CHAPTER 1

INTRODUCTION

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1.1.1 Introduction

1. Water is rapidly becoming a scarce resource in almost all countries and cities with growing population on the one hand, and fast growing economies, commercial and developmental activities on the other.

2. This scarcity makes water both a social and an economic good. Its users range from poor households with basic needs to agriculturists, farmers, industries and from commercial undertakings with their needs for economic activity to rich households for their higher standard of living.

3. For all these uses, the water supply projects (WSPs) and water resources development programs are being proposed for extension and augmentation; likewise with the rehabilitation of water supply for which measures for subsequent sustainability are being adopted.

4. It is, therefore, essential to carry out an economic analysis of projects so that planners, policy makers, water enterprises and consumers are aware of the actual economic cost of scarce water resources, and the appropriate levels of tariff and cost recovery needed to financially sustain it.

5. In February 1997, the Bank issued the *Guidelines for the Economic Analysis of Projects* for projects in all sectors, and subsequently issued the *Guidelines for the Economic Analysis of Water Supply Projects*" (March 1998) which focuses on the water supply sector. The treatment of subsidies and a framework for subsidy policies is contained in the *Bank Criteria for Subsidies* (September 1996).

6. This Handbook is an attempt to translate the provisions of the water supply guidelines into a practical and self-explanatory work with numerous illustrations and numerical calculations for the use of all involved in planning, designing, appraising and evaluating WSPs.

7. In this document, short illustrations have been used to explain various concepts of economic analyses. Subsequently, they are applied in real project situations which have been taken from earlier Bank-financed and other WSPs, or from case

studies conducted in different countries in Asia as part of a Bank-financed Regional Technical Assistance Project (RETA).

1.1.2 Uses of the Handbook

8. This Handbook is written for non-economists (planners, engineers, financial analysts, sociologists) involved in the planning, preparation, implementation, and management of WSPs, including: staff of government agencies and water utilities; consultants and staff of non-governmental organizations (NGOs); and staff of national and international financing institutions.

9. Since the Handbook focuses on the application of principles and methods of economic analysis to WSPs, it is also a practical guide that can be used by economists in the economic analysis of WSPs.

10. The Handbook can also be used for the following purposes:

(i) as a reference guide for government officials, project analysts and economists of developing member counries (DMC) in the design, economic analysis and evaluation of WSPs;

(ii) as a guide for consultants and other professional staff engaged in the feasibility study of WSPs, applying the provisions of the Bank's *Guidelines for the Economic Analysis of Water Supply Projects*; and

(iii) as a training guide for the use of trainors of "Economic Analysis of Water Supply Projects"

1.2 Characteristics of Water Supply Projects

1.2.1 Water as an Economic Good

11. The characteristic features of water supply include the following:

(i) Water is usually a location-specific resource and mostly a nontradable output.

(ii) Markets for water may be subject to imperfection.
Features related to the imperfect nature of water markets include physical constraints, the high costs of investment for certain applications, legal constraints, complex institutional structures, the vital interests of different user groups, limitations in the development of transferable rights to water, cultural values and concerns of resource sustainability.

(iii) Investments are occurring in medium term (typically 10 years) phases and have a long investment life (20 to 30 years).

(iv) Pricing of water has rarely been efficient. Tariffs are often set below the average economic cost, which jeopardizes a sustainable delivery of water services. If water availability is limited, and competition for water among potential water users (households, industries, agriculture) is high, the opportunity cost of water (OCW) is also high. Scarcity rent occurs in situations where the water resource is depleting. OCW and depletion premium have rarely been considered in the design of tariff structures. If the water entity is not fully recovering the average cost of water, government subsidies or finance from other sources is necessary to ensure sustainable water service delivery.

(v) Water is vital for human life and, therefore, a precious commodity. WSPs generate significant benefits, yet water is still wasted on a large scale. In DMC cities and towns, there is a very high incidence of unaccounted-for-water (UFW). An ADB survey among 50 water enterprises in Asian countries over the year 1995 revealed an average UFW rate of 35 percent.

(vi) Economies of scale in WSPs are moderate in production and transmission but rather low in the distribution of water.

The above characteristics have implications on the design of WSPs and should be considered as early as the planning and appraisal stages of project preparation.

