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Investment Project Financing Economic Analysis Guidance Note



OPSPQ

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This guidance notes are intended for internal use by Bank staff. The notes will be updated and complemented from time to time.

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ACRONYMS AND ABBREVIATIONS

CAS	Country Assistance Strategy
CPS	Country Partnership Strategy
ERR	Economic rate of return
ICR	Implementation Completion Report
NPV	Net present value
OP/BP	Operational Policy/Bank Procedure
ORAF	Operational Risk Assessment Framework
PAD	Project Appraisal Document
PCN	Project Concept Note
PDO	Program development objective

Section I. Introduction

1. This guidance note is intended to help World Bank staff implement the revised approach to the economic analysis of projects set out in the new Operational Policy and Bank Procedure (OP/BP) 10.00, *Investment Project Financing*, resulting in the good practice of more effective use of economic analysis in supporting countries in designing and implementing successful projects. The revised approach posits three questions that should be addressed in all projects.

1. ***What is the project's development impact?*** This is the traditional question underlying the Bank's approach to cost-benefit analysis. It requires careful consideration of the expected stream of project benefits and costs, grounded in an explicit causal framework linking project activities to targeted outcomes.
2. ***Is public sector provision or financing the appropriate vehicle?*** This question probes the rationale for public involvement with respect to financing and/or implementation and should explicitly consider alternative modes of provision.
3. ***What is the World Bank's value added?*** This question examines the World Bank's contribution to the project. It seeks to determine the benefit from Bank staff involvement and whether the proposed project maximizes the development impact of staff effort.

2. **Economic analysis historically.** To visualize the change implied by the revised approach, think of economic analysis in the form of a triangle. The apex or peak of the triangle is a summary statistic called the expected economic rate of return (ERR) while the underlying analysis and evidence forms the body. In the 1970s, economic analysis focused on the first question and projects were typically of the 'bricks-and-mortar' variety — physical rehabilitation of a road, for example. In such cases, expected project costs and benefits could usually be readily monetized at least to a reasonable approximation. Consequently the analyst could quickly arrive at an estimate of the rate of return. As a result, the economic analysis triangle was slim with a narrow base and a well-defined peak. Now consider what happens with today's projects and today's questions.

3. **Economic analysis today.** Compared with the projects of earlier decades, the current portfolio comprises more complex and innovative operations involving institutional redesign, incentive restructuring, decentralized decision-making, and so on. This complexity implies that the body of the triangle expands with the need for deeper analysis and evidence to substantiate each step in the project's causal chain. Given analytical, time, and data constraints, some parts of the analysis may be less well articulated and less well supported empirically than others, thereby reducing the robustness of the summary statistic sitting at the top of the triangle. Furthermore, in many projects in today's portfolio it may not be possible to arrive at a comprehensive monetary value of benefits, or else prohibitively costly to do so, once more making it difficult to provide a numerical estimate of the rate the return and effectively truncating the triangle. Nevertheless, the requirement of sound economic analysis is more critical than ever in informing good project design. It is tightly tied to both the results focus and the focus on risks to those results required for today's world of more complex projects. The consideration of alternatives remains key but

encompasses a wider perspective. Consider a proposed investment in expanding the electric power transmission system: *is the investment the best way to deliver greater quantities of more reliable power, or might policy changes to promote energy efficiency and improved grid management accomplish the same objectives at lower cost—a different project or no project at all?*

4. **The two additional questions.** Explicit incorporation of questions #2 and #3 in today's evaluations is the second difference compared with previous standard practice in the 70s. Typically, the earlier analysis made no attempt to rationalize why the proposed project ought to be implemented or financed by the public sector. Of course, if a project supports institutional reforms in core public sector activities, the answer to question #2 could be straightforward but should still be considered to avoid overlooking potential creative alternatives. Also, little attention was paid to establishing the reason for World Bank involvement (question #3). To continue with the example of road rehabilitation, it may be relatively straightforward to demonstrate the need for public sector management of roads but more difficult to argue that World Bank expertise is required for what in most countries would be considered a routine operation. The intent here is not to comment on the merits of road rehabilitation projects but to point out that these two questions should be addressed in all situations implying a further broadening of the base of the triangle but, in this instance, with no direct consequence for the rate-of-return estimate.

5. **Greater complexity but no dilution of the importance of economic analysis.** The essential point regarding economic analysis is that its demands are likely to be more complex for today's appraisals than those over the past four decades or more. Consequently, this guidance note is directed toward the analysis and evidence that can fill this void. As noted above, economic analysis today is likely to be even more important than in the past, given both the greater focus on results and the greater uncertainties facing many types of Bank-supported projects. In fact, one of the major changes in OP/BP 10.00, reflected in the guidance note, is the focus on economic analysis earlier in project preparation when it can have a greater impact on project choice and project design.

6. **Summary of differences in OP/BP 10.00 from previous policy and practice.** There are three main differences from previous policy and practice on economic analysis:

- An explicit link between the project economic analysis and the project development objectives (and implicitly to the risks to those objectives) but recognizing the often greater complexity of the causal chain — calling for using approaches and methodologies appropriate to the project, sector, and country conditions, including the consideration of alternative approaches.
- Explicitly incorporating the two additional questions — the rationale for public involvement (#2) and the rationale for the use of scarce World Bank resources (#3) — into the analysis.
- Deciding at the PCN stage on the form and content of the economic analysis that the team will undertake during preparation, necessitating advance thinking about economic analysis prior to the PCN meeting (perhaps already shaping project choice

and design) and permitting the analysis to start earlier so it can play a larger role in helping to shape the project.

7. **Structure of the guidance note.** Given the variety of projects today, this guidance note will not set out details for all eventualities, which will be covered in topic-specific and sector-specific guidance. The vast array of existing project economic analysis guidance, inside and outside the Bank, need not be duplicated in this note. The main focus of this note is guidance on making the decision on the form of economic analysis a team will use in project preparation. The goal of the note is to set out what should be covered (Section II, Basic Concepts); who does what (Section III, Role of the Client in Project Economic Analysis); how it should be covered (Section IV, Designing the Project Economic Analysis); and when it should be covered (Section V, Overall Step-by-Step Guidance). Annex A provides a glossary of terminology for economic analysis. This guidance note is best used in combination with the vast literature on good project economic analysis. Annex B provides an annotated bibliography, citing useful sources across project economic analysis topics and indicating the strengths of each, with links to on-line material, including concrete applications to real projects. It includes links to existing Bank guidance by sector. Annex C sets out project financial analysis, an important part of the economic analysis for those projects that depend on the financial sustainability of an entity that operates on commercial terms.

