THE REPUBLIC OF UGANDA

PUBLIC INVESTMENT MANUAL FOR PROJECT PREPARATION AND APPRAISAL

JUNE 2017

MINISTRY OF FINANCE PLANNING
AND ECONOMIC DEVELOPMENT

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List of Acronyms

AC	Administration Cost
AO	Accounting Officer
ADSCR	Average Debt Service Coverage Ratio
BC	Base Cost
BCR	Benefit Cost Ratio
BMAU	Budget Monitoring And Accountability Unit
BOPD	Barrels of Oil Per Day
CBA	Cost Benefit Analysis
CEA	Cost Effectiveness Approach
CF	Cash Flow
CSCF	Commodity Specific Conversion Factor
DC	Development Committee
DCF	Discounted Cash Flow
DSCR	Debt Service Coverage Ratio
EG	Efficiency Gains
EIRR	Economic Internal Rate Of Return
ENPV	Economic Net Present Value
EOCK	Economic Opportunity Cost Of Capital
ER	Economic Exchange Rate
ERS	Economic Resource Statement
F1	Field One
FEL	Front End Loading
FIRR	Financial Internal Rate Of Return
FNPV	Financial Net Present Value
FPC	Financing Project Cost
FY	Financial Year
GDP	Gross Domestic Product
IBP	Integrated Bank of Projects
IPA	Integrated Project Analysis
IMF	International Monetary Fund
IRR	Internal Rate Of Return
LF	Logical Framework
LFA	Logical Framework Approach
LFM	Log Frame Matrix
LGs	Local Governments
MDAs	Ministries, Departments And Agencies
MoFPED	Ministry of Finance Planning And Economic Development
MOWT	Ministry Of Works And Transport
NDP	National Development Plan
NPA	National Planning Authority

NPV	Net Present Value
NTE	Neutrality Tax Effects
OPM	Office Of The Prime Minister
OVIs	Objectively Verifiable Indicators
PEP	Public Earnings Of Project
PFC	Public Finance Cost
PFF	Project Facilitation Fund
PFMA	Public Finance Management Act
PI's	Public Investments
PIM	Public Investment Management
PIMS	Public Investment Management System
PIP	Public Investment Plan
PPC	Project Preparation Committee
PPDA	Public Procurement And Disposal Of Public Assets
PPP	Public Private Partnership
PSC	Public Sector Comparator
PVCS	Present Value Of Costs
QQT	Quantity Quality Time Frame
QQTTP	Quantity Quality Time Frame Target group and Place
RRC	Retained Risk Cost
RRP	Renegotiation Risk Of Project
RSS	Road Side Station
SER	Shadow Exchange Rate
SWG	Sector Working Group
ToC	Theory of Change
TRC	Transferred Risk Cost
UNRA	Uganda National Roads Authority
VAT	Value Added Tax
VFM	Value For Money

List of Definitions

1. **Amortization:** an accounting term that refers to the process of allocating the cost of an intangible asset over a period of time.
2. **Benefit cost ratio:** the ratio of the NPV of the cash inflows (economic benefits) to the NPV of the cash outflows (economic costs).
3. **Capital Assets:** investments made to generate more capital in the future. They include all kinds of property, movable or immovable, tangible or intangible, fixed or circulating, e.g. machines, land, liquid capital.
4. **Commodity Specific Conversion Factors:** the ratio of a good's economic price to its financial price.
5. **Cost Overruns:** occur when the cost incurred is more than the value of work done. They are unexpected costs incurred in excess of planned amounts due various factors which may include an underestimation of the actual costs during project preparation.
6. **Financial Analysis:** attempts to estimate the profits accruing to the project operating entity or to the project participants. It provides insight into how markets operate taking the view point of individuals, and offers methods for attempting to predict future market behavior in response to events, trends, and cycles.
7. **Economic Analysis:** attempts to assess the overall impact of a project on improving the economic welfare of the citizens of the country concerned. It provides insight into how markets operate taking the view point of society, and offers methods for attempting to predict future market behavior in response to events, trends, and cycles.
8. **Institutional Capacity:** process of developing and strengthening the skills and abilities that organizations and communities need in order to survive, adapt, and thrive in the fast-changing world.
9. **Integrated Bank of Projects:** an information system designed to give support to public investment management by serving as a central registry of data and information on all public investment Projects and as a mechanism for tracing their development through all stages of the Project cycle.
10. **Internal Rate of Return:** the discount rate that makes the project have a zero net present value.
11. **Key stakeholders:** persons, groups or organizations that are involved in delivery or are affected by a particular project.
12. **Logframe Matrix:** a useful tool to display and organize the project idea, it consists of four columns and four rows, which summarize selected aspect of project.
13. **National Parameters:** Information disseminated for specific variables required to facilitate uniformity in the Cost Benefit analysis of a project. This could include discount rates such as the EOCK, exchange rates, commodity specific conversion factors for both tradable and non-tradable commodities etc.
14. **Net Present Value:** the future value of one unit of money if it is invested today.
15. **Non-tradable goods:** goods that, by their nature, cannot be traded or are difficult to trade internationally.
16. **Payback period:** the amount of time it takes for the cumulative cash inflows to equal the initial investment.
17. **PPP Approach:** a commercial transaction between a contracting authority and a private party where the private party performs a function of the contracting authority on behalf of the contracting authority, for a specified period.
18. **Project Facilitation Fund:** a fund that has exclusively been created in order to facilitate the funding of feasibility studies undertaken by the various MDAs.
19. **Project Life cycle:** a series of specific processes from inception to implementation necessary to fulfill the intended project goals.
20. **Project Viability:** a project that is legally and technically feasible and economically justifiable.
21. **Public Investment Management System:** a system put in place in order to ensure efficient, effective and

timely delivery of public investments with the highest economic returns at an affordable cost.

22. **Public Investment Plan:** a central registry that provides an overview of all investment profiles for Central Government Votes with development funding (either GoU and or External Financing).
23. **Public Investments:** the resources that government spends in the delivery of key public goods and services.
24. **Public Sector Comparator:** a comparison of the value of money for delivering a Project via traditional public sector modality versus the PPP option.
25. **Rate of Discount:** the cost of funds that are invested in the Project.
26. **Residual value:** the value of fixed assets that is subject to recovery on the last day of the last year of the project.
27. **Risk Mitigation Plan:** a combination of measures to reduce the likelihood and impact of a risk occurring.
28. **Road Side Safety Station:** government designated areas found along roads and high ways. In addition to providing places for travelers to rest, they are intended to promote local tourism.
29. **Shadow Prices:** also called economic prices, are values that replace market prices in the economic evaluation of projects in cases where observed market prices do not represent the true economic value of goods and services.
30. **Sponsoring agency:** an entity that is in charge of formulating the Project idea.
31. **Tradable goods:** goods or services that are currently traded on international markets, either as exports or imports.
32. **Traditional Project Approach:** a Government funded approach of delivering a particular Project to the Public.
33. **Value for Money:** refers to the assessment of a project in regard to the key aspects of attaining economy (least possible cost), efficiency (delivered on time), effectiveness (expected outcomes achieved) and equity

Foreword

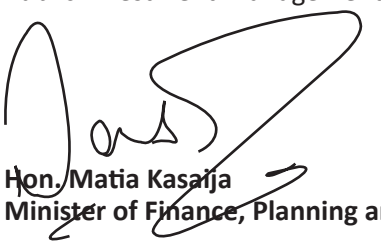
The Project Preparation and Appraisal Manual comes at a critical time as Government intensifies its efforts to meet the 2020 target set for the transformation of Uganda into a middle income country. The achievement of this objective is highly dependent on the pace of implementation of Government's development agenda as detailed in the second National Development Plan (NDP II) and Vision 2040.

Significant opportunities exist for Uganda to fast-track investments in the NDP II. The on-set of oil and gas production is expected to provide new resources over the NDP II period while the recent enactment of the Public Private Partnerships Act (2015) is expected to provide a strong platform for leveraging private capital. Combined with the expected growth in non-oil tax revenues, these resources offer a unique opportunity for Uganda to achieve its development objectives. However, reflecting on the experiences of resource rich countries in sub-Saharan Africa, the overall contribution of Government spending to growth very much depends on the effectiveness of the management of public investments.

I am pleased to note that Government undertook a diagnostic assessment of its Public Investment Management System to identify key challenges that are bound to constrain the development agenda. A major finding of the diagnostic study was the uneven quality of projects in the Public Investment Plan and the limited reliance on pre-feasibility and feasibility studies to guide public investment decision making, a weakness that is partly attributed to the lack of a comprehensive framework to guide the project appraisal process across sectors.

The Project Preparation and Appraisal Manual is therefore a timely intervention that is expected to strengthen our Public Investment Management System by improving the quality and readiness of projects included in the Public Investment Plan. As such, this manual is important in fast tracking the implementation of Uganda's Development Agenda.

Finally, I would like to take this opportunity to appreciate the efforts of all our stakeholders particularly, Makerere University School of Economics, the World Bank, Department for International Development and other Public Investment practitioners that in one way or another took part in the preparation of this manual. We recognize that the Manual on Project Preparation and Appraisal is by no means the only intervention needed to address the glaring challenges constraining Uganda's development agenda. I therefore look forward to further collaboration with all stakeholders in strengthening our Public Investment Management System.



Hon. Matia Kasaija
Minister of Finance, Planning and Economic Development

Preface

The Manual on project preparation and appraisal was prepared as a follow up on the recommendations of the diagnostic study undertaken to assess Uganda's Public Investment Management System. Government is committed to implement a number of key interventions that include: (i) the development of national parameters and commodity specific conversion factors in support of project appraisal and analysis (ii) establishment of an Integrated Bank of Projects (iii) the preparation of sector specific manuals on project management, monitoring and evaluation (iv) creating a critical mass of public investment management experts through capacity building for relevant government officials (v) establish a funding mechanism for relevant studies and (vi) the establishment of a national compendium of national indicators.

This manual was therefore developed within the context of the overall Public Investment Management Systems (PIMS) framework which emphasizes the gradual development of each project idea through the mandatory stages of a project preparation and appraisal cycle. At the project identification stage, emphasis is placed on the need for each sector to present a strategic case for any proposed project idea. A key requirement at this stage is the preparation of a project concept note which demonstrates a clear link between the project idea and the National Development Plan.

The manual also places considerable focus on establishing a framework for measuring the success or failure of projects. The definition of project objectives to include the project goal, outcomes, outputs, inputs and related activities for each project is consistent with the results chain envisaged under the Program Based Budgeting System recently introduced across government. The adoption of the Logframe Approach at the identification and preparation stage is therefore a welcome section in the manual that is expected to improve the quality of project profiles in the Public Investment Plan and set the stage for strengthening the monitoring and evaluation of projects across government.

At the appraisal stage, the manual provides guidance on two important areas where there is significant evidence of weakness in our current practices. The first key area is the need for project sponsors and reviewers to explore all possible alternatives that can be pursued to deliver project objectives. This assessment at the pre-feasibility stage is important especially in light of the recent enactment of the Public Private Partnerships Act (2015) where, among other choices, we are more often faced with the decision on whether the delivery of a development initiative is best financed by the private sector or by government. The second aspect is the need to subject the best project option to a detailed feasibility study.

In line with international best practices, the manual proposes the use of Cost Benefit Analysis to support project appraisal at the pre-feasibility and feasibility study stage. The identification of relevant benefits and costs for any project is however dependent on a number of factors. These include; the need to determine the levels of demand for the services to be offered by the project, the need to take into account the costs of complying with mandatory environmental regulations and standards, an assessment of the human resources required to deliver the project objectives, and the cost of delivering the right technical solutions to the problems to be addressed by the project.

The manual adopts an integrated Cost Benefit Analysis which is intended to offer insights into how projects may impact on the macro-economy through economic analysis as well as assess the likely impacts on the various stake holders a task, made possible through distributional analysis. In light of our increasing partnership with the private sector, the manual also offers guidance on the use of cost benefits analysis as a basis for assessing the profitability and sustainability projects from the private investors' perspective.

The recommendation to undertake risk analysis for all projects is also an important addition that will not only assist government in negotiations with development partners but also help address the challenges of low absorption, cost overruns, scope creep and delays in the implementation of projects. I am therefore confident that the nine modules recommended for the pre-feasibility and feasibility studies will go a long way to ensure that Government establishes a sustainable inventory of bankable projects.

Finally, I wish to encourage all stakeholders within the public investment management process to make good use of this manual.

Keith Muhakanizi
Permanent Secretary/ Secretary to the Treasury

Acknowledgement

The Public Investment Manual on Project Preparation and Appraisal was prepared by the Projects Analysis and Public Investment Department of the Ministry of Finance, Planning and Economic Development in partnership with a team of World Bank Consultants (Prof. Edgardo S. Mimica, Prof. Fernando Britos, Mr Christian Rodriguez) and staff from the World Bank Country Office. Special appreciation goes to the Department for International Development (DFID) which funded the preparation of the manual through its Trust Fund managed by the World Bank Country office.

The manual was produced with input of Makerere University School of Economics which reviewed and offered valuable insights. Special gratitude goes to officers from various departments of the Ministry of Finance, Planning, and Economic Development (MFPED) who supported and participated in the preparation of the manual. We also appreciate the contribution of Dr. Jean- Pascal Nganou and Ms. Rachel Kaggwa Sebudde of the World Bank for their contribution and support towards the manual.

The Ministry is grateful for the comments and contributions of the National Planning Authority (NPA), planners of various Ministries, Departments and Agencies for their contribution especially in the review of the various drafts of the manual.

Chapter One

Introduction

A. Overview

1.1 Public Investments support the delivery of key public services, connect citizens and firms to economic opportunities; and can serve as an important catalyst for economic growth. In the global economy where the private sector plays a dominant role in economic activity, public investments have the effect of lowering the cost of doing business which benefits the private sector and spurs the overall economic development process.

1.2 Notwithstanding the need for government intervention, its overall contribution to growth very much depends on the effectiveness of public investments assessed in terms of the government's ability to deliver projects on time, within budget and to the right specifications. Global economic developments over the last decade offer important lessons for Uganda in respect of the need to strengthen its Public Investment Management System (PIMS).

1.3 For the case of natural resource rich countries, the high global commodity prices offered many countries the opportunity to transform their economies through using resource revenues to create productive capital assets. However, many of the recognized oil and mineral resource exporters in Sub-Saharan Africa continue to face tremendous deficits in economic and social infrastructure. This is partly on account of the relatively weak institutional capacity to ensure effective use of their natural resource endowments for development.

1.4 Cross country studies undertaken by the World Bank[1] reveal substantial evidence of inefficiency in Public Investment Management (PIM) regardless of the country's income level. These inefficiencies tend to manifest themselves in the form of; poor project identification, design, selection and preparation; delays in implementation and completion of projects; inefficient procurement practices; chronic under-execution of capital projects; cost over-runs; and a lack of commitment to maintaining and sustain sustaining created assets. These inefficiencies may be attributed to weaknesses in PIM systems that include: i) Lack of objective criteria for project selection; ii) Unclear lines of responsibility and accountability; iii) Inadequate technical skills for project appraisal, procurement and management; iv) Perverse incentives for project managers to underestimate risk; and v) Lack of integration and coordination between different levels of government and across jurisdictions.

1.5 Building strong processes to guide project appraisal and selection is therefore a key prerequisite for ensuring that Public Investments positively contribute to economic and social development. Several questions raised in relation to the requisite processes, among others, include the following: How should public sector investment proposals be designed, analyzed and evaluated? What are the expected results? What investment alternatives are available? Are there economically suitable alternatives in terms of growth and distribution? Should the analysis be done based on distributional considerations? Is it appropriate to continue or discontinue the ongoing projects? Which set of alternatives optimize the results given the projected budgetary constraints?

B. Purpose of the Manual

1.6 This manual is developed as guidance to government organizations and its personnel involved in public investment management with the aim to create a consensus and understanding of definitions, terminologies, methods and procedures used in public investment management. It also provides guidance on the basic processes, tools and controls underlying the preparation and appraisal of public

[1]The Power of Public Investment Management, Rajaram et al. 2014

projects in Uganda. Specifically, the manual is intended to:

i. Act as an instrument for enhancing coordination of public investments by strengthening and ensuring compliance with the PIMS framework that defines the public investment cycle and the roles and responsibilities of various stakeholders.
ii. Assist MDAs in developing and appraising investment projects that promote economic and social well-being through the provision of tools to improve the formulation, planning, implementation and evaluation of public investment projects.
iii. Assist MDAs in the preliminary assessment of potential Public Private Partnership projects.

C. Targeted users of the Manual

1.7 This manual is intended for different types of users in Uganda. It serves as a technical reference for Public Sector Authorities who are responsible for making public sector investment decisions. This group shall include policy makers and technocrats in Ministries, Departments, Agencies, Local Governments, State Owned Enterprises and all other institutions involved in the formulation, planning, implementation, monitoring and evaluation of Public Investments. Other key users are parliamentarians, financial/ economic analysts, Development Partners, Civil Society Organizations and the general public.

D. Structure of the Manual

1.8 Apart from Chapter 1 where the background of the manual itself is presented and explained, there are four other chapters in the manual:

- Chapter 2 describes the framework for Public Investment Management in Uganda. It streamlines the public investment decision process by defining the scope of eligible public investments and prescribes a mandatory project life cycle. It also establishes an institutional framework in support of the decision process over the project cycle clearly specifying the responsibilities of key stakeholders and prescribes instruments critical to the successful implementation of the Public Investment Management System.

- Chapter 3 provides the guidelines for project preparation and appraisal by detailing (i) key processes involved (ii) the controls in place (decision gates) to ensure that stake holders develop quality projects and (iii) the key documentation required in the development and appraisal of projects.

- Chapter 4 discusses the Logical Framework Approach and the Theory of Change as some of the methodologies available to project sponsors for use in the identification and preparation stages of public investment projects.

- Chapter 5 provides the methodologies and processes for conducting the financial, economic, stakeholder and risk analyses which are collectively referred to as Integrated Project Analysis, and are used to guide stakeholders on the assessment of project viability from both the private and public sector's points of view.

1.9 Each chapter has a brief introduction at the beginning which explains its contents, and a summary at the end outlining the main points. The summary guidelines derived from the manual form an important building block for the Development Committee Guidelines.

Guideline No.1 Application of the Manual

1.1 The guidance in the Public Investment Manual for Project Preparation and Appraisal applies to the development of projects within the Public Sector and is designed to ensure that the minimum basic processes and controls that are likely to generate optimal levels of efficiency in decision-making processes related to public investments are observed across the entire Government.

Chapter 2

Uganda's Public Investment Management System Framework

2A. Overview

2.1 This chapter elaborates on the relevance of the manual within the context of Uganda's overall Public Investment Management Framework. Focus is placed on the roles and responsibilities of key stakeholders within the project cycle and the importance of(i) the manual on project preparation and appraisal, (ii) the Integrated Bank of projects (IBP), (iii) the Project Facilitation Fund (PFF), (iv) capacity building, (v) dissemination of key national parameters and commodity specific conversion factors, in enhancing the efficiency and effectiveness of key stakeholders in the Public Investment Management System.

2B. Background

2.2 Uganda has a well-defined development agenda of transforming itself from a peasant to a modern and prosperous country by 2040. Achieving this vision requires significant increases in Public Investments with focus on interventions in agriculture, tourism, minerals, oil and gas, infrastructure and human capital development.

2.3 Significant opportunities exist for Uganda to fast-track investments in the priority areas. The on-set of oil and gas production is expected to provide new resources while the Public Private Partnerships Act, 2015 is expected to provide a strong platform for leveraging private capital. Combined with the expected growth in non-oil revenues, these resources offer a unique opportunity for Uganda to achieve its development objectives. However reflecting on the experiences of resource rich countries in sub-Saharan Africa, the overall contribution of Government spending to growth very much depends on how public investments are managed.

2.4 There is significant evidence to the effect that Uganda's development agenda is constrained by a weak Public Investment Management System (PIMS). The mid-term review of first National Development Plan (NDP I) highlighted a number of challenges that often led to delays in the implementation of core NDP projects. The challenges include; conflicting prioritization of programs and projects in government, limited technical analysis and appraisal prior to inclusion of projects in the PIP, Inadequate financing for projects, limited structures and technical capacities in MDAs to develop, manage and implement complex projects, as well as slow and cumbersome procurement processes. Most of these challenges are characteristics of a weak investment management system.

2.5 The Mid-term review was further reinforced by a diagnostic study on Uganda's Public Investment Management System (2016) which also identified significant challenges within the existing PIMS framework. Most importantly, the diagnostic study recommended the strengthening of Uganda's PIMS through the establishment of a comprehensive Public Investment Management Framework supported by an action plan.

2C. Public Investment Management Framework

2.6 In the Fiscal Year 2016/17, the Government adopted a PIMS framework which aims at strengthening the screening of projects prior to entry into the Public Investment Plan (PIP) by creating a stage-wise approach to project preparation, appraisal, and independent review.

2.7 The framework defines the scope of eligible public investments, prescribes a mandatory project life cycle, and establishes an institutional framework in support of the decision process over the project cycle. It also specifies the responsibilities of key stakeholders and prescribes instruments that are expected to make the PIMS much more efficient and effective.

C.1 Scope of Public Investments

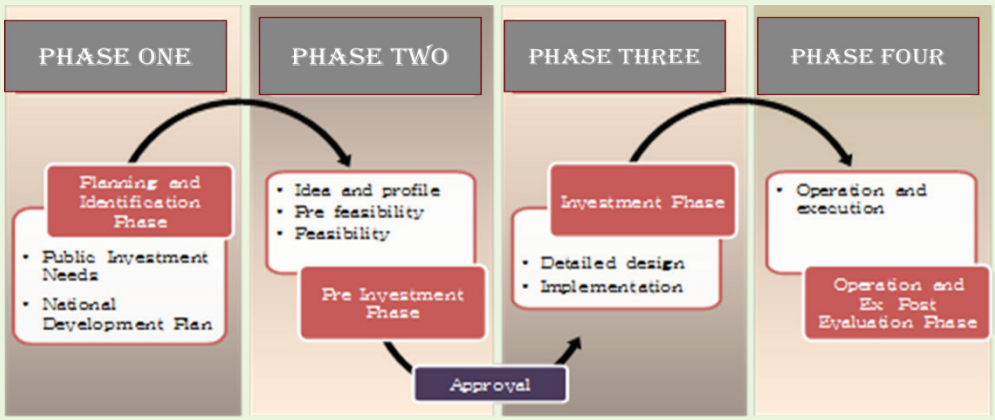
2.8 Within the context of this manual, public investments are defined to include all public sector spending to establish, operate and maintain physical assets necessary to facilitate production and or delivery of Infrastructure, social and administrative services. Public Investments are implemented through projects which for the purpose of this manual are defined as government interventions designed to deliver public assets within a given time frame based on certain outputs and activities. The utilization of assets created by a project is expected to positively impact on development objectives over time.

2.9 Public investments may also be delivered through a program which for the purpose of this manual is defined as a comprehensive scheme within or across sectors comprising a set of projects expected to impact on similar outcomes.

C.2 Project Cycle

2.10 In order to streamline the development of public investment projects, the PIM framework establishes a four phase cycle to guide the preparation and implementation of projects. The enforcement of a clear project life cycle is a systematic way of ensuring that the identification of project ideas is driven by national strategies, and that only those project proposals that are bankable are selected for inclusion in the PIP.

Figure2.1 Uganda's Project Cycle



2.11 The project life cycle also ensures that there is a deliberate framework for the monitoring of projects during implementation as well as the evaluation of the impact of completed projects on development outcomes. The four mandatory phases include: (i) the Project Identification phase, (ii) the Pre-Investment (Formulation, Planning and Appraisal) Phase, (iii) the Investment (Implementation or Execution) Phase, and (iv) the Operation and Ex-post evaluation phase.

Project Identification

2.12 This is the first phase of the project cycle. It is concerned with the generation of project ideas and the focus at this stage is on establishing the project idea's relevance to national priorities as defined in the National Development Plan. This phase requires the project sponsoring agency to build a strategic business case for the proposed project idea through the preparation of a concept note which is subjected to preliminary screening at the (i) vote level by the Project Preparation Committee (PPC), (ii) sector level by the Sector Working Group (SWG) and (iii) by the Development Committee (DC). Approval of the project concept note by the DC amounts to initial registration of the project and permission for the sponsoring agency to proceed to the profiling stage of the pre-investment phase.

Pre-Investment

2.13 The pre-investment phase includes project formulation, and appraisal. Project formulation takes the form of developing the project concept further into a detailed project profile or framework whose objective is to describe

the project deliverables/results and how they will be monitored and measured. In other words, the results chain is defined in terms of the project inputs, activities, outputs, outcomes and the overall project impact. At this stage therefore, a conceptual framework of the project is developed to include (i) the hierarchy of objectives (ii) indicators that will be used to measure success for each of the project objectives (iii) how information or data on the indicators will be obtained (means of verification) and (iv) targets for each indicator set and baselines established and (v) underlying assumptions that need to occur for the project to be successfully executed.

2.14 **The second step in the pre-investment stage is the preparation of a pre-feasibility study** which is one of the two components of what has been traditionally known as the appraisal phase of a project. This is the first attempt to examine the overall potential or viability of the project and focuses on assessing the various alternatives identified at the profile study level so as to choose the best alternative to be considered for further development. The options to be assessed could be whether to implement the project through the traditional project approach or the PPP approach.

2.15 After going through the prefeasibility study, the chosen project option must be subjected to a more detailed financial and economic feasibility study to see if it meets the set government criteria for investment expenditures. The feasibility study is therefore the final part of the appraisal of a project. Its function is to improve the accuracy of the measures of key variables if the project shows potential for success. In order to improve the accuracy of the appraisal, more detailed studies will have to be undertaken and perhaps a second opinion sought on other variables.

2.16 The final approval of the project should therefore come after the feasibility study has been completed. At this point the cost estimates should be known, and the detailed design and engineering work is completed. The detailed design of the project will involve substantial financial costs. Once a project is shown to be feasible, the next step is to issue a request for proposal (RFP) depending on the funding sources involved. The formal approval will require the acceptance of funding proposals and agreement on contract documents, including tenders and other contracts requiring the commitment of resources.

Investment/Implementation Phase

2.17 During the Implementation phase, the project is mobilized and executed. Detailed project designs if not already finalized as part of the feasibility study, are undertaken as well as actual implementation of the developed project plans. This may require the tendering and awarding of contracts for technical assistance or works and supplies. The defining characteristic of this stage is the availability of the appropriate capabilities and capacities, including the capacities to disburse funding, procure materials and undertake engineering and construction works on the project. It also involves processes related to monitoring and adjusting implementation to ensure the achievement of development objectives.

2.18 During implementation,and in consultation with beneficiaries and stakeholders, project management monitors actual progress against planned progress to determine whether the project is on track towards achieving its objectives. If necessary the project is re-oriented to bring it back on track, or to modify some of its objectives in the light of any significant changes that may have occurred since its formulation.

2.19 At the end of this phase, key activities will include performance tests, hand-over, close down, decommissioning and disposal, etc. In addition, the sponsoring agency is required to submit a project completion report assessing the project in terms of value for money, achievement of the intended project outcomes and outputs, challenges and recommendations related to the project implementation.

Operation (Delivery) and Ex-post evaluation

2.20 The fourth phase in the project life cycle is the operations and ex-post phase, where the project evolves into its operation stage to produce its final fully operational deliverable, (e.g. a new plant, product, system, etc.). The management processes, tasks and tools at this stage are shifted towards the effective and efficient delivery of the products and outputs from the new services, plant or mine. A permanent organizational structure is put in place to replace the project implementation/construction team. The new team ensures generation of returns and/or produces the economic benefits for which it will have to incur operational expenses (such as production, maintenance costs, etc.). This phase is the responsibility of the project-sponsoring agency.

2.21 After a reasonable period of operating the project, it is important to examine whether the development objectives

are being achieved by the intervention. This process is known as ex-post (or post) project evaluation. This task is very important because projects may face some problems. The problems may arise either because of some flaw or shortcoming in design, formulation, planning and implementation of the project or simply because of changes in the economic and political environment.

2.22 During the operational phase, evaluations are deemed necessary to ensure an effective PIMS. Project evaluation involves assessing the actual operational results of a project and comparing them to the planned forecasts. The focus is on establishing whether the project represents "value for money" and on learning lessons for the design and implementation of similar projects in the future.

2.23 The objective of evaluation is therefore to determine the relevancy, legitimacy, efficiency, efficacy and control of the investment initiatives, through feedback mechanisms with management controls and measurements of the short, medium and long-term results of projects. The funding agency assesses the project to identify what has been achieved, and to identify lessons that have been learned. Evaluation findings are used to improve the design of future projects or programmes. Although in the generic cycle, the evaluation phase comes after implementation, it is common practice also to conduct a mid-term evaluation during implementation, to identify lessons that can be applied during the remaining life of the project.

C.3 Critical Success Factors for the Public Investment Management Framework

2.24 In order to operationalize the PIMS framework, the diagnostic study recommended appropriate institutional arrangements that must be established. In addition, the institutional arrangements must be supported by relevant tools needed to enhance the efficiency of key players in the PIMS.

2.25 Besides this manual which provides uniform guidance to MDAs on project preparation and appraisal, the other tools that Government is expected to introduce in support of an effective and efficient PIMS include: (i) Development of a database of National Parameters such as shadow prices to support financial and economic analysis of proposed projects, (ii) Establishment of an IT-based Integrated Bank of Projects (IBP) to improve coordination and monitoring, (iii) develop manuals to guide project implementation and ex-post evaluation process and (iv) putting in place a training program to help create a critical mass of PIMS experts.

National Parameters and Shadow (Efficiency) Prices

2.26 The rationale for using shadow prices rather than market prices in assessing the economic impact of a project is derived from the fact that many countries are faced with economic distortions and as a consequence, market prices do not reflecting the true economic value of resources and services to society.

2.27 There are also many goods and services for which there are no market prices but because such public goods have a social value, their actual worth needs to be taken into account if the economic value of a good or service to society is to be accurately measured and evaluated. For the above reasons, prevailing market prices must be replaced with shadow prices in conducting an economic project appraisal. In addition, the other macroeconomic parameters necessary for project appraisal must be regularly updated and communicated to stakeholders to ensure uniformity in the project appraisal process.

2.28 A key feature of the PIMS framework therefore, is the establishment of a database of national parameters disseminated to stakeholders and regularly updated. Obligatory use of Shadow Prices and National Parameters is required of all Government Entities and Development Partners to ensure uniformity in the economic appraisal process.

The Integrated Bank of Projects (IBP)

In order to improve the efficiency and effectiveness in project preparation and management, an IBP must be established as a comprehensive information system designed to give support to public investment management by serving as a central registry of data and information on all public investment projects and as a mechanism for tracing their development through all stages of the project cycle. It

is therefore an important tool for managing and monitoring projects through their life cycle, and for improving the quality and reliability of project information. The IBP is expected to contain all projects in the identification /pre-investment phase, those in the PIP / under implementation, and completed projects, plus all information needed for government-wide monitoring and evaluation.