1.3 The Water Supply Project

1.3.1 Economic Rationale and Role of Economic Analysis

12. The main rationale for Bank operations is the failure of markets to adequately provide what society wants. This is particularly true in the water supply sector. The provision of basic water supply services to poorer population groups generates positive external benefits, such as improved health conditions of the targeted project beneficiaries; but these are not internalized in the financial cost calculation.

13. The Bank provides the finance for water supply services to assist DMCs in providing safe water to households, promoting enhanced cost recovery over time, creating an enabling environment including capacity building and decentralized management of water supply operations, and setting up of autonomous water enterprises and private companies which are run on a commercial basis.

14. While economic analysis is useful in justifying the Bank's intervention in terms of economic viability, it should also be considered as a major tool in designing water supply operations. There is a scope for better integrating social and economic considerations in the overall project design. Demand for water depends on the price charged, a function of the cost of water supply which, in turn, depends on demand. This interdependence requires careful analysis in all water supply operations. Safe water should be generally provided at an affordable price and using an appropriate level of service matching the beneficiaries' preferences and their willingness to pay.

1.3.2 Macroeconomic and Sectoral Context

15. The purpose of the economic analysis of projects is to bring about a better allocation of scarce resources. Projects must relate to the Bank's sectoral strategy and also to the overall development strategy of the country.

16. In a WSP, the goal may be "improved health and living conditions, reduction of poverty, increased productivity and economic growth, etc.". Based on careful problem analysis, the Project (Logical) Framework establishes such a format showing the linkages between "Inputs and Outputs", "Outputs and Purpose", "Purpose and Sectoral Goal" and "Sectoral Goal and Macro Objective". The key assumptions regarding project-related activities, management capacity, and sector policies beyond the control and management of the Project Authority are made explicit.

1.3.3 Procedures for Economic Analysis

17. The economic analysis of a WSP (urban or rural) has to follow a sequence of interrelated steps:

(i) Defining the project objectives and economic rationale as mentioned above.

(ii) Demand analysis and forecasting effective demand for project outputs. This is to be based on either secondary information sources or socio-economic and other surveys in the project area.

(iii) Establishing the gap between future demand and supply from existing facilities after ensuring their optimum use.

(iv) Identifying project alternatives to meet the above gap in terms of technology, process, scale and location through a least-cost and/or cost-effectiveness analysis using economic prices for all inputs.

(v) Identifying benefits, both quantifiable and nonquantifiable, and determining whether economic benefits exceed economic costs.