Section II. Basic Concepts

8. Clarity around the aim of economic analysis will help to strengthen Bank-supported projects and guide the choice of practical, cost-effective approaches. This section sets out the conceptual underpinnings of the three questions that should be asked in all projects:

1. *What is the project's development impact?*
2. *Is public sector provision or financing the appropriate vehicle?*
3. *What is the World Bank's value added?*

9. **Development impact.** The basic, well-known framework underlying the estimation of a project's development impact rests on three principles:

- A project is expected to contribute to development if expected benefits justify the expected cost, including benefits that can be realistically stated in monetary terms or other benefits that are more difficult to monetize or sometimes even to quantify but can be demonstrated to be important as project outcomes.
- Expected benefits and costs attributable to a project are measured by comparing the situation with the project to the situation without the project (the counterfactual or a baseline).
- Where plausible alternatives exist, the selected project should be shown to be the preferred design. In other words, assessment of development impact should involve a serious consideration of serious alternatives. Normally, the selected project would be the alternative that maximizes the net present value of expected net benefits, or the

least-cost alternative among options for producing a specific set of expected results, unless explicit reasons are given for choosing another alternative.

10. The form of economic analysis will depend on the project, its setting and context, the existing knowledge, the time factor, and the degree to which benefits can be sensibly quantified. In addition, as a part of project economic analysis, task teams should address sustainability.

- **Financial sustainability.** Projects, which involve an entity that operates on a commercial basis or otherwise depends on cost recovery for sustainability, should undertake financial analysis to establish that, under a set of plausible assumptions, the entity will eventually be able to self-finance its activities. (See Annex C on financial analysis.) In most cases in which project economic analysis requires a comprehensive financial analysis, the financial analysis is a straightforward extension of the economic analysis. The financial analysis comprises factoring in costs and benefits as seen by the entity providing the intended goods and services; the economic analysis considers all benefits and costs to society, including those not paid for or captured by the enterprise.
- **Fiscal sustainability.** Projects should not undermine the client government's fiscal sustainability. Teams should examine the project's expected government budget impact.
- **Environmental sustainability.** The Bank's environmental and social safeguards normally address some of the relevant environmental sustainability issues, which are then reflected in the project design. However, in projects for which improved environmental sustainability is the intended development impact, teams should follow the steps laid out in this note for estimating the development impact of alternative approaches.

11. All of these concepts on sustainability and alternative approaches are cited in the annexes, with links to further detailed guidance and concrete examples.

12. **Public rationale.** Public investment is one way the government plays a key role in a country's development by handling a range of issues that can only (or predominantly) be accomplished or implemented through government action. The main rationales warranting public action include the correction of market failures, the incorporation of externalities or spillovers, redistributive, and social and political concerns. Given the scarcity of public funds and implementation capacity, public investment in new or ongoing programs contributes most to development when those programs are clearly directed to addressing one or more of these concerns. (As noted above, as part of the economic analysis, non-investment alternatives, including changes in policies or regulations or information or education campaigns, may also warrant consideration.)

13. A government's role in reducing market failures and promoting other economic, social, and political goals through investment often takes the form of public provision, but in some cases public-private partnerships of a variety of forms may be the preferred solution. The choice, along the spectrum from pure public to mixed to pure private provision, will be situation-specific. In

answering question #2, having established as part of the answer to question #1 that the need is best met through investment versus another type of action, staff should examine the strengths of governments in terms of their regulatory and administrative capacities and independence from capture by special interests, as well as the relevant private sector's level of development and competitiveness. The specific design features of a given program will also help determine its suitability for public, private, or mixed provision, taking into account, for example, whether the program allows for user fees to be charged or whether the quality of service is realistically contractible. These issues may be particularly germane in a fragile state setting.

14. Quantitative information to establish the extent of these problems — *What is the evidence of market failure? How pervasive are spillovers?* — is often difficult to acquire; but, at a minimum, the economic analysis should set out a clear description of the problem. One way of demonstrating the argument for public provision is to compare it with the best possible private sector alternative wherever such an alternative attractive to the private sector exists.

15. In some cases investment projects in the public sector may be targeted toward correcting government failure (although it is often the focus of development policy operations). Examples could be helping develop or restructure regulatory agencies that might not exist or might have been subject to regulatory capture, supporting a tax agency to reduce inefficient loopholes, supporting the development of environmental agencies, or simply improving the efficiency of provision of a legitimate government service.

16. Many investment projects in the public sector do not introduce new government programs but strengthen or improve ongoing ones by relaxing binding constraints to public sector performance (for instance, core institutional reforms). For these, answering question #2 on public rationale may seem redundant. In fact answering the question will normally be straightforward, requiring an answer of only a sentence or two; but it is still useful for the team to think through — *Are there any functions covered by the project that, at second thought, do not need to be performed by the government?*

17. **Bank value added.** Investment projects are not isolated activities. They are imbedded in a country's development strategy, and the selection of those projects to be financed by the Bank results from discussions with the client government as part of the country dialogue, including during the preparation or update to a Country Assistance Strategy (CAS) or Country Partnership Strategy (CPS), and during country portfolio reviews. The corresponding documents lay out, among others, the priorities and rationales for project lending. Therefore, the intent of the Bank value-added analysis in the context of a specific investment project is not to provide the rationale for the choice of the project's basic parameters (e.g., sector, indicative Bank-financing amount or tentative objective) as those are often defined as part of the country dialogue. Rather, the intent is to justify, within such basic parameters, the task team's proposal in terms of designing an investment project with significant added value as perceived not only within the Bank but also by the client and the development community.

18. Beyond financing, the added value arises mainly from the Bank's technical input based on international experience, introduction of innovative projects, improvement in design, support

for capacity development during implementation, training, sharing of experience on project and risk management, and more. In fact, clients often seek Bank support (in the form of knowledge or experience shared by Bank staff, or Bank-identified experts) precisely because local expertise is not available or not sufficiently developed. Ideally, Bank support would lead to increase a project's development impact in ways that go beyond what can be realized by exclusive reliance on the client's own resources or other external sources of support such as from the United Nations and the Asian Development Bank. Conceptually, the Bank's value added is the difference in the project's net development impact with and without Bank staff and related resources. Bank value added may also be expressed through the Bank's convening power, for example, by bringing development partners together to help support a government to develop or implement an investment project.

19. In certain circumstances, Bank value added may be minimal or could be provided effectively by local and/or alternative resources. When this is the case, the task team should clearly identify the project as such, and provide a justification as to why there is still a rationale for the Bank to support the specific project. In certain cases, for example, the Bank may want to support an innovative investment project designed by a government, to learn from it and possibly replicate it in other sectors or countries.