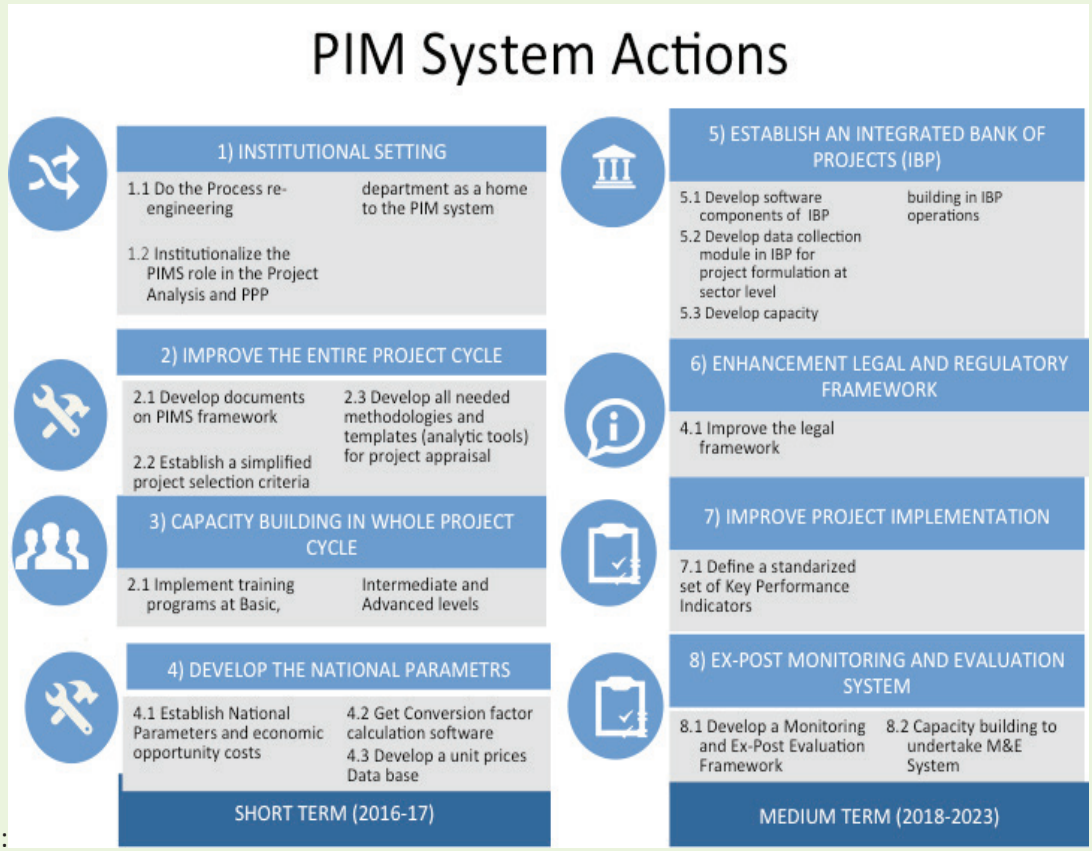
Capacity Building

2.29 The PIMS not only requires a sophisticated computer system but is also supported by a large number of professionals with the right set of skills to formulate, appraise, implement, monitor and evaluate investment projects. Therefore, as part of the PIMS Framework, Government is expected build a critical mass of human resources through regular training of officials across government in Public Investment Management. For sustainability purposes, Government through MoFPED, is expected to partner with competent training institutions within and outside the country to deliver tailor-made courses to enhance the technical competences of PIMS practitioners across the public service.

2D. PIMS Framework Action Plan

2.30 The PIMS Action Plan covers the period 2016 - 2020 and consists of eight components that include: institutional setting, improvement of the entire project cycle, capacity building in whole project cycle, development of the national parameters, establishment of an Integrated Bank of Projects (IBP), enhancement of the legal, accounting, auditing, policy and regulatory framework, improvement of project implementation, and establishment of monitoring and evaluation systems. Figure 2.2 below summarizes the action plan disaggregated into short-term and medium-term actions.

Figure 2.2: Planned Actions to Improve the PIMS in Uganda



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2E. Roles and responsibilities of key stakeholders in the PIMS Framework

2.31 In line with its mandate of ensuring efficiency and effectiveness in allocation of public resources, the overall responsibility of managing the PIMS lies with MoFPED. The 'gate-keeping' role of the PIMS shall be effected by the Development Committee (DC), through coordination and facilitation of the various stakeholders by development and issuance of relevant guidelines, training, and establishment and maintenance of critical tools like the IBP, national parameters, and compendium of national indicators.

2.32 Given the cross cutting nature of Public Investment Management, the Development Committee as established by the PFMA Treasury Instructions is chaired by the Secretary to the Treasury, with the Department of Projects Analysis and Public Investments (PAP) as the Secretariat, and is constituted to include representatives from the Office of the President, National Planning Authority, the Office of the Prime Minister, PPDA, Office of the Auditor General, Solicitor General and Members of project sponsoring agencies (Line Ministries, Departments, Agencies and Local Governments) who attend on a case by case basis. The general roles and responsibilities of key players in the PIMS system are highlighted below and summarized as Annex 1:

The Development Committee

2.33 The Development Committee has the following responsibilities:

i. Develop and Issue guidelines for the identification, preparation, formulation, planning, appraisal, implementation, monitoring and evaluation of public investment projects.

ii. Review sector submissions of project concept notes, profiles, pre-feasibility studies, feasibility studies and proposals to ensure that (i) the submissions are consistent with the NDP policy objectives (ii) each project idea has a clear set of measurable objectives and targets defined to include the project goal, outcomes, outputs, and activities (iii) all possible alternatives for the attainment of project objectives have been evaluated and (iv) a detailed feasibility assessment has been undertaken for the proposed project.

iii. Provide guidance on areas for adjustments to project concept notes, profiles, pre-feasibility studies, feasibility studies and proposals before approval.

iv. Approve projects to be financed by Government and incorporated into the Public Investment Plan.

v. Review and make recommendations on existing projects in the Public Investment Plan in regard to performance, and the status of multi-year commitments.

vi. Recommend eligible projects to proceed to the PPP unit, to be undertaken in accordance with the PPP Act.

vii. Provide oversight role over the implementation of Public Investments (PI's).

Ministry of Finance, Planning and Economic Development

2.34 The functions of the Ministry of Finance, Planning and Economic Development in regard to PIMS include the following:

i. Serve as a secretariat to the DC through the Department of Projects Analysis and Public Investment (PAP) by offering technical support in the review of sector submissions of project concept notes, profiles, pre-feasibility studies, feasibility studies and proposals.

ii. Draft the guidelines on the identification, preparation, appraisal, implementation, monitoring and evaluation of public investment projects for consideration by the DC.

iii. Develop manuals and templates for project identification, preparation, formulation, planning, and appraisal.

iv. Compute and update the National Parameters, Shadow Prices and Conversion Factors to be used in all economic project appraisals.

v. Analyze the results of the pre-investment studies and appraisals of investment projects in order to validate their assumptions, forecast criteria, costs, benefits and parameters used in the evaluation (i.e. analyzing the reports submitted by the public entity sponsoring the project or requesting the funding of an investment initiative).

vi. Provide financing for Public Investments (PIs).

vii. Monitor the performance of investment projects under operation comparing them to their respective pre-investment studies assumptions.

viii. Establish and enforce an appropriate regulatory framework for the PIMS.

ix. Coordinate the national training policy surrounding the PIMs.

x. Establish and manage the Integrated Bank of Projects(IBP).

xi. Participate in the review of projects concept notes, profiles, pre-feasibility studies, feasibility studies and proposals within the Sector Working Groups (SWGs).

National Planning Authority (NPA)

2.35 As the think tank behind the formulation of National development objectives, the NPA is to supervise the strategic implementation of the investment plan to ensure prioritization of the NDP objectives. The NPA shall do the following:

i. Formulate National investment Objectives.

ii. Provide guidance to SWGs to ensure that their plans are aligned to the National Objectives.

iii. Participate in the review of projects concept notes, profiles, pre-feasibility studies, feasibility studies and proposals as members of the DC.

iv. Monitor and evaluate ongoing projects

Office of the Prime Minister (OPM)

2.36 As the overall coordinator of the day-to-day government activities, OPM will undertake the following:

i. Participate in the review of projects concept notes, profiles, pre-feasibility studies, feasibility studies and proposals as members of DC.

ii. Monitor and evaluate ongoing projects and propose correctional measures.

Office of the President (OP)

2.37 Office of the president will carry out the following responsibilities:

i. Participate in the review of projects concept notes, profiles, pre-feasibility studies, feasibility studies and proposals as members of DC

ii. Ensure that investments meet public interests and regulations

iii. Monitor and evaluate ongoing projects

Office of the Auditor General (OAG)

2.38 The auditor general will carry out the following roles:
Undertake performance audits (VFM audits) on completed projects and any other tasks on request by the DC.

Parliament

2.39 The parliament equally provides an oversight role over the executive to ensure that they work within the public interest. The following shall be their roles:

i. Ensure that the DC processes are adhered to before approving external financing.

ii. Appropriate resources for Public Investments (PIs).

iii. Approve both external financing for PIs.

Line Ministries, Departments, Agencies and Local Governments

2.40 These are the implementing agencies as well as institutions responsible for supervising the implementation of PIs. Their responsibilities include the following:

i. Develop project ideas in line with the sector strategic objectives.

ii. Develop project documents and studies for consideration.

iii. Participate in the appraisal process as members of DC.

iv. Provide project information for the data base.

v. Participate in implementation, monitoring and evaluation of Public Investments

vi. Produce project completion reports and submit them to DC.

Sector Working Groups

2.41 These are technical working fora in sectors through which stakeholders meet to discuss cross-cutting issues as well as planning. The following are the roles of SWGs:

i. Convene meetings on a regular basis to consider the project concept notes submitted by MDAs.

ii. Approve the project concept notes submitted by MDAs.

iii. Ensure that all projects are well aligned to the Sector Investment Plans.

Project Preparation Committee (PPC)

2.42 This Committee is established at the vote level and SWG level. Its responsibilities include the following:

i. Convene meetings on a regular basis to consider the project concept ideas submitted by Departments and MDAs under their jurisdiction.

ii. Ensure that the project idea is in line with the MDA's strategic plan and National development Objectives.

iii. Ensure that the proposed intervention is not duplicating an existing project within the MDAs or Sector.

Development Partners

2.43 Development partners have the following roles:

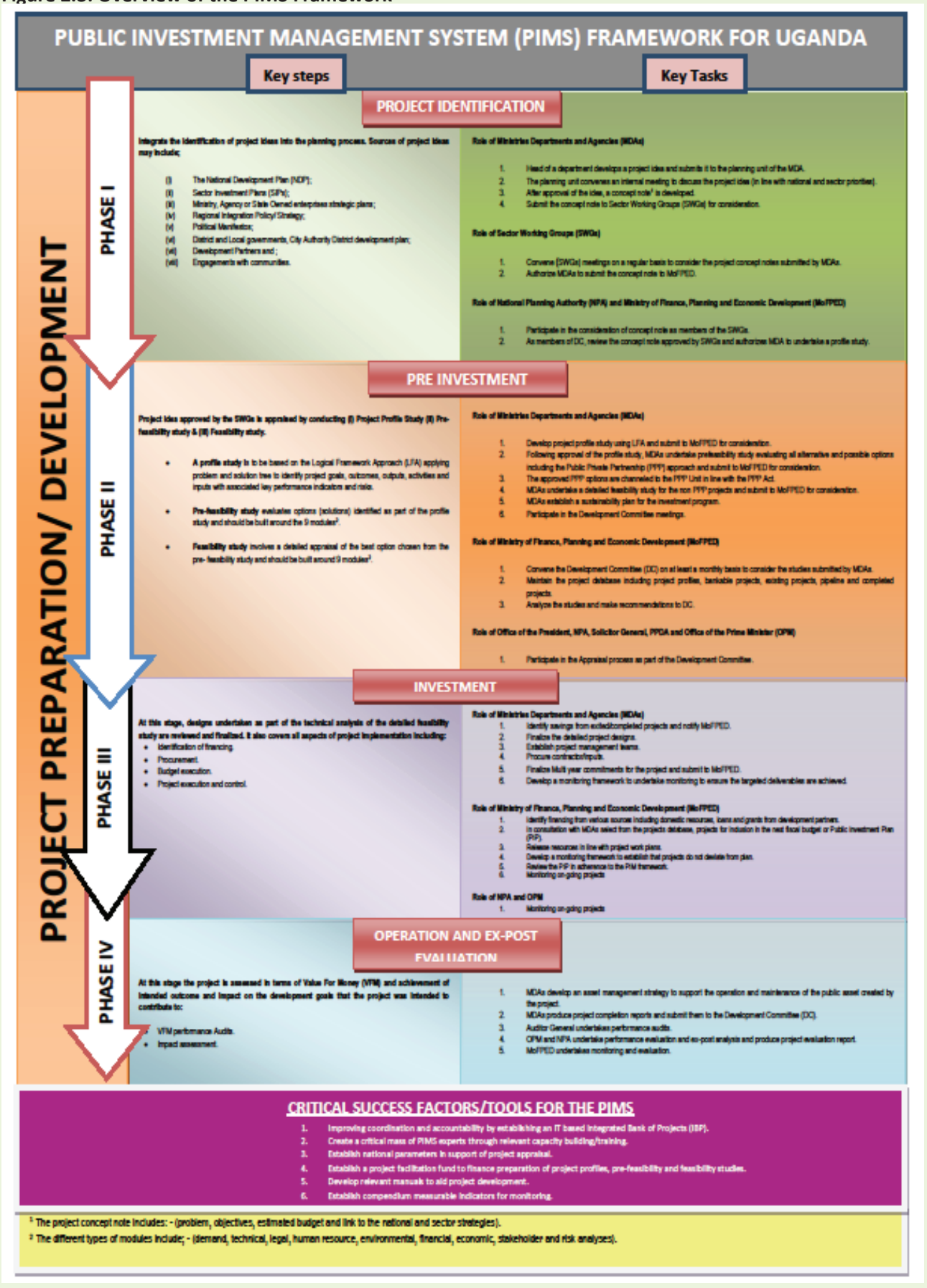
i. Participate in the consideration of project submissions as members to the SWGs.

ii. Align their interventions to the country's investment plan.

iii. Provide financial and technical support for development to the government.

iv. Ensure that their interventions are aligned to the PIMS processes.

Figure 2.3: Overview of the PIMS Framework



Guideline No.2 Scope and Institutional Arrangements

2.1 Public Investments admissible into the Public Investment Plan shall be limited to public spending to acquire or establish physical assets necessary to facilitate production or delivery of social and administrative services.

2.2 Public Investments shall be identified, prepared and appraised through projects, each of which shall be implemented in line with the guidance established by this manual.

2.3 Where a Public Investment is to be implemented as a program, each of the projects under the program shall be required to satisfy the project identification, preparation and appraisal criteria issued in this manual.

2.4 For purposes of facilitating the project preparation and appraisal processes in Government, Project Preparation Committees (PPCs) shall be established at vote and sector working group level. The committees shall meet at least once a month to execute the gate keeping roles as assigned in this manual.

2.5 In order to support the process of building capacity in public investment management, all votes shall be required to prioritize training in project preparation and appraisal.

Chapter 3

Project Preparation and Appraisal

3A. Overview

3.1 This chapter provides detailed guidance on the concepts, principles, processes, controls and tools underlying project preparation and appraisal in Uganda. It commences with a justification of the stage-wise approach in the approval process adopted by Government. It also introduces the concepts of relevancy, efficacy and efficiency as the key guiding principles for the appraisal process and provides a detailed description of the key requirements that sectors must comply with during project preparation and appraisal. This includes the requirement to:

i. Prepare a concept note at the identification stage.

ii. Develop a project profile at the pre-investment stage

iii. Undertake pre-feasibility and feasibility studies as a basis for appraisal, and,

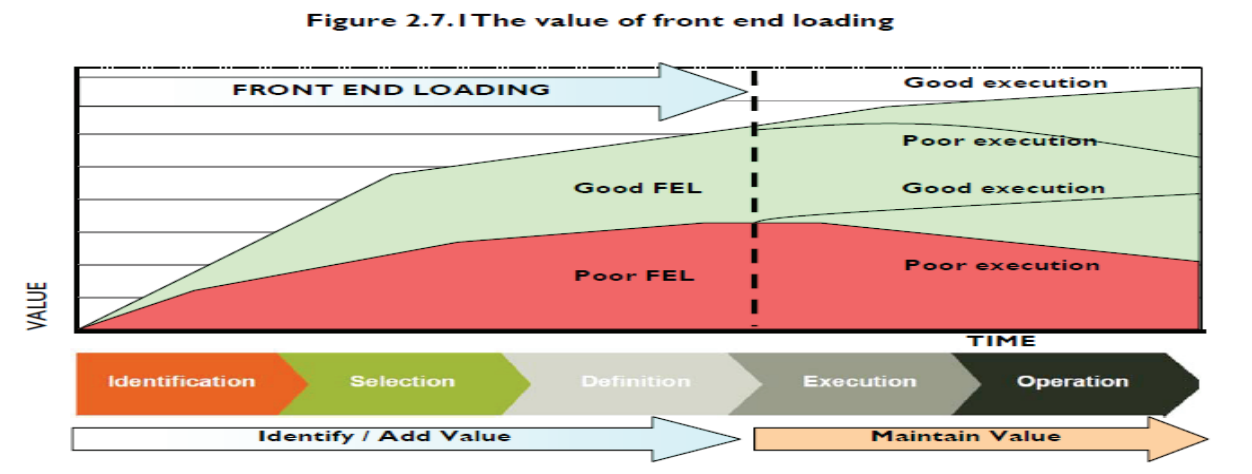
iv. Prepare a project proposal as a basis for mobilizing financing.

3B. Concepts and Principles underlying project preparation and appraisal

B.1 Front End Loading (FEL) Concept

3.2 The decision by Government to strengthen the screening of projects prior to entry into the PIP, by requiring the stage wise progression or approval of project ideas from the identification phase through to project preparation, appraisal, and selection, was based on the front end loading concept. This concept which is widely applied in investment projects and engineering design asserts that the early stages in a project cycle are the ones where the potential to add value to the project design is at its maximum whereas the corresponding cost is at its minimum. It is therefore prudent to identify and correct challenges in the project design as early as possible before it reaches the execution and operation phase. Later on, in the final stages of the project, it becomes more costly and complicated to correct or make adjustments to project designs. Figure 3.1 illustrates the impact of an effective Front End Loading on the returns to public investments.

Figure 3.1 – The value of FEL



Source: based on international best practices

B2. Guiding principles for Project Preparation and Appraisal

3.3 There is evidence to show that Uganda's Development Agenda is constrained by inefficiencies in the management of its Public Investments (Dabla-Norris et al., 2012; IMF, 2013). The World Economic Forum (2012) estimated the level of efficiency in public investment in Uganda at between 0.33 and 0.36, suggesting that about 60 percent of the resources put in public investment are wasted. The World Bank report- "from smart budgets to smart returns: unleashing the potential of PIM (2016)", indicated that for every dollar invested in Uganda capital infrastructure, only seven tenth of a dollar has been generated.

3.4 The primary objective therefore, in strengthening Uganda's framework for project preparation and appraisal, is to improve the efficiency and the effectiveness of capital spending. In pursuit of this objective, all new projects must fulfill two prerequisites in order to qualify for inclusion in the Public Investment Plan:

i. There must be a strong strategic justification for each eligible project (the efficacy principle)

ii. The projects selected for inclusion into the Public Investment Plan must be those with the highest contribution to society's welfare (the efficiency principle).

The Efficacy approach

3.5 Testing for investment efficacy or assessing whether proposed projects involve spending on the right public assets shall be enforced at the project identification and the pre-investment phases. This shall be done through reviewing the project concept notes and the project profiles to assess whether there is a strategic business case for the proposed intervention.

3.6 In other words, the question whether the proposed government spending will help achieve national and sector strategic priorities must be addressed. For this to happen, resources should only be spent on areas that are best aligned with the government's objectives as spelt out in the National Development Plan and/or Vision 2040.

The Efficiency approach

3.7 The assessment of whether proposed projects are likely to lead to the efficient allocation of resources shall be done at the pre-investment stage by seeking assurances on the economic profitability or attractiveness of each public investment project. This is best achieved by subjecting each proposed project to a Cost Benefit Analysis (CBA) or Cost Effectiveness Analysis which are integral parts of the financial and economic analysis undertaken as part of the pre-feasibility and feasibility studies.

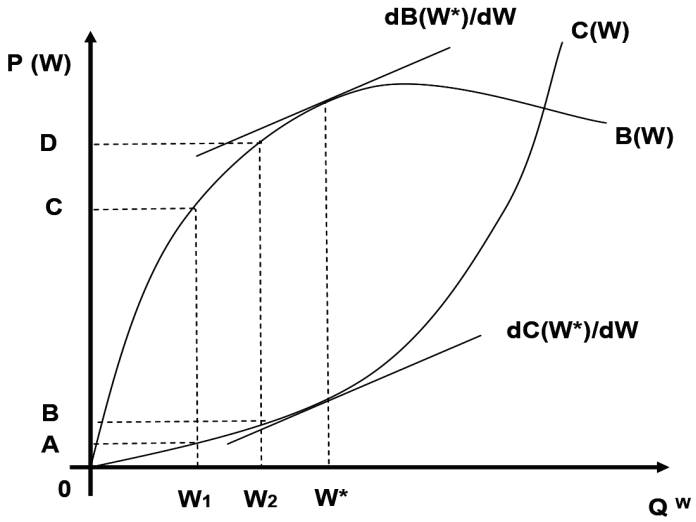
Box 3.1: Cost Benefit Analysis as a tool for ensuring efficient allocation of public resources

In general terms, developing countries (such as Uganda) should allocate their scarce resources to the most productive investments. Welfare economics provides a basis for analyzing the desirability and goodness of public policy, based in the utilitarian approach developed from the construction of the work of Bentham (1789) and Mill (1863) where utility is defined to represent the level of welfare of individuals, derived from consumption and production activities.

From the concept of *Pareto Efficiency*[1], the relationship between project analysis and Cost Benefit Analysis (CBA) is straightforward in an attempt to maximize social welfare. According to Boardman et al. (2001, page 28.) "if there is a policy that has positive net benefits, then you may find a set of transfers (side payments) that make at least one person better, without diminishing other". Then, CBA is the recommended tool to establish the desirability of allocating resources inside society.

In Figure 2.1 the curve B(W) is a representation of added benefits (i.e. consumption) of different levels of service of good W; while, C(W) represents the added costs. In this case, any policy that increases W from W1 to W2 is desirable from the Paretian point of view (the Pareto optimal solution is achieved in W*, where the marginal social benefit equals to marginal social cost; maximum vertical distance between the curves B(W) and C(W)).

Figure 2.1 Pareto efficiency and CBA



Source: Boardman et al. (2001).

Through the aggregation of the net profits of all individuals affected by the project, as Boardman et al. (2001) demonstrate, any policy with positive net benefits is a potential Pareto improvement. Therefore, if all the benefits and costs measured in terms of social opportunity cost are estimated, a positive difference indicates that the society can compensate those who bear the costs, enough to make no one worse and at least someone better, thus demonstrating the theoretical justification of CBA as measure of changes in society´s welfare.

In other words, when a project produces a good or a service (output), the economic benefit or the economic price of each incremental unit is measured by the demand price or the consumer's willingness to pay for that unit. On the other hand, the economic cost of a resource (input) that goes into the production of the project's output is measured by the supply price of each incremental unit of that resource. Finally, the net economic benefit of the project is measured by simply subtracting the total resource costs from the total benefits from the project's output.

3C. Identifying projects

3.8 In Uganda's case, the National Development Plan provides the basis for identification and development of project ideas. However, due to the ever changing economic environment, limiting the public investment plan to a fixed set of ideas in the NDP may not be practical. This is because new beneficial project ideas outside the NDP pipeline are bound to evolve within the 5-year NDP implementation period. A flexible approach to project identification is therefore adopted allowing for project ideas to be generated from other sources on condition that any such project ideas are consistent with the strategic priorities of the NDP. The other sources of project ideas may include:

i. Existing agencies, independent units, line ministries and State-Owned Enterprises' strategic plans.
ii. Regional integration policy.
iii. Political Manifestos.
iv. People's representatives.
v. Interest groups or beneficiaries.
vi. Private sponsors and enterprises.
vii. Development Partners.

3.9 The overriding requirement at the identification phase is that irrespective of the source of a project idea, the entry point into the Public Investment Management System is by way of preparation of a concept note that must be submitted to the Accounting Officer responsible for the relevant MDA. Within the MDA, the programme head under which the project idea falls takes the responsibility of preparing the concept note.

C.1 Approval of the concept note within the Vote/Agency

3.10 The Department/Unit responsible for Planning and/or Policy Analysis within an MDA shall be responsible for vetting the project concept note and shall present its findings/recommendations to the MDA's Project Preparation Committee for consideration.

3.11 At the MDA level, assessment shall be undertaken in respect to the definition of the problem, consistency with mandate, alignment to the Ministry, Sector and National strategic priorities, justification of proposed interventions, estimated cost of the intervention and availability of fiscal space within the vote's Medium Term Expenditure Framework and financing framework. In addition, the PPC will ensure that the proposed idea is not a duplication of an existing or ongoing intervention. If approved, the concept note must be submitted by the Accounting Officer to the Sector Working Group for further consideration.

C.2 Approval of the concept note at the Sector Working Group Level

3.12 At the sector level, assessment shall be undertaken in respect to definition of the problem, consistency with sector mandate, alignment to the Sector and National strategic priorities, justification of proposed interventions, estimated cost of the intervention and availability of fiscal space within the sector's Medium Term Expenditure Framework and confirmed new sources of financing. Once approved by the Sector Working Group, the concept note shall be submitted by the Chair of the SWG to the Ministry of Finance for consideration by the Development Committee.

C.3 Approval of the concept note by the DC

3.13 The DC secretariat shall review the concept note in line with the DC guidelines and present its findings to the DC for consideration.

3.14 Submissions to the DC must be supported by the relevant approvals of the SWG as evidenced by the minutes of the meetings at which approvals were made and under the cover of the letter of the Chairperson of the SWG. Approval of the concept note by the Development Committee shall amount to the initial registration of the project concept note by MoFPED.

C.4 Basic content of the Concept Note

3.15 In view of the mandatory screening of the project concept note (Annex 2) by the MDA, SWG and the Development Committee, the criteria summarized below shall be followed in establishing the strategic business case for the proposed project. :

a. Project Background: Present the problem your project will focus on by explaining (i) the envisaged situation in terms of Vision 2040, NDP, Government policy stance and/or international standards (ii) current situation in terms of past developments, recent developments including current and projected trends and published forecasts.

b. Problem Statement: explicit definition of the problem to be addressed in terms of challenges, constraints or gaps that the market or private sector cannot resolve and a brief insight of the likely causes of the problem and consequences if no government intervention is made.

c. Relevance of the project: Justify the need for the proposed project by: (i) linking the project to the National Development Plan (NDP) strategic interventions by identifying the objective (s) that the proposed project is expected to contribute to; (ii) Linking the proposed project to Sector Investment Plan (SIP) objectives by describing the sector outcomes that the project is expected to impact.

d. Stakeholder Analysis: Identify the key stakeholders that are likely to be affected (either positively or negatively) by the interventions including: (i) Direct Beneficiaries (ii) Indirect Beneficiaries (iii) Project affected persons. Give a brief description of the likely impact of the project on the stakeholders.

e. Project Goal: link the project to the NDP by describing the national development objective (s) that the proposed project is expected to contribute to;

f. Project Outcomes: Link the proposed project to sector strategic objectives by describing the sector outcomes that the project is expected to impact on;

g. Proposed interventions: explain the proposed interventions to be made, and demonstrate that the interventions fall within the mandate of the sponsoring vote, rank high among the priorities in the ministries strategic plan and also prove that the interventions cannot be accommodated in the recurrent budget.

h. Proposed Project Cost: Provide annualized cost estimates of the amount of funding required over the expected life of the proposed project and demonstrate whether the estimated funding falls within the sectoral constraint set in the Medium Term Expenditure Framework or otherwise present evidence on the possibility or likelihood of new sources of financing over and above the existing MTEF allocations.

3D. Project Profile

3.16. Upon approval of the concept note by the DC and its registration with MoFPED, the MDA is required to undertake a detailed Project profile study to establish a logical framework for the proposed project. The objective of this stage therefore is to:

i. Help present the project in a logical manner with a detailed description of the objectives. This includes: the project goal, outcomes, outputs, activities and inputs,

ii. Identify the measurable indicators for each level of objectives in the results chain. Each indicator should have a baseline and targets to be achieved

iii. Establish or identify means of verifying performance against the indicators

iv. Disclose critical assumptions behind the logic of "how the activities will contribute to the achievement underlying the project objectives."

3.17. The project profile study therefore sets a firm foundation for the monitoring and evaluation framework at the later stages involving implementation and ex-post evaluation.

3.18 The project profile study shall be undertaken by the MDA and submitted to MoFPED for consideration and approval by the Development Committee. The approval of the profile by the DC means that the project sponsoring agency (MDA) may proceed to the pre-feasibility stage of project appraisal.

D.1 Basic contents of the project profile study

3.19 The project profile report builds on the components of the concept note in section C4 above. In addition, the project profile is also required to: (i) provide a description of the results chain or intervention logic (ii) present a results based Logic Framework Matrix. The project profile shall be prepared in line with the template attached to this manual as Annex 3.

D.2 Description of the Results Chain of the proposed project (objectives hierarchy)

3.20 The results chain must show the logical relationship between the project objectives and planned activities, and is used to check whether planned activities will ensure the achievement of planned objectives. The following are the logical components of the results chain.

Project Goal

3.21 The project goal is the broader development objective to which the project contributes at a national or sectoral level. It provides the link to national policy or the sector programmes context. It will normally be achieved some time after the end of the project. It shows why the project is important for the society, from the point of view of long-term benefits. Usually the overall objective cannot be achieved as the result of only one project and may require the implementation of many other projects/programmes.

Project Outcomes

3.22 Outcomes are the effects that follow from the utilization of products or services delivered (outputs) by the project. The consequence of project outputs, outcomes are the eventual benefits to society that the project interventions are intended to achieve and are reflected in terms of what people will be able to do better, faster, or more efficiently, or what they could never do before. Project outcomes are achievements at the level of the final Target Group. Some examples of outcomes related to concrete outputs are:

i. Delivery of training' (project output) cause 'raised professional skills' or 'implementation of positive habits'(outcomes),

ii. Construction of 20 km road between village X and town Y' (output) causes 'shortening of travel time to a health center by one hour' (outcome)

3.23 Outcomes therefore do not correspond to the rendered services (results), but to the usage of these services by beneficiaries and show how the target groups/final beneficiaries are using the products of a public project, usually showing changes in behavior or understanding (e.g. raised awareness, obtaining new habits, practical skills, etc.)

Project Outputs (Components)

3.24 Project outputs are the direct/tangible results (goods and services) that the project delivers, and which are largely under the project management's control. Achievement of the project outputs and provision of reasonable input to the achievement of the overall objectives require implementing a series of activities resulting in outputs, outcomes and impacts.

3.25 Some examples of project deliverables could be: road constructed, classroom constructed, engineering designs undertaken, feasibility studies completed, and infrastructure built / renovated, etc. Outputs are usually the immediate and concrete consequences of the implemented activities and resources (inputs) used.