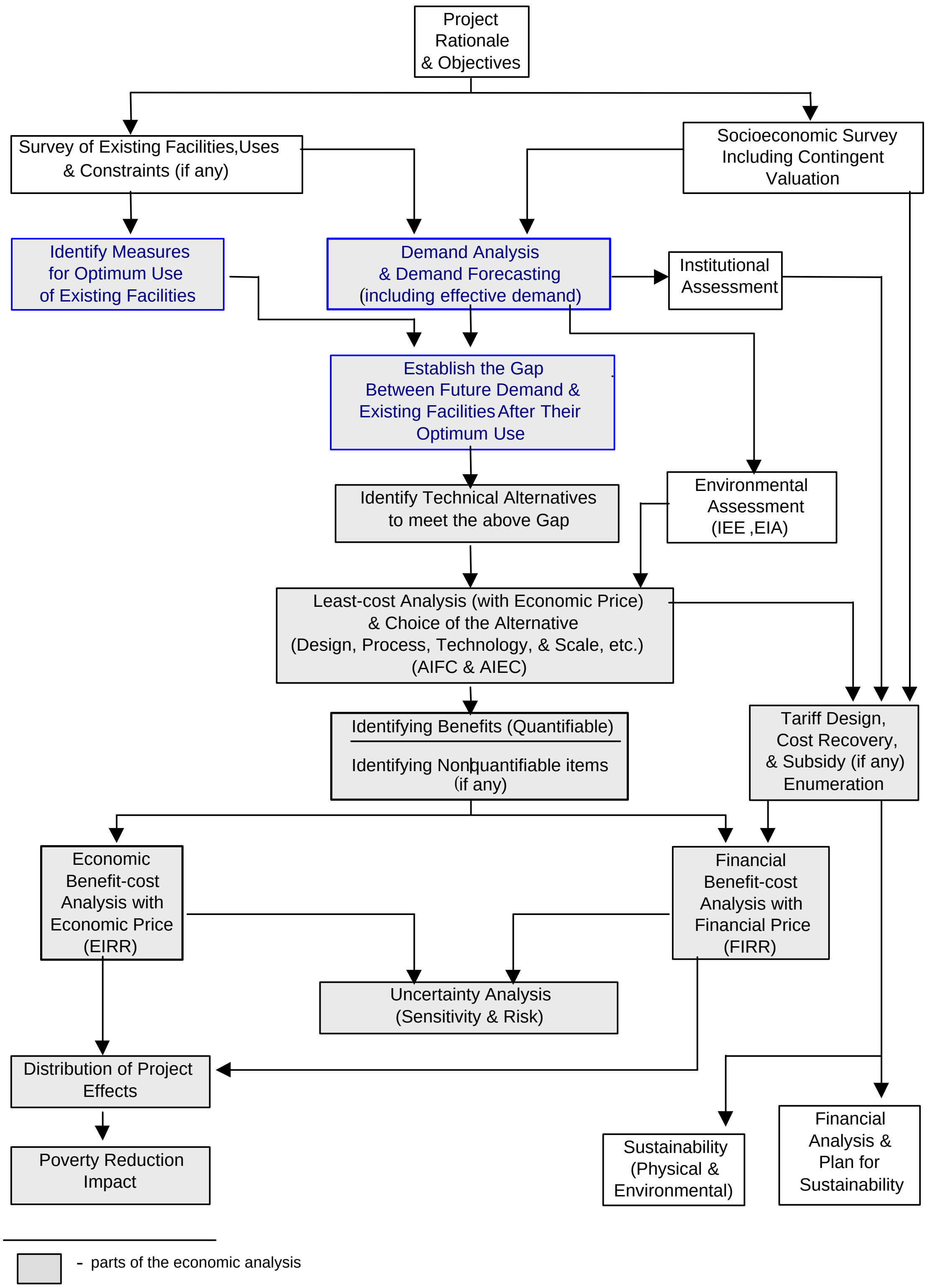
(vi) Assessing whether the project's net benefits will be sustainable throughout the life of the project through cost-recovery, tariff and subsidy (if any) based on financial (liquidity) analysis and financial benefit-cost analysis.

(vii) Testing for risks associated with the project through sensitivity and risk analyses.

(viii) Identifying and assessing distributional effects of the project and poverty reduction impact.

Figure 1.1 shows a flowchart for the economic analysis of a water supply project.

Figure 1.1 **Flow Chart for Economic Analysis of Water Supply and Sanitation Projects**



AIFC - average incremental financial cost; AIEC - average incremental economic cost; EIRR - economic internal rate of
EIA - environmental impact ; FIRR - financial internal rate of return; IEE - initial environmental

1.3.4 Economic Analysis and ADB's Project Cycle

18. Economic analysis comes into play at the different stages of the project cycle: project identification, project preparation and project appraisal.

19. *Project identification* largely results from the formulation of the Bank's country sectoral strategy and country program. This means that the basic decision to allocate resources to the water supply sector for a certain (sector) loan project has been taken at an early stage and that the project has, in principle, been identified for implementation with assistance from the ADB.

20. In the *project preparation* stage, the planner has to make an optimal choice of the design, process, technology, scale and location etc. based on the most efficient use of the countries' resources. Here, the economic analysis of projects again comes into play.

21. In the *project appraisal* stage, the economic analysis plays a substantial part to ensure optimal allocation of a nation's resources and to meet the sustainability criteria set by both the recipient country and the ADB from the social, institutional, environmental, economic and financial viewpoints.

1.3.5 Project Preparation and Economic Analysis

22. Before any detailed preparation is done, it is necessary for the design team to get acquainted with the area where the project is identified. This is to acquire knowledge about the physical features, present situation regarding existing facilities and their use constraints (if any) against their optimal use, the communities and users specially their socio-economic conditions, etc.

23. To get these information, the following surveys must be undertaken in the area:

(i) Reconnaissance survey – to collect basic information of the area and to have discussions with the beneficiaries and key persons involved in the design, implementation and management of the project. Relevant data collection also pertains to information available in earlier studies and reports.

(ii) Socio-economic survey – to get detailed information about the household size, earnings, activities, present expenditure for water supply facilities, along with health statistics related to water-related diseases, etc.