20. **Project justification nexus — Results, risks, and economic rationale.** The first step in good economic analysis is to set out the objective of the project and the causal chain that links project activities and inputs to these objectives (and, perhaps, beyond to the ultimate outcomes the project hopes to influence). Another important step is risk and sensitivity analysis. That leads to a final basic concept: the link between the three elements, the “project justification nexus” — (a) the results framework, (b) the analysis of the risks to those results, and (c) the economic analysis that brings in cost and efficiency. These three analytical elements are interdependent — and the analysis from each reinforcing — in helping the client design a high-quality investment project financing operation. The guidance on the results framework and monitoring and evaluation¹ sets out the process for setting project development outcome (PDO) and key performance indicators. The PDO may not correspond exactly to the expected benefits identified for an economic evaluation because these benefits may go beyond the PDO. Nevertheless, in many cases they will match and in all cases the link between the economic benefits and PDO and monitoring indicators should be explicitly set out in the key results section of the PCN.²

21. Similarly, economic evaluation has clear links to the Operational Risk Assessment Framework (ORAF).³ In doing its economic analysis, the team has to project the future, an exercise that is inherently uncertain and subject to risks. Staff should identify the most significant uncertainties they will face in doing their economic projections during project preparation and the most serious risks to achieving the PDO that the project is likely to face. Key

¹ Refer to [Results Framework and M&E Guidance Note](#) for Investment Project Financing.

² Beyond a focus on results or outcomes, the results framework and economic analysis sections have different purposes. The former compares expected results with the base case (before and after analysis) and does not examine costs, whereas the latter compares expected benefits with a counterfactual (with and without analysis or comparison to an alternative project) as well as considers costs.

³ Refer to [Operational Risk Assessment Framework Guidance Note](#) for Investment Project Financing.

parameters should be fully consistent with (indeed, ideally identical with the relevant subset) and drawn from the information in the ORAF where risks are defined as “risks to achieving development objectives as reflected in the results to be generated by Bank operations.” If the key risk parameters used for sensitivity analysis done as part of the economic analysis are not identified in the ORAF, this inconsistency should be explained and explicitly justified in project documentation.

Section III. Role of the Client in Project Economic Analysis

22. Perhaps the central element in all of development, including that supported by investment project financing, is country capacity development. Experience has shown that using country systems supports capacity development. It is desirable for the relevant government agency to produce the economic analysis for the project using its own system. In that case, since economic analysis is part of due diligence, the task team then validates the analysis (using the OP 10.00 requirements and the guidance below) and works with the authorities to strengthen it if necessary. However, often the country’s economic analysis capacity does not exist or is weak. In those cases, good practice is to share and discuss the analysis with the client at each step. Their insights are likely to improve the analysis and the process can contribute to capacity building. In addition, the Bank country team might steer country officials toward the World Bank Institute training course on project economic analysis or similar training from regional development banks or universities. In some cases, it might be relevant to build in economic analysis capacity development as a project element.

Section IV. Designing the Project Economic Analysis

23. Economic analysis is an integral part of project development. When properly conducted, economic analytic activities should inform and guide each stage of the project preparation and beyond. While the economic analysis may take a variety of forms, its completion is expected to be comprehensive and rigorous. This section delineates the general features of a comprehensive and rigorous analysis as well as helps guide the project team in its choice of analytic form. While project economic analysis should be tailored to the specific needs of the project, an analysis basically belongs to one of two general categories; cost benefit or cost effectiveness. (Both categories typically include discussion of cost minimization along with a quantitative risk/sensitivity analysis.)

- **Cost-benefit analysis.** *Are the dollar benefits of the project likely to outweigh dollar costs?* Cost-benefit analysis is a method for comparing the economic pros and cons of policies and programs to help policymakers identify the best or most valuable options to pursue. Cost-benefit analysis monetizes all major benefits and all costs associated with a project so that they can be directly compared with each other as well as to reasonable alternatives to the proposed project. A cost-benefit analysis is generally considered the most comprehensive approach and, in many ways, the gold standard.

- **Cost-effectiveness analysis.** *How does the cost of the desired project outputs under the project compare to other options for providing the same or similar results?* Cost-effectiveness analysis evaluates which program or policy creates the wanted results at the lowest cost. Cost-effectiveness analysis is a technique used in weighing the effectiveness of a project against its cost. It is similar to a cost-benefit analysis in many important respects but does not attempt to monetize all anticipated benefits deriving from the project or the alternatives considered. Its applicability is constrained by the need to make comparisons across alternative approaches that deliver roughly similar bundles of outcomes and benefits.

24. While in virtually all cases, teams will be using one of these two approaches, the following considerations will help determine how far to go usefully in moving up the analysis and evidence triangle set out in paragraph 4, toward an apex expected ERR in the first case and an explicit expected least-cost demonstration in the second.

25. **Considerations of analytic form and scope.** Teams should start with a preliminary inquiry, based on the specific project context and design, to the extent to which it is defined. Before the project concept stage, the following aspects should be considered as part of the preliminary analysis to answer questions around the form and scope of the analysis. The first steps broadly overlap with the work that the team needs to do to prepare the results framework:

- (a) *What would happen without the project?* It is impossible to carry out sound economic analysis without a logical definition of a no-project baseline. Explaining different plausible future trends is a key step in defining an informed baseline. The counterfactual should not just be a continuation of the status quo; for example, the situation could deteriorate.
- (b) Define the rationale and objective of the project.
- (c) Delineate the causal framework that links the project activity to ultimate outcomes of interest. List the major assumptions utilized by the causal chain framework. Define a clear link between project activity, intermediate outcomes/objectives, and ultimate outcomes/outputs (PDOs) within the result chain framework:
 - (i) Determine whether this is a project where the results chain is well established and documented. Determine how to effectively utilize this prior knowledge.
 - (ii) Determine whether it would be appropriate for supplementary studies to be supported by, or conducted in conjunction with, project activities in order to improve knowledge around project impacts and important mitigating factors. These studies may run the gamut from small-scale observational exercises to a full-blown prospective impact evaluation, depending on the informational needs and timeframe of the project.
- (d) Delineate alternative approaches/designs to achieve the same outcomes as anticipated by the project.

26. The next set of steps goes beyond the results framework per se but overlap with other parts of project identification, including establishing an overall idea about project costs and financing. [Note: this is not a required section in the PCN; it is due diligence work in establishing

the argument for the form and scope of economic analysis during project preparation that the team will recommend at the PCN meeting.]