Project Activities

3.26 Project activities refer to the tasks (in the work programme) that need to be carried out to deliver the planned results, i.e. how the project's goods and services will be delivered. To obtain the results of a project, a number of activities have to be undertaken. The implementing agency must ensure that activities will lead to achievement of the project result. Activities can be focused directly on the target group(s) and realized with their participation (delivery of trainings, consultations, etc.) or without their active participation but focused on them (e.g. new tourists routes development, publications, infrastructural activities, construction of new bridge), among others.

Setting Objectives

3.27 The results chain described above essentially sets a hierarchy against which the objectives of the project should be stated. At each level, the objectives should be described or stated in such a way that they are Specific, Measureable, Achievable, Relevant, and Time-bound (SMART). In other words, it is expected that SMART objectives for every proposed project will be set at the goal, outcomes, outputs and activity levels within the results chain.

The Results Matrix

3.28 In addition to the detailed description of the logical relationship between the project objectives and planned activities, project sponsors shall be expected to develop a framework for measuring success of the proposed project. This shall involve; the identification of measurable indicators for every objective, setting targets to be achieved for each indicator and disclosure of the baseline level against which the target is to be measured. It is also a requirement that each indicator is supported by a disclosure of the sources of information that will be used to verify performance and the assumptions underlying the attainment of each objective.

3.29 Project sponsoring agencies are required to demonstrate how the results of the proposed project can be measured and monitored by submitting as part of the project profile a results matrix as reflected in table 3.1.

3.30 In developing the results matrix the following points need to be considered:

i. The matrix should provide a summary of the project design, and its length will be dictated by the project's complexity. It should generally be between one and four pages in length. If the matrix is too long, the project may not be focused enough. If the matrix is too short, it may be missing parts or insufficiently developed.

ii. The matrix should only describe the main, or indicative, activities. The detailed activities should be documented separately in an activity schedule.

Table 3.1 Sample Results Matrix

Objective Hierachy and Description	Indicator	Means of Verification	Baseline	Target	Assumptions
1.Goal					
2.Outcomes 2.1 2.2 2.3 …					
3.Outputs 3.1 3.2 3.3 …					
4.Activities 4.1 4.2 4.3 4.4 …					

Source: international best practice

3.31 The project description outlines the project's objectives hierarchy, or the logic that supports the project. This is also known as the vertical logic, reading from the bottom-up. It describes how the project will achieve its ends. For example, to produce components or outputs requires the implementation of all the activities specified. Each component is necessary for the achievement of the project outcomes and in fulfilling the outcomes the project will, overtime, contribute to achieving the project goal. Meanwhile, the horizontal logic is constituted by the narrative summary of each goal, the indicators, means and sources of verification and assumption (s).

Indicators

3.32 The indicators include information necessary to track the project and assess the achievement of the objectives at the level of goal, outcomes, outputs and activities. Indicators provide a means to assess the project's success. Indicators must be targeted. This means that they need to specify the quantity of change, the expected quality of the desired change, and the timeframe in which the desired change is to occur. It should be noted as QQT (for Quantity, Quality, Time-frame).

3.33 The analyst cannot use indicators from a lower level to demonstrate achievement of a higher level objective. For example, the indicator for 'staff trained in using the LFA' (output level) cannot be used as proof that the purpose has been achieved.

Means and /or Sources of verification

3.34 The means/sources of verification specify where to gather the information needed to measure the indicators, so that you can perform the measurement. The assumptions consider those risk factors in achieving different levels of objectives, which are outside the direct control of project management, and that have a high probability of occurrence and impact on outcomes. Sources of verification refer to:

i. How the information for indicators should be collected (survey, document analysis, measurements etc.)?

ii. Who should collect it?

iii. When it should be collected?

3.35 In determining sources of verification, the project team should consider whether appropriate sources already exist. Where new sources are required, it is important to consider the cost of data collection, as well as how valid and accurate the data collection process is.

3.36 Where indicators relate to a specific change in a condition, baseline data (what is the current state of things) shall be required. This will mean that the source of verification requires both baseline and post-project data and data sources. The indicators and sources for the baseline and post project data may be the same. However, the project team will be required to collect the data at different times in the project cycle.

Assumptions

3.37 Assumptions refer to key factors outside the direct control of the project team, which must hold true if the project is to achieve its results, purpose or goal. If the assumptions do not hold true (certain events do not occur), then this may have a negative impact on the project. Identifying assumptions (or risks) is critical as these may have a strong influence on the project's likelihood of success.

3.38 Assumptions form part of the vertical logic of the matrix (Table 3.1). Note that there are no assumptions for the 'goal' and thus the assumptions column is left blank.

3.39 In order to ensure that project design teams make an exhaustive appraisal of the problem and alternative solutions, all project Sponsoring Votes or Agencies shall be required to use the Logical Framework Approach (LFA) in every project profile. Guidance on the Logical Framework Approach to project preparation is summarized in Chapter 4 of this manual.

3E. Pre-feasibility Studies-Appraising the Options

3.40 The MDAs are required to undertake a pre-feasibility study for each proposed project whose profile or framework is approved by the DC. At the project profile stage, the project objectives will have been agreed upon. However, it is expected that there are many alternative solutions that may be implemented to achieve the agreed upon project objectives.

3.41 The purpose of a pre-feasibility study therefore, is to help develop a value for money solution that meets the objectives of government by analyzing all feasible options that can achieve the identified output specifications. This helps in identifying the preferred solution to the problem. The following principles should guide the options analysis:

i. All feasible options should be evaluated.

ii. The preferred option should be the one that achieves the highest net economic /social benefits and should be affordable.

Identification and Description of Alternative Solutions

3.42 Analyzing options at this stage shall be at two levels. The first level shall be to decide whether the project objectives are best achieved through the Traditional Public Sector approach or through the Public Private Partnership project modality.

3.43 The PPP projects are therefore a sub-category of the overall portfolio of public Investments which are bound to benefit from the pool of resources, tools and processes established by the PIMS framework.

3.44 After a cost benefit analysis at the pre-feasibility stage has been performed, and it is perceived that a specific project shows potential to be implemented with private sector participation, then that project shall be forwarded to the PPP unit for further scrutiny in line with the PPP Act (2015). A detailed overview of the PPP process in Uganda is made in Annex 8 of this manual.

3.45 At the second level of options analysis, alternative options shall be generated on the basis of variations in locations, technical specifications, and environmental considerations, among other possibilities. This step involves preparing a list of the range of actions which the government could possibly take to achieve the identified objectives. The list should include an option where government takes no action or the status quo remains so that this can be used as a base case to judge the value added by proposed interventions.

3.46 A first high-level analysis of these options should include a qualitative listing of the advantages and disadvantages as well as preliminary quantification of the costs and benefits of each option relative to the objectives of the project. This comparison should allow for the development of a shortlist of 2 to 3 preferred options, which will be assessed in detail using the modules described in section 3G of this manual.

3.47 Whenever possible, the pre-feasibility study should utilize secondary (existing) data. Most problems have been faced and solved before by others. Therefore, a great deal of information can be obtained quickly and cheaply if the existing sources are utilized efficiently. Upon completion of the pre-feasibility study, the project sponsoring agency shall be required to submit the report to the MoFPED for review and consideration by the DC.

3F. Feasibility Studies-Appraising the Best Alternative

3.48 The MDAs are required to undertake a detailed feasibility study for each proposed project whose pre-feasibility study is approved by the Development Committee. At this stage, the chosen option of the project must be examined to see if it meets the financial, economic, and social criteria that the government has set for investment expenditures. This is the final step in the appraisal of a project and its purpose is to improve the accuracy of the key variables.

3.49 In order to improve accuracy, more primary research shall be undertaken and perhaps a second opinion sought on other variables. Since the estimates of costs and benefits may be subject to substantial margins of error, an analysis should always be made about the sensitivity of the project's outcome to variations in the values of key variables.

3.50 It is at the end of this stage that the most important decision has to be made, on whether to approve the project or not. It is much more difficult to stop a bad project after the detailed and expensive design work has been carried out.

3G. Basic Contents of pre-feasibility and feasibility studies

3.51 The pre-feasibility and feasibility studies undertaken by MDAs shall cover nine modules namely: (i) Demand /Market module, (ii) Technical/engineering module (iii) Environmental safety module, (iv) Human resources and administrative module (v) Institutional (social, political) module (vi) Financial module (vii) Economic module (viii) Uncertainty/risk analysis module and (ix) Distributional module. In line with international best practices, modules (i) to (v) are considered the "project building blocks" and (vi) to (ix), the "analytical" modules2. The pre-feasibility and feasibility studies shall be prepared in line with the templates attached to this manual as Annex 4 and 5, respectively.

Demand (or Marketing) Module

3.52 This module examines whether there is a demand for a project's goods/services either in the domestic or foreign market, or both. Demand corresponds to how much of a good or service is needed to meet a beneficiaries' need for it. The demand must be measured in appropriate quantities, for example, number of medical visits per year, liters of drinking water per day, etc.

[2] See Jenkins, Harberger & Kuo (2013) for a discussion of the various aspects of the pre-feasibility phase.

3.53 In the demand or marketing analysis, a distinction must first be made between the products from the project to be used to meet local/domestic demand and the products to be sold in foreign markets. For products that are sold in the foreign markets, usually a great deal of information is available on market trends, new technologies, and the approximate cost of production from potential competitors.

The key question is: What are the advantages and disadvantages of the proposed facility relative to other competitors, both domestically and internationally? For some products, research on costs relative to those of other producers may suffice. For others, research on likely price trends may be needed; and even in some cases, research into the likely demand for the deliverables of the specific project under study may also be required. The function of this module is not only to assess the current demand but also to undertake the more difficult task of forecasting future demand.

3.54 In the case of public sector monopolies, such as public utilities, government policies are an important factor in determining the demand for the output. The growth in demand for the outputs of a public utility may be forecasted fairly accurately by studying the relationship, over time, of demand with respect to variables such as population growth, disposable income, industrial output, household-specific information and relative prices. The study of growth in demand experienced by utilities in other countries with similar circumstances can also provide a good indication of what to expect in the future.

3.55 The most widely used method of estimating demand is through individual/private consumption, that is, per capita or family. The total demand for the good or service in question is obtained by multiplying individual/private consumption by the affected population for a certain period (t), viz:

Total Demand = Private consumption * Affected population

3.56 To determine individual consumption (or per capita), available historical records of the consumption of a population with similar characteristics can be used, or specific information sources, as in the case of the demand for transport services. Based on the formula for calculating the total demand growth on the horizon, this project evaluation will depend on the evolution of individual consumption in the affected population. The rates used in the diagnosis must be justified by specific studies, noting all the cases/premises under consideration.

3.57 The actual and projected supply analysis estimates the amount of goods or services currently available, which helps to solve the identified problem. For its estimation, consideration should be given to such aspects as:

i. The capacity of existing infrastructure and standards compliance.

ii. Compliance with quality standards.

3.58 For projected supply analysis, consider the expected evolution of the provision of goods or services by existing providers and the entry of new suppliers into the area of influence. Along with this, the medium and long-term must be analyzed, in which case there might be an increase or decrease in the supply of the goods or services.

3.59 The current and projected deficit is estimated based on the comparison of the current and projected demand and the current and projected supply in the area of influence. The deficit calculation allows the determination of the magnitude of the current and projected gap. This can be expressed in qualitative terms (that is, deficiencies in quality, regulatory compliance) or in quantitative terms. However, it is necessary that current and projected demand and current and projected supply be expressed in the same units of measurement and over the same time frame.

The Technical (or Engineering) Module

3.60 This module is concerned with the input parameters of the project; the quantities and prices of inputs by type required for the construction of the project, the inputs required for the operation of the project by year, and the appropriateness of the technology adopted. It is also concerned with issues such as the size of the project, its design, location, and the technology to be adopted, including the equipment to be used and the processes to be followed. Assessment of the environmental impact caused by inputs, outputs or technology should be a central component of this module.

3.61 A major task in technical analysis is to conduct an analysis of the cost estimates along with the data used to arrive at those estimates, provisions for contingencies and expected price increases during the implementation phase, and cost estimates for operating the facilities. The procedures for procurement of materials and provision of professional services are also reviewed at this stage.

3.62 For investment and implementation, it is essential to identify the inputs required by each of the alternatives under study (machinery, equipment, materials and labor), quantity, cost, and feasibility to access them either at the domestic or foreign markets, technological advances and the possibility of their incorporation into the project.

3.63 Incorporating the analysis of the various technological alternatives also facilitates decisions about the optimal size and time to carry out the project. Also, the information obtained in this module allows for the estimation of entire costs of implementation and operation during the lifecycle of the project.

Environmental Module

3.64 A project may have a negative impact on the environment that may adversely affect people or other living things (plants and animals) in the project environment. This is an externality generated by the project and is not reflected in the private costs of the project. Failure to consider these effects in the evaluation of the project may lead to the selection of an alternative that is not necessarily the most beneficial in terms of socio-economic considerations.

3.65 Whenever the project has an impact on the environment, all the costs of abatement including pollution control equipment and facilities used for mitigation should be included in the project costs. Whatever residual pollution and environmental impacts remain after the pollution control equipment is in place should be estimated and their economic value assessed. Finally, these values should be included as a cost in the cash flow of the project.

3.66 The importance of this module lies in environmental feasibility and sustainability and the rules regarding it, which may prevent or hinder the implementation of the project. Therefore, it is essential to identify how project alternatives behave in relation to environmental safety conditions and the effects they may generate. Also, this analysis must be taken into account throughout the project life cycle, from the choice of size, technology, material requirements, and location, among others. The resultant findings should be published in an ESIA report as approved by the mandated body, NEMA, before commencement of the project. It is also important under the NEMA Act which makes it is mandatory for every new project to be subjected to an ESIA.

Human Resource and Administrative Support Module

3.67 This module deals with the human resource requirements for both the implementation and operation phases of the project. It reconciles the technical and administrative requirements of the project with the supply constraints on human resources.

3.68 It would be a mistake to confine project appraisal to the analysis of financial and economic costs and benefits, under the assumption that the project can be built and made ready for operation on time. This assumes a degree of administrative support and project management capacity for implementation of projects. Projects have, in the past failed, because they were undertaken without the administrative

and project management expertise necessary to complete the project as specified. The prospect of future financial and economic benefits materializing is only as good as the administrative and project management capability of the agency in charge of putting the project in place.

3.69 This module must reconcile the technical and administrative requirements of the project with the supply constraints on human resources. If those two cannot be reconciled, the project should not be undertaken. A careful study of the labor markets should be made in order to ensure that the estimates of wages to be paid are accurate and that the planned source of human resources is reasonable in light of labor market conditions. It is also important to break down the labor requirements by levels of knowledge, skills and sources as each category may attract a different level of compensation.

Institutional and legal Module

3.70 This module deals with the adequacy of the institution responsible for managing the different stages or phases of the project. Insufficient attention to the institutional frameworks can lead to problems during the implementation and operation of the project.

3.71 The institutional arrangements cover the entire management that goes into the project, along with its policies and procedures. In a broad sense, the institutional setup also incorporates the whole range of government policies, rules, regulations, guidelines and procedures. Experience shows that insufficient attention to the institutional aspects creates serious problems during the implementation and operation phases of the project. The institutional module should address the following issues.

i. Which institutions are related to the project? Which organization should lead the project? Does this organization have the capacity and enough resources to run and monitor the project properly?

ii. Is the local entity that is supposed to manage the project properly organized and its management adequately equipped to handle the project?

iii. Are the local capabilities and facilities being properly utilized?

iv. Is there a need for changes in the policy and institutional set up outside these sponsoring entities? Are the changes warranted with regard to policies of the local, regional or national governments? Is the project legally defensible? What legal actions and/or restrictions may obstruct or impede implementation or operation processes?

v. Which are the prevailing regulations? Is there a need for changes to policy and institutions or creating new agreements or commitments? And, what changes are needed at local, regional and political centers?

Financial Module

3.72 This module provides the first integration between the building blocks and analytical modules by making use of the information generated in the marketing, technical, environmental, legal and human resource modules to generate a cash flow profile of the project which tracks all the receipts and expenditures that are expected to materialize during the lifetime of the project. The financial analysis should be based on these discounted cash flows. An attempt should be made at this stage to provide a description of the financial flows of the project that identifies the key variables to be used as input data in economic and social appraisal.

3.73 The financial appraisal also helps determine the level and structure of prices or user fees to be charged to the beneficiaries in order to ensure the project's financial viability. Government may decide to subsidize specific services to consumers as a matter of policy or pure expediency. The recovery of user charges has to take into account the income position of the beneficiaries and the practical problems of administering a particular system. The degree of fiscal impact of such government policies on the budget has a strong bearing on the viability, feasibility and sustainability of the project. In such cases, not only should the level and structure of prices be defined but the procedure for making future

adjustments in prices and government subsidy should be clearly laid down.

3.74 The result of this analysis should be the capacity to build a flow of benefits and costs. To do this, the following steps are proposed:

i. Identify the key determinants of revenues, expenses and investments.

ii. Develop a revenue, expense and investment Plan consisting of their monetary values over the project life

iii. Prepare the cash flow projections by consolidating the above plans

iv. Discount the cash flows to determine the indicators for assessing viability of the project. Indicators may include NPV, IRR, Pay-back period, Benefit-Cost ratio.

Economic or social evaluation module

3.75 This module examines the project from the entire economy's point of view to determine whether or not its implementation will improve the economic welfare of the country or region. An economic appraisal is almost of the same nature as financial analysis, except that for the former, the benefits and costs are measured from the point of view of the whole country or the entire region, in order to choose those projects that maximize the economic welfare of the entire society. Another main difference is that the effects in a private (financial) evaluation do not take into account all the relevant costs and benefits, such as externalities and intangible effects.

3.76 Instead of relying on market prices to measure expenditures and costs, as in the case of a financial appraisal, economic analysis requires the use of techniques to determine the economic prices of goods and services, foreign exchange, cost of capital and labor. The true economic values of costs and benefits are not reflected in market prices in the presence of various distortions such as trade restrictions, price control, taxes, subsidies, and minimum wages. The questions covering the economic appraisal of a project are as follows:

i. What are the magnitudes of the differences between the financial and economic values of variables that are affected by government regulation and control or are subject to taxes, tariffs, and subsidies?

ii. What are the magnitudes of the differences between the financial and economic values of variables that are affected by other imperfections in the factor and product markets (e.g. labor unions, lack of competition and restrictive trade practices)?

iii. What relative degree of certainty can be placed in each of the above measurements of economic externalities as compared to the estimates of financial expenditures and revenues?

iv. When evaluated at a discount rate that reflects the relevant cost of capital to the economy as a whole, does this project produce a positive economic net present value?

v. In order for the appraisal to indicate that the project is economically viable, what proportion of the more uncertain economic adjustments must be included?

3.77 Before the adjustments outlined above can be measured satisfactorily, the basic principles of economic evaluation must be clearly understood. However, it must also be pointed out that all these adjustments are made to the basic financial data of the project, and therefore it should always be easy to check the various steps in the methodologies that transform financial evaluations into economic evaluations.

In summary, the steps required to carry out economic analysis are as follows:

a. Estimate the CSCF for all the prices of inputs and outputs involved in the evaluation.

b. Convert the variables in the financial cash flow statement into economic resource flows by applying

the CSCFs.

c. Identify the indirect benefits and costs attributed to the project (externalities) and quantify them.

d. Integrate the externalities into the Economic Resource Flow Statement.

e. Discount the net economic resource by the Economic Opportunity Cost of Capital to ascertain the Economic Net present Value of the project.

f. Conduct the sensitivity analysis and/ or scenario analysis.

Distributional module

3.78 The distributional module analyses all the people or organizations, collectively referred to as stakeholders, who have an interest in a project and may determine the project's success or failure. They are either the project's allies or, sometimes, the people or organizations who may block the successful implementation of the project if they are not effectively engaged. The preparation and analysis of the list of Stakeholders (stakeholder analysis) will help in keeping all these groups in mind and to decide how to involve these stakeholders or deal with them in an effective manner.

3.79 The second reason for distributional analysis is to see if the benefits of the project will actually go to the targeted groups, as well as to ensure that no specific group is subjected to undue burden as a result of a project. The magnitude of any burden can be measured by the present value of the incremental net benefit flows that are expected to be realized by that group. Among the main stakeholders affected by a project are the project's suppliers, contractors, vendors, sponsors/funders, consumers, project competitors, labor, and the government. The impact on government is mainly derived from the externalities generated by taxes and subsidies.

3.80 The financial and economic analysis of the integrated project analysis will provide the basic data for estimating the specific impacts on stakeholder. In the financial analysis, there are several groups or parties affected by a project. Each group's benefits and costs can be analyzed to determine who gains and who loses as a result of a project.

Uncertainty and Risk Analysis Module

3.81 A traditional cash flow analysis assumes single (deterministic) values for all of the variables. The outcome of that analysis is a point-estimate of a project's indicators such as, NPV or its Internal Rate of Return (IRR), and a decision whether to accept a project is made on that basis. More realistically, however, we know that values for most project variables are subject to change and are difficult to predict. While the past values of a particular variable are known with certainty, predicting future values is a different matter. It is more likely to forecast the correct range of future values for a variable rather than its exact value. Given that there are probabilities attached to the possible values of a variable in a given range, there is a good chance that the value that occurs will be other than the one we have chosen. Sources of Uncertainty may include:

a. **Technical Factors**

i. Supply of the main raw materials, particularly the quantity and timing of delivery. This affects the level of capacity utilization.

ii. Quantity of raw materials, affecting the technical performance of the project, and therefore its financial and economic performance.

iii. Ready supply of imported inputs, and spare parts for equipment in particular. Delays may cause downtime or increased levels of working capital (to avoid stoppages) both increasing the costs of production/operation.

iv. Availability of competent labour and managers.

v. Supply of energy, particularly in terms of e.g. electricity breakdowns affecting the level of

downtime, or additional capital expenditure on stand-by (or permanent) generators.

b. **Commercial/Economic factors**

i. Changes in the relative prices of various inputs to projects, or in the relative prices of inputs and outputs may affect project performance independently of technical performance. Prediction of price movements is difficult.

ii. In particular the foreign exchange rate is difficult to predict – this is a more macro-economic factor.

iii. Market conditions for the output of some industrial products, particularly agro-industrial products, may be especially unpredictable.

iv. Administrative, bureaucratic, legal and cultural problems can affect projects in negative ways, so that the ability to ensure the minimization of such problems is a desirable characteristic of management staff.

3.82 Risk analysis is therefore important for a number of reasons. Among others, the analysis reduces the likelihood of undertaking a "bad" project while not failing to accept a "good" project. It would be easy to avoid "bad" projects simply by making very conservative assumptions about the values of the key variables and then accepting only those projects that still have a positive NPV. In second place, one of the ways to reduce risk is to gather more data and information, to the extent feasible, about the key project variables in order to narrow their likely range and to determine more precisely the appropriate probability distribution. To deal with the risk analysis, Sensitivity Analysis and Scenario Analysis are introduced later in this Manual.

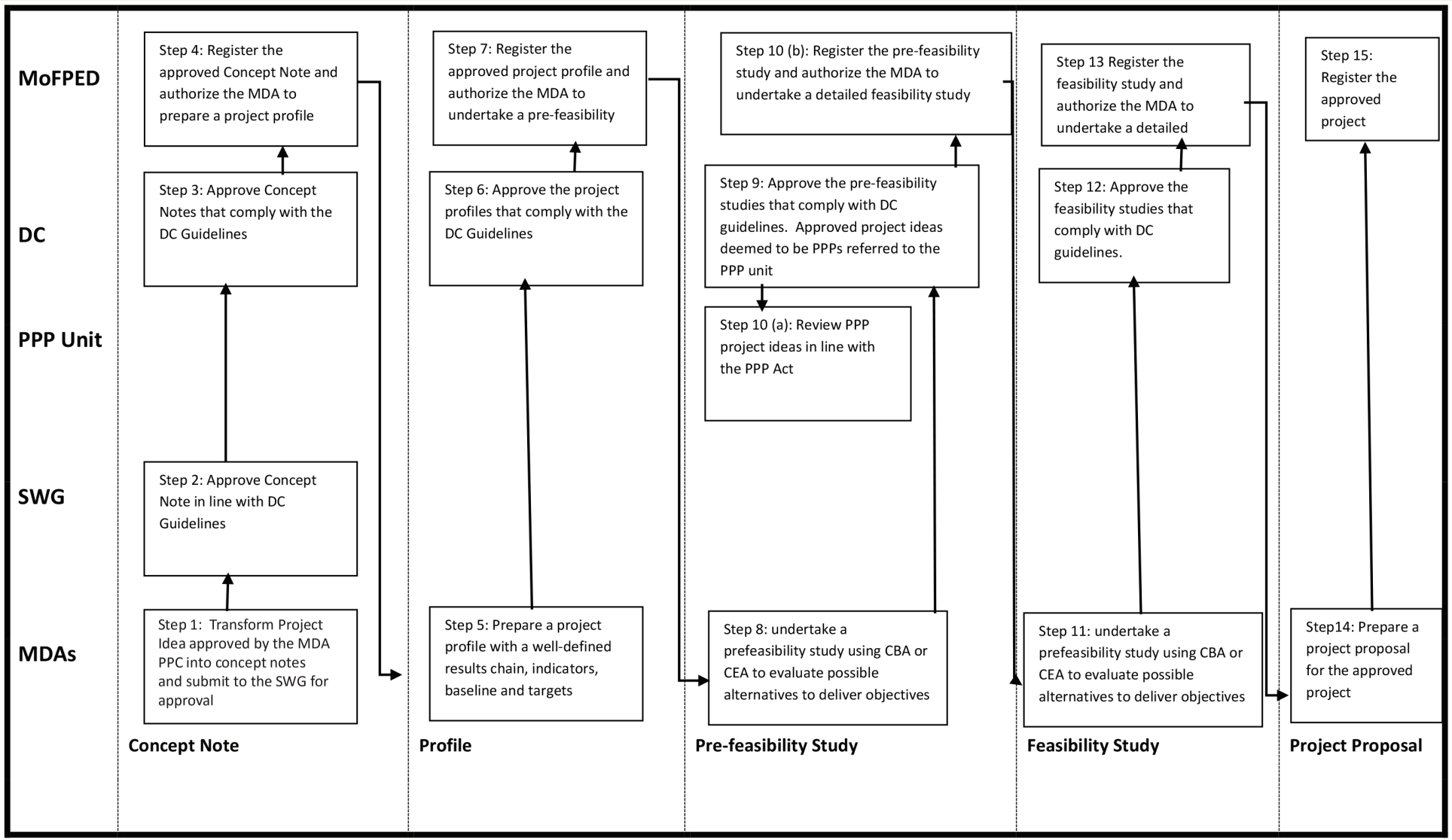
3H. Final Investment Decision and Budgeting

3.83 After the Project Feasibility Study is completed, a project proposal should be developed by the vote for each proposed project whose feasibility study is approved by the DC.

3.84 The project proposal shall form part of the inventory of bankable projects stored in the Integrated Bank of Projects or any other data base created by Government. The inventory of bankable projects shall form a pool from which the Public Investment Plan and the development budget shall be developed using a selection criterion that shall be issued by the Development Committee.

3.85 The content of the project proposal shall be as specified in annex 6 of this manual.

Figure 3.2 'Step 1: Transform project ideas approved by the MDA PPC into concept notes and submit to SWG for Approval'



Guideline No.3 Project Identification, Preparation and Appraisal

Identification

3.1 Irrespective of the source of a project idea, the entry point into the PIMS shall be by way of preparation of a concept note that must be submitted to the Accounting Officer responsible for the relevant vote/ agency.

3.2 The concept note shall be subject to approvals by the (i) PPC at the sponsoring agency (ii) Sector Working Group (iii) by the Development Committee.

3.3 The main objective of the concept note shall be to ensure that the project idea is consistent with the national strategic priorities as specified in the NDP, Sector Investment Plans, and agency strategic plans.

3.4 In justifying the project idea, basic content of the concept note shall include Problem Statement, demonstrable linkage to NDP and SIPs, justified proposed interventions, and indication that there is fiscal space to accommodate the proposed project idea and that all possible alternatives have been considered.

Pre-Investment Phase (Project profile)

3.5 The Vote shall be required to prepare a detailed project profile for each concept note approved by the DC and registered by the MOFPED.

3.6 The objective of project the profile study shall be to set a firm foundation for the monitoring and evaluation frameworks which are necessary at all stages of the project through:

a. The presentation of the project in a logical manner with a detailed description of the results chain or objectives including- the project goal, outcomes, outputs and activities.

b. The identification of measurable indicators for each level of objectives in the results chain with established baselines and set targets.

c. The identification of means of verifying performance against the indicators.

d. Disclose assumptions underlying the project objectives.

Guideline No.3 Project Identification, Preparation and Appraisal

Pre-Investment Phase (Pre-feasibility study)

3.7 The project profile study shall be undertaken by the vote and submitted to the MoFPED for consideration and approval by the Development Committee. Approval of the profile amounts to authorization to proceed with project appraisal.

3.8 The Vote shall be required to undertake a pre-feasibility study for each proposed project whose profile or framework is approved by the DC.

3.9 The objective of the pre-feasibility study shall be to identify and appraise the options or alternatives of available interventions that can be undertaken to achieve the project objectives.

3.10 Appraising options shall be at two levels. The first level of appraisal shall be to decide on whether the project objectives are best achieved through the traditional project approach or the Public Private Partnership approach. Level 2 option appraisal shall be on the basis of good practice and may arise out of variations in locations, technical specifications, environmental considerations, etc.

Pre-Investment Phase (Feasibility Study)

3.11 The Vote shall be required to undertake a detailed feasibility study for each proposed project whose pre-feasibility study is approved by the DC.

3.12 The pre-feasibility and feasibility studies undertaken by project Sponsoring Agencies shall, in line with international best practices, be presented in nine modules. The first five which are considered as —project building blocks‖ shall include:

i. **Demand module (including environmental factors).** Estimates, quantifies and justifies the demand

ii. **Technical or engineering module.** Determines and specifies in detail the technical parameters and investment and operational costs.

iii. **Environmental module.** Determines and specifies the economic effects of environmental norms and possible compensations for ecological damages.

iv. **Human resources and administrative support module.** Determines the human resource requirements for implementation and operation, in terms of quantities and competences; identifies the sources of the work force. Also it determines the management capacity and the organizational structure of the operating entity.

v. **Institutional and legal module.** Studies the legal restrictions that may obstruct or impede implementation or operation, for example, limitations in localization and in the use of soil, special tax considerations in the case of public–private partnerships, etc.

Guideline No.3 Project Identification, Preparation and Appraisal

The last four which are considered —analytic‖ modules shall include:

vi. Financial (or private) evaluation module. Determines the financial costs and benefits at market prices, studies alternative financial leverage methods.

vii. Economic or social evaluation module. Economic adjustments from financial data using conversion factors; after that, costs and benefits are appraised from the point of view of the entire economy.

viii. Distributional module. The project is appraised from the point of view of stakeholders receiving economic benefits or costs. Economic externalities have to be calculated and distributed among different actors (stakeholders)

ix. Risk (uncertainty) analysis module. The flow of costs and benefits throughout the project life is uncertain. Given that uncertainty, consideration has to be given to the costs that those risks imply. The objective of this module is to reduce the risk exposure through contractual clauses.

Integration of the Project Preparation and Appraisal process with the Budget Cycle

Project Proposal

3.13 The Vote shall be required to prepare a project proposal for each project whose feasibility study is approved by the DC.