It is important to analyze the potential project beneficiaries, their preferences for a specific level of service and their willingness to pay for the level of service to be provided under the project. The analysis of beneficiaries should show the number of poor beneficiaries, i.e., those below the country's poverty line, and their ability to pay. Such information is required to ensure that poor households will have access to the project's services and to know whether, and to what extent, "cost-recovery" can be done.

(iii) Contingent Valuation Method – An important contribution in arriving at the effective demand for water supply facilities, even where there are no formal water charges, is the contingent valuation survey. This is based on questions put to households on how much they are willing to pay (WTP) for the use of different levels of water quantities. These data may help build up some surrogate demand curve and estimate benefits from a WSP.

(iv) Survey of existing water supply facilities – Knowledge of the present water supply sources, treatment (if any) and distribution is also needed. It is also necessary to know the quantity and quality of water and unaccounted-for-water (UFW) and any constraints and bottlenecks which are coming in the way of the optimum use of the existing facility.

24. Using the information taken from the survey results and other secondary data sources, effective demand for water can then be estimated. Two important considerations are:

(i) Effective demand is a function of the price charged. This is ideally based on the economic cost of water supply provision to ensure optimal use of the facility, and neither over-consumption nor under-consumption especially by the poor should occur. The former leads to wastage contributing to operational deficits and the latter results in loss of welfare to the community.

(ii) Reliable water demand projections, though difficult, are key in the analysis of alternatives for determining the best size and timing of investments.

25. Approaches to demand estimation for urban and rural areas are usually different. In the urban areas, the existing users are normally charged for the water supply; in the rural areas, there may not be any formal water supply and the rural households often do not have to pay for water use. An attempt can be made in urban areas to arrive at some figure of price elasticity and probably income elasticity of demand. This is more difficult in the case of water supply in rural areas with a preponderance of poor households.

1.3.6 Identifying the gap between Forecast Need and Output from the Existing Facility

26. Once demand forecasting has been done, it is necessary to arrive at the output (physical, institutional and organizational) which the project should provide. The existing facilities may not be optimally used due to several reasons, among them:

(i) UFW due to high technical and nontechnical losses in the system;

(ii) inadequate management system, organizational deficiency and poor operation and maintenance leading to deterioration of the physical assets; and

(iii) any bottleneck in the supply network at any point starting from the raw water extraction to the households and other users' end.

27. Before embarking on a detailed preparation of the project, it is necessary to take measures to ensure optimal use of the facilities. These measures should be both *physical* and *policy* related. The physical measures are like leakage control, replacing faulty valves and adequate maintenance and operation, etc.; policy measures can be charging an economically efficient tariff and implementing institutional reforms, etc.

28. The output required from the proposed WSP should only be determined after establishing the gap between the future needs based on the effective demand and the restored output of the existing facilities ensuring their optimal use. Attention needs to be focused on the identification and possible application of instruments to manage and conserve demand, such as (progressive) water tariffs, fiscal incentives, pricing of raw water, educational campaigns, introducing water saving devices, taxing of waste water discharges, etc.

1.4 Least-Cost Analysis *for Choosing an Alternative*

1.4.1 Introduction

29. After arriving at the scope of the WSP based on the gap mentioned above, the next task is to identify the least-cost alternative of achieving the required output. Economic costs should be used for examining the technology, scale, location and timing of alternative project designs. All the life-cycle costs (market and non-market) associated with each alternative are to be taken into account.

30. The alternatives are not to be confined to technical or physical elements only, e.g., ground water or surface water, gravity or pumping, large or small scale, etc. They can also include activities due to policy measures, e.g., leakage detection and control, institutional reforms and managerial reorganization.

1.4.2 Choosing the Least-Cost Alternative

31. There can be two main cases for the choice from mutually exclusive options:

(i) the alternatives deliver the same output or benefit, quantity wise and quality wise;

(ii) the alternatives produce different outputs or benefits.

Case 1.

32. In the first case, the least-cost analysis compares the life cycle cost Streams of all the options and selects the one with the lowest present value of the economic costs. The discount rate to be used is the economic opportunity cost of capital (EOCC) taken as 12 percent in real terms.