- (a) Make a comprehensive list of anticipated costs and benefits with and without the project, including social costs and benefits, setting out what the team would likely need if it was to measure the expected NPV or expected ERR arising as a result of project activities. (There will be a spectrum of challenges in doing this work. On one end is the set of potential projects for which the economic analysis framework is well-developed and well-tested; for those, this step will be straightforward. On the other end is the set of potential complex and innovative projects with causal chains incorporating all of the complicating factors around institutional design, incentives, and so forth; for those, this step may be more challenging but equally important.)
 - (i) To the extent possible, delineate and describe anticipated investment and non-recurring costs, operation and maintenance as well as recurring costs (where appropriate) and their likely timing, and other opportunity costs to economy generated during the life of the project. (Opportunity costs reflect the value of the next best alternative use of the resources in question.) All of these costs need to be assessed relative to the postulated baseline.
 - (ii) To the extent possible, delineate and describe anticipated project benefits, both direct and indirect, and their likely timing. Note that for projects whose objectives are reducing environmental or other sorts of negative externalities, it is this reduction in spillover costs that needs to be quantified and monetized as benefit. A similar observation applies in the case of investment projects whose goals are to foster positive externalities (for example, investment in technology innovation and diffusion).
 - (iii) List the set of variables required to perform (if needed) a financial analysis (see Annex C).
 - (iv) Identify which of the listed costs and benefits can be quantitatively measured with existing knowledge and which may likely be quantitatively measured cost-effectively with information gained during project preparation.
- (b) Identify any possible externalities resulting from project outcomes, both positive and negative (for example, environmental impacts). Note which externalities might be quantitatively measured before or during project preparation. Those that can be quantified and monetized should be treated as part of the overall set of project costs or benefits as outlined in step (e) above.
- (c) Assess the degree of risk and uncertainty relating to anticipated project impact/effectiveness as well as degree of uncertainty in valuations delineated above, using the ORAF as the basis.
 - (i) Delineate key parameters needed for economic analysis that are subject to significant variation (including indirect and external effects), the source of the variance, and an idea of the extent of variation.
 - (ii) Take into consideration the range of possible variations and the extent of uncertainty attached to the outcomes.
- (d) Assess the feasibility of analytic activities during preparation, given the time and resources available, that could fill in key data gaps.

- (i) Determine what analysis can be done within the required timeframe.
- (ii) Determine whether the analysis can be completed given the allocated resources.
- (e) Delineate estimated costs and benefits identified in step (e) above that cannot be measured or valued given the current state of knowledge (determined after a thorough review of existing knowledge) and explain why they cannot be measured or valued now or through information obtained during project preparation.
- (f) Determine whether a distributional analysis is relevant to the careful consideration of social costs and benefits.
 - (i) Delineate to the extent possible who benefits (or is harmed) from the project activities and to what degree. This would include the identification of stakeholders affected by the project and the degree of impact such as a determination of access to project benefits and the distribution of benefit incidence.
 - (ii) Determine appropriate approaches to the distributional analysis (quantitative versus qualitative).

27. Once the preliminary analysis is completed, the following contextual questions should be considered:

- (a) *Is there sufficient information available to calculate a credible expected ERR or NPV during project preparation?*
- (b) *Is there sufficient information available to demonstrate expected least cost for a given level of benefits if those benefits cannot be expressed sensibly in monetary terms?*
- (c) *Is the project highly time sensitive (an emergency situation in which the expected benefits are critically linked to the speed of their provision)? If so, what data are readily available or can be acquired during the limited time frame?*
- (d) *Are there significant data gaps that cannot be cost-effectively addressed through project preparation activities?*
- (e) *Is there solid existing external evidence that can be used to supplement the information at hand for the project?*
- (f) *Is the project of a high-risk nature (for example, because of its size, innovative nature, or fragile setting)? If so, is the evidence available or can it be cost-effectively acquired during preparation (internal or external, qualitative if necessary) to demonstrate the commensurate expected high return that would justify supporting the project? In the case of an innovative project, should the project be designed to include or be complemented with an impact analysis?*
- (g) *Is there considerable experience within the Bank for this type of project where net returns are consistently high? If so, are the costs and benefits of past projects similar to the ones in the proposed projects?*
- (h) *In the absence of complete data, during preparation can a credible range of expected benefits be established, showing that even at the low end of the range, the project would provide acceptable net benefits?*
- (i) *In the absence of complete data, during preparation can the data support calculating a threshold level above which the net benefits of the project are acceptable and credibly justify that the project is likely to achieve that threshold?*

28. **Determination of the form and scope of the economic analysis.** The next step is to use the above information to formulate a recommendation at the PCN stage for the form and scope of project economic analysis to be undertaken during preparation. Even for project types where the calculation of an expected NPV or ERR has not been traditional, by going through the above checklist of considerations, teams may find that it is feasible, at least for major elements of the project. In those instances where the benefits may not be quantifiable in a timely or cost-effective manner, a rigorous economic analysis that, at a minimum, leverages existing internal and external information is needed under OP/BP 10.00. Often a cost-effectiveness analysis can be done even if a full quantitative assessment of costs and benefits is not feasible.

29. For those projects for which a precise specification of costs and benefits is especially difficult (for example, a project designed to increase financial accountability in the public works ministry), it is not enough to say that economic analysis is not relevant or to make general statements about expected benefits being large. Staff should support any verbal description of benefits by presenting available evidence (including quantitative evidence) from similar projects or from established research to help ascertain what the project contributes relative to the counterfactual. In institutional reform and similar projects, evidence on impact is likely to refer to improvements in intermediate outcomes or measures of the strength of country systems; in these cases the impact on final outcomes is more likely to be predicted theoretically than observed empirically. In other cases, the benefits may be quantifiable but not in monetary terms or in terms of ultimate development impact. Thus, it may be possible to measure benefits with and without the project in terms of intermediate outcomes, such as a reduction in the incidence of malaria, without being able to express them in monetary terms or in terms of their ultimate impact on health and development.

30. Alternatively, in some cases where the Bank has experience with a type of project, calculated NPVs or ERRs turn out to be accurate, and net returns consistently high, teams may need only to cite that evidence and demonstrate that key cost and benefit parameters of the project are similar to those earlier projects. When the Bank has significant existing knowledge on the economic impact of similar projects, this knowledge should inform the economic analysis process for similar proposed projects. The sectors will provide guidance on how to take into account the existing knowledge within their sector and on good practice on project-level economic analysis. This will ensure that the existing knowledge is being used effectively and will result in scarce resources being spent in an efficient and effective manner.

31. Over and above any requirements, the goal is to use economic analysis as a tool in working with the client to better choose and define the project and improve its design. Whether or not an estimated NPV or ERR is calculated, the underlying information, in whatever form it can be gathered and provided, is by itself the most useful input for many management decisions.

Section V. Overall Step-by-Step Guidance

32. With these issues in mind, the goal is to do the economic analysis that answers all three questions in every project but with the tools and techniques that fit the proposed project and its setting. Economic analysis has a role in each step of the project cycle.

A. Advance of Project Concept Preparation

33. It is important to start the process of answering the three questions as early as possible in the project cycle so that economic analysis is useful in guiding decisions. Even before the PCN, during the identification stage, country teams should be thinking in terms of the three questions. Many decisions influencing the subsequent selection of projects are made in the context of regular country dialogue and embedded in the CAS. Using the focus of the three questions in overall country program preparation will exert a guiding influence during country discussions and in project identification.

B. Project Concept Preparation

34. The PCN should provide the basis for Management to (a) *understand* how the project is expected to contribute to the country's development, why the public sector should undertake or finance the project, and what is the value added of Bank support; and (b) *determine* what further actions are necessary to substantiate project justification and decide on the form of economic analysis that the team will do.