3.14 The project proposal shall form part of the inventory of bankable projects stored in the integrated bank of projects or any other data base created by Government.

3.15 The inventory of bankable projects shall form a pool from which the Public Investment Plan and the development budget shall be developed.

3.16 The Development Committee shall issue a criterion for prioritizing bankable projects to be funded in the annual budget. Chapter 4

Chapter 4

Using the Logical Framework Approach to Prepare Projects

4A. Overview

4.1 Chapter three provided guidance on project preparation and appraisal with particular emphasis on (i) concept notes which demonstrate the relevance of new project ideas to the National Development Plan/Agenda (NDP) (ii) project profiles which are prepared with the objective of establishing the proposed project's results framework and (iii) the pre-feasibility study which is undertaken to identify and evaluate the various options that can be applied to achieve project objectives (iv) the feasibility study and (v) the project proposal.

4.2 The objective of this Chapter is to introduce the Logical Framework Approach (LFA) as a tool sponsors may use in developing, planning, managing, monitoring and evaluation of projects. The Logical framework is further supplemented with the principles of Theory of Change (ToC) as an alternative tool.

Logical Framework Approach (LFA).

4.3 Originally developed and applied in science, the LFA has since been adopted as a planning tool by a large number of development agencies. The Logical Frame Model has proven to be useful at all stages of the project cycle by enabling stakeholders to identify and analyze problems, and to define objectives and activities which should be undertaken to resolve these problems. At the identification stage of project cycle, the LFA helps to analyze the existing situation, investigate the relevance of the proposed project and identify potential objectives and strategies. At the pre-investment stage, the LFA supports the preparation of an appropriate project plan with clear objectives, measurable results, a risk management strategy and identification of all alternatives for achieving project objectives.

4.4 At the implementation stage, the LFA provides a key management tool to support contracting, operational work planning and monitoring. And, at the evaluation and audit stage, the Log-Frame Matrix provides a summary record of what was planned (objectives, indicators and key assumptions), and thus provides a basis for performance and impact assessment.

4.5 The LFA is undertaken in two phases namely:

i. **The analysis phase** during which the existing situation is analyzed to develop a vision of the 'future desired situation' and to select the strategies that will be applied to achieve it. The phase covers problem definition/ analysis, stakeholder analysis, objective analysis and strategy analysis.

ii. **The planning phase** during which the project idea will be developed in operational detail. It covers the development of the logical framework matrix, activity scheduling and resource scheduling.

4B. Analysis stage

Problem definition

4.6 A precise definition of a problem is the key to project planning, implementation and successful completion. A poorly defined problem will probably lead to difficulties with in setting project objectives.

4.7 The sponsoring agency must therefore first clearly identify the problem that gives rise to the idea of a given project. The sources of information that shed light on the problem should be identified; through reviewing the National Development Plan, Sector Investment Plans, reviewing existing studies, designing and using questionnaires and/or interviews with the relevant authorities or stakeholders. The problem must be framed as a negative state affecting a population, e.g.: "High rates of accidents on highways", instead of "lack of a solution" such as "Lack of road signs on a highway".

4.8 After defining and analyzing the problem, it is important to engage the stakeholders in conceptualizing the project.

B.2 Stakeholder analysis

4.9 Stakeholder analysis is an important activity in the process of problem analysis, objective setting and strategy selection. Stakeholder analysis involves the identification of key players in the analysis and planning stage of a project. The process also includes an assessment of each stakeholder's level of interest in the project and their ability or power to either positively or negatively influence the success of the project. It leads to the preparation of a stakeholder engagement plan in terms of the extent to which each stakeholder should be involved in the various stages of the project.

4.10 Preliminary stakeholder analysis is done in three steps:

i. Identify the stakeholders.

ii. Determine relative importance and influence of each of the stakeholders.

iii. Profile the stakeholders in terms of characteristics.

Stakeholder identification

4.11 The first step in stakeholder analysis is to establish who your stakeholders are. Stakeholders in this case are defined as any individuals, groups of people, organizations or firms that are affected by the project or may have a significant interest in the success or failure of a project (either as implementers, facilitators, beneficiaries, or adversaries), or have power or influence over it. For example, in analyzing the problem of "high roads accidents in Uganda", the relevant stakeholders could be identified to include 12 groups as summarized below:

i. Ministry of Works and Transport

ii. Uganda Roads Authority

iii. Uganda Road Fund

iv. Ministry of Finance Planning and Economic Development

v. Community

vi. Affected residents

vii. Development partners

viii. Uganda engineers association

ix. Local council

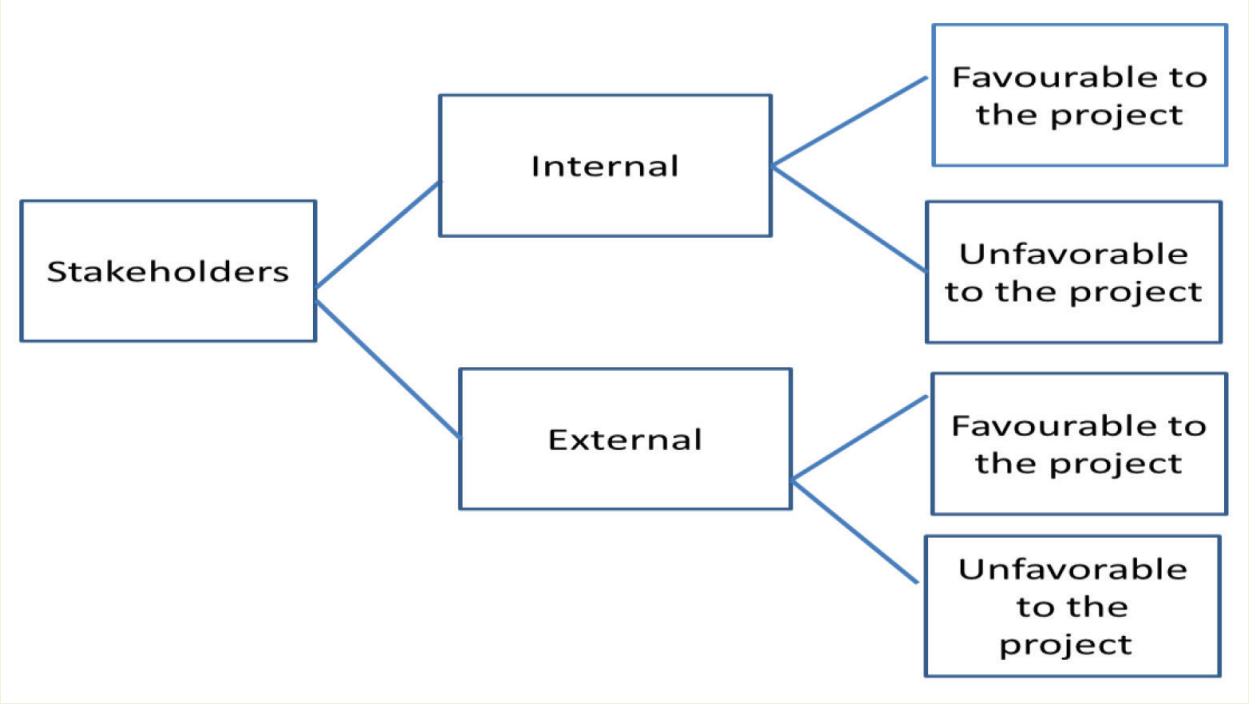
x. Construction companies

xi. Lenders

xii. Media, among others.

4.12 Stakeholders may be further disaggregated to establish whether they are partof the internal environment of the project sponsoring agency or fall within the external environment of the project and whether, they are in favor of or against the project. Figure 4.1 below illustrates the potential categorization stakeholders may relate to:

Figure 4.1: The scope of potential stake holders



Assessing Stakeholder level of Influence and interest

4.13 The identification of stakeholders should be followed by an assessment of each stakeholder's level of interest in the resolution of the problem at hand and their potential to influence the project.

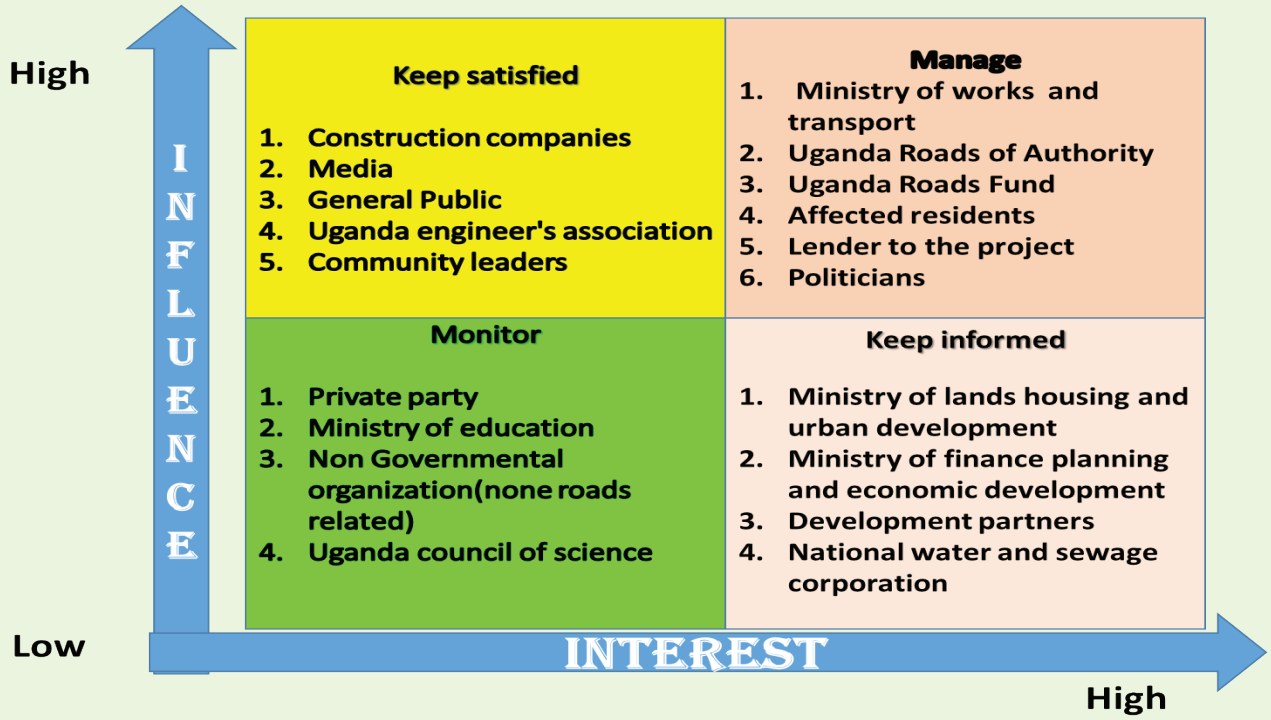
4.14 The assessment serves as a basis for determining the kind of engagement to be adopted for each stakeholder. Table 4.1 illustrates how stakeholders could be profiled depending on their interests and influence on the project and the possible levels of engagement that could be adopted.

Table 4.1: Preliminary Stakeholder analysis matrix

Source: Based on international Practice

4.15 Table 4.2 further illustrates the preliminary stakeholder analysis matrix in case of the road accidents example discussed in chapter three.

Table 4.2: Preliminary Stakeholder analysis matrix for a highway project



Source: Author's compilation

4.16 After ranking the stakeholders, the next step is to profile them in terms of their interest, capacity and motivation and to think of engagement activities that may be undertaken to ensure smooth project implementation and delivery.

4.17 Engagement with stakeholders can be achieved using a participation matrix that indicates who to involve and in which way in a process. The participation matrix provides for; who will do what particularly in implementation, who will be involved with information, advice or supervision. A tentative example of a participation matrix for the road project is summarized in Table 4.3 below:

Table 4.3: Participation matrix for a high way project

Phases/Stakeholders	Inform	Consult	Partner	Control
Phase 1:Identification	Roads Authorities, Ministry of Works	Affected residents, Local authorities, National Planning Authority, Ministry of Land, Housing and Urban Development	Ministry of Finance, Planning and Development, Development Partners, Lenders	Project team
Phase 2:Pre-investment	Roads Authorities	Development committee, Private consultation companies, Ministry of Works and Transport	Private party and Lenders	Project team
Phase 3: Implementation	Roads Authority, Private engineers	Local Council	Service providers and Financiers	Project team
Phase 4: Operation and Evaluation	Roads Authority, Private engineers	Lenders and financiers, Ministry of Finance Planning and Economic Development	Office of Prime Minister, National Planning Authority, Budget Monitoring unit	Project team

Source: Author's compilation

4C Problem Analysis

4.18 Problem analysis involves identifying stakeholders, their key problems, constraints and opportunities and determining 'cause and effect' relationships. Problem analysis identifies the negative aspects of an existing situation and establishes the 'cause and effect' relationships between the problems that exist. It involves three steps:

1. Identification of the stakeholders affected by the proposed project
2. Identification of the major problems faced by beneficiaries
3. Development of a problem tree to establish causes and effects

4.19 Once the problem to be addressed by the project has been defined and stakeholder analysis completed as described in section B.2 above, the next step is to embark on the process of identifying all the possible causes of the problem and the likely effects. This is done through constructing a problem tree. A problem tree is simply a representation of the problem, its causes and likely effects set out in a hierarchical order. The process involves two stages:

a. Construction of the causes tree

b. Construction of the effects tree

4.20 The steps of creating a problem tree are summarized below:

i. Start with the focal problem, defined as a negative statement.

ii. Identify all other problems associated with it as illustrated in figure 4.2. For example, if you identify the main problem as unemployment among the youth in the region, you may find connected problems such as: limited technical skills, low education levels, lack of self-confidence, gap between professional qualifications and current labour market needs, lack of work experience, escalation of social conflicts, etc.

Figure 4.2: Showing problems associated with focal problem

iii. Once you define all problems associated with the focal problem, you should carefully analyze each of them and determine the cause-effect relationship between them.

iv. Next step is to construct cause and effects trees.

v. Present the trees in a way where the causes are below and the effects are above.

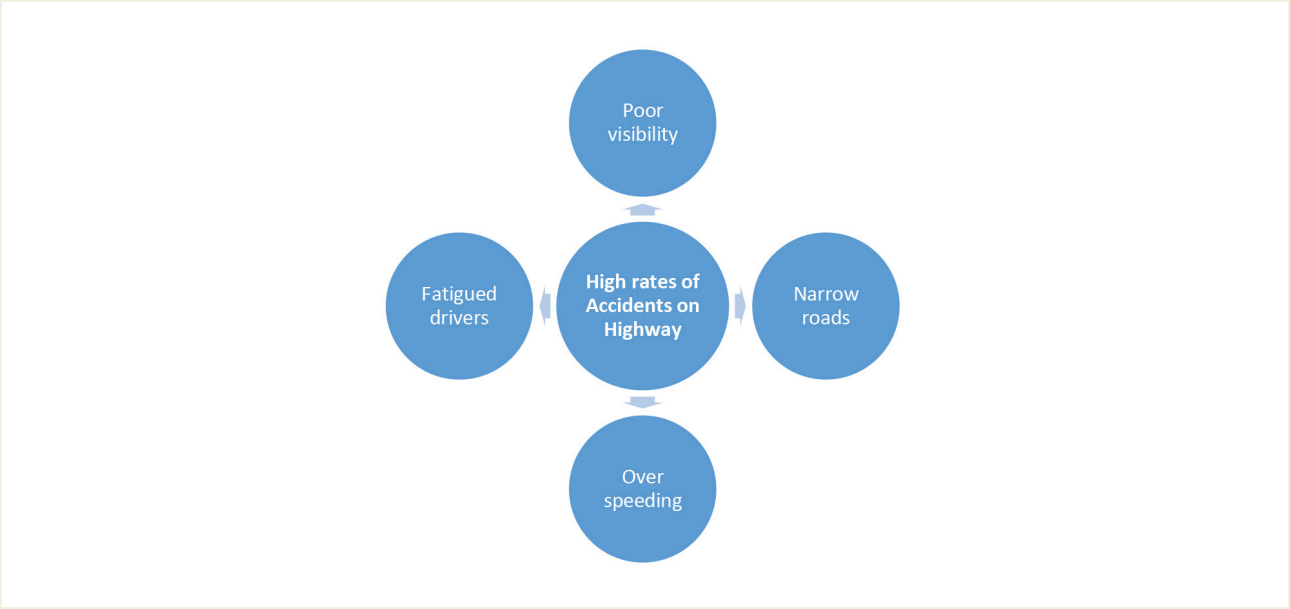
vi. Put the direct causes and effects on the same levels next to the focal problem.

vii. The indirect causes and effects are leveled below the direct causes-effect (level two).

4.21 The identification process has two parts: causes generated from the supply of the good or service and causes generated from its demand. For both types of causes, it is advisable to consider the causes associated with the conditions of vulnerability to a particular hazard. For example, the Ministry of Works and Transport has received a complaint from the public of continuous road accidents on highways because of narrow roads that have led to the loss of lives of loved ones. The public recommends that the roads are expanded to six lanes per highway. Then, the problem can be defined as “High road accidents on the highways in Uganda”.

4.22 Figure 4.3 illustrates the task of identifying problems associated with high rates of accidents on highways in Uganda as the focal problem.

Figure 4.3: Illustration of problems associated with the focal problem



Source: Author's compilation

Steps of constructing the cause tree

4.23 The cause tree which forms part of the problem tree is constructed through the following steps;

a. Define the central problem (trunk of the tree).

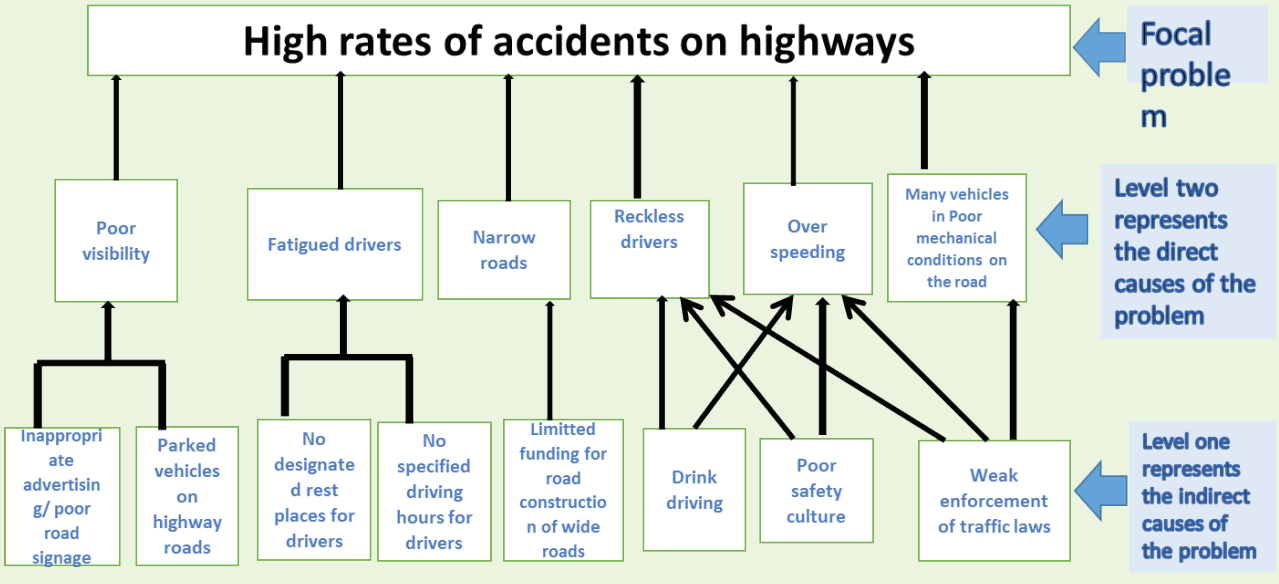
b. Undertake brainstorming sessions (interviews and discussions) with the key stakeholders involved with the problem, whether they caused it, or are affected by it, including institutional managers, authorities, partners, among others.

c. Identify the causes downwards (roots of the tree) that give rise to that central problem.

d. Establish the primary and independent causes of the root problems. In doing so, one asks: What is the problem and who is concerned with it? b) What is the scope of the problem? How big is the problem and how can it be solved?

4.24 From the study of the current situation discussions with various stakeholders and brainstorming, the various causes of the problem can be identified as illustrated in Figure 4.4 below.

Figure 4.4– The Causes Tree for high road accidents in Uganda



Source: Author's compilation

4.25 As shown in the figure 4.4, the immediate causes of the root problem are indicated in level two as the direct causes of the problem. These are generated by various other causes shown in the Level one. The number of levels should depend on the magnitude and scope of the problem. For example, one of the direct causes of high rate of road accidents on the highways is over speeding which is caused by weak enforcement of traffic laws on speed limits in addition to poor safety culture and drink driving.

Steps of building the Effects Tree

4.26 In order to build an effects tree, the project formulator must identify the effects, that is, the tree-top and branches, generated by the central problem (the tree trunk) on the target group. As in the case of the Causes tree, these effects shall be identified by the sponsoring agencies through a "brainstorming session", with the stakeholders. The steps are summarized below:

a. The central problem has been defined already (trunk of the tree), that is, High rates of accidents on the highways in Uganda.

b. Undertake brainstorming sessions with the key stakeholders to establish the effects of the problem. In that way, one is able to establish the persons/ organizations affected by the problem.

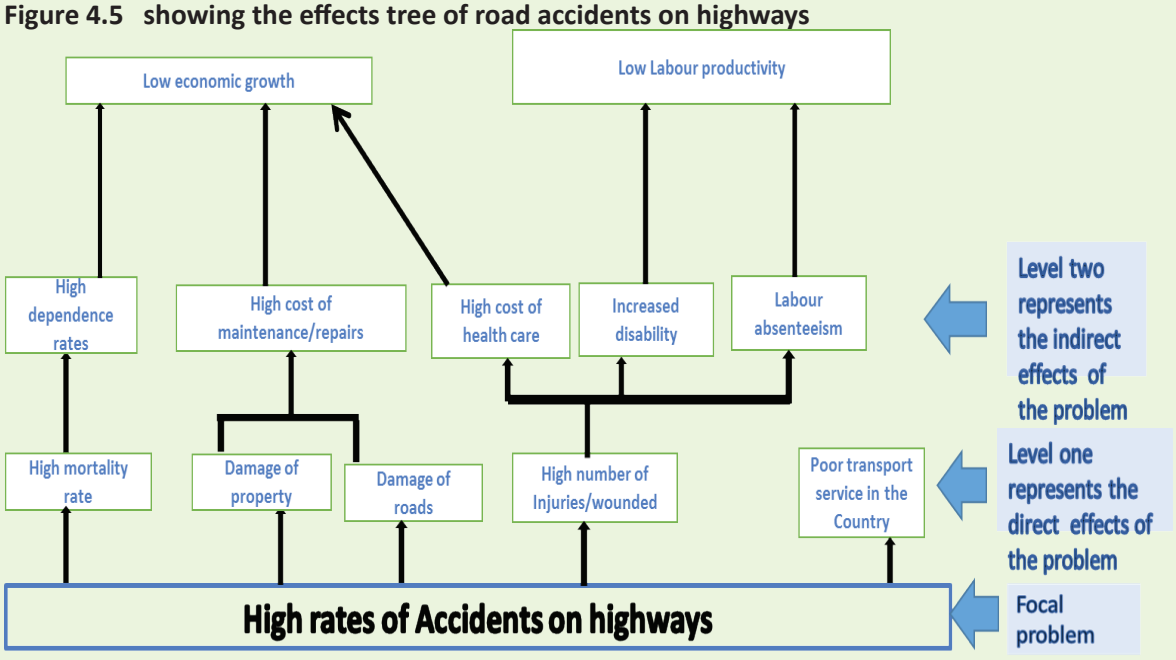
c. Rank the effects of the problem as primary (direct) and secondary (indirect).

d. The immediate/direct effects are placed above the trunk of the tree in level one whereas the secondary/ indirect are placed above the direct effects in level two.

4.27 Identifying the effects clarifies on what the outcomes will be, once the problem is solved. For example, High rates of accidents on highways in Uganda will lead to a high number of injured persons which, in turn, may lead to increased disability and labour absenteeism thus lowering labour productivity.

4.28 Choosing the right solution allows for remedial action on the effects identified (see Figure 4.5- effects tree) below:

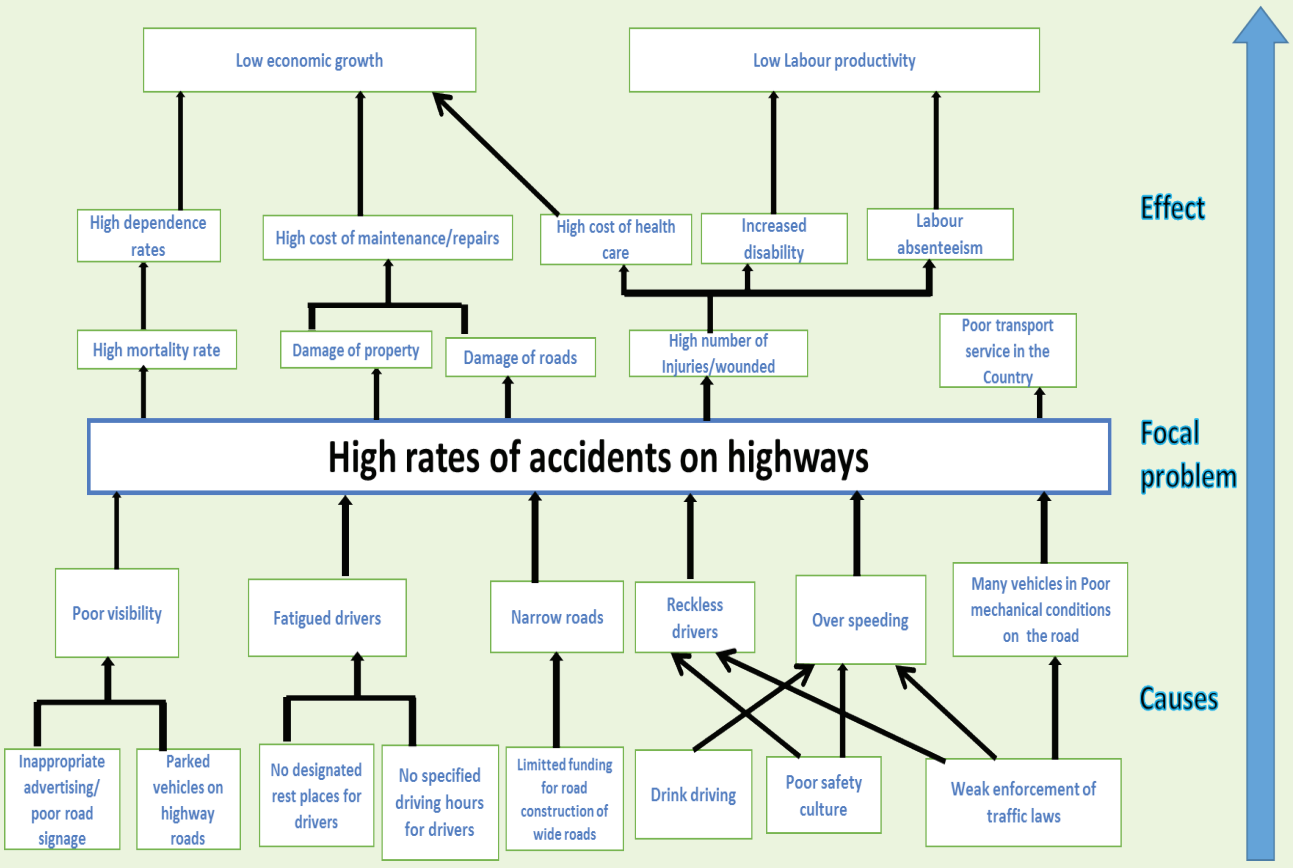
Figure 4.5 showing the effects tree of road accidents on highways



Source: Author's compilation (MoFPED)

4.29 Integrating the causes and effects trees leads to the complete problem tree as illustrated in figure 4.6. Always cross-check the Problem Tree to ensure that there is vertical logic to understand the problem (bottom-up check).

Figure 4.6 showing the integrated cause (Problem) and effects tree



Source: Author's compilation

4D Analysis of objectives

4.30 When the stakeholders have identified the problems that the project seeks to eliminate, the next stage will be to develop an objective tree which serves as the basis for establishing the results chain of the project. While problem analysis presents the negative aspects of an existing situation, analysis of objectives presents the positive aspects of a desired future situation. This involves the reformulation of problems into objectives.

4.31 The objective tree can therefore be conceptualized as the positive mirror image of the problem tree, and the 'cause and effect' relationships become 'means to end' relationships.

Steps in constructing an objective tree

4.32 Objective analysis involves the following steps

a. Reformulate all negative situations of the problems analysis into positive situations that are desirable and realistically achievable.

b. All the causes in the problem tree are transformed into positives thus establishing the objectives of the project.

c. The effects in the effects tree are transformed into purposes and ends.

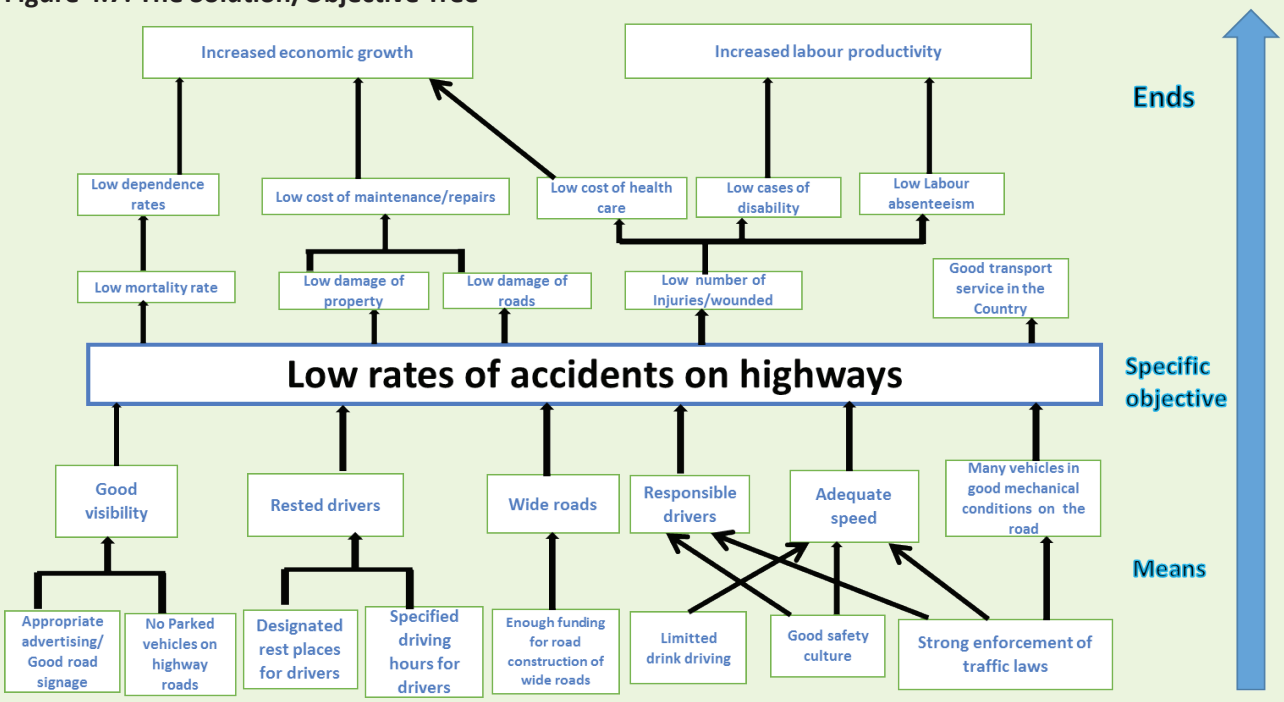
d. Check the means-ends relationships to ensure validity and completeness of the hierarchy (cause-effect relationships are turned into means-ends linkages).

e. Work from the bottom upwards to ensure that cause-effect relationships have become means-ends relationships.

f. The defined root is transformed positively into the overall goal that the project must accomplish. Draw connecting lines to indicate the means-ends relationships as illustrated in Figure 4.7.