33. Alternatively, it is possible to estimate the equalizing discount rate (EDR) between each pair of mutually exclusive options for comparison. The EDR is also equal to the economic internal rate of return (EIRR) of the incremental cash flows of the

mutually exclusive options. The EDR/EIRR of the incremental cash flows can then be compared with the EOCC for choice among alternatives.

34. The least-cost choice can also be done by calculating the average incremental economic cost (AIEC) of each alternative. The AEIC is the present value of incremental investment and operating costs in with-project and without-project situations divided by the present value of incremental output (say, in m^3) also in both with-project and without-project alternative. The discount rate to be used is the EOCC = 12 percent. This will establish the project alternative with the lower per unit economic cost.

Case 2.

35. In this second case, it is possible to select the least economic cost option by calculating per unit economic costs of all the project options. Because water demand, supply cost and price charged for water tend to be closely interrelated, least-cost analysis should account for the effect of uncertain demand. Lower-than-forecast demand results in higher average costs, which can push up water prices and depress demand further.

36. Sensitivity analysis can be used to show whether the project option remains the least-cost alternative under adverse changes in key variables. The scale of the project may vary in relation to prices charged to consumers and the size may influence the least-cost alternative.

1.5 Financial and Economic Analyses

1.5.1 With- and Without-Project Cases

37. After choosing the best among alternatives, the next step is to test the financial and economic viability of the project, which is the chosen, least-cost alternative. The initial step in testing the financial and economic viability of a project is to identify and quantify the costs and benefits.

38. To identify project costs and benefits and to compare the net benefit flows, the without-project situation should be compared with the with-project situation. The without-project situation is different from the before-project situation. The without-project situation is that one which would prevail without the project vis-à-vis

factors like population increase. As water is getting more scarce, the water use pattern and the cost are also likely to change.

1.5.2 Financial vs. Economic Analysis

39. Financial and economic analyses have similar features. Both estimate the net benefits of an investment project based on the difference between the with-project and the without-project situations.

40. However, the concept of financial net benefit is not the same as economic net benefit. While financial net benefit provides a measure of the commercial (financial) viability of the project on the project-operating entity, economic net benefit indicates the real worth of a project to the country.

41. Financial and economic analyses are also complementary. For a project to be economically viable, it must be financially sustainable. If a project is not financially sustainable, there will be no adequate funds to properly operate, maintain and replace assets; thus the quality of the water service will deteriorate, eventually affecting demand and the realization of financial revenues and economic benefits.

42. It has sometimes been suggested that financial viability not be made a concern because as long as a project is economically sound, it can be supported through government subsidies. However, in most cases, governments face severe budgetary constraints and consequently, the affected project entity may run into severe liquidity problems, thereby jeopardizing even its economic viability.

43. The basic difference between the financial and economic benefit-cost analyses of the project is that the former compares benefits and costs to the enterprise in constant financial prices, while the latter compares the benefits and costs to the whole economy measured in constant economic prices. Financial prices are market prices of goods and services that include the effects of government intervention and distortions in the market structure. Economic prices reflect the true cost and value to the economy of goods and services after adjustment for the effects of government intervention and distortions in the market structure through shadow pricing of the financial prices. In such analyses, depreciation charges, sunk costs and expected changes in the general price should not be included.

44. In financial analysis, the taxes and subsidies included in the price of goods and services are integral parts of financial prices, but they are treated differently in economic analysis. Financial and economic analyses also differ in their treatment of

external effects (benefits and costs), favorable effects on health and the UFW of a WSP. Economic analysis attempts to value such externalities, health effects and nontechnical losses.

1.5.3 Financial vs. Economic Viability

45. The steps in determining the financial viability of the proposed project include:

(i) identifying and quantifying the costs and revenues;

(ii) calculating the project net benefits;

(iii) estimating the average incremental financial cost, financial net present value and financial internal rate of return (FIRR).

The FIRR is the rate of return at which the present value of the stream of incremental net flows in financial prices is zero. If the FIRR is equal to or greater than the financial opportunity cost of capital, the project is considered financially viable. Thus, financial benefit-cost analysis covers the profitability aspect of the project.

46. The steps in determining the economic viability of a project include the following:

(i) identifying and quantifying (in physical terms) the costs and benefits;

(ii) valuing the costs and benefits, to the extent feasible, in monetary terms; and

(iii) estimating the EIRR or economic net present value (NPV) discounted at EOCC = 12 percent by comparing benefits with the costs.