35. **PCN content.** In order to make those decisions, task teams should include the necessary information in the PCN. In particular, the team should provide tentative answers to the three key question of economic analysis. The PCN document contains the relevant sections for answering the three questions.

36. **Expected development impact.** Staff should provide a clear description of the project's expected contribution to development relative to the most reasonable counterfactual in the key results section of the PCN. That description should demonstrate that staff are drawing on relevant sector and country knowledge. The team should also recommend the form of economic analysis they will use (including anticipated impact evaluation during implementation) in helping the client country develop the project and set out any key data they need to acquire and how and when they will acquire that data.

37. **Public rationale.** The PCN should explain how the proposed project either addresses the identified concern that calls for public intervention or compensates for it by outlining the causal chain from project design to impact on the factor justifying intervention. This parallels precisely the discussion of a 'results chain' or 'logic of an intervention' in the results framework and should be documented in that context in the key results section of the PCN.

38. **World Bank value added.** The PCN should describe how the Bank's technical input contributes to the project beyond the provision of funds. Decisions regarding these tasks can

have significant budgetary implications for the Bank. In addition to explaining why Bank input is required (as part of the project description section), the PCN should therefore also specify the tasks expected to be undertaken by staff throughout appraisal and implementation (in the section on proposed team composition) and indicate the skill and time requirements.

39. **Summary.** The outlined approach requires that all three questions be addressed in the PCN for all projects. It shifts the economic analysis to a conceptual understanding of what the project is trying to achieve and how it plans to do so. This in no way discounts the value of quantitative information. As noted above, using economic analysis data (where it exists) from similar operations and identifying key data gaps are important PCN elements. In deciding at the PCN meeting, the standard form of economic analysis to be done during preparation is quantitative economic analysis, including calculating an expected ERR wherever possible, at reasonable cost, and without forcing unreasonable assumptions. As noted above, the added cost of the work necessary for the PCN to address the three questions and recommend the form of economic analysis to be undertaken during project preparation should be limited — that, of course, depends on having done a good review of existing literature and of information on experience with related projects. Much of the work is identical to the work needed to complete the key results and risks sections of the PCN.

C. PCN meeting

40. The key decision confronting the decision-maker at the PCN meeting stage is whether to continue with plans to support the country's project and, if so, how to do so. The decision-maker may wish to differentiate between those projects where justification is already well advanced and those where additional gaps need to be filled in or where there are special considerations (a high-return but high-risk project, for instance) calling for more intense scrutiny before submission for approval. This is consistent with the two-track approach already in place. As part of that decision, the decision-maker decides on the form of economic analysis that the team will undertake during preparation and records that decision. The decision-maker also has to assess the arguments justifying Bank support and decide on future staff allocations. The decision-maker should be persuaded that the allocation of staff to the project under consideration adds significant value and that the specific activities to be undertaken are well chosen.

41. **Quality Assurance.** The decision-maker's decisions at the PCN meeting will inevitably be based on judgment as much as hard evidence. In these circumstances, efforts to encourage maximum transparency and objectivity play a key role. Peer reviews are expected to provide guidance around reviewing economic analysis proposals laid out in the PCN.

D. PCN through appraisal

42. During preparation, teams should use the economic analysis process proactively in helping to refine the design of the operation. This can involve data gathering and analytic activities conducted in conjunction and full coordination with other project design activities. As with the results and risk frameworks, if new information comes to light that would call into question the decision-maker's decision at the PCN stage on the form of economic analysis, the

team follows internal processing procedures in seeking a reconsideration from the decision-maker.

43. The main task is to revisit the three questions drawing on the additional information and analysis resulting from actions called for at the time of the concept note. The Project Appraisal Document (PAD) should therefore report fully on the economic evaluation for all projects. The PAD should also report the key lessons learned from the economic analysis. It should also recall the actions to be undertaken by staff as decided at the PCN meeting, confirm they have been completed (or explain why not) and demonstrate to the extent possible that they have resulted in real value added. In particular, if the decision-maker at the PCN stage notes that the team needs to fill important gaps in the information base, teams should explicitly report on the results of that work.

44. The economic analysis (including as necessary the financial analysis) in the appraisal summary should be consistent with the PDO section, the project cost section, the key risks and mitigation measures section, and the underlying ORAF. Another feature of the analysis that should be included at this stage is sensitivity analysis, ideally Monte Carlo simulations around the key parameters. The analysis should also address the fiscal impact question. Lastly, it should already identify actions during implementation that will enable revisiting the economic analysis as necessary at mid-term and doing the ex post economic analysis for the ICR that will draw out the lessons learned and in many cases allow for more precise economic analysis in future projects. The (newly strengthened) peer review process should include an independent look at the economic analysis.

E. Implementation

45. During implementation, the task team should monitor whether or not the project is generating the data necessary for assessing progress and doing ex post economic (and, where relevant, financial) analysis. Much of the work overlaps with the monitoring of process toward project development objectives, filling in the indicator data, and monitoring project costs. If there is a mid-term review, staff should consider updating the economic analysis as a key input into mid-term review decisions.

F. Ex post economic evaluation at ICR stage

46. At the ICR stage, the team should revisit the economic analysis and provide an ex post evaluation of the benefits and cost.⁴ In this evaluation, the team should calculate an ex post ERR or NPV (and, if relevant, financial rate of return) if the relevant data are available, whether or not those calculations were made at appraisal. If these were estimated at appraisal but not in the ICR, the ICR should set out explicitly the reasons why, on an exception basis, these recalculations were not done. If the ICR does not include ERR or NPV calculations, the team should use other techniques, such as cost per unit of output, to measure efficiency.

⁴ Refer to the ICR Guidance Notes.

Section VI. Summary and Conclusion

47. This guidance note sets out advice to staff in complying with the new policy and procedure on IL project economic analysis. The goal is more effective use of economic analysis in supporting countries in designing and implementing good projects. The three main differences are:

- An explicit link between the project economic analysis and the project development objectives (and implicitly to the risks to those objectives), recognizing the often complex results chain and therefore using approaches and methodologies appropriate to the project, sector, and country conditions (the “project justification nexus”).
- Explicitly incorporating the two additional questions—the rationale for public involvement and the rationale for the use of scarce World Bank resources—into the analysis.
- Deciding at the PCN stage on the form and content of the economic analysis the team will undertake during preparation, so the thinking on the form of analysis and available data has already started (and perhaps already influenced project choice and design) and so that the analysis is started earlier and can play a larger role in helping to shape the project.

48. The effective use of economic analysis from start to finish of investment projects and having client countries and staff see the value in its use will be the measure of success.

Annex A. Glossary of Terms in Economic and Financial Analysis

Benefits-cost ratio (BCR). The BCR represents a ratio of the present value of the economic benefits stream to the present value of the economic costs stream (net benefits divided by net costs). A BCR of 1.0 means that the project produces net benefits of zero and the present value of benefits and costs are exactly equal. A BCR of more than 1.0 indicates that a project is expected to produce positive net benefits. A BCR of less than 1.0 indicates a project where the net benefits are negative (the present value of costs is larger than the present value of benefits).