Caution: It may be found that there are gaps in the logic of the initial objective tree that were not apparent in the problem tree, therefore the 'means-ends' linkages between objectives should be reviewed and reorganised as necessary. If necessary, revise statements, add new objectives if these seem to be relevant and necessary to achieve the objective at the next higher level or delete objectives that do not seem suitable or necessary.

Figure 4.7: The Solution/Objective Tree



Source: Author's compilation

4E. Analysis of the strategies/ alternatives

4.33 The final stage of the analysis phase involves the selection of the strategy(ies) which will be used to achieve the desired objectives. Strategy analysis involves deciding on what objectives will be included IN the project, what objectives will remain OUT, and what the project purpose and overall objectives will be. In addition to examining the logic, strategy analysis also looks at the feasibility of different interventions.

4.34 After developing the solution/objective tree, the vote needs to identify, assess and then choose the viable project strategy.

4.35 Out of these possible strategies of intervention, the most pertinent and feasible one is selected on the basis of a number of criteria including relevance, likelihood of success, and resource availability, sustainability, among others.
This analysis of alternatives is very challenging since it involves synthesizing a significant amount of information and making judgment about the best implementation strategy (or strategies) to pursue. Depending on the scope and amount of work entailed, the selected clusters or strategy may form a 'project-sized' intervention, or a programme consisting of a number of projects.

4.36 However, a number of compromises often have to be made to balance different stakeholder interests, political demands and practical constraints such as the likely resource availability. Nevertheless, the task is made easier if there is an agreed upon set of criteria against which to assess the merits of

different intervention options.

Possible key criteria for strategy selection could be:

a. **Strategic:** Expected contribution to key policy objectives (e.g. such as poverty reduction or economic integration, complementarily with other on-going or planned programmes or projects.

b. **Social/distributional:** Distribution of costs and benefits to target groups, including gender issues, socio-cultural constraints, local involvement and motivation, etc.

c. **Financial:** Capital and operating cost implications, financial sustainability and local ability to meet recurrent costs, foreign ex-change needs, etc.

d. **Economic:** Economic return, cost-benefit, cost effectiveness, etc.

e. **Institutional:** Contribution to institutional capacity building, Capacity and capability to absorb technical assistance.

f. **Technical:** Feasibility appropriateness, use of local resources, market suitability, etc.

g. **Environmental:** Environmental impact, environmental costs vs. benefits.

4.37 These criteria should be considered in relation to the alternative options and roughly assessed, e.g. high/low; positive/negative; extensive/limited. Using these criteria will help to determine what should/can be included within the scope of the project, and what should/cannot be included.

4.38 Those objectives which fall under the strategy of intervention are selected to elaborate the hierarchy of objectives in the first column of the Log frame matrix. Objectives at the top of the objective tree are translated into the overall goal, while those objectives further down the tree need to be converted into outcome statements and then results/outputs. In order to conduct analysis of strategies/alternative options, one can follow the following steps.

a. **Identify differing "means-ends" ladders, as possible alternative options or project components**

b. Eliminate objectives which are obviously not desirable or achievable.

c. Eliminate objectives which are pursued by other projects in the area.

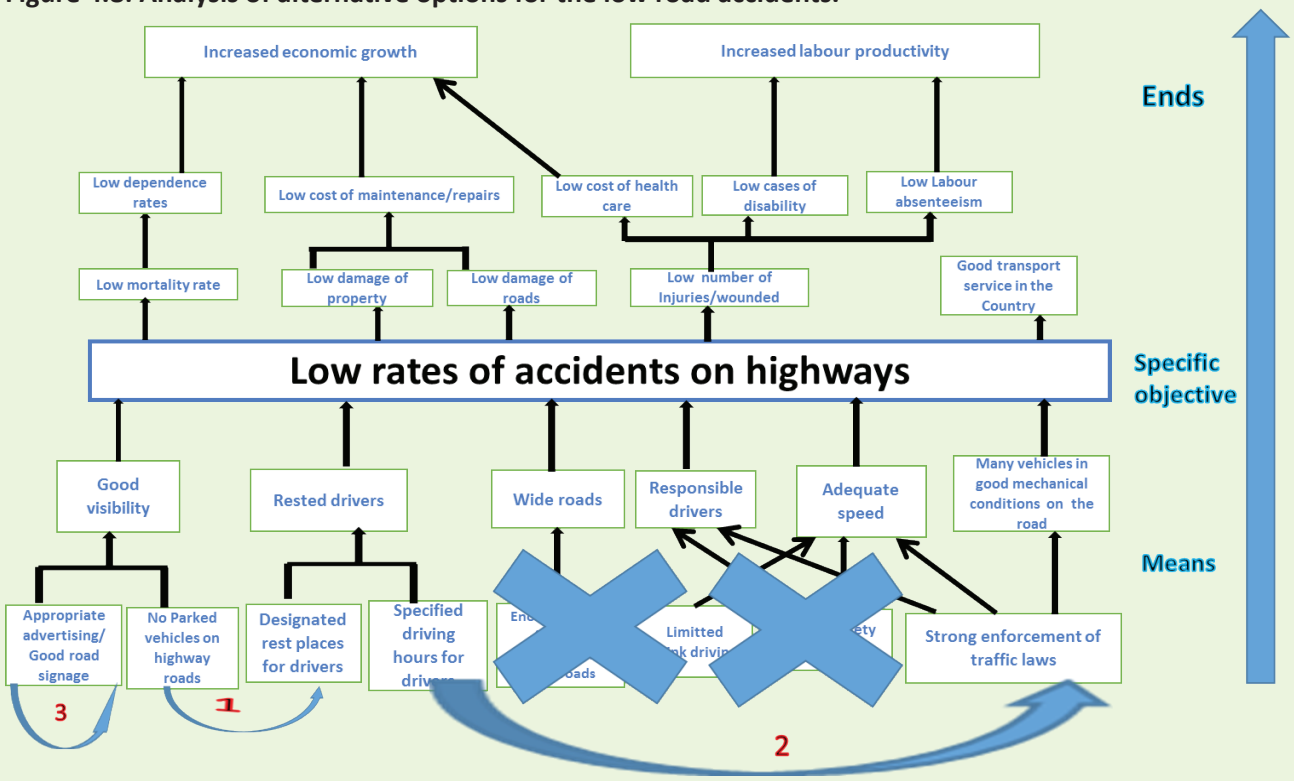
d. Discuss the implications for affected groups.

e. Make an assessment of the feasibility of the different alternatives.

f. Select one of the alternatives as the project strategy.

4.39 The figure 4.8 below shows the road accidents example where some objectives have been eliminated to come up with one project proposal with different components. If agreement cannot be directly reached, then: Introduce additional criteria, or; Alter the most promising option by including or subtracting elements from the objectives tree.

Figure 4.8: Analysis of alternative options for the low road accidents.



Source: Author's compilation

4.40 The alternatives have been grouped into three strategies to formulate a full project proposal for low rates of accident on Ugandan highway:

a. **Construction of designated Road Side Stations (RSSs) to provide rest places for drivers and reduce on driving hours. This will reduce on the n**umber of fatigued drivers on the highway.

b. **Strong enforcement of traffic laws and regulations.** This will cater for adequate speeding, Vehicles in good mechanical condition on the road and responsible drivers on the road.

c. **Installation of appropriate road signage and designated stops along highways.** This will improve visibility on the roads.

4.41 The strategy analysis will give you answers to the following questions:

a. What problems / objectives will be addressed?

b. What combination of expected results has higher probability of achievement and leads to sustainable benefits?

c. What variant is more efficient and economically effective?

d. How does the project build over other past and current actions in this area?

e. Are added values and/or synergy possible?

4.42 Once a strategy is chosen, one should finalize the stakeholder analysis: information on each stakeholder should be inserted into the table and careful analysis done on their attitudes towards the project.

4.43 Think whether any activities to address stakeholders' interests should be taken into account to ensure smooth implementation of your project and keep accurate records of the stakeholders' analysis for further project planning. All alternative strategies identified but not chosen should be kept for further development.

4F Logical Framework Matrix

4.44 The Logical Framework Matrix **is a useful tool to display and organize the project idea.** The LFM consists of a table, or matrix, which has four columns and four rows. The vertical logic identifies what the project intends to do and how it will achieve it, clarifies the causal relationships and specifies the important assumptions, and how the inputs and outputs of the project will be monitored and evaluated. The horizontal logic relates to the measurement of the effects of, and resources used by, the project through the specification of key indicators of measurement, and the means by which the measurement will be verified.

4.45 The Matrix summarizes a selected aspect of an activity design, namely:

a. The activity's hierarchy of objectives including the goal (overall objective), outcomes, outputs and activities (also Activity Description).

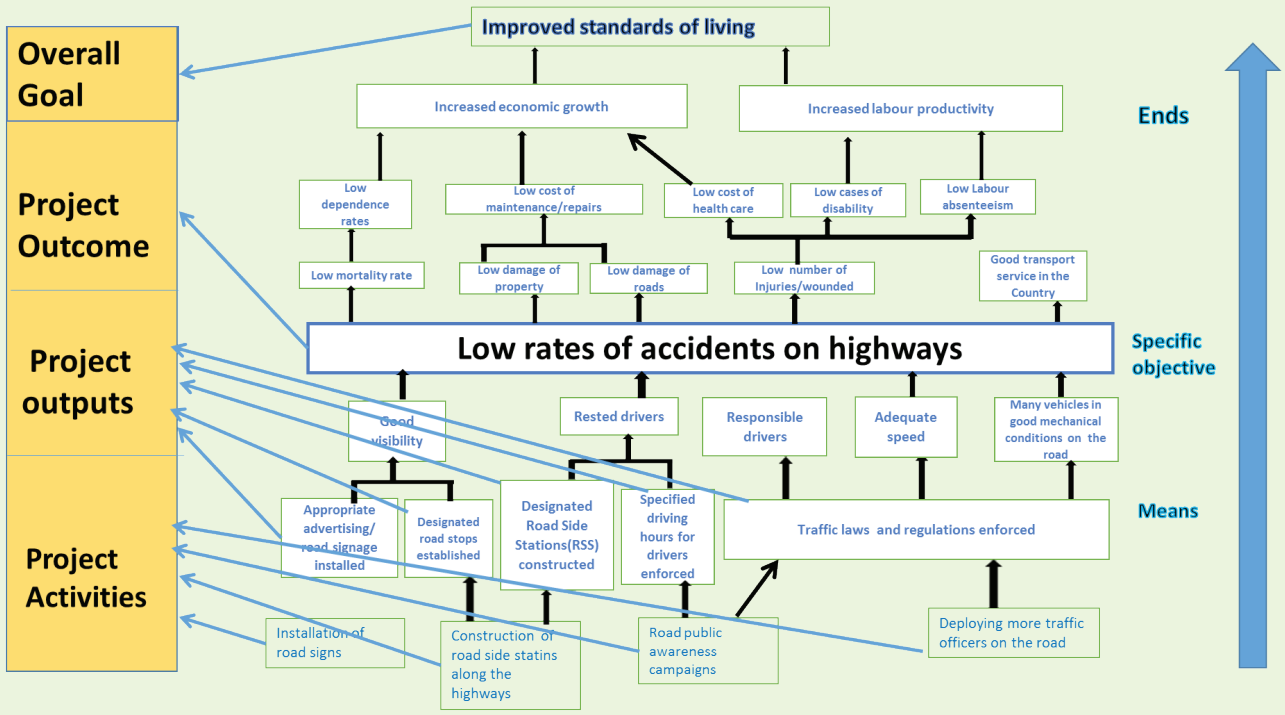
b. Indicators including their description, baseline and the target

c. How achievements will be measured, monitored and evaluated (Indicators and Means of Verification).

d. The key assumptions that are being made in line of the project (Assumptions).

4.46 The completion of the Matrix will be guided by the selected strategy, where the higher level ends (top section of solution tree) will form the goal, the outcome (center) will transfer across, and the outputs and activities will be based on the means (bottom section) to achieve the purpose, (See Figure 4.9: objective tree).

Figure 4.9: Objective tree



4.47 In order to transpose the objective tree into the LFM as illustrated in table 4.4, there is need to adjust and refine the statements to ensure that the means-ends logic is adhered to. It is possible that the objective tree may require more than one project to implement and in that case each project may require a separate LFM.

Table 4.4: Standard Result Based Log frame Matrix and Definition of Terminology

Hierarchy of Objectives	Indicators	Baseline	Target	Means of verification or source	Assumptions (External factors)
<u>The Project Goal</u> What is the overall development objective that the project will contribute to? <u>Definition:</u> Project importance to society in terms of the long-term benefits which are not achieved by the project alone. <u>Scope of project management</u> The project will partially achieve the overall objective	What indicators are linked to the overall problem? <u>Definition</u>: Measures the extent to which a contribution to the overall objective has been made. Features which can be measured or at least described. Precisely in terms of quantity and quality respectively and which shows a change in situation. However, its often not appropriate for the project itself to try and collect this information	What is the existing situation linked to the overall problem?	What will be achieved in line with the project objective after the project?	What are information sources for these indicators in column two?	Not required for overall objectives

Hierarchy of Objectives	Indicators	Baseline	Target	Means of verification or source	Assumptions (External factors)
Project Outcomes What is the purpose of project to be realized by the project? Definition Central specific objective(s) of the project in terms of sustainable benefits to be delivered to the beneficiaries. Project purpose describes intended situations at the end of the project. Scope of project management The attainment of the purpose is primarily dependent on project's results (outputs), but depends also on factors beyond the project's control. Hint: projects or programs should have one outcome/ purpose.	Indicators showing the extent to which project purpose has been achieved. Definition Conditions at the end of the project indicating that the purpose has been achieved. NB: Include appropriate details of quantity and time. This helps understand whether the purpose has been achieved. Purpose indicators are commonly used for project reviews and evaluations.	How is the existing status linked to the overall outcome of the project? Indicate in percentages or numbers.	What will be achieved in line with the project outcome after the project? Indicate in percentages or numbers.	What are information sources for these indicators (Mentioned above)?	Factor and conditions not under direct project control, but necessary to achieve the overall project objective? Hint: To ensure proper vertical, logic, it is essential to attribute assumptions to the corresponding level of intervention (in this box assumptions at purpose level which are relevant for achieving the overall objective and need to be stated)

Hierarchy of Objectives	Indicators	Baseline	Target	Means of verification or source	Assumptions (External factors)
Outputs (Results) What are concrete visible results to contribute to realization of project purpose? What changes and improvements will be achieved by the project? Definition Tangible products and services delivered or competencies and capacities established. Directly as a result of project activities by the completion date. Scope of project management Results are under the control / responsibility of project management. Hint: For clarity, a minimum of one result statement for each corresponding project component is recommended.	What are the indicators showing whether expected results have been achieved? Definition Measures of the quantity and quality of results. Result indicators are predominantly used.	Indicate using numbers or percentages the current physical existence of the outputs.	Indicate using numbers or percentages the forecasted achievements in regard to Physical existence of the outputs after the project duration.	What are the information sources for these indicators? (Mentioned above)	Factors and conditions not under direct project control, but necessary to achieve the project purpose? Hint: Formulate assumptions at result level which are relevant for achieving the project's purpose(s)

Hierarchy of Objectives	Indicators	Baseline	Target	Means of verification or source	Assumptions (External factors)
Activities What activities are required and in what order to achieve the expected outputs? Definition Specific tasks (work programs) to be undertaken during the project's lifetime in order to obtain outputs. (Sometimes optional within the matrix itself).	Means What resources are required for implementation of listed activities? (by the type of PRAG contract). Sometimes a summary of resources/ means is provided. Indicate what are the inputs required, main resources to be applied e.g. technical assistance, personal, equipment, training, studies, supplies, etc.	Not required for Activities.	Not required for Activities.	Costs What are the costs of each of the means? Sometimes as a summary of costs and budget is to be provided. What are the means/ actions costs, breakdown of the budget?	Factors and conditions not under direct project control, but necessary for outputs to be achieved as planned? Hint: formulate assumptions at activity/ input level which are relevant for achieving project outputs. Precondition What pre-requisites must be fulfilled for project implementation?

Source: European Union Guide to Logical framework

Project description

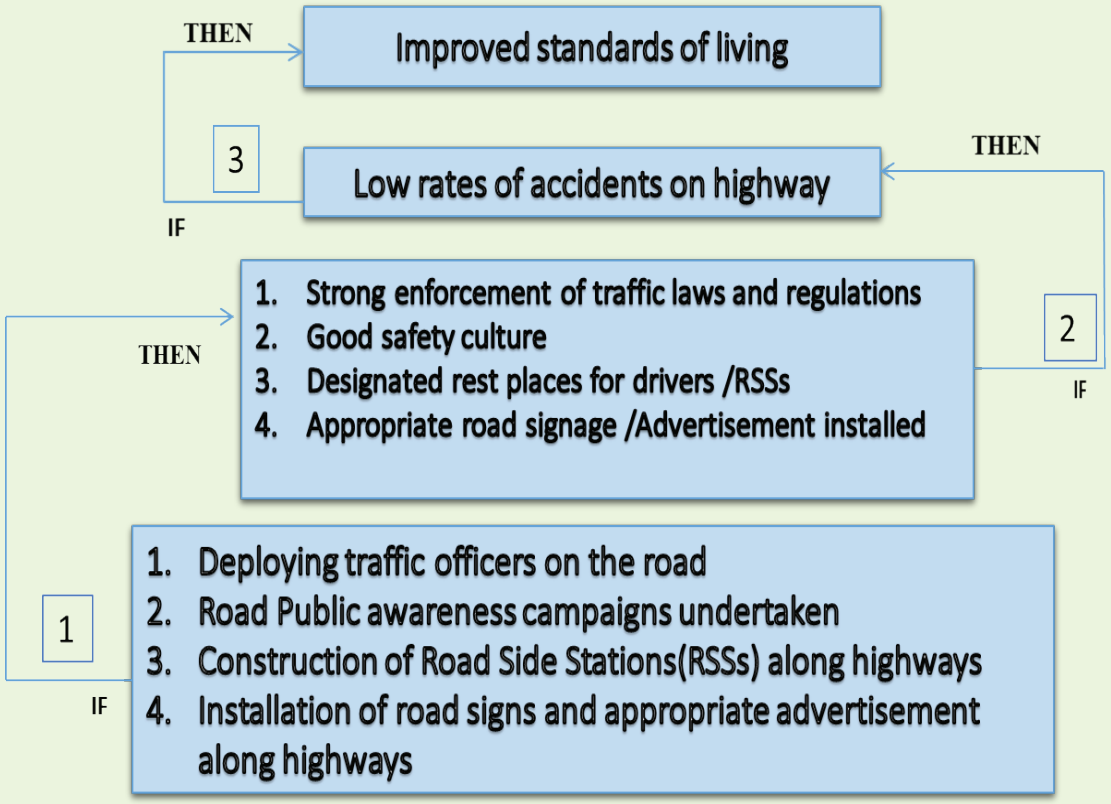
4.48 The project description outlines the logic of the project as illustrated in Figure 4.10. This is also known as the vertical logic. It shows a bottom-up approach on how project objectives will be achieved. For example, to produce outputs, one must carry out all the activities specified, each output is necessary in order to achieve the project outcome, and in fulfilling the outcome the project will contribute to achieving the Goal.

Figure 4.10: The project description logic

4.49 The horizontal logic of the Log framework is constituted by the narrative summary of each goal, the indicators, means of verification and assumptions. There are general rules to follow in writing the statements in the project description within the column.

4.50 Inputs are generally not included in the project description column but are sometimes included adjacent to the activities (in the indicator column) and a high level summary of the budget may then be included in the sources of verification column. From the objective tree, one can formulate the project description as illustrated in Figure.4.11.

Figure 4.11 The project description logic of high road accidents in Uganda



4.51 Table 4.5 below shows the structure of the LFM for low rates of road accidents on highways in Uganda. In developing a Log Frame Matrix, the following points need to be considered:

i. The Matrix should provide a summary of the project design, and its length will be dictated by the project's complexity. It should generally be between one and four pages in length.

ii. If the Log Frame is too long, the project may not be focused enough. If the Log Frame is too short, it may be missing parts.

iii. The Matrix should only describe the main, or indicative, activities. The detailed activities should be documented separately in an activity schedule.

"If you can still ask 'how?' questions and not find the answer in the draft Log Frame (with the accompanying draft work plan showing activities), then it is not complete."

Table 4.5: Result Based Logical Framework for Low Rates of Accidents on Highway in Uganda

Hierachy of Objectives	Indicators	Baseline	Target	Means of Verification or Source	Assumptions (External Factors)
<u>The Project Goal</u> To contribute to improved standards of living by reducing road accident related effects	Population below poverty reduced by 10%.	19.7% in 2016	Poverty levels of 9.7% in 2020	Poverty status report	Not required for overall objectives
	Improved Gross Domestic Product (GDP) by 2%	5.8% GDP growth rate in 2016	GDP growth rate of 6.0% by 2020	NDP report of 2020	
<u>Project Outcomes</u> Reduced rates of accident, injury and death to road users	Reduced number of road accidents on highways reported in Uganda.	18,686 accidents recorded in 2014.	Reduce road crashes by 15% by 2020 to approximately 15,883.	Police reports on road accidents in Uganda.	• Continued political and economic stability in Uganda • There is a sustained positive change in the behavior of road users
	Reduced number of patients admitted to hospital as a result of a road accident.	17,848 patients recorded in 2014.	Reduce the number by 15% (to 15,171) by the year 2020	Hospital/Clinic admission statistics.	• Emergency hospitals are well equipped and easily accessible

Hierachy of Objectives	Indicators	Baseline	Target	Means of Verification or Source	Assumptions (External Factors)
<u>Outputs /Results</u> 1. Traffic laws and regulations enforced.	Increased % of traffic offenders reported.	188,792 traffic offenders registered in 2014.	Number of traffic offenders apprehended to increase by 40% to 264,309 by 2020	Police reports on road accidents in Uganda.	• Traffic officers are willing to report traffic offenses. • The Public does not resist the enforcement of the traffic laws and regulations. • The implementing agencies maintains the RSS and road signs in good condition • Motorists make use of the RSSs • The road signs are not stolen or mishandled by the Public.
	Increased number of random motor vehicle inspections along highways.	7,919 random vehicle inspections undertaken in 2014.	Increase the number of random motor vehicle inspection by 25% to 9,899 in 2020.	Police reports on vehicle inpections	
2. Designated Road Site Stations (RSSs) constructed on all highways in Uganda.	Increased number of RSSs on Highways.	Zero RSSs existing on highways. The ones in place are not functional	At least 10 RSSs are constructed along highways per year until 2020.	BMAU reports on Road sector. MoWT/UNRA performance reports.	
3. Appropriate road signs installed and road marking on highways.	Increased number of signage and road marking on highways.	50% of highways have appropriate road signage in 2016	Increase proportion of highways with appropriate road signage to 100% by 2020	MoWT/UNRA performance reports.	

Hierachy of Objectives	Indicators	Baseline	Target	Means of Verification or Source	Assumptions (External Factors)
Activities 1.1. Deploy more traffic officers on the highways. 1.2. Undertake road Public awareness campaigns. 1.1 Contractor for the construction of Road Site Stations (RSSs) along highways procured. 1.2 Designs for designated stop/parking places along highways acquired. 3.1 Contractor to install road signs procured	**Annualized costed work plan**				• The traffic officers are equipped with the tools to detect traffic offenders • The Public is willing to attend the road safety talks/seminars. • Resources for are availed in time and the contractors are effective in implementing the project. • Land is acquired to construct the RSSs. • Resources to procure materials for the road signs are availed in time.

No.	Activities	FY16/17(Mn shs) FY17	FY17/18(Mn shs)	FY18/19(Mn shs)	FY19/20(Mn shs)
1	Deploy more traffic officers on the highways	**10**	**15**	**5**	**3**
2	Undertake road Public awareness campaigns	**3**	**5**	**5**	**4**
3	Construction of Road Site Stations(RSSs) along highways	**300**	**350**	**300**	**350**
4	Establish designated stop/parking places along highways	**15**	**20**	**10**	**10**
5	Installation of road signs and marking of roads on highways.	**30**	**35**	**35**	**35**
	Total project cost	**358**	**425**	**355**	**402**

Sequence of Log framework completion and content

4.52 The preparation of a Log frame matrix is an iterative process, not just a linear set of steps. As new parts of the matrix are drafted, information previously assembled needs to be reviewed and, if required, revised. Nevertheless, there is a general sequence to completing the matrix, which starts with the project description and logic of intervention (top down), and the assumptions (bottom-up). These are followed by the indicators and then sources of verification (working across). The sequence of completion as illustrated in table 4.6 below:

Table 4.6 Sequence to complete the matrix

Logic of Intervention	Objectively Verifiable Indicators	Source of Verification	Assumptions
Goal (1)	(9)	(10)	(8)
Outcomes (2)	(11)	(12)	(7)
Outputs (3)	(13)	(14)	(6)
Activities (4)	Cost(15)		(5)

Source: Based in international best practices

First Column: The Intervention Logic

4.53 The intervention logic of the Log frame matrix identifies what the project intends to do (strategy of intervention) and shows the causal relationship between the different levels of the objectives. This logic is tested and refined by the analysis of assumptions in the fourth column of the matrix in table 4.6.

Define the development Goal to which your project contributes

4.54 As defined in Chapter 3, the overall goal is the broader development objective to which the project contributes at a national or sectoral level. It usually relates to a programme or a sector. Very often a group of projects will share a common overall goal statement.

4.55 Since the overall goal describes the anticipated long term objective towards which the project will contribute), it is to be expressed as **"To contribute to……" or "To improve……."** Statements should be kept as clear and concise as possible. If necessary, rephrase the wording from the objectives tree to make them more accurate.

4.56 For example, if the problem being addressed is "high rates of accidents on highways", the interventions to address this problem would seek to address an overall goal which is "To contribute to improved standards of living".

Define the outcomes to be achieved by the project

4.57 As defined in chapter 3, a project outcome is the immediate impacts on the direct beneficiaries of the project.. It is to be expressed in terms of benefits to the target group being 'Increased/Improved, etc. For example, in order to achieve the above overall goal, the following outcomes have to be realized; Low mortality rates, low cases of disability, good transport services in the country, low cost of health care, among others.

Define the outputs whose utilization result into outcomes

4.58 In line with the guidance offered in chapter 3, the outputs for the case study of "high rates of road accidents in Uganda" can be defined as tangible results that the project team must deliver. They include:

i. Traffic laws and regulations enforced,

ii. Designated road site stations constructed,

iii. Appropriate road signs installed, and

iv. Road markings undertaken.

4.59 The above outputs are the targets of the project team which, with available resources, is directly accountable for achieving these results unlike the outcome and goal that are outside its control. The outputs must be achieved in order to attain the above mentioned outcome.

Define the activities which will lead to outputs

4.60 In line with the definition adopted in chapter 3, the activities, for achieving each output, define how the team will carry out the project. Generally, the aim is to provide an indicative list of tasks that must be undertaken in order to deliver the envisaged output(s), The planner should avail just enough detail to outline the strategy for accomplishing each activity, and to provide the basis for a work breakdown analysis or more elaborate Activity Chart, Bar Chart, or Gantt chart. As such, therefore, the identified activities are the most appropriate to the problem setting in terms of institutional set up, resource envelop, or otherwise.

4.61 In relation to our case study, the envisaged activities would be:

i. Deployment of more traffic officers on the highways
ii. Undertaking road public awareness campaigns
iii. Procurement of the Contractor for the Road site Stations (RSSs) along Highways
iv. Developing designs for designated stop/parking places along Highways
v. Procurement of the contractors to install road signs and mark roads on Highways

Note: It is recommended that each activity should be numbered relating it to its corresponding output(s).

Table 4.7: Formulating the intervention logic column

No	Objective hierarchy	Example of how to write statements
1	Project Goal	To contribute to improved standards of living by reducing road accident related effects that push people into poverty or make escape from poverty difficult
2	Outcomes	Reduced rates of accident, injury and death to road users on Ugandan high ways
3	Outputs	i. Traffic laws and regulations enforced. ii. Designated Road Site Stations (RSSs) on all highways in Uganda. iii. Appropriate road signs installed and road marked on highways.
4	Activities (may not be included in the matrix itself but rather presented in an activity schedule format).	1.1 Deploy more traffic officers on the highways 1.2 Undertake road Public awareness campaigns 2.1 Procure Contractor to construct Road Site Stations(RSSs) along highways 2.2 Develop designs for designated stop/parking places along highways. 3.1 Procure Contractor for Installation of road signs and marking of roads on highways.

Source: Author's compilation

4.62 Identifying and agreeing on what might be useful/appropriate components to include in the project should be based on the objectives and strategy analysis, consultation with key stakeholders, and consideration of 'what makes sense' from a management perspective.

Assumptions

4.63 In line with the guidance in chapter 3, assumptions are defined as the key factors outside the direct control of the project team, which must hold true if the project is to achieve its intended results (outcomes and outputs). It should be noted that there are no assumptions for the goal and thus the assumptions column is left blank.

4.64 In regard to our example on high road accidents on highways in Uganda, the underlying assumptions for outcomes to have an impact on the project goal will be:

i. Continued political and economic stability in Uganda

ii. There is a sustained positive change in the behavior of road users

iii. Emergency hospitals are well equipped and easily accessible

4.65 The underlying assumptions for the outputs to impact on the project outcome of reduced rates of accident, injury and death to road users on Ugandan high ways are:

i. Traffic officers are willing to report traffic offenses.

ii. The Public does not resist the enforcement of the traffic laws and regulations.

iii. The implementing agencies maintains the RSS and road signs in good condition

iv. Motorists make use of the RSSs

v. The road signs are not stolen or mishandled by the Public.

4.66 The underlying assumptions for the project activities to lead to the desired outputs are:

i. The traffic officers are equipped with the tools to detect traffic offenders

ii. The Public is willing to attend the road safety talks/seminars.

iii. Resources for are availed in time and the contractors are effective in implementing the project.

iv. Land is acquired to construct the RSSs.

4.67 Some assumptions will be critical to project success while others may be of marginal importance. The main issue is to assemble and analyze all the information from various sources; including the different viewpoints of different stakeholders (e.g. what is considered a key assumption to one group may not be so important to others). There is no set formula for doing this, and some degree of subjectivity is involved.

4.68 The assumptions made in the fourth column of the log frame matrix are a good starting point for the identification, assessment and management of risks that may undermine the achievement of the objectives of the project.