The EIRR is the rate of return for which the present value of the net benefit stream becomes zero, or at which the present value of the benefit stream is equal to the present value of the cost stream. For a project to be acceptable, the EIRR should be greater than the economic opportunity cost of capital. The Bank uses 12 percent as the minimum rate of return for projects; but for projects with considerable nonquantifiable benefits, 10 percent may be acceptable.

1.6 Identification, Quantification, Valuation

of Economic Benefits and Costs

1.6.1 Nonincremental and Incremental Outputs and Inputs

47. Nonincremental outputs are project outputs that replace existing water production or supply. For example, a water supply project may replace existing supply by water vendors or household/community wells.

48. Incremental outputs are project outputs that add to existing supply to meet new demands. For example, the demand for water is expected to increase in the case of a real decline in water supply costs or tariffs.

49. Incremental inputs are for project demands that are met by an overall expansion of the water supply system.

50. Nonincremental inputs are inputs that are *not* met by an expansion of overall supply but from existing supplies, i.e., taking supply away from existing users. For example, water supply to a new industrial plant is done by using water away from existing agricultural water.

1.6.2 Demand and Supply Prices

51. In economic analysis, the market prices of inputs and outputs are adjusted to account for the effects of government intervention and market structure. The adjusted prices are termed as shadow prices and are based either on the supply price, the demand price, or a weighted average of the two. Different shadow prices are used for incremental output, nonincremental output, incremental input and nonincremental input.

1.6.3 Identification and Quantification of Costs

52. In estimating the economic costs, some items of the financial costs are to be excluded while other items, which are not part of financial costs are to be

included. The underlying principle is that project costs represent the difference in costs between the without-project and the with-project situations. Cost items and the way they are to be treated in project economic analysis, are as follows:

(i) **Sunk Costs.** They exist in both with-project and without-project situations and thus are not additional costs for achieving benefits. They are, therefore, not to be included.

(ii) **Contingencies.** As the economic benefit-cost analysis is to be done in constant (or real) prices, the general price contingencies should not be included.

(iii) **Working Capital.** Only inventories that constitute real claims on the nation's resources should be included in the project economic costs. Others items of working capital reflect loan receipts and repayment flows are not to be included.

(iv) **Transfer payments.** Taxes, duties and subsidies are transfer payments as they transfer command over resources from one party (taxpayers and subsidy receivers) to another (the government, the tax receivers and subsidy givers) without reducing or increasing the amount of resources available in the economy as a whole. Hence, these transfer payments are not economic costs. However, in certain circumstances when valuing the economic cost of an input or an output, taxes are to be included:

(a) If the government is correcting for external environmental costs by a correcting tax to reduce the production of water, such a transfer payment is part of the economic costs.

(b) The economic value of incremental outputs will include any tax element imposed on the output, which is included in the market price at which it sells.

(v) **External Costs.** Environmental costs arising out of a project activity, such as river water pollution due to discharge of untreated sewage effluent, is an instance of such costs. It may be necessary to internalize this external cost by including all relevant effects and investments like pollution control equipment costs and effects in the project statement.

(vi) **Opportunity Cost of Water.** If, for example, a drinking water project uses raw water diverted from agriculture, the use of this water for drinking will result in a loss for farmers. These costs are measured as the opportunity cost of water which, in this example, equals the "benefits foregone" of the use of that water in agriculture.

(vii) **Depletion Premium.** In water supply projects where the source of water is ground water and the natural rate of recharge or replenishment of the aquifer is less than its consumptive use, the phenomenon of depletion occurs. In such cases, significant cost increase may take place as the aquifer stock depletes; the appropriate valuation of water has to include a depletion premium in the economic analysis.

(viii) **Depreciation.** The stream of investment assets includes initial investments and replacements during the project's life. This stream of expenditure, which is included in the benefit-cost analysis, will generally not coincide with the time profile of depreciation and amortization in the financial accounts and as such, the latter should not be included once the former is included.

1.6.4 Identification and Quantification of Benefits

53. The gross benefit from a new water supply is made up of two parts:

(i) resource cost savings on the nonincremental water consumed in switching from alternative supplies to the new water supply system resulting from the project; and

(ii) the WTP for incremental water consumed.