Constant prices. Constant prices allow for comparison of prices at different points in time by removing the expected or measured change in the general price level. Refers to valuation of transactions, wherein the influence of general price changes from the base year to the current year has been removed.

Consumer surplus. Savings to existing consumers arising from the difference between what they are willing to pay for an output and what they will be charged.

Conversion factor. The ratio between the economic value and the financial value of a project output or input. This factor can be used to convert the constant price financial values of project benefits and costs to economic values.

Cost-benefit analysis. Cost-benefit analysis is an economic evaluation technique that analyzes the generation of economic benefits and costs from a project or policy through the comparison of the discounted flows of benefits and costs over a prescribed time horizon. The following data are needed to complete a cost-benefit analysis: the number of years to include in the analysis (the project life or time horizon); the values of project benefits and costs (all expressed in monetary terms) for each year included in the analysis; and the discount rate.

Cost-effectiveness analysis. Cost-effectiveness analysis evaluates which program or policy creates the desired or anticipated results at the lowest cost. Cost-effectiveness analysis is a technique used in weighing the effectiveness of a project against its cost. It is similar to a cost-benefit analysis in many important respects, but doesn't attempt to monetize all anticipated benefits deriving from the project or the alternatives considered. Its applicability is constrained by the need to make comparisons across alternative approaches to delivering roughly similar bundles of outcomes and benefits.

Cost-effectiveness ratio. The ratio of the present value of project costs to the present value of project effects or outcomes, where costs and effects are discounted at the opportunity cost of capital. It provides the baseline for assessing how much it would cost in terms of extra resources to achieve greater results, through the use of more effective but more costly alternatives.

Cost-minimization analysis. (Alternative with lowest cost). Basically equivalent to cost-effectiveness analysis.

Cost recovery. The extent to which user charges for goods and services recover the full costs of providing such services, including a return on capital employed.

Current prices. The value based on prices during the reference year; nominal prices. (Projected future price values include the effects of expected inflation.)

Discount rate. A percentage rate representing the rate at which the value of equivalent benefits and costs decrease in the future compared to the present. A discount rate is commonly applied in financial analysis because it provides a means for converting future costs and benefits into present value dollar amounts (i.e., their worth today). The principle behind discounting is the “time value of money:” a dollar paid today is worth more than a dollar paid a year into the future because the person holding the dollar can invest it and earn a return.

Discounting. A methodology used to calculate the value, in today’s terms, of costs borne or income received in the future. To test whether an investment is economically viable, future income must be discounted so that it can be measured against the costs. If the present value of the benefits exceeds the costs, the investment is expected to have a positive return.

Distribution effects. An analysis of the net income effects of project costs and benefits on groups of project participants distinguished by their different levels of living. Distribution effects can include the difference between financial and economic values for project outputs and inputs.

Economic prices. The competitive undistorted demand or supply price for an incremental unit of a good where distortions include personal income taxes, corporate income taxes, value-added taxes, excise duties, import duties, and production subsidies.

Economic rate of return (ERR). An internal rate of return based on economic prices. It is analogous to the IRR in a cost-benefit analysis but based on economic values instead of financial prices.

Environmental sustainability. Environmental sustainability refers to the rates of renewable resource harvest, pollution creation, and non-renewable resource depletion that can be continued indefinitely.

Externality. Externalities are costs or benefits arising from an economic activity that affect others than the agent engaged in the economic activity (or making the economic decision) and are not reflected fully in market prices. These are essentially a third party detrimental (or beneficial) effect for which no price is exacted. Externalities are not reflected in the financial accounts, but need to be accounted for an economic analysis.

Financial sustainability. The assessment that a project will have sufficient funds to meet all its resource and financing obligations, whether these funds come from user charges or budget sources.

Fiscal sustainability. Fiscal sustainability is defined as the government's ability to maintain a set of fiscal and monetary policies without becoming insolvent. Fiscal sustainability is a concept, intimately linked to the concept of solvency and liquidity. Solvency usually refers to the government's ability to service its debt obligations without explicitly defaulting on them. Liquidity refers to government's ability to roll-over its maturing liabilities with its liquid assets and available financing.

Internal rate of return (IRR). IRR is the discount rate that would give a proposal a present value of zero. Generally, a project is accepted if the IRR is higher than the discount rate. However, IRR is not suitable for the ranking of competing projects since simple comparisons between IRRs may be misleading if the projects are not the same size. The size of each project and the discount rate can influence which project is best. In addition, applying different appraisal techniques to the same basic data may yield contradictory conclusions. Lastly, the IRR equation can have multiple roots.

Market failure. Market failure occurs when freely functioning markets fail to deliver an efficient allocation of resources. The result is a loss of economic welfare, especially from the point of view of society as a whole. This is usually because the benefits that the free-market confers on individuals or businesses carrying out a particular activity diverge from the overall benefits to society. Market failures may often arise in the presence of information asymmetries, externalities, or public goods.

Monte Carlo analysis. Monte Carlo analysis expresses the uncertainty associated with the critical variables of a model by treating them as random variables drawn from known distributions. A simulation process is then used to register the impact of this uncertainty on the projected results.

Net present value (NPV). The NPV is a monetary estimate, in today's term, of the generation of net benefits over the life of a project. The "net" appellation signifies that both the costs and benefits of the investment are included. Typically projects with positive NPV are seen as favorable. On the other hand, projects with negative NPV likely should be rejected because the present value of the stream of benefits is insufficient to recover the cost of the project.

Opportunity cost. Often described as the benefit foregone from not using a good or resource in its best alternative use. Opportunity cost is the full cost of an activity, investment, or purchase, including everything forgone in order to achieve the activity (or investment or purchase). This includes not only the money spent in buying (or doing) the "something", but also the economic benefits (utility) that were done without because "the beneficiary" bought (or did) that particular something and thus can no longer buy (or do) something else. These lost opportunities may represent a significant loss of utility. The notion of opportunity cost plays a crucial part in ensuring that resources are being used efficiently.

Results chain framework. The result chain framework is a tool to assist with delineating and fully specifying the causal linkages between project activities and the achievement of specific objectives. It links objectives to program-level outcomes and ultimately to the activities and inputs of individual programs.

Risk analysis. The analysis of project risks associated with the valuation of key project variables, and the risk associated with the overall project result. Quantitative risk analysis considers the range of possible values for key variables and the probability with which they may occur.

Sensitivity analysis. The analysis of the possible effects of changes in anticipated project outcomes and/or uncertainty in the valuation of project inputs or outputs. Values of key

variables are changed one at a time, or in combinations, to assess the extent to which the overall project result, such as measured by the economic NPV, would be affected.

Shadow price. The true economic value or opportunity cost of an activity (as opposed to the market price, which might be distorted). Shadow pricing is often used in cost-benefit analysis, where the purpose of the analysis is to capture the benefits and costs to society and not market returns. Synonymous with accounting price and social price.