4.69 As illustrated in tables 4.7 and 4.8, a risk matrix can be used to guide, which assumptions need to be included in the log frame. This requires turning assumptions into risks by including those that can be managed into the matrix while excluding those that pose little risk (i.e. those that have a low impact and low probability of occurring).

Table 4.8: Risk matrix and the assumptions

Assumption	Risk	Impact if risk occurs.	Likelihood of the risk occurring	Action to take
Relevant staff able to attend training	Relevant staff are unable to attend training	High - The project will not succeed unless relevant staff attend training	Low, - Stakeholder analysis identified high level of management support for the training. They will release staff from duties to attend training.	 What action should you take?

Source: Based on international best practices

Figure 4.9: Risk matrix for the Road accident

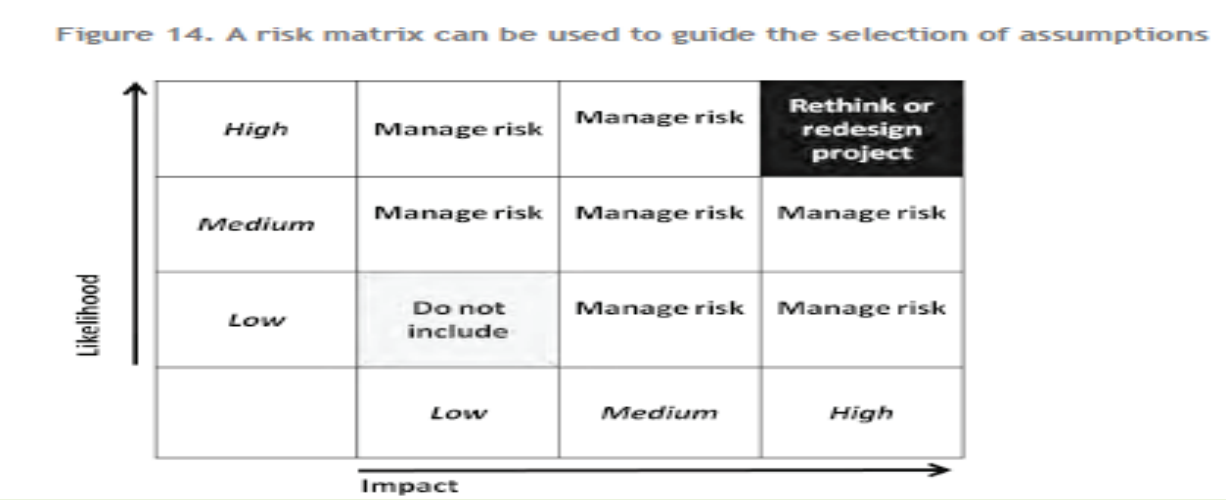
Assumption	Risk	Impact if risk occurs	Likelihood of the risk occurring	Action to take
Land is secured to construct the designated Road Site Stations (RSSs).	Land is not secured to construct the designated RSSs.	High- The project will not be completed unless the designated RSSs places are constructed.	Medium- The resettlement action plan requires resources before the project commences. In that regard UNRA requires to secure the land during project preparation.	Secure land for designated rest places after feasibility study is approved.
Traffic officers knowledgeable of traffic laws are deployed at Highways.	Un knowledgeable officers are deployed on highways.	High- The project will not succeed unless knowledgeable traffic officers are deployed on highways.	Low- Stakeholder analysis identified high level of Police to improve the safety of citizens on highways. Therefore police will deploy traffic officers who know the law.	Train traffic officers about the traffic laws and regulations before deployment.

Source: Author's compilation

4.70 Note that risks that have a high likelihood of occurring and have a high impact, should lead to the project being redesigned, as these are likely to impact the project's success. Assumptions have to be carefully specified and worded to allow continuous monitoring.

4.71 As illustrated in figure 4.12 below, for the Low-low risks on the project, do not include them in the project document, However, the project team needs to manage all other risks except those risks that have high likelihood to occur and high impact on the project. For the latter, rethink or redesign the project.

Figure 4.12: Risk matrix and the assumptions



Source: Based on international best practices

4.72 The subject of project risk management is extensively discussed in chapter 5 as part of the process of undertaking an Integrated Project Appraisal

Indicators

4.73 As already discussed in Chapter 3, the indicators include information necessary to track the project and assess the achievement of the objectives at the level of Goal, Outcomes, Output and activities. They, therefore, provide a means to assess the project's success. This is especially important for the impact and goal, as various stakeholders may interpret these differently.

4.74 In the example of 'low rates of accidents on highways', the indicators at goal level may be:

i. Population below poverty reduced by 10%.

ii. Improved Gross Domestic Product (GDP) by 2%

4.75 At the Outcome level, the indicators are summarized below:

i. Reduce road fatalities at 18,686 in 2014

ii. Reduce the number at 17,848 in 2014

4.76 Whereas at the output level, the indicators corresponding to the outputs are:

i. Increased % of traffic offenders reported.

ii. Increased number of random motor vehicle inspections along highways

iii. Increased number of RSSs on Highways

iv. Increased number of signage and road marking on highways.

4.77 In other words, indicators imply visualizing what a successful project would look like, that is, what conditions would be met. Therefore, indicators need to be closely linked to what one is trying to measure, so that they are confident that what they undertook was an important factor in the observed result. Indicators must be targeted. This means that they need to specify the quantity of the expected change, the quality of the desired change, and the timeframe in which the desired change is to occur. This may be remembered as QQT-for Quantity, Quality, and Time frame). For example, reduced number of accidents by 60% on high ways reported in Uganda within 2 years. The basic principle of the indicator column is that "if you can measure it, you can manage it". Indicators are measures of performance. They tell us how to recognize successful accomplishment of objectives. They define, in measurable

detail, the performance levels required by objectives in the intervention logic and check the feasibility of objectives and the basis of the project's monitoring and evaluation system.

4.78 The indicators show not only what accomplishment is necessary, but also what will be sufficient performance to ensure that we can reach the next level of objective. For this reason, it is best to begin at the end. That is, begin with the higher order objective and work backwards through the causal chain: Overall goal, Outcome then Outputs.

Figure 4.13 characteristics of good indicators

A good OVI is SMARTI

- Specific to the objective it is supposed to measure and substantial, i.e it reflects an essential aspect of an objective in precise terms
- Measurable either quantitatively or qualitatively in a factual way. Each indicator should reflect fact rather than subjective impression. It should have the same meaning for project supporters and to informed skeptics
- Available at an acceptable cost based on obtainable data. Indicators should draw upon data that is readily available or that can be collected with reasonable extra effort as part of the administration of the project
- Relevant to the information needs of managers and plausible, i.e the changes recorded can be directly attributed to the project
- Time bound:-so we know when we can expect the objective/target to be achieved
- Independent: indicators should be independent of each other, each one relating to only one objective in the intervention logic, i.e to either the project goal, project outcome, or to one result. The same indicators should not be used for more than one objective. For example, indicators at the level of a result should not be a summary of what has been stated at the activity level, but should describe the measurable consequence of activity implementation.

4.79 Indicators may refer to targets that have already been determined by existing strategies or action plans. Objectively Verifiable Indicators (OVIs) describe the project's objectives in operationally measurable terms and specify the performance standards to be reached in order to achieve the goal, outcome and the outputs. Therefore, OVIs should be specified in terms of Quantity, Quality, Time, Target group, and Place (QQTTP targeting) as discussed above. Putting numbers and dates on indicators is called Targeting. Although it is often claimed that higher order objectives are not measurable, this is not true. We may choose not to put targets on them, but we can give the overall objective (goal), outcome and outputs their indicators.

4.80 It is often necessary to establish more than one indicator for each objective statement. For example, one indicator may provide good quantitative information, which needs to be complemented by another indicator focused on qualitative matters (such as the opinions of target groups). However, the fewer the indicators the better. Use only the number of indicators required to clarify what must be accomplished to satisfy the objective stated in the narrative summary column.

4.81 The number of indicators selected for each level of vertical logic should be guided by the confidence required to demonstrate achievement of that particular level of the objective hierarchy. Between two and five (both qualitative and quantitative where possible) indicators is generally sufficient.

4.82 For instance in the road accidents example, suggestions on how to formulate an indicator are as follows:

i. **Objective:** Reduced road accidents along highways.

ii. **Identify indicator:** Number of road accidents along highways

iii. **Specify target group:** Road users of highways

iv. **Quantify:** Road accidents reduced by 45%

v. **Set quality:** meet established national road safety standards

vi. **Specify time frame:** between 2017 and 2023

vii. **Set location:** Entebbe highway among others

viii. **Combined statement:** The number of road accidents faced by highway users along Entebbe highways is reduced by 45% between 2017 and 2023 to meet the established national safety standards.

Means and Sources of verification

4.83 Means' are the human, material and financial resources required to undertake the planned activities and manage the project. When indicators are formulated, the source of information and means of collection should be specified. This will help to test whether or not the indicator can be realistically measured at the expense of a reasonable amount of time, money and effort. The SOV should specify:

i. **What information to be made available, (e.g. from administrative records, special studies, sample surveys, observation, etc.).**

ii. Where and the format in which the information should be made available (e.g. progress reports, project accounts, project records, official statistical documents, etc.).

iii. Who should collect/provide the information (e.g. field extension workers, contracted survey teams, the district health office, the project management team).

iv. When and how regularly it should be provided (e.g. monthly, quarterly, annually, etc.).

4.84 In determining sources of verification, the project team should consider whether appropriate sources already exist. Where new sources are required, it is important to consider the cost of data collection, as well as how valid and accurate the data collection process is.

4.85 Where indicators relate to a specific change in a condition, baseline data (what is the current state of things) may be required. This will mean that the source of verification requires both baseline and post-project data and data sources. The indicators and sources for the baseline and post project data may be the same. However, you should collect the data at different times in the project.

Reviewing the log frame matrix

4.86 Once drafted, the log frame matrix should be reviewed to assess the:

i. **Vertical logic -Whether the means-end relationship (column 1) and assumptions (column 4) makes sense.**

ii. Horizontal logic -What elements of project design will be measured and how

4.87 It is important to remember that the matrix represents broad steps, and not a detailed project plan. It is also important to remember that the LFA is an iterative process, and the matrix should be reviewed on a regular basis during the project's implementation, and changes made accordingly.

4.88 The LFM facilitates understanding, monitoring and evaluation. In this regard, the definition of the indicators before the project enters implementation phase allows the construction of the project baseline, which makes the ex-post evaluation easier.

4.89 One important warning to keep in mind is that LFA (and LFM) does not substitute for a full-blown Cost/ Benefit Analysis. The LFA is useful because it is an aid to thinking, forcing one to systematically design a project or program but, it is never sufficient because LFA does not calculate quantitatively, the costs and the benefits of a project.

Summary of the LFA

4.90 Whether a project design is the result of a step-by-step participatory process or a less systematic process, it is useful to make a final overall check of the result. In this section, our main concern shall be the content of the Log frame matrix. The recommendations described in this section can be used when checking the design of an existing project, or when reformulating a project document into the LFA format.

Target groups

4.91 Once the project is designed, ensure that the target groups are:

1. **Specified in the indicators column at the level of development objective, immediate objective and output.**
2. Precisely defined. If this is not possible, the composition of the target group can be narrowed down, e.g. according to one or more of the following criteria:
   i. Geographical area, where the majority of the population belongs to the target group.
   ii. Field of activity (e.g. fishing families and industries, health professionals, doctors, stock breeder, cattle farmer, etc.).
   iii. Economic situation, living conditions.
   iv. Needs, access to social services (health, education, etc.)
   v. Gender and age.
   vi. Class, caste, ethnicity, social status, etc.

Overall Goal

4.92 Once the Goal has been formulated, ensure that:

1. It is consistent with the development policy of the country.
2. It is consistent with the policy guidelines.
3. It represents a sufficient justification for the project.
4. It is not too ambitious. (i.e. achieving the purpose should significantly contribute to the fulfillment of the goal).
5. The target groups are explicitly defined.
6. It is expressed as a desired end, not as a means (a process).
7. It does not contain two or more objectives which are ca**usally linked (means-ends).**

Outcomes

4.93 Once the outcomes have been defined, ensure that:

1. The target groups of the project are specified.
2. They are expected to contribute significantly to the fulfillment of the goal.
3. They are realistic, i.e. likely to occur once the project outputs have been produced.
4. They are outside the immediate control of the project itself.
5. They are formulated as a desired state, not a process.

6. They are precisely and verifiably defined.
7. Not more than one outcome is expected per project.

Outputs/components/Results

4.94 Once the outputs have been identified, ensure that:

1. All essential outputs necessary for achieving the Outcome are included.
2. Only the outputs which can be guaranteed by the project are included.
3. Each output can be seen as a necessary means to achieve the outcome.
4. All outputs are feasible within the resources available.
5. The outputs are precisely and verifiably defined.

Activities

4.95 Once activities are described, ensure that:

1. All essential activities necessary to produce the anticipated outputs are included.
2. All activities contribute directly to the output level above.
3. Only those activities to be performed by the project are included.
4. Activities are stated in terms of actions being undertaken rather than completed outputs.
5. The time available for each activity is realistic.
6. The activities are appropriate to the situation in the country, in terms of institutions, ecology, technology, culture, etc.

Inputs– Resources:

4.96 Once inputs are described, ensure that:

1. The inputs can be related directly to the specified activities.
2. The inputs are necessary and sufficient conditions to undertake the planned activities.
3. The level of detail is adequate but limited to comprehensibility.
4. The inputs are precisely and verifiably defined (quantity, quality, cost).
5. The resources are appropriate for the situation within the Country in regard to gender, culture, technology, environment, etc.

Assumptions

4.97 Once assumptions have been formulated, ensure that:

1. They are formulated as desirable, positive conditions.
2. They are linked to the correct project level.
3. Assumptions which are not important are not included.
4. Assumptions which are very likely to occur are not included.
5. If there are assumptions which are both important and unlikely to occur (killing factors) the project should either be redesigned to avoid them - or abandoned.
6. The remaining assumptions are precisely and verifiably defined.

Indicators

4.98 Once indicators have been specified, ensure that:

i. They are specific in terms of quantity, quality, time, location and target group.

ii. The means of verification is available (statistics, observation, records, etc.). If not, check that the information can be generated at reasonable cost.

iii. It is relevant as a measurement of the achievement of objectives.

iv. The means of verification is reliable and up-to-date.

v. The collection, preparation and storage of information is an activity within the project and the necessary inputs for it are specified in the PM.

4G Theory of change (ToC)

4.99 The aim of Theory of Change (ToC) is to ensure that programs lead to results. In reality there is no official definition of a Theory of Change or how it differs from a Logical Framework. Both of them have the same general purpose – to describe how your program will lead to results, and to help you think critically about this.

4.100 However, ToC shows the real world picture of a project with all the possible pathways leading to change, and why you think they lead to change (This is supported by evidence and the assumptions).

4.101 The difference between ToC and Logical Framework Approach (LFA) is that the LFA provides a linear specific pathway that a project is going to deliver in a neat, orderly manner. This makes it easier for the sponsoring MDA and donors to monitor project implementation.

4.102 In practice, a Theory of Change(ToC) typically:

i. Gives the big picture, including issues related to the environment or context that the project cannot control.

ii. Shows all the different pathways that might lead to change, even if those pathways are not related to your project.

iii. Describes how and why you think change happens.

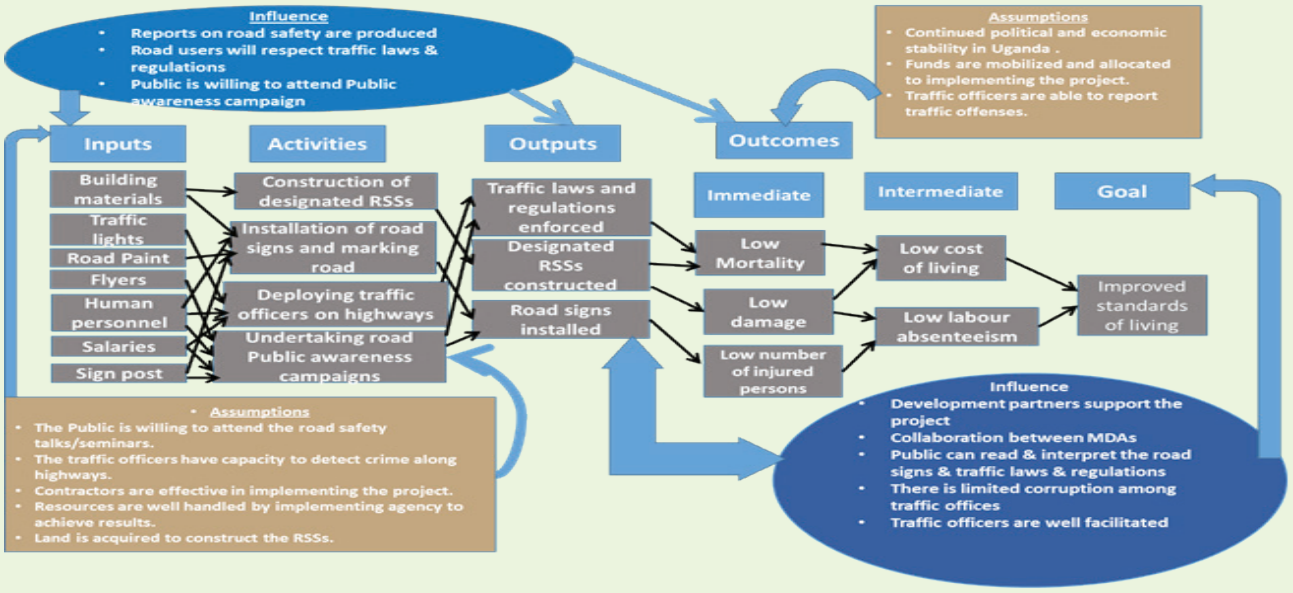
iv. Could be used to complete the sentence “if we do X then Y will change because…”. For example, if resources are provided to construct RSSs, we will have less fatigued drivers because they will have rest places for refreshing.

v. ToC has no fixed diagram or format as it is flexible. It could include cyclical processes, feedback loops and one box could lead to multiple other boxes, different shapes could be used, etc.

vi. Describes why you think one box will lead to another box (e.g. if you think increased knowledge will lead to behavioral change, is that an assumption or do you have evidence to show it is the case?).

vii. Is mainly used as a tool for program design and evaluation.

Figure 4.14: Theory of Change for reducing road accidents in Uganda

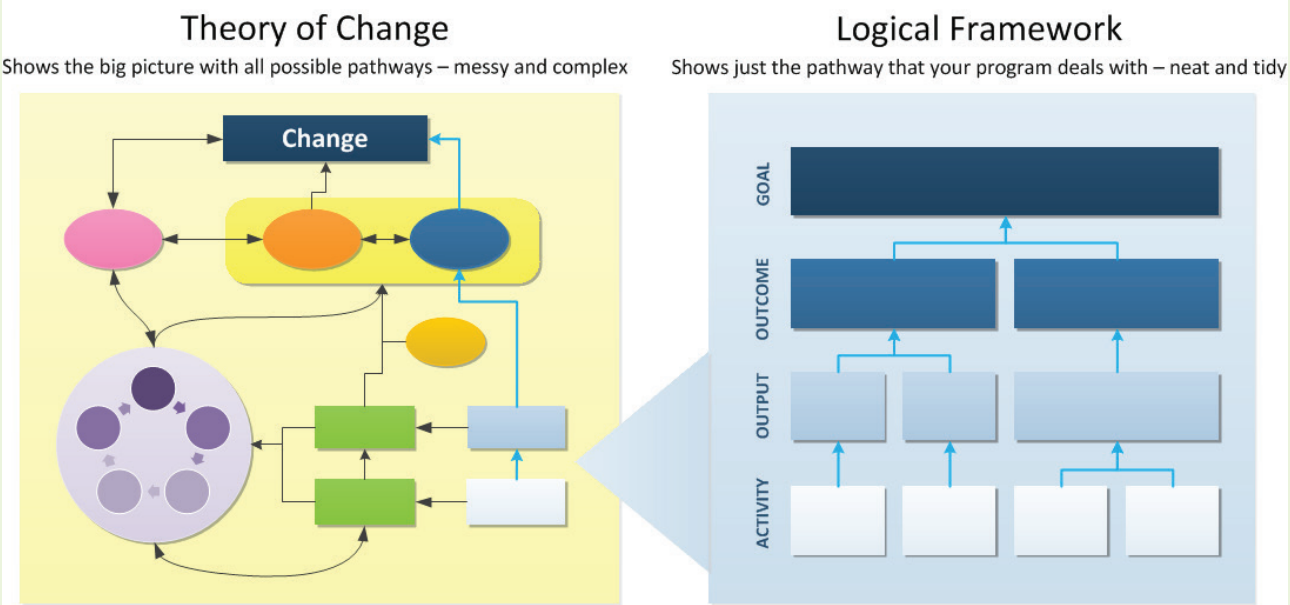


4.103 It is expected that there will be behavioral changes by drivers to use the RSSs for resting along the highways. In addition, Ugandans will adopt a safety culture and follow traffic laws and regulations

4.104 Whereas, in practice, a Logical Framework:

1. Gives a detailed description of the program showing how the program activities will lead to the immediate outputs, and how these will lead to the outcomes and goal.
2. Could be used to complete the sentence “we plan to do X which will give Y result”.
3. Is normally shown as a matrix, called a logframe. It can also be shown as a flow chart, which is sometimes called a logic model.
4. Is linear, which means that all activities lead to outputs which lead to outcomes and the goal – there are no cyclical processes or feedback loops.
5. Includes space for risks and assumptions, although these are usually only basic. Doesn’t include evidence why you think one thing will lead to another.
6. Is mainly used as a tool for monitoring.

Figure 4.15: ToC VS LFA in picture



Chapter 5

Integrated Project Analysis

5A. Overview

5.1 The use of pre- feasibility and feasibility studies to screen projects was extensively discussed in Chapter three. The mandatory studies are built around nine modules defined to include the: (i) Demand module (ii) Technical module (iii) Environmental module, (iv) Human resources and administrative support module (v) Institutional and legal module (vi) Financial or Private evaluation module, (vii) Economic or social evaluation module, (viii) Distributional module, and (ix) Risk analysis module.

5.2 The first five modules are referred to as building blocks because they help generate the stream of project benefits and costs which are then aggregated to prepare the project cash flow statement which in turn, is used to compute indicators needed to assess the viability of projects.

5.3 This chapter focuses on the tools for assessing project viability. An Integrated Project Analysis (IPA) approach is adopted in the sense that the manual does not only look at measures to assess financial profitability but also extensively discusses techniques for determining the potential impact of a project on the macro-economy and the distribution of its net benefits to the various stake holders. In addition, the qualitative and quantitative tools for assessing project risks are discussed. Integrated project analysis therefore focuses on the four analytical modules of the pre- feasibility and feasibility studies which are defined to include:

i. Financial analysis.

ii. Economic analysis.

iii. Stakeholder / distributional analysis, and

iv. Risk analysis.

5B. Financial Analysis

5.4 Financial analysis involves the identification of all expenditures and revenues over the lifetime of the project, with a view to assessing the ability of a project to achieve financial sustainability and a satisfactory rate of return. The objectives of financial analysis therefore are to:

i. Assess the profitability of a proposed project;

ii. Ascertain the project's ability to achieve its intended objectives without being constrained by funding gaps (sustainability)

iii. Establish baseline information for undertaking economic, distributional and risk analysis of the proposed project.

Financial Cash Flow projections

5.5 Financial analysis requires the preparation of cash-flows which are discounted and used to compute the various indicators needed to appraise or assess the viability of a project. The financial cash flow statement of a project is a profile of the receipts (inflows) and expenditures (outflows) over the life of the project.

5.6 The construction of the cash flow statement is generally preceded by the organization of variables and data into the financial plan consisting of three components; the investment plan, the operating plan (operating costs and revenues) and the financing plan. For purposes of this manual, a hypothetical example is used to illustrate the proposed approach to financial analysis and the inter-related economic,

distributional and risk analyses. Box 5.1 below describes the hypothetical case applied in the manual.

Box 5.1 The hypothetical case: Nkono Oil Project

Following the discovery of commercial quantities of Oil, Government has embarked on the next phase of issuing production licenses. A private company, Nkono Oil Ltd, has submitted a Field Development Plan (FDP) for field one (F1). The production rate for F1 is 4,000 barrels of oil per day (bopd) and the recoverable reserves are expected to last eight years.

The field is partly located in the national wild life park which is a key tourist attraction. In addition, it stretches into communal land that is used by neighboring communities for agriculture. Apart from the decision on whether to approve the FDP, Government is considering a proposal to take up equity in Nkono Oil Limited. The Public Investment Management Framework requires that any potential investment be subjected to Cost Benefit Analysis (financial and economic evaluation) before any decision is taken to invest public resources.

Task:

Make use of the assumptions listed in table 5.1 to undertake a financial and economic analysis of the Nkono Project. You are also required to assess the extent to which the project impacts key stakeholders and develop a mitigation plan for the risks associated with the project.

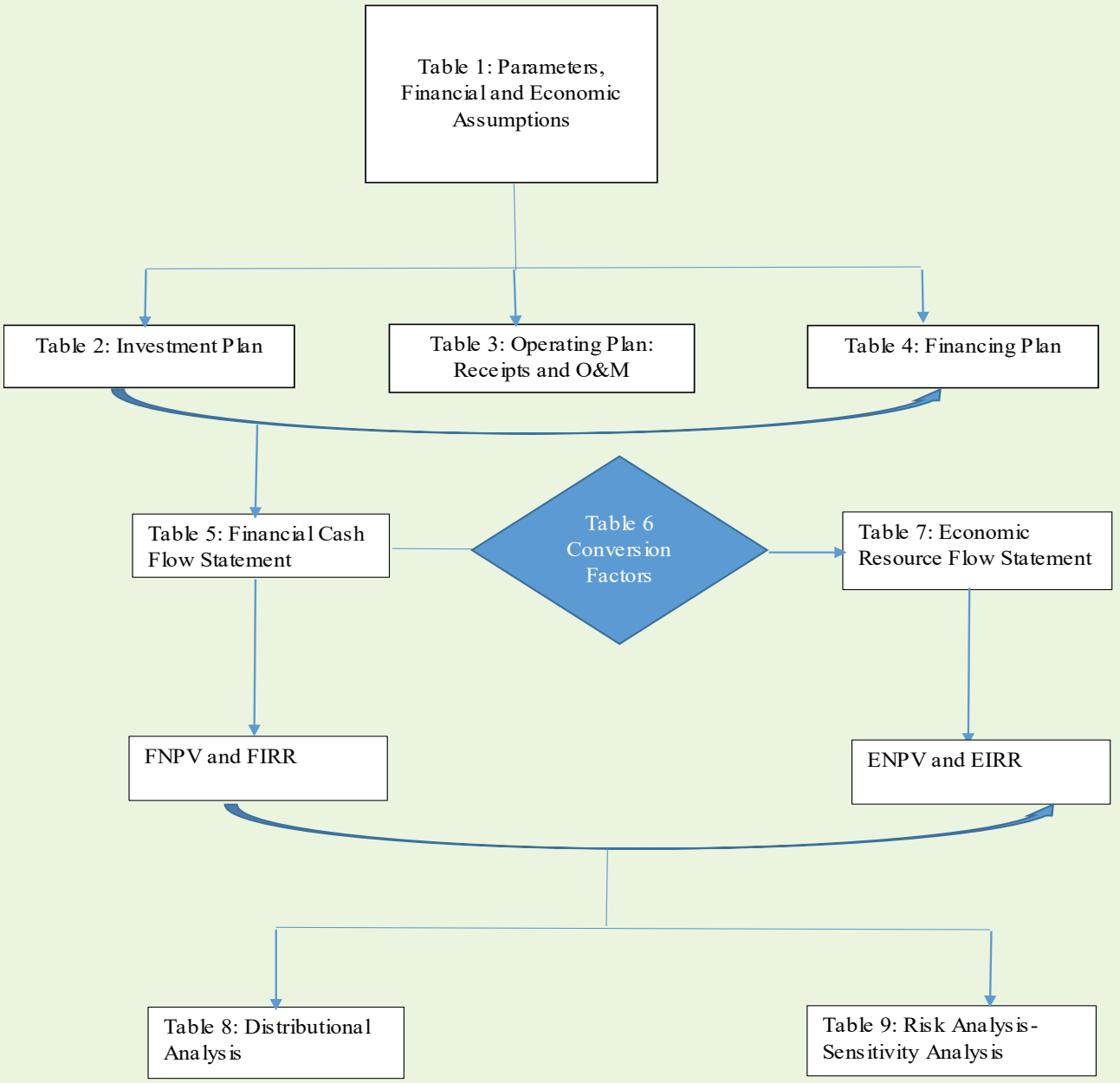
Table 5.1: Assumptions underlying the hypothetical Nkono Oil Project case study:

Investment (gross of taxes/tariffs) (Million Dollars)		2009	2010	2014	Taxes and Tariffs	VAT	WT	CIT	
Wells	46%		50.9	34.1	Taxes	18%	12%	30.0%	
Facilities	44%	10.9	71.7		Fiscal	**Royalty Sharing**		**Production Sharing**	
other costs	6%	5.9	6.0			volume	%	%IOC	% State
Past Exploration Costs		16.6				2.5	0.1	0.6	40.0%
Loss of Land Value (at Liquidation)	20%					5	0.1	0.55	45.0%
Site Restoration (2018)	6.0					7.5	0.1	0.5	50.0%
Yearly Capital Replacement (% of initial asset value)	80%					10	0.1	0.45	55.0%
Investment Cost Overrun Factor	0%				**Financing (Million Kina)**				145.3
Salvage Value (% of initial asset value)	10%				Debt			30%	43.6
Crude Oil Price FOB 2012	$/Barrel	58.6			GoU Subsidy			5%	7.3
Gas Price (2012)	$/GJ	16.2			Equity			65%	94.5
Conversion (gram / oz)					Return on Equity				94.5
Maximum production perday '000	4				Return on equity				15.0%
Cost Oil limit	60%				Interest Rate (US$ loan)				15.0%
Economic Opportunity Cost of Capital	13.0%				Principal Installments				3.5%
Foreign Exchange Premium	5.3%				Grace Period on Principal				5
Exchange Rate	3,442.96				Start of Principal Repayment				2
Annual Depreciation	2%								2009
Shadow Price of Non-tradable Outlays	1%								
Dollar inflation rate	2.5%								
UCPI	219.306								
Annual Change in CPI	5%								
Daily Production'000	2011	2012	2013	2014	2015	2016	2017	2018	
Crude Oil as % of max day production	85.9%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	67.0%	
Demand for Gas by generation	106.37	438.34	787.69	1,394.10	1,932.88	2,292.01	2,494.61	761.82	
operating days	333	365	365	365	365	365	365	122	

5.7 Integrated Project Analysis for any project is carried out with the aid of a financial and economic evaluation model. The key output of the financial model is the statement of cash flow projections which are used to assess the financial viability of a project by computing the relevant indicators such as the Financial Net Present Value (FNPV) and/or the Financial Internal Rate of Return (FIRR).

5.8 On the other hand, the main output of the economic evaluation model is the Economic Resource Statement which is used to assess the economic viability of a project by computing relevant indicators such as the Economic Net Present Value (ENPV) and the Economic Internal Rate of Return (EIRR). The financial and economic indicators for the project are then analyzed to determine the distributional effects of the project and the critical risks facing projects. Figure 5.1 illustrates the steps to be taken in developing the model.