54. Resource cost savings are estimated by multiplying the quantity of water consumed without the project (i.e., nonincremental quantity) by the average economic supply price in the without-project situation.

55. The WTP for incremental supplies can be estimated through a demand curve indicating the different quantities of water demand that could be consumed at different price levels between the without-project level of demand and the with-project level of demand. The economic value of incremental consumption is the average value derived from the curve times the quantity of incremental water. Where there is inadequate data to estimate a demand curve, a contingent valuation methodology can be applied to obtain an estimate of WTP for incremental output.

56. The gross benefit stream should be adjusted for the economic value of water that is consumed but not paid for, i.e., sold but not paid for (bad debts) and consumed but not sold (non-technical losses). It can be assumed that this group of consumers derives, on the average, the same benefit from the water as those who pay.

57. Other benefits of a WSP include health benefits. These benefits are due to the provision of safe water and are also likely to occur provided that the adverse health impacts of an increased volume of wastewaters can be minimized.

1.6.5 Valuation of Economic Costs and Benefits

58. The economic costs and benefits must be valued at their economic prices. For this purpose, the market prices should be converted into their economic prices to take into account the effects of government interventions and market structures. The economic pricing can be conducted in two different currencies (national vs. foreign currency) and at the two different price levels (domestic vs. world prices).

59. To remove the market distortions in financial prices of goods and services and to arrive at the economic prices, a set of ratios between the economic price value and the financial price value for project inputs and outputs are used to convert the constant price financial values of project benefits and costs into economic values. These are called conversion factors, which can be used for groups of typical items, like energy and water resources.

1.6.6 Economic Viability

60. Once the economic benefit and cost streams are derived, a project resource statement can be developed and the EIRR for the project can be calculated. Bank practice is to use 12 percent as the minimum rate of return for projects for which an EIRR can be calculated, although for projects with considerable nonquantifiable benefits, 10 percent may be acceptable. For rural WSPS, there may be limitations to value the economic benefits, thus making it difficult to calculate a reliable EIRR. However, the economic analysis may be undertaken on the basis of the least-cost or cost effectiveness analysis using the economic price of water.

1.7 Sensitivity and Risk Analysis

61. In calculating the EIRR or ENPV for WSPs, the most likely values of the variables are incorporated in the cost and benefit streams. Future values are difficult to predict and there will always be some uncertainty about the project results. Sensitivity analysis is therefore undertaken to identify those benefit and cost parameters that are both uncertain and to which EIRR and FIRR are sensitive.

62. The results of the sensitivity analysis should be summarized, where possible, in a sensitivity indicator and in a switching value. A sensitivity indicator shows the percentage change in NPV (or EIRR) to the percentage change in a selected variable. A high value for the indicator indicates project sensitivity to the variable. Switching values show the change in a variable required for the project decision to switch from acceptance to rejection. For large projects and those close to the cut-off rate, a quantitative risk analysis incorporating different ranges for key variables is recommended. Measures mitigating against major sources of uncertainty are incorporated into the project design, thus improving it.

1.8 Sustainability and Pricing

63. For a project to be sustainable, it must be both financially and economically viable. A financially viable project will continue to produce economic benefits, which are sustained throughout the project life.

64. Assessing sustainability includes:

(i) undertaking financial analysis at both the water enterprise level and the project level (i.e., covering the financial liquidity aspect of the project at both levels);

(ii) examining the role of cost recovery through water pricing; and

(iii) evaluating the project's fiscal impact, i.e., whether the government can afford to pay the level of financial subsidies that may be necessary for the project to survive.

65. Subsidies aimed at helping the poor may not always benefit them in a sustained manner. Underpricing can lead to waste of water (by the non-poor in particular), deterioration of the water system and services, and ultimately to higher

prices for all. Cross subsidies could also distort prices and should generally be discouraged. To minimize economic costs and maximize socioeconomic development impact, any level of subsidies should be carefully targeted to lower the price charged for water to poor and low-income households.

66. To minimize financial subsidies, projects should be designed to supply services that people want and are willing to pay for.

1.9 Distribution Analysis *and Impact on Poverty*

67. Water supply provision, especially in the rural areas and shantytowns in urban areas, is considered to be important for poverty reduction. The poverty-reducing impact of a project is determined by evaluating the expected distribution of net economic benefits to different groups such as consumers and suppliers, including labor and the government.