Annex B: Annotated Bibliography of Useful Guidance on Project Economic Analysis

Annex B lists representative sources that serve as useful background material to inform an economic analysis. The list is not comprehensive but seeks to present a variety of relevant experiences and approaches. Section 1 lists references that provide a conceptual overview to the conduct of economic analysis. Section 2 includes references that in their detail are useful for practitioners. And section 3 provides reference materials more suited to selected sectors.

Section 1: Conceptual overviews of economic analysis.

**1. Evaluating Socio Economic Development, SOURCEBOOK 2: Methods & Techniques
Cost-Benefit Analysis**

<http://www.tcd.ie/civileng/Staff/Brian.Caulfield/4A8/CBA%20Guidelines.pdf>

This 10-page document provides a brief step-by-step overview on how to conduct a cost-benefit analysis (including financial analysis). It clearly explains principles and the broad methodology for doing a cost-benefit analysis.

2. Guidelines for Economic and Beneficiary Analysis (MCC)

The paper provides an overview of the MCC guidelines for an economic analysis. It provides a good qualitative narrative with a focus on beneficiary analysis and specifics on health and education (in annex).

3. Key Areas of Economic Analysis of Projects (Economic and Research Department of the ADB)

http://www.adb.org/sites/default/files/key_areas.pdf

The document provides a brief qualitative narrative on economic analysis. It outlines the key areas of economic analysis for ADB projects and the main issues that need to be addressed in each of the key areas of analysis.

4. Guidelines for the Economic Analysis of IDB-funded Projects

The document provides a brief qualitative narrative that serves as a primer on economic analysis. It offers guidance on the preparation of the economic analysis needed for IDB projects.

5. Toolkit for the application of the DEM, Sovereign Operations 2011 (IDB)

The document provides an overview of the IDB's economic analysis procedures. It offers a step-by-step description along with some useful examples on cost-benefit analysis and cost-effectiveness analysis.

6. Guidelines for the Economic Analysis of Projects, ADB

The document offers guidance on the general approach for economic analysis of ADB projects. It provides a systematic description on how to do an economic analysis.

Section 2: Detailed descriptions of economic analysis for practitioners.

1. Belli, P., J. R. Anderson, H. N. Barnum, J. A. Dixon, and J-P Tan. 2001. *Economic Analysis of Investment Operations: Analytical Tools and Practical Applications*. WBI Development Studies, World Bank Institute, World Bank.

This handbook guides users on how to do an economic analysis within the World Bank Context. It offers a set of usable tools that integrate financial, economic, and fiscal analysis.

2. **The Green Book** (HM Treasury)

http://www.hmtesury.gov.uk/d/green_book_complete.pdf

The handbook is a thorough and widely used guide on how to do an economic analysis. It also offers several good examples.

3. **Benefit-Cost Analysis Guide**, Treasury Board of Canada Secretariat, 1998

<http://classwebs.spea.indiana.edu/krutilla/v541/Benefit-Cost%20Guide.pdf>

The guide offers a comprehensive framework on how to do cost-benefit analysis.

4. **Guide to Cost Benefit Analysis of Investment Projects** (EU)

http://ec.europa.eu/regional_policy/sources/docgener/guides/cost/guide2008_en.pdf

The handbook provides guidance Cost-Benefit Analysis on project appraisals within the EU as specified by the EC. It offers a very thorough description and is principally focused in the infrastructure sector.

For specific guidance on cost effectiveness, the following two sources provide a good description:

1. Jenkins, G.P. and others. 2004. "Cost Effectiveness Analysis." Chapter 13 in *Integrated Investment Appraisal: Concepts and Practice*, 2004.
<http://qed.econ.queensu.ca/faculty/kuog/references/D11+JKH+Chap15+CEA.pdf>
2. Belli, P., J. R. Anderson, H. N. Barnum, J. A. Dixon, and J-P Tan. 2001. "Chapter 8: Cost Effectiveness." In *Economic Analysis of Investment Operations: Analytical Tools and Practical Applications*. WBI Development Studies, World Bank Institute, World Bank.

For specific guidance on Fiscal Impact Analysis:

1. Michael J. Mucha, *An Introduction to Fiscal Impact Analysis for Development Projects* *Fiscal Impact Analysis for Development Projects*. Research and Consulting Center, Government Finance Officers Association.
<http://www.gfoa.org/downloads/FinanicalImpactAnalysis.pdf>

This 6 page document provides a conceptual overview of a fiscal impact analysis.

2. Mary Edwards. *Community Guide to Development Impact Analysis*.
http://www.lic.wisc.edu/shapingdane/facilitation/all_resources/impacts/analysis_fiscal.htm

This document describes fiscal impact analysis with an emphasis on land use.

For specific guidance on financial analysis

1. USAID. **ADS 202 Supplementary Reference: Guidelines for Financial Analysis of Activities.**

<http://transition.usaid.gov/policy/ads/200/2026s5.pdf>

The guide outlines the differences between the financial analysis of commercial and non commercial activities.

2. ADB. *Financial Analysis and Appraisals of Projects*.

http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-related-Procurement/GFA06_Financial%20Analysis%20and%20Appraisal%20of%20Projects.pdf

The guide describes the different steps needed for a financial analysis of projects.

3. “Chapter 4 The Financial Analysis of a Project.” In *Integrated Investment Appraisal: Concepts and Practice*.

<http://intresources.worldbank.org/INTDEBTDEPT/Resources/468980-1170954447788/3430000-1205164461144/06JenkinsEtAlChap4Page420.pdf>

This reference describes how to analyze financial statements.

4. Harberger, A.C., G. P. Jenkins, and C. Y. Kuo. 2009. “Chapter 3: The Financial Analysis of Projects.” *Cost-Benefit Analysis for Investment Decisions*. Queen’s University, Canada.

<http://qed.econ.queensu.ca/faculty/kuog/references/D5+JKH+Chap03+Financial.pdf>

5. *Theory and Practice in the Choice of Social Discount Rate for Cost-Benefit Analysis: A Survey*.

<http://www.adb.org/sites/default/files/pub/2007/WP094.pdf>

A good reference for specific guidance on how to calculate the discount rate; gives examples of discount rate values.

6. World Bank projects with examples of financial analysis:

- Republic of Croatia: Railway Modernization.
- Sao Paulo Sustainable Rural Development and Access to Markets Project.
- Integrated Water Management in Metropolitan Sao Paulo.

For technical guidance on discounting and shadow pricing.

1. Harberger, A.C., G. P. Jenkins, and C. Y. Kuo. 2006. "Chapter 4: Discounting and Alternative Investment Criteria." *Cost-Benefit Analysis for Investment Decisions*. Queen's University, Canada.
http://qed.econ.queensu.ca/faculty/kuog/references/D3+JKH+Ch04+Criteria_11_9.pdf
2. Drèze J., and N. Stern. "Policy Reform, Shadow Prices, and Market Prices." *Journal of public economics* 42, 1990, pp. 1-45.