Figure 5.1 Chart of tables for financial and economic evaluation



The Investment Plan

5.9 The first step in the financial analysis is the analysis of the amount and breakdown, over the years, of the total investment costs. The investment plan combines information from the demand, environmental, human resource, institutional and technical modules of the feasibility study to establish a detailed plan for expected capital expenditures during a project's investment phase3. The investment plan consists of two sections: the first section deals with the expenditure on new acquisitions, and the opportunity cost of existing assets, and the second section deals with the financing aspects of the proposed investment. The major components of the investment expenditure section may include the items listed in table 5.2 below.

Table 5.2 List of possible components of an investment plan

		Total	1	2	...	....	....	...	n
1	Fixed Assets								
1.1	Equipment								
1.2	Installation cost								
1.3	Land acquisition and development(land, buildings)								
1.4	Other fixed assets								
1.5	Contingencies on fixed assets								
2	Preliminary expenses/Pre-operational costs								
2.1	Licenses								
2.2	Planning and other consultancy services								
2.3	Initial advertising								
2.4	Startup expenses								
2.5	Training of personnel								
3	Working Capital								
3.1	Working Capital								
3.2	Contingencies on working Capital								
4	Intrest during construction								
5	Initial Investment expenditure =1+2+3+4								
	Replacement Costs								
6	Residual Value								
7	Total Investment Cost=5+6								

5.10 In order to establish the initial expenditure, the above components are summed up to give the total initial investment. In addition, the investment plan should provide estimates of the liquidation or scrap value or residual value. The above expenditures should also be disaggregated into tradable and non-tradable commodities and should indicate the breakdown of workers by skill and likely source of availability. Such disaggregation is useful later in the appraisal process when undertaking economic analysis.

5.11 Table 5.3 provides an illustration of sections of an investment plan for the hypothetical Nkono Oil project. In this example the investment is done in two parts; the initial investment in year 0 and the subsequent or replacement investment in year 4. All data in the investment plan regarding the expenditures on new acquisitions, and the opportunity cost of existing assets, if applicable, are included in the cash flow

[3] Capital expenditures include expenditures on land, buildings, machinery, equipment, building materials, and construction and management labor.

statement. Financing data is included in some statements but not others depending on the point of view.

Table 5.3 Example of an Investment Plan for the hypothetical Nkono Oil Project -millions of dollars)

1	1A. Investment Expenditures	Total	Year 0	Year 4
2	**Materials for well drilling and completion**	25.3	15.1	10.1
3	Tradable	23.4	14.0	9.4
4	o/w CIF	15.9	9.5	6.4
5	o/w Import duty @25%	4.0	2.4	1.6
6	o/w VAT @18%	3.6	2.1	1.4
7	Non-tradable	1.9	1.1	0.7
8	o/w VAT @18%	0.3	0.2	0.1
9	**A.2 Drilling Equipment-Rigs**	35.3	21.1	14.2
10	o/w CIF	23.9	14.3	9.6
11	o/w Import duty @25%	6.0	3.6	2.4
12	o/w VAT @18%	5.4	3.2	2.2
13	A.3 S ervices	14.3	8.5	5.7
14	o/w WHT @ 6%	0.8	0.5	0.3
17	**A.4 Production Facilities equipment**	82.6	82.6	0.0
18	CIF	56.0	56.0	0.0
19	Import duty @25%	14.0	14.0	0.0
20	VAT @18%	12.6	12.6	0.0
21	**A.5 Trans port Equipment**	11.9	11.9	0.0
22	CIF	8.1	8.1	0.0
23	Import duty @25%	2.0	2.0	0.0
24	VAT @18%	1.8	1.8	0.0
25	**A.6 Labor**	10.1	6.0	4.0
26	PAYE@30%	2.3	1.4	0.9
27	**Total Expenditures**	179.4	145.3	34.1
28	**BFinancing**	179.4	145.3	34.1
29	Equity	135.8	101.74	34.1
30	Loans	43.6	43.6	0

5.12 The second half of the investment plan deals with the means and schedules of financing the investment expenditures. The sources of financing should be identified and the disbursement schedules formulated. Table 5.4 below lists possible sources of financing.

Table 5.4: Summary of sources of financing

1.	**Equity**
2.	**Loans** 1. **domestic** 2. **foreign** 3. **concessional**
3.	**Grants**
4.	**Supplier credit**

The Operating Plan

5.13 The second step in financial analysis is the calculation of the total operating costs and revenues (if any). The operating plan is developed on the basis of the data formulated and organized in the technical, demand (market), environmental and manpower modules. It also includes all cash receipts generated

from the operations of the business and all operating expenditures. Expenditures and corresponding receipts should be projected by year of operation. Similar to investment expenditures, data breakdowns are necessary.

5.14 Operating costs should be broken down into internationally traded and non-traded items; and each expenditure item should be broken down into its components, whenever possible. Expenditures on different types of labor (skilled, unskilled, etc.) should be identified and recorded separately. Any taxes or subsidies associated with operating expenditures should also be identified and recorded separately whenever possible. These breakdowns are necessary for conducting the economic analysis of the project and for providing a better understanding of the cost structure of the operating expenditures[4].

5.15 Table 5.5 presents an example of an operating plan. As a matter of convention, residual values are recorded in the cash flow statement in the year following the cessation of operations. The underlying assumption is that liquidating assets may take a few months[5]. When determining the residual value of the assets at the end of the project, it is preferable to break down all the assets into different categories: land, building, equipment, vehicles, etc. The residual value is taken as the higher of the in-use or liquidation value subject to recovery on the last day of the project.

5.16 The in-use value of the plant is the value of the plant under the assumption that it will continue to operate as an on-going concern. The liquidation value is the value of the assets if all components of the project are sold separately and perhaps even the plant is taken apart (dismantled) and liquidated. The depreciation rates could be obtained from plant manufacturers; technical journals may contain information on depreciation patterns; also insurance companies (that insure a plant's assets) have some estimates for the plant's rate of economic depreciation.

5.17 The most important items related to financial receipts that are considered in the cash flow statement depend on the nature of each project. However, the most important items are related to fees charged to users and state grants. In the last case, the government can provide a subsidy, per capita, for care or global, which is a cash inflow to the institution(s) responsible for the operation.

[4] Direct data requirements for a cash flow statement are slightly different from, and may not be as readily available as, data requirements for income statements and balance sheets. For example, an income statement includes sales and purchases, while a cash flow statement includes receipts and expenditures. Sales and purchases include credit as well as cash transactions, while receipts and expenditures are cash only.

[5] When a new project acquires an asset, the entire expenditure on the asset is accounted for in the cash flow statement at the time that the expenditure actually occurs. It is quite possible, however, that the life of the project will not coincide with the life of all its assets, or that the span of the analysis will not extend as far in the future as the project may be expected to operate (for example, railway projects). If either of the two conditions exists, the residual value of the asset should be included in the cash flow statement as an inflow in the year following the cessation of operations.

Table 5.5 Example of Operating Plan for the hypothetical Nkono Oil project (millions of US dollars)

Sales	0	1	2	3	4	5	6	7	8
Sales revenue									
Oil revenue		66.5	83.3	85.4	87.6	89.8	92.0	94.3	23.4
Gas revenue		1.7	7.3	13.4	24.4	34.6	42.1	46.9	14.7
Fixed Operating Costs		**23.8**	**23.8**	**23.8**	**29.4**	**29.4**	**29.4**	**29.4**	**7.4**
Wells		4.1	4.1	4.1	5.1	5.1	5.1	5.1	1.3
Maintainance		7.9	7.9	7.9	9.7	9.7	9.7	9.7	2.4
Insurance		1.3	1.3	1.3	1.6	1.6	1.6	1.6	0.4
Labor		10.1	10.1	10.1	12.5	12.5	12.5	12.5	3.1
o/w Skilled		1.7	1.7	1.7	2.1	2.1	2.1	2.1	0.5
o/w Un Skilled		8.5	8.5	8.5	10.5	10.5	10.5	10.5	2.6
Logistics and Vehicles		**0.4**	**0.4**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.1**
Variable Operating Costs		6.7	8.5	8.8	9.0	9.2	9.4	9.7	2.4
Catalysts and chemicals (tradables)		6.5	8.4	8.6	8.8	9.0	9.2	9.4	2.3
Effluent disposal (Non-tradable)		0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Working Capital									
Accounts Receivable (end period values)	10.2	13.6	14.8	16.8	18.7	20.1	21.2	5.7	-
Crude Oil in Storage (end period values)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	-	-
Cash Balance (end period values)	1.5	1.6	1.6	1.9	1.9	1.9	2.0	0.5	-
Change in A/R	(10.2)	(3.4)	(1.2)	(2.0)	(1.9)	(1.5)	(1.1)	15.5	5.7
Change in A/P	(2.0)	(0.2)	(0.0)	(0.3)	(0.0)	(0.0)	(0.0)	2.0	0.7
Change in stock of crude	9.4	-	-	-	-	-	-	(9.4)	-
Change in C/B	1.5	0.1	0.0	0.3	0.0	0.0	0.0	(1.5)	(0.5)

The Financing Plan

5.18 The Financing Plan should provide details about how any anticipated negative net cash flows will be financed during both the investment and operating phases of a project. In addition, when developing the financing plan, equity investors and potential lenders should be identified and the anticipated timing of their contributions specified (interest and amortization schedules should also be stated).

The Cash flow statement

5.19 Following the completion of the Investment plan, operating plan (operating expenditure and revenue plan), financing plan; the cash flow statement can be derived by aggregating the three plans as illustrated in the hypothetical example in table 5.6.

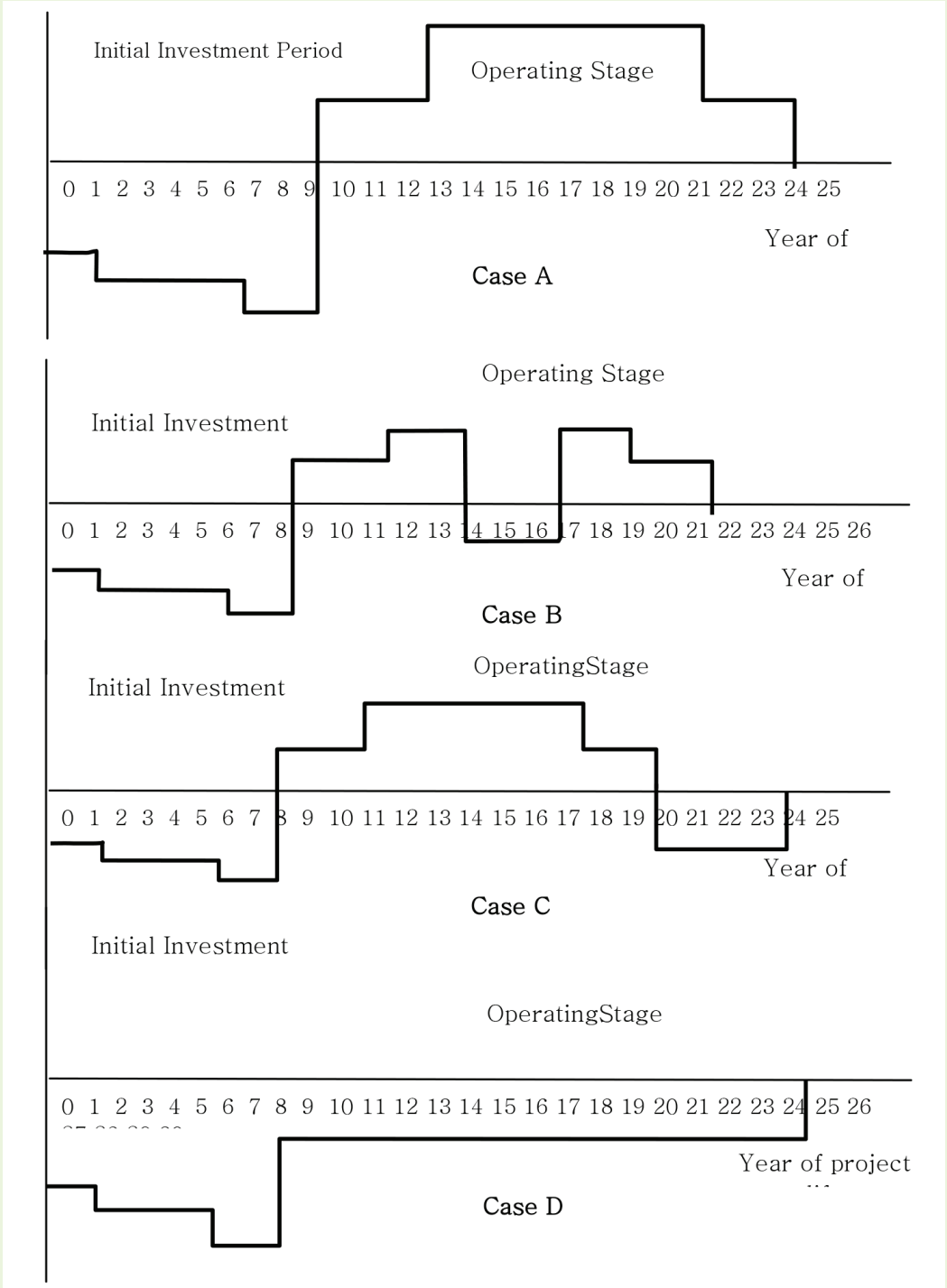
Table 5.6: Pro-forma financial cash flow statement for an investment in Nkono Oil Project (millions of dollars)

	Year	0	1	2	3	4	5	6	7	8	9	10
1	**Inflows**											
2	Oil revenue	0.0	66.5	83.3	85.4	87.6	89.8	92.0	94.3	23.4	0.0	0.0
3	Gas revenue	0.0	1.7	7.3	13.4	24.4	34.6	42.1	46.9	14.7	0.0	0.0
4	Change in A/R	0.0	-10.2	-3.4	-1.2	-2.0	-1.9	-1.5	-1.1	15.5	5.7	0.0
5	Salvage Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
6	Land subsidy	7.3	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	**Total Inflows**	**7.3**	**65.3**	**87.3**	**97.6**	**110.0**	**122.5**	**132.6**	**140.2**	**53.5**	**5.7**	**0.4**
8	**Outflows**											
9	**Investment Costs**	**145.3**	**0.0**	**0.0**	**0.0**	**34.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**9.3**
10	Wells	50.9	0.0	0.0	0.0	34.1	0.0	0.0	0.0	0.0	0.0	0.0
11	Facilities	82.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	other costs	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	Past Exploration Costs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Site Restoration (2018)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3
16	**Operating Costs**	**0.4**	**41.4**	**52.2**	**55.8**	**50.6**	**67.7**	**91.5**	**99.5**	**24.6**	**-0.7**	**0.0**
17	Wells	0.0	4.1	4.1	4.1	5.1	5.1	5.1	5.1	1.3	0.0	0.0
18	Maintainance	0.0	7.9	7.9	7.9	9.7	9.7	9.7	9.7	2.4	0.0	0.0
19	Insurance	0.0	1.3	1.3	1.3	1.6	1.6	1.6	1.6	0.4	0.0	0.0
20	Skilled Labor	0.0	1.7	1.7	1.7	2.1	2.1	2.1	2.1	0.5	0.0	0.0
21	Un Skilled Labor	0.0	8.5	8.5	8.5	10.5	10.5	10.5	10.5	2.6	0.0	0.0
22	Logistics and Vehicles	0.0	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.1	0.0	0.0
23	Catalysts and chemicals (tradables)	0.0	6.5	8.4	8.6	8.8	9.0	9.2	9.4	2.3	0.0	0.0
24	Effluent disposal (Non-tradable)	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0
25	Surface Rental (% of block licenced)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0
26	Development phase training	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	Production phase train ing	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0
28	Change in A/P			0.2	0.0	0.3	0.0	0.0	0.0	-2.0	-0.7	0.0
29	Income Tax	0.0	2.1	4.4	5.5	2.0	7.3	14.5	16.9	4.7	0.0	0.0
30	Royalty	0.0	3.8	4.9	5.0	5.1	5.3	5.4	5.5	1.2	0.0	0.0
31	State Profit oil	0.0	4.6	9.9	12.2	4.4	16.1	32.3	37.6	10.5	0.0	0.0
32	**Total Outflows**	**145.8**	**41.4**	**52.2**	**55.8**	**84.7**	**67.7**	**91.5**	**99.5**	**24.6**	**-0.7**	**9.3**
33	**Net Cashflow before financing**	(138.5)	23.9	35.1	41.8	25.3	54.7	41.1	40.6	28.9	6.4	(8.9)

Structure of net cash flows

5.20 Typically, a project's net cash flow is negative in the early part of its life when the initial investment (cash outflow) is being undertaken and the project is not generating any receipts (cash inflows). Once the investment is completed and the project starts operating, the net cash flow is likely to be positive (Case A).

Figure 5.2 Different Financial net-cash flow Profiles



Source: Jenkins, Harberger & Kuo (2013).

5.21 Case B presents an alternative situation where a period of reinvestment or plant retooling is planned during the life of the project. This may result in negative net cash flows during the operating life of the project. Case C presents a profile for a class of projects that require a large expenditure at the end of the project. The expenditure could be, for example, attributed to clean-up and landscaping costs associated with a mining project, or the decommissioning of a power plant.

5.22 The profile of the net cash flow in Case D represents projects that do not generate any financial receipts

(road projects that charge no tolls), or projects that generate low receipts that are insufficient to cover operating expenditures (possibly water and wastewater projects). In such cases, the project will have a large initial outlay during the investment stage and will continue to show negative net cash flows during the operating stage.

Analysis of Investment Decisions from Alternative Viewpoints

5.23 For most projects that are directly undertaken by the government, or involve some government intervention in the form of grants, loans or subsidies, there are several stakeholders who would like to determine how the project impacts them. This could include; the owners, participating banks, any government department providing loans or grants or collecting taxes, competitors, employees etc. It is therefore necessary to conduct the analysis from the perspectives of the different important stakeholders to ensure the project's sustainability and success.

The most commonly-undertaken financial analyses for government and government-related projects are from the following viewpoints: i) point of view of owner; ii) point of view of all investors combined (banker's point of view or total investment point of view); iii) point of view of Budget.

The Owner's Point of View

5.24 The owner of a project be it a private investor who is receiving some form of support from the government or a government department undertaking a project normally accounts for all receipts and expenditures related to the project in the cash flow statement to determine whether he/she is made better off or not.

5.25 The cash flow statement, from an owner's point of view therefore, will include the disbursement of the loan as an inflow and all subsequent repayments of loan and interest as expenditures. If the project receives any grants or subsidies, these should be included as receipts in the cash flow statement. If the project pays taxes, these should be included as a cash outflow. If the project sponsor is going to give up an existing source of income to undertake a project, the forgone earnings (opportunity cost) should be included as an expenditure in the cash flow statement. For instance, in the hypothetical example, the private party and the National Oil Company would adopt the owner's view of the cash flow projections.

The Total Investment (Banker's) Point of View

5.26 This point of view examines the returns to the total invested capital. In other words, this analysis disregards any distinctions in the sources of finance. It asks the question whether the financial receipts generated from the operations of this project are sufficient to cover the investment and operations expenditures, and provide a sufficient return or not. This point of view is also known as the "banker's point of view" because a bank will be interested in examining the expected receipts and expenditures to determine if the net cash flow is sufficient to cover the loan and interest repayments. The banker typically has first claim to the project's assets and net cash flow, and so the banker's net cash flow is the project's gross receipts net of operating and investment expenditures.

5.27 The only difference between the analysis from the owner's point of view and that from the banker's point of view is financing. Specifically, the cash flow statement from the total investment point of view will include all items included from the owner's perspective except loan and loan repayments. For example, the interested parties in the Bank's point of view would be the key financiers or the financial Institutions lending to the project.

Budgetary Point of View

5.28 The purpose of the analysis from the budgetary point of view is to ensure that the relevant department has enough resources to finance its obligations to the project. If the government department is the project owner, then the only distinction between the cash flow statement from the owner's point of view and from the budget point of view is that opportunity costs are not taken into account in the latter

statement. If, on the other hand, the government's involvement is in the form of providing some cheap credit, subsidies, or grants, then the cash flow statement will only reflect these transactions.

5.29 A summary of how different financial items should be included in the cash flow statement from different points of view is given in Table 5.7.

Table 5.7: Summary of Net Resource Flow from different Points of Views

	Point of View of Owners	Point of View of All Investors	Point of View of Budget	Other Perspective
	(A)	**(B)**	**(C)**	**(D)**
	Include all receipts in Inflows and all expenditure related to the project in Outflows	= (A) – Loan and loan and interest repayments	Include all subsidies/ grants to the project in Outflows and taxes from the project in Inflows	Include the financial impacts of the projects on any affected group
Grant/Subsidy	Positive	Positive	Negative	Not included
Loan	Positive	Not included	Not included	Not included
Investment costs	Negative	Negative	Not included	Not included
Operating costs	Negative	Negative	Not included	Not included
Loan repayment	Negative	Not included	Not included	Not included
Interest payment	Negative	Not Included	Not included	Not included
Foregone earnings	Negative	Negative	Not included	Not included
Taxes	Negative	Negative	Positive	Not included
Positive Externalities	Not included	Not included	Not included	Positive
Negative Externalities	Not included	Not included	Not included	Negative

Source: Jenkins, Harberger & Kuo (2013).

Accounting for inflation in the financial analysis

5.30 Much of the published literature on economic project evaluation recommends the need to account for inflation in the the appraisal process. Experience with projects faced with financial liquidity and solvency problems has demonstrated that inflation can be a critical factor in the success or failure of projects. Correctly designing a project to accommodate both changes in relative prices and changes in the rate of inflation may be crucial for its ultimate survival.

5.31 Improper accounting for the impacts of inflation when conducting the financial analysis could have detrimental effects on the financial sustainability of a project through higher investments and operational costs which may call for new funding.

5.32 Table 5.8 demonstrates the effects of inflation on the financing of the hypothetical oil project. The project profile is such that investment costs related to production are to be made in year 0 and year 4, with production to start in year 1 and end in year 8 and the residual assets be liquidated in year 9.

Table 5.8 Impact of inflation on the financing of the hypothetical Oil Project

	Period	0	1	2	3	4	5	6	7	8	9	10	Total
1	Inflation 0%												
2	Price Index	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
3	Investment Outlays	145.3				34.1							179.4
4	Inflation 10%												
5	Price Index	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	
6	Investment Outlays	145.3	-	-	-	47.7	-	-	-	-	-	-	193.0
7	**Impact on Financial requirements**					**13.6**							**13.6**

5.33 In this project, an investment of 145.3 million dollars is required in year 0 and without accounting for inflation; an additional investment of 34.1 million dollars is required in year 4. If there is a 10% rate of inflation, the investment required in year 4 increases to 47.7 million dollars. The presence of inflation therefore increases the nominal amount of investment financing required by 13.6 million dollars even when there is no increase in quantity of material inputs. The increased investment expense will have knock on effects on financing in terms of additional principal, interest costs and allowances for depreciation on tax returns. This example demonstrates the risks to a project of not accounting for the effect of inflation.

5.34 It is important to note therefore that the ultimate analysis of the financial cash flows should always be carried out on a statement prepared in real terms (i.e. net of inflation). When the sponsoring agency prepares the cash flow statement, all variables such as tax liabilities, cash requirements, interests and debt repayments and initial cash flows in current prices are developed. These cash flows are later deflated and presented in real prices.

5.35 By preparing the financial analysis in this manner, we ensure that first, all the effects of inflation are consistently reflected in the projected variables and second, all variables are deflated by the projected increase in the general level of prices. The steps required to carry out the inflation analysis are as follows:

i. Estimate the various variables in the investment, operating and financing plans in nominal or current prices.

ii. Consolidate the three plans into a cash flow statement.

iii. Deflate the cash flow statement using the projected price index over the life of the project.

5.36 When the financial analysis is carried out in terms of real prices, it is essential that the private opportunity costs of capital or the target financial rates of return used as discount rates be expressed net of the expected rate of inflation. In other words, these discount rates must be real and not nominal variables.

5.37 It should be noted that the real financial prices for the input and output variables developed above are used as the base to estimate the economic values for the benefits and costs of the project. Once these economic costs and benefits are estimated, an economic resource flow statement is prepared. The structure of the statement should be similar to that of the financial cash flow statement. Finally, the difference between the two statements is analyzed to determine the distributional impacts of the project.

Table 5.9 Pro forma cash flow statement in table 5.6 converted into billions of shillings (real prices using the consumer price index and exchange rates (lines 1 and 2) in table below).

	Period	0	1	2	3	4	5	6	7	8	9	10
1	**CPI**	219.3	230.3	241.8	253.9	266.6	279.9	293.9	308.6	324.0	340.2	357.2
2	**Exchange rate UGX to USD**	3,443.0	3,495.1	3,548.0	3,601.7	3,656.3	3,711.6	3,767.9	3,824.9	3,882.8	3,941.6	4,001.3
3	**INFLOWS**											
4	Oil revenue	-	1,010	1,223	1,212	1,201	1,190	1,179	1,169	280	-	-
5	Gas revenue	-	26	107	190	334	459	539	582	176	-	-
6	Change in A/R	-	(155)	(49)	(17)	(27)	(25)	(19)	(13)	185	66	-
7	Salvage Value	-	-	-	-	-	-	-	-	-	-	4
8	Land subsidy	114	110	-	-	-	-	-	-	-	-	-
9	**TOTAL INFLOWS**	**114**	**991**	**1,281**	**1,385**	**1,508**	**1,624**	**1,700**	**1,737**	**642**	**66**	**4**
10	**OUTFLOWS**											
11	**Investment Costs**	**2,282**	**-**	**-**	**-**	**467**	**-**	**-**	**-**	**-**	**-**	**104**
12	Wells	798	-	-	-	467	-	-	-	-	-	-
13	Facilities	1,296	-	-	-	-	-	-	-	-	-	-
14	other costs	187	-	-	-	-	-	-	-	-	-	-
15	Past Exploration Costs	-	-	-	-	-	-	-	-	-	-	-
16	Land	-	-	-	-	-	-	-	-	-	-	-
17	Site Restoration (2018)	-	-	-	-	-	-	-	-	-	-	104
18	**Operating Costs**	**7**	**629**	**766**	**791**	**695**	**898**	**1,173**	**1,234**	**295**	**(8)**	**-**
19	Wells	-	63	61	59	70	68	65	63	15	-	-
20	Maintainance	-	119	115	111	133	129	124	120	29	-	-
21	Insurance	-	20	19	19	22	21	21	20	5	-	-
22	Skilled Labor	-	25	24	24	28	27	26	25	6	-	-
23	Un Skilled Labor	-	129	124	120	144	139	134	130	31	-	-
24	Logistics and Vehicles	-	6	6	6	7	7	6	6	2	-	-
25	Catalysts and chemicals	-	99	123	121	120	119	118	117	28	-	-
26	Effluent disposal (Non-tradable)	-	2	3	3	3	3	3	3	1	-	-
27	Surface Rental (% of block licenced)	5	5	4	4	4	4	4	4	4	-	-
28	Development phase training	2	-	-	-	-	-	-	-	-	-	-
29	Production phase train ing	-	2	2	2	2	2	2	2	2	-	-
30	Change in A/P	-	-	3	0	5	0	0	0	(24)	(8)	-
31	Income Tax	-	31	65	78	27	96	186	209	57	-	-
32	Royalty	-	58	72	71	70	70	69	68	14	-	-
33	State Profit oil	-	70	145	173	60	214	414	465	126	-	-
34	Loss in tourism and agricultural revenues											
35	**TOTAL OUTFLOWS**	**2,289**	**629**	**766**	**791**	**1,162**	**898**	**1,173**	**1,234**	**295**	**(8)**	**104**
36	**NET CASH FLOW BEFORE FINANCING**	**(2,175)**	**362**	**515**	**594**	**346**	**726**	**527**	**503**	**347**	**74**	**(100)**

5C. Economic Analysis

5.38 Economic analysis is similar to financial analysis in the sense that they both measure changes in the wealth generated by a project. However, beyond this common attribute, economic analysis has a wider scope because it is concerned with society as a whole and not only with the welfare of the owners of the project.

5.39 The key valuation principle underlying economic analysis is that the appraisal of a project is based on economic prices which reflect the true value of a public project's goods and services to society instead of prices observed in the market, which may be distorted. Sources of market distortions are several and may include:

a. Non-efficient markets where the public sector and/or public operators exercise their power to subsidize or tax, (e.g. subsidies for energy generation from renewable sources, prices including a mark-up over the marginal cost in the case of monopoly, etc.);

b. Administered tariffs for utilities may fail to reflect the opportunity cost of inputs due to affordability and equity reasons;

c. Some prices that include fiscal levies such as duties on import, excises, VAT and other indirect taxes, income taxation on wages, etc.);

d. Effects where no market (and prices) are available (e.g. reduction of air pollution, time savings).

5.40 When the markets for the outputs and inputs of a project are perfectly competitive and when there are no other reasons for economic externalities to prevail, market prices will reflect economic prices. Under these conditions, and where a project introduces only small changes in the demand for its inputs and in the supply of its outputs, the financial analysis of a project will serve as a good proxy for the economic analysis.

5.41 But in the majority of cases, these requirements are not satisfied and in that case, market prices no longer provide a reliable measure of marginal economic benefits or costs. Economic analysis therefore calls for a series of adjustments to be made in order to convert estimates of the financial cash receipts and payments into incremental economic benefits and costs.