This paper offers a theoretical discussion of cost-benefit analysis as a way of looking at reforms in countries where prices are distorted measures of social values (shadow prices).

Section 3: Sector specific references.

Cost effectiveness analysis in health.

1. Wilhelmine Miller, Lisa A. Robinson, and Robert S. Lawrence. *Valuing Health for Regulatory Cost-Effectiveness Analysis*.
http://www.nap.edu/openbook.php?record_id=11534&page=160
2. *Assessing the Effectiveness of Health Interventions for Cost-Effectiveness Analysis*.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1497158/>

Environment.

1. *Guidelines for Preparing Economic Analyses*. 2010. National Center for Environmental Economics, Office of Policy, U.S. Environmental Protection Agency.
[http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0568-50.pdf/\\$file/EE-0568-50.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0568-50.pdf/$file/EE-0568-50.pdf)
2. *Economic Cost-Benefit Analysis (CBA) of Project Environmental Impacts and Mitigation Measures Implementation Guideline*
<http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=36993990>

3. OECD. 2005. *Cost-Benefit Analysis and Environment: Recent Developments*.
<http://www.oecd.org/greengrowth/environmentalpolicytoolsandevaluation/36190261.pdf>

This report takes stock of the recent developments in the conceptual framework and techniques of environmental cost-benefit analysis. Technically rigorous.

4. *Canadian Cost-Benefit Analysis Guide*.
<http://www.tbs-sct.gc.ca/ri-qr/documents/gl-ld/analys/analys-eng.pdf>

The document provides guidance to Canadian departments and agencies on how to conduct a cost-benefit analysis. Examples are focused on the environment.

Education.

Belli, P., J. R. Anderson, H. N. Barnum, J. A. Dixon, and J-P Tan. 2001. "Chapter 9: Economic Evaluation of Education Projects". *Economic Analysis of Investment Operations: Analytical Tools and Practical Applications*. WBI Development Studies, World Bank Institute, World Bank.

World Bank. *Economic Analysis of Education Interventions*.

<http://go.worldbank.org/IN4JVNYBR0>

Infrastructure.

European Union. *Guide to Cost Benefit Analysis of Investment Projects*. "Section 3: Sector-specific Bank References.

Agriculture.

<http://intranet.worldbank.org/WBSITE/INTRANET/SECTORS/INTARD/0,,contentMDK:22085741~pagePK:210082~piPK:210098~theSitePK:335808,00.html>

Environment.

<http://intranet.worldbank.org/WBSITE/INTRANET/SECTORS/INTRANETENVIRONME NT/INTTOOLKIT3/0,,contentMDK:22231607~menuPK:6246515~pagePK:64168332~piPK:64168299~theSitePK:3646240,00.html>

Social Development.

<http://intranet.worldbank.org/WBSITE/INTRANET/SECTORS/INTRANETSOCIALDEVELOPMENT/INTCDD/0,,contentMDK:20309647~menuPK:8167868~pagePK:210082~piPK:254376~theSitePK:429617,00.html>

Social Funds.

World Bank. **Economic Analysis.** Social Funds Webpage.

<http://go.worldbank.org/K8F4HYDET0>

Social Protection.

http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/280558-1138289492561/2158434-1215013935788/Tesliuc-ADePT_SP.pdf

Transport.

<http://intranet.worldbank.org/WBSITE/INTRANET/SECTORS/INTTRANSPORT/INTTES/0,,contentMDK:20464962~menuPK:512236~pagePK:210082~piPK:210098~theSitePK:338801~isCURL:Y,00.html>

Water.

World Bank. **An Approach to the Economic Analysis of Water Supply Projects.**

<http://water.worldbank.org/publications/approach-economic-analysis-water-supply-projects>

Annex C: Financial Analysis

1. While not all investment project financing operations require a financial analysis, there are several reasons why it might be necessary. Projects may depend on agencies that operate on commercial terms, requiring that financial returns (possibly including explicit cash subsidies) cover costs and the timing of cash flow streams permit meeting debt service requirements. [Projects that have positive expected economic net present values (NPVs) can fail because an entity cannot service its debt in the short run.] Government ministries may have operations that depend on cost recovery. Measuring the benefits to beneficiaries may require the calculation of the difference between a financial price and gross economic benefit.

2. ***Differences between economic and financial analysis.*** The difference is basically one of perspective. Economic analysis looks at the project from the point of view of society (for example, taking into account externalities). Financial analysis looks at the project from the point of view of the entity undertaking the investment and ignores externalities. It uses market prices, whether or not those prices represent the true cost to society. Essentially, ex ante financial analysis consists of setting out and comparing (usually annual) expected revenue and expense streams (investment, maintenance, and operation costs) calculated from the point of view of the concerned economic agents in each project alternative and in working out the corresponding financial ratios that help demonstrate likely profitability and sustainability.

3. ***Setting out the assumptions.*** As with economic analysis, key assumptions about national or regional economic growth, the path of key price and wage indexes, and the prices of important inputs and outputs are the basis for the analysis. Including an explicit list of assumptions is critical to the credibility of the financial analysis.

4. ***Financial income and cash-flow statements.*** Given the assumptions, two presentations of revenue and expenditure are normally prepared, an income statement and a cash-flow statement. Both are useful. The income statement shows if the entity is expected to make a profit over time. It records revenue as soon as sales are made, whether the cash is yet in hand or not, and includes depreciation expenses. It normally is the basis for any income tax. The cash-flow statement shows the expected net increase or decrease in cash at hand across time (and, for example, ignores depreciation) from operating activities, real investment activities, and financial investment activities. The cash-flow statement only records revenue when the money is actually in hand. The expected cash-flow statement is especially important in relationship to bulky future expenditures and future annual debt service obligations.

5. ***Balance sheet statement.*** The balance sheet projections (again annually) present the structure of the entities assets, liabilities, and net worth. It sets out the capital structure (equity and debt). The projections of expected net worth over time indicate whether the entity is in a sustainable financial position.

6. ***Financial ratios.*** An expected financial (as opposed to economic) NPV can be calculated for the entity from the income statement, using either real prices and a real discount

rate or nominal prices and a nominal discount rate. (Guidance on choosing a discount rate is available in Annex B, —see the Annotated Bibliography.) Clearly a positive expected NPV is necessary expected sustainability. Similarly, the data can be used to calculate an expected real or nominal internal rate of return (IRR), a discount rate at which discounted future net (real or nominal) income is equal to zero. Again, clearly an expected real or nominal IRR greater than the expected real or nominal interest rate is an indication of sustainability. Because entities need to meet year-to-year payments coming due, two other financial ratios are useful — interest and debt service coverage ratios — usually calculated as expected annual earnings before interest and taxes divided by interest due or debt service due.