Economic (Shadow Prices) and Conversion Factors

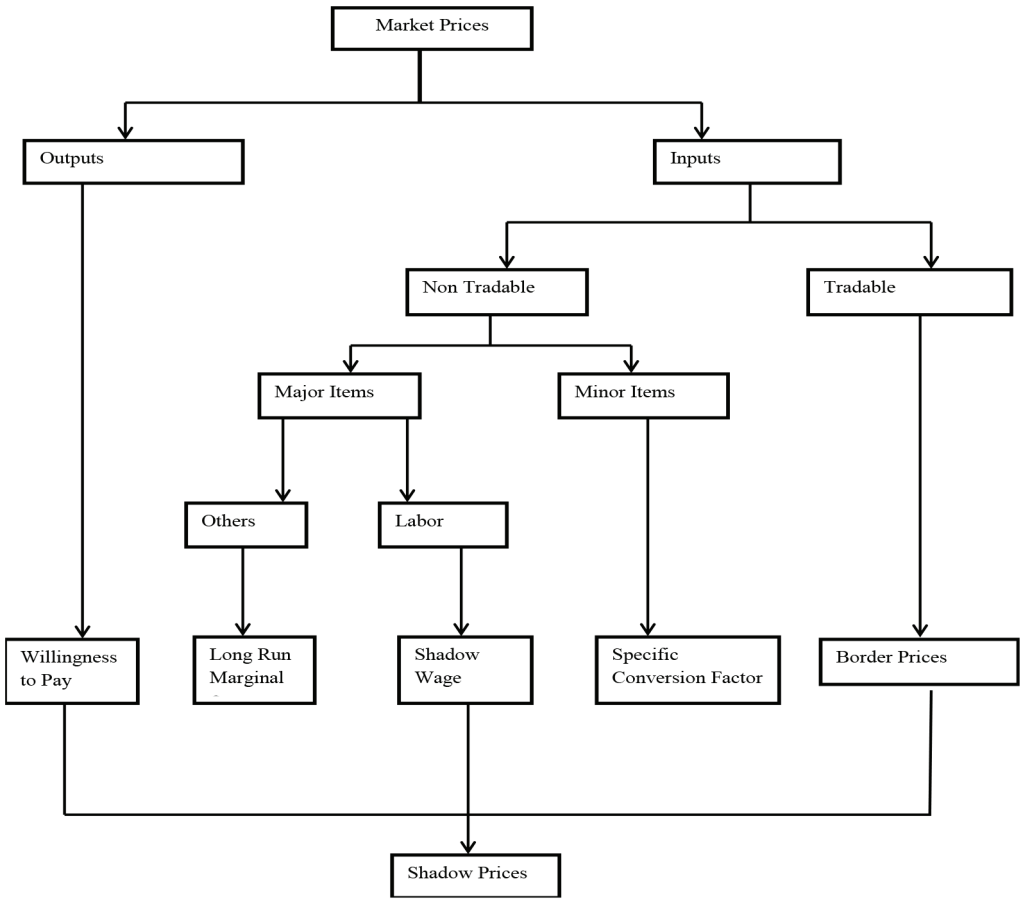
5.42 The standard approach suggested in this manual, is to move from financial to economic analysis, by transforming the net financial cash flows illustrated in table 5.8 into an Economic Resource Statement (ERS). The transformation is made possible through the following adjustments:

a. Correcting market prices for fiscal distortions. In this regard, taxes and subsidies are transfer payments that do not represent real economic costs or benefits for society as they involve merely a transfer of control over certain resources from one group in society to another. Some general rules can be established to correct such distortions: (i) Prices for inputs and outputs must be considered net of VAT; (ii) Prices for inputs should be considered net of direct and indirect taxes; (iii) Prices (e.g. tariffs) used as a proxy for the value of outputs should be considered net of any subsidy and/or other transfers granted by a public entity.

b. Transformation of adjusted market prices into shadow (economic) prices using the relevant conversion factors;

c. Evaluation of non-market impacts and correction for externalities.

Figure5.3: Conversion of market prices into shadow prices



Source: Adopted from European Commission, Guide to Cost-Benefit Analysis of Investment Projects, Economic Appraisal tool for Cohesion Policy 2014-2020, December 2014.

5.43 Figure 5.3 above illustrates the adjustments that may be made to transform market prices of project inputs/ outputs into economic / shadow prices

Project inputs

5.44 If project inputs are tradable goods, border prices are used. If a project uses an imported input, e.g. gas and oil, the shadow price is the import cost plus insurance and freight (CIF) in more liberalized (i.e. competitive and undistorted) markets, thus excluding any custom duties or taxes applied once the good enters the national market. Border prices can be expressed as a percentage of the price of the goods, as a fixed amount per unit or as a minimum price applied as soon as the good passes the border.

5.45 If they are non-tradable goods: the Standard Conversion Factor, which measures the average difference between world and domestic prices of a given economy may be applied in the case of 'minor' items, e.g. administrative costs, intermediate services, etc.;

5.46 As such, the concept of a conversion factor, defined as the ratio of the economic price to the financial price, plays an important role when looking at the economic costs or benefits of a project. If the conversion factor specific to the project's inputs and outputs and the economic costs of capital and foreign exchange are known, it is easy to translate the financial appraisal of a project into its economic valuation. For a given good or service, the term Commodity Specific Conversion Factor (CSCF) is used. While commodity specific conversion factor values may be different when calculated at project sites, economic parameters such as economic cost of capital and foreign exchange are national parameters that remain constant, at a given time and across projects, in the overall economy.

5.47 If there are no distortions in the supply and demand market of a commodity, the CSCF will simply be one because the economic and financial prices are the same. If the market for foreign exchange is distorted, the market exchange rate will not accurately reflect the economic value of a unit of foreign exchange in relation to the domestic currency. Thus, it is essential to make an adjustment for the divergence between the market price of foreign exchange and its economic price, also referred to as the Economic Exchange Rate (EER) or sometimes as the Shadow Exchange Rate (SER).

In summary, the steps required to carry out economic analysis are as follows:

i. Estimate the CSCF for all the prices of inputs and outputs involved in the evaluation.

ii. Convert the variables in the financial cash flow statement into economic resource flows by multiplying them with the CSCFs

iii. Identify the indirect benefits and costs attributed to the project (externalities) and quantify them

iv. Integrate the non-market impacts and externalities into the Economic Resource Flow Statement

v. Discount the net economic resource by the Economic Opportunity Cost of Capital to ascertain the Economic Net present Value of the project.

Table 5.10 Computation of the Conversion Factor for Catalytic Chemicals

CIF = US$ 6.3 per litre	Parameters	Financial Value	CF Unadj.	Econ. Value	FEP Distortions	Econ. Value Adj
CIF		**6.3**	1.0	6.3	0.3	6.7
(+) Tariff	0	**0.0**		0.0	0.0	0.0
(+) VAT	18%	**1.1**		0.0	0.0	0.0
(+) With holding tax	6%	**0.4**		0.0	0.0	0.0
(+) Domestic Transport and Handling	3%	**0.2**	1.0	0.2	0.0	0.2
Financial Price		**8.0**				**6.9**
CF = EV / FV =6.9/8.0		**0.853**				

5.48 Table 5.10 above illustrates the computation of the CSCF for the catalytic chemicals in the hypothetical example. In this case, the market price per litre is USD 8. After adjustment for import duty, Value Added Tax, Withholding Tax, domestic transport and handling, and the foreign exchange premium, the economic price is estimated at 6.9 per litre. The implied CSCF is therefore estimated at 0.853. in addition, table 5.11 demonstrates how the CSCF may be used to convert financial cash flows into economic flows for the hypothetical oil project.

Table 5.11: An example of the Economic Resource Flow Statement for a hypothetical Nkono oil project

		Period										
INFLOWS	**CSCF**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Oil revenue	1.053	-	1,063.6	1,287.9	1,276.2	1,264.7	1,253.3	1,242.0	1,230.8	294.8	-	-
Gas revenue	1.053	-	27.6	112.6	200.6	351.8	483.3	567.9	612.6	185.4	-	-
Change in A/R	1.053	-	(163.7)	(51.8)	(18.4)	(28.3)	(26.1)	(19.6)	(14.0)	195.3	69.6	-
Salvage Value	0.713	-	-	-	-	-	-	-	-	-	-	-
Land subsidy	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL INFLOWS		**-**	**927.5**	**1,348.7**	**1,458.4**	**1,588.2**	**1,710.5**	**1,790.3**	**1,829.3**	**675.5**	**69.6**	**3.1**
OUTFLOWS												
Investment Costs		1,935.8	-	-	-	375.1	-	-	-	-	-	93.1
Wells	0.803	641.0	-	-	-	375.1	-	-	-	-	-	-
Facilities	0.896	1,161.2										
other costs	0.713	133.6										
Past Exploration Costs	-	-	-	-	-	-	-	-	-	-	-	-
Land	1.000											
Site Restoration (2018)	0.896											93.1
Other Costs		**2.3**	**624.2**	**706.2**	**720.5**	**681.8**	**806.0**	**975.1**	**1,012.0**	**365.7**	**(6.5)**	**-**
Wells	0.849	-	53.2	51.4	49.7	59.3	57.3	55.4	53.6	13.0	-	-
Maintainance	0.849	-	101.2	97.9	94.6	112.9	109.2	105.5	102.0	24.7	-	-
Insurance	0.849	-	16.9	16.3	15.8	18.8	18.2	17.6	17.0	4.1	-	-
Skilled Labor	0.940	-	23.7	23.0	22.2	26.5	25.6	24.8	23.9	5.8	-	-
Un Skilled Labor	0.940	-	121.0	117.0	113.1	135.0	130.5	126.2	122.0	29.5	-	-
Logistics and Vehicles	0.849	-	5.2	5.1	4.9	5.8	5.6	5.5	5.3	1.3	-	-
Catalysts and chemicals	0.853	-	84.3	104.6	103.6	102.7	101.8	100.8	99.9	23.9	-	-
Effluent disposal (Non-tradable)	0.849	-	1.9	2.4	2.4	2.3	2.3	2.3	2.3	0.5	-	-
Surface Rental (% of block licenced)	-	-	-	-	-	-	-	-	-	-	-	-
Development phase training	0.993	2.3										
Production phase train ing	0.993	-	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.8	-	-
Change in A/P	-	-	-	-	-	-	-	-	-	-	-	-
Income Tax	-	-	-	-	-	-	-	-	-	-	-	-
Royalty	0.849			2.4	0.3	4.0	0.3	0.3	0.2	(20.3)	(6.5)	
State Profit oil	0.90	-	62.8	130.0	155.5	53.7	192.1	371.3	417.8	112.9	-	-
Loss in tourism and agricultural revenues	1.00		151.8	154.1	156.4	158.8	161.2	163.6	166.1	168.6		
TOTAL OUTFLOWS		**1,938.2**	**624.2**	**706.2**	**720.5**	**1,056.9**	**806.0**	**975.1**	**1,012.0**	**365.7**	**(6.5)**	**93.1**
NET RESOURCE FLOW BEFORE FINANCING		**(1,938.2)**	**303.3**	**642.5**	**737.8**	**531.3**	**904.5**	**815.2**	**817.3**	**309.8**	**76.2**	**(90.0)**

Note: The economic resource flows are derived by multiplying each financial flow in table 5.9 by the respective CSCF's in table 5.11 above.

Non-market impacts and correction for externalities

5.49 Economic cost-benefit analysis should consider all benefits and costs for society as a whole, pecuniary or otherwise, no matter where they fall and should extend beyond the narrow perspective of the impact on the accounts of an individual operating entity.

5.50 It is important to note that the process of applying conversion factors to adjust project financial cash flows does not in itself give rise to economic resource flows that are comprehensive enough to conduct a good economic evaluation of a project. Impacts generated on project users due to the use of a new or

improved good or service, which are relevant for society but for which a market value is not available, should be included as project direct benefits. In addition, any cost or benefit that spills over from the project towards other parties without monetary compensation should be included. An example of such externalities would relate to the environmental effects of a project.

5.51 Accounting for non-market impacts and externalities in the economic evaluation of projects involves a rigorous process of identification, quantification, and valuation of the associated costs and benefits.

Identification of Economic Costs and Benefits

5.52 The process of identifying benefits and costs that are relevant to the economic analysis of a project should focus on only those benefits or costs that can clearly be traced back as an effect of the project.

Quantification and Valuation of Economic Costs and Benefits

5.53 This step involves assigning monetary values to benefits and costs. Quantification of direct costs is generally the easiest task at this stage, as it only requires adequately estimating the physical requirements of each type of input used in the implementation of the project (investment) as well as the operational and maintenance cost. The valuation of these costs does not present major difficulties since for most of the resources used in the project, there are clearly defined market prices that can be used.

5.54 The quantification of economic benefits, particularly positive externalities, is a complex task that requires different studies, establishing numerical relationships between resource availability and consumption of goods. This also applies to the quantification and valuation of indirect, incidental costs and externalities, which must be analyzed case by case depending on the available information.

Relevant Economic Benefits

5.55 In keeping with international practice, a broader interpretation is adopted in this manual by defining economic benefit brought about by the proposed project as any increase in the welfare of society or the individuals who make up society.

5.56 The ultimate objective of any public project investment (and public expenditure in general), is to produce better outcomes for society, where an outcome is defined as a change in the general state of well-being in the community, such as:

i. Reducing the incidence of maternal deaths.

ii. Reducing the number of fatal road accidents.

iii. Increasing access to clean water.

5.57 The overall presumption is that any project that has defined outcomes can feasibly have its economic benefits identified and quantified. Project benefits can therefore exhibit a number of forms, which can be valued, measured and/or described in different ways including:

- Direct impacts on efficiency of the sponsoring agency through lower operating and maintenance costs which results in monetary savings.
- Contributions to the achievement of outcomes or intermediate outcomes sought by government through the provision of public services and leading to gains in well-being for the users of these services. Examples include: time savings for business and private users of an improved road; or improved amenity for users of a new solid waste management and disposal system.
- Positive externalities or spill-over benefits which accrue to third parties including society, rather than to the operating entity or intended beneficiaries of the project. Examples include: amenity/ leisure benefits from the creation of a reservoir the primary purpose of which is irrigation or water supply; or reduced congestion for non-users when users transfer to new or improved transport infrastructure.

5.58 Annex 7 lists typical economic benefits/costs for projects in key sectors where the public sector intervenes. Project sponsors may consider this annex when identifying benefits for proposed projects.

Valuing Economic Benefits

5.59 Estimating the monetary value of economic benefits is a challenging and resource intensive process. Projecting the likely demand for the goods or services from the project should be the starting point for assigning values to benefits based on the market prices.

5.60 For projects that are undertaken with the objective of supplying existing goods or services more efficiently, the benefits can be estimated in terms of savings arising out the with- and without project scenarios. An example could be the case of retooling projects, where the alternatives are to either hire or acquire the equipment needed to make staff more efficient.

5.61 In the case of non-market services, say with regard to social services, the intangible effects that fall into the category of benefits where there are no directly observable market prices alternative means of valuing benefits can be applied. These could include estimating the willingness to pay (WTP) for the project benefits. WTP is the maximum payment that a beneficiary would be willing to give up in order to receive a public service and it is therefore a measure of the 'utility' that a consumer expects to obtain.

5.62 Examples of (positive) non-market impacts are: savings in travel time; increased life expectancy or quality of life; prevention of fatalities; injuries or accidents; improvement of landscape; noise reduction; increased resilience to current and future climate change and reduced vulnerability and risk

5D. Project Selection Criteria

5.63 The financial and economic attractiveness of a project is determined by the net present value of its incremental net cash or resource flows. The net present value criterion is widely accepted by accountants, financial analysts, and economists as the only one that yields correct project choices in almost all circumstances. However, some investors have frequently relied upon other criteria such as a project's Internal Rate of Return (IRR) and the Benefit-Cost Ratio (BCR). The discount rate is a key variable in applying any one of the two major investment criteria for project selection: net present value or internal rate of return. Its correct choice is critical given the fact that a small variation in its value may alter the results of the analysis completely and may affect the final choice of a project.

The Discount Rate

5.64 Investment decisions are fundamentally different from consumption decisions because the former have a time dimension. For example, land and capital equipment are purchased at one point in time, and they are expected to generate net cash flows, or net economic benefits, over a number of subsequent years. To determine whether the investment is worthwhile, it is necessary to compare benefits and costs, which occur in different time periods.

5.65 The rate of discount, stated in simple terms, is the cost of capital that are invested in the project. In financial analysis, the discount rate depends upon the point of view of analysis. In the economic analysis of a project, the relevant cost of fund is the Economic Opportunity Cost of Capital (EOCK) to the country. From the point of view of the economy, the funds are generally drawn from three sources.

- First, funds that would have been invested in other investment activities and have now been displaced by the project (the cost of these funds would be the return that would have been earned on the alternative investments which are now foregone).
- Second, funds come from different categories of savers in the economy who postpone their consumption in the expectation of getting a return on their savings (the cost of this part of the funds is the cost of postponing consumption and this is reflected in the interest rate that the savers earn).

- Finally, some funds may be coming from abroad, that is from foreign savers (the cost of these funds would be the marginal cost of foreign borrowing). The EOCK will simply be a weighted average of the costs of funds from three sources outlined above: rate of return on postponed investments, the rate of interest on domestic savings, and the marginal cost of additional foreign capital inflows.

The Net Present Value Criteria

5.66 The Net Present Value (NPV) is the algebraic sum of the present values of the incremental expected positive and negative cash flows over a project's anticipated lifetime. If this sum is equal to zero, investors can expect to recover their incremental investment and to earn a rate of return on their capital equal to the private discount rate used to compute the present values6.

5.67 An NPV greater than zero means that investors can expect not only to recover their capital investment and to earn a rate of return equal to the discount rate, but also to receive an addition to their real net worth equal to the positive amount of the NPV. Only projects with positive NPVs are beneficial and hence attractive to private investors. However, investors are unlikely to pursue a project with a negative NPV unless there are strategic reasons.

5.68 The formula for computing the NPV of expected incremental net cash flows over n time periods with annual discounting is:

$$\mathrm{NPV} = \sum_{t=0}^{n} \frac{CF_t}{(1+\mathrm{r})^t} \quad (1)$$

Where:

The incremental net cash flows (CF_t) could be negative, zero, or positive; r is the discount rate equal to the cost of capital.

The NPV formula can be written out in its component present values of the annual net cash flows, as follows:

$$\mathrm{NPV} = C_0 + \frac{CF_1}{1+\mathrm{r}} + \frac{CF_2}{(1+\mathrm{r})^2} + \ldots + \frac{CF_n}{(1+r)^n}$$

5.69 The NPV relating to financial analysis is referred to as the Financial Net Present Value (FNPV) whereas the NPV relating to economic analysis is referred to as the Economic Net Present Value (ENPV).

5.70 The difference between ENPV and FNPV is that the former uses accounting prices or opportunity cost of goods and services instead of imperfect market prices, and it includes as far as possible any social and environmental externalities. This is because the analysis is done from the point of view of society, not just the project owner. Because externalities and shadow prices are considered, some projects with low or negative FNPV(C) may show positive ENPV.

5.71 The ENPV is the most important and reliable social CBA indicator and should be used as the main reference economic performance signal for project appraisal. Although ERR and B/C are meaningful because they are independent of the project size, they may sometimes be problematic. In particular cases, for example, the ERR may be multiple or not defined, while the B/C ratio may be affected by considering a given flow as either a benefit or a cost reduction.

[6] The recovery of the invested capital is anticipated when $NPV \geq 0$ because the incremental capital expenditures are included in the initial negative net cash flows.

Table 5.12 Calculating the FNPV from a hypothetical Oil project

		Period										
Row	**Item**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
F1	Financial Benefits	114.1	991.2	1,280.8	1,385.0	1,508.2	1,624.4	1,700.2	1,737.2	641.5	66.1	4.3
F2	Financial Costs	2,288.9	628.9	766.2	791.3	1,161.8	898.4	1,173.0	1,233.8	294.7	(7.7)	103.9
F3	Net Financial Benefits Before Financing	(2,174.8)	362.2	514.6	593.7	346.4	726.0	527.2	503.5	346.8	73.8	(99.6)
F3.1	Add Loan disbursement		661.8									
F3.2	Less Armotization				123.7	119.6	115.6	111.8	108.1			
F3.3	Less interest costs			22.4	21.7	16.7	12.1	7.8	3.8			
F3.4	Net Financial Benefits After Financing	(2,174.8)	1,024.1	492.2	448.3	210.0	598.2	407.6	391.6	346.8	73.8	(99.6)
F4	Discount Factor 'r' @15%=l/(1+r)At	1.000	0.870	0.756	0.658	0.572	0.497	0.432	0.376	0.327	0.284	0.247
F5	Present Values (PV) of net Financial Benefits	(2,174.8)	890.5	372.2	294.8	120.1	297.4	176.2	147.2	113.4	21.0	(24.6)
F6	Cummulative Present Values (CPVt)	(2,174.8)	(1,284.3)	(912.2)	(617.4)	(497.3)	(199.9)	(23.7)	123.6	236.9	257.9	233.3
F7	**FNPV**	**233.3**										

5.72 For purposes of illustration, the FNPV and ENPV of the stream of net financial /economic benefits of an investment in a hypothetical oil project are calculated in tables 5.12 and 5.13, respectively. The tables use net financial cash /economic resource flows extracted from tables 5.9 and 5.11 and the present values are computed by multiplying the discount factors given in row 4, by the values of the net benefits for the corresponding periods in row 3. The FNPV of Ushs 233.3 billion and the ENPV of UGX 1,015.9 billion are the simple sum of the project values of net benefits arising each period throughout the life of the project.

Table 5.13 Calculating the ENPV from a hypothetical Oil project

		Period										
Row	**Item**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
F1	Economic Benefits	-	927.5	1,348.7	1,458.4	1,588.2	1,710.5	1,790.3	1,829.3	675.5	69.6	3.1
F2	Financial Benefits	1,938.2	624.2	706.2	720.5	1,056.9	806.0	975.1	1,012.0	365.7	(6.5)	93.1
F3	Net Economic Benefits	(1,938.2)	303.3	642.5	737.8	531.3	904.5	815.2	817.3	309.8	76.2	(90.0)
F4	Economic Opportunity Cost of Capital (EOCK) 'i	1.000	0.885	0.783	0.693	0.613	0.543	0.480	0.425	0.376	0.333	0.295
F5	Present Values (PV) of net Financial Benefits	(1,938.2)	268.4	503.2	511.4	325.8	490.9	391.5	347.4	116.5	25.4	(26.5)
F6	Cummulative Present Values (CPVt)	(1,938.2)	(1,669.8)	(1,166.6)	(655.2)	(329.4)	161.6	553.1	900.5	1,017.0	1,042.4	1,015.9
F7	**FNPV**	**1,015.9**										

5.73 The net present value criterion can be stated in the form of a set of decision rules.

i. Decision Rule 1: Do not accept any project unless it generates a positive NPV when discounted by a discount rate equal to the opportunity cost of the funds.

ii. Decision Rule 2: To maximize net worth, choose the one with the highest NPV among the various projects or scenarios of projects. If the investment is subject to a budget constraint, choose the package of projects that maximizes the NPV of the fixed budget.

iii. Decision Rule 3: When there is no budget constraint and when a choice must be made between two or more mutually exclusive projects, e.g. projects being considered for the same building site,

investors who seek to maximize net worth should select the project with the highest NPV.

The Internal Rate of Return Criteria

5.74 By definition, the Internal Rate of Return (IRR) is the discount rate (ρ) that equates the NPV to 0 as illustrated in the following equation:

$$\sum_{j=1}^{n} \frac{CF_j}{(1+\rho)^j} - I_0 = 0 \qquad (2)$$

Where:

CF_j = the incremental net cash flow in year j to total, or equity, capital; I_0 = the initial investment.

ρ = the IRR. We have to solve for ρ.

5.75 This definition is consistent with the meaning of a zero NPV as explained in the previous section, namely, that investors recover their invested capital and earn a rate of return equal to the discount rate, which is the IRR. The internal rate of return criterion can be stated in the form of a set of decision rules.

i. Decision Rule 1: Do not accept any project unless its IRR is greater than the discount rate (accept project if ρ > r, the opportunity cost of capital/discount rate; otherwise, reject). The opportunity cost of capital is measured by the cost of funds or the expected rate of return offered by other assets equivalent in risk to the project being evaluated.

ii. Decision Rule 2: When a choice must be made between two or more mutually exclusive projects, investors should select the project with the higher, or highest IRR.

5.76 For purposes of illustration, the same example of a hypothetical oil Project used for deriving the Net Present Value (NPV) will be used here. To derive the Internal Rate of Return, we subject the present values to different discount rates until the Net Present Value is equal to zero. In this case, the discount rate that gives us a zero NPV is 25.8 % and this becomes our EIRR as illustrated in table 5.14 below.

Table 5.14 Calculating the Economic Internal Rate of Return (EIRR) for the hypothetical Oil project

		Period										
Row	Item	0	1	2	3	4	5	6	7	8	9	10
F1	Economic Benefits	-	927.5	1,348.7	1,458.4	1,588.2	1.710.5	1,790.3	1.829.3	675.5	69.6	3.1
F2	Financial Benefits	1,938.2	624.2	706.2	720.5	1,056.9	806.0	975.1	1,012.0	365.7	(6.5)	93.1
F3	Net Economic Benefits	(1.938.2)	303.3	642.5	737.8	531.3	904.5	815.2	817.3	309.8	76.2	(90.0)
F4	Economic Opportunity Cost of Capital (EOCK) 'i	1.000	0.795	0.632	0.503	0.400	0.318	0.253	0.201	0.160	0.127	0.101
F5	Present Values (PV) of net Financial Benefits	(1.938.2)	241.2	406.2	370.9	212.3	287.4	206.0	164.2	49.5	9.7	(9.1)
F6	Cummulative Present Values (CPVt) 0.000	(1.938.2)	(1,697.0)	(1,290.8)	(920.0)	(707.6)	(420.2	(214.2)	(50.1)	(0.6)	9.1	0.
F7	ENPV 25.8%											
F8	EIRR											

Benefit-Cost Ratio Criteria

5.77 As its name indicates, the Benefit–Cost Ratio (BCR), sometimes referred to as the profitability index, is the ratio of the NPV of the net cash inflows (or economic benefits) to the NPV of the net cash outflows (or economic costs) for the entire life of the project:

$$BCR = \frac{NPV \text{ inflows / economic benefits}}{NPV \text{ outflows / economic costs}} \qquad (3)$$

5.78 The benefit-cost ratio criterion can be stated in the form of a set of the decision specified below:.

iii. Decision Rule 1: Do not accept any project unless its BCR is greater than one (Accept project if BCR

> 1; otherwise, reject.).

Table 5.15 illustrates how to derive the BCR for a hypothetical project.

Table 5.15 Calculating the Cost Benefit Ratio from a hypothetical Oil project

		Period											
Row	**Item**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Cumm**
F1	Financial Benefits	114.1	991.2	1,280.8	1,385.0	1,508.2	1,624.4	1,700.2	1,737.2	641.5	66.1	4.3	11,053.1
F2	Financial Costs	2,288.9	628.9	766.2	791.3	1,161.8	898.4	1,173.0	1,233.8	294.7	(7.7)	103.9	9,333.2
F4	Discount Factor 'r' @15%=1/(1+r)At	1.000	0.870	0.756	0.658	0.572	0.497	0.432	0.376	0.327	0.284	0.247	
F5	PV of Benefits	114.1	861.9	968.5	910.6	862.3	807.6	735.0	653.1	209.7	18.8	1.1	6,142.8
F6	PV of Costs	2,288.9	546.9	579.3	520.3	664.3	446.7	507.1	463.8	96.3	(2.2)	25.7	6,137.2
F7	Benefit cost ratio=F5/F6	0.05	1.58	1.67	1.75	1.30	1.81	1.45	1.41	2.18	(8.62)	0.04	1.001

5E. Risk Analysis and Management

5.79 For purposes of this manual, a risk is defined as a future or unforeseen event or development which, if it happens, will affect the project's ability to achieve its objectives. Projects of all types and sizes face internal and external factors that cause uncertainty as to whether and when they will achieve their objectives. When a project risk materializes, it is bound to affect the project in various ways. These could include:

i. The need to revise the project scope.

ii. The need to revise the project work plan.

iii. The need to revise project costs.

iv. Impairment of the project's effectiveness.

5.80 The financial and economic analysis of projects as discussed in Sections D and C involves the estimation of key financial and economic variables that are critical in assessing the viability of a project. However, due to the ever changing economic and technical environments, there are variables which cannot be accurately predicted thus leading to uncertainty in the financial and economic modeling process.

5.81 This uncertainty may come from two main sources, namely:

i. The internal and external factors whose occurrence will affect the project.

ii. Uncertainty in the process of appraisal of the project itself on account of forecasting errors. such as prices, demand elasticity among others.

5.82 Every project is therefore bound to face a certain level of risk. This calls for the need to establish a risk management framework for every project during the preparation and appraisal processes. The risk management framework adopted in this manual is a stepwise approach as listed below:

Step 1: Identify the Risks. The Project team should list and document all the possible risks that might affect the project or its outcomes.

Step 2: Analyze the risk. Once risks are identified, the project team should determine their likelihood of occurrence and the impact of each risk. The team should develop an understanding of the nature of the risk and its potential to affect project goals and objectives.

Step 3: Evaluate or rank the risks. The Project team evaluates or ranks the risk by determining the

magnitude of the risk, which is the combination of likelihood and consequence/impact. The team makes decisions about whether the risk is acceptable or whether it is serious enough to warrant mitigation. These risk rankings are also added to the project risk register.

Step 4: Develop a risk mitigation plan. This is also referred to as risk response planning. During this step, you assess the highest ranked risks and set out a plan to treat or modify these risks to achieve acceptable risk levels. You create risk mitigation strategies, preventive plans and contingency plans at this step.

Step 5: Monitor and Review the risk. This is the step where you take your project risk register and use it to monitor, track and review.

Identifying the risks

5.83 As noted in chapter 4, risk identification should start in the early stages of project preparation. The assumptions underlying the achievement of project objectives whether at the outcome level, output level or activity level are an important indicator of risks that may be relevant to the success of the project. One of the other ways to identify risks is by learning from the experience of similar projects that have been undertaken elsewhere. Risks for a typical project may be classified in various categories which may include:

i. Market Risk: may be defined to include demand side risks such as insufficient demand, falling prices or limited scope for increasing prices. On the supply side, this may relate to increased cost of in-puts, un-availability or cost of inputs.

ii. Construction Risk: these may relate to overruns on cost and or time arising out of delays to acquire right of way, inadequate designs, quality of work, site risks, etc.

iii. Operating Risk: these may relate to cost overruns, industrial action, and failure to obtain necessary permits, technological failure.

iv. Political Risk: Sovereign debt defaults, nationalization, expropriation, privatization

v. Environmental Risk; new environmental regulations or failure to comply with existing regulations

vi. Financial Risk: inflation risk, interest rate risk, foreign exchange risk

vii. Regulatory Risk: Refers to changes in the regulatory environment.

Risk Analysis

5.84 Risk analysis involves a review of each of the identified risks in terms of its likelihood (Probability) of occurrence and the impact it would have on the viability of the project if it were to occur. Risk analysis helps the project team profile or rank the various risks facing the project. This manual adopts both a quantitative and qualitative approach to risk analysis.

Quantitative Analysis

5.85 In respect to quantitative risk analysis, this manual proposes three techniques which may be applied to assess the impact and the likelihood of occurrence of project risks (variables) when examining the financial and economic viability of projects. These are defined to include:

i. Sensitivity Analysis.

i. Scenario Analysis.

ii. Monte Carlo Analysis

Sensitivity Analysis

5.86 Sensitivity Analysis is a means of testing how responsive a project's selection criteria (NPV or IRR) are to

a change in key variables in the cash flows taken one at a time. Sensitivity analysis is often referred to as "what if" analysis, such as: "What would happen to NPV if some variable changes by a certain amount or percentage?"

Box 5.2: Key steps in conducting sensitivity analysis

Step 1: Estimate the cash flows and NPV of a project. This is called the base-case analysis.

Step 2: Let the base-case value of each of the variable change by, say, 10 per cent, and calculate the percentage change in the NPV. The resulting number measures the degree of sensitivity of the NPV to the change in the selected variable, while holding other variables constant.

Step 3: For the variables that cause the greatest change in the NPV, calculate what happens to the NPV as values for one variable at a time change over their likely range. For example, after undertaking a 10% change as suggested in step 3 above, one could shock the base variables by either +20% or -10% or, any other change. If the NPV turns negative after only a small change in a variable, then this may signal the need to either reject a project or to take some mitigating action before the project is initiated.

Step 4: Reecord the results in a table or graph where it is relatively easy to spot the key risk variables.

5.87 Sensitivity analysis, therefore, helps isolate the key variables of the project. These are variables whose variations have the largest impact on the project's financial and/or economic performance. The analysis is carried out by changing one variable at a time and assessing the effect of that change on the discounted net benefits (NPV).

5.88 A variable may be considered key or critical if, when varied by ±1%, it gives rise to a change of more than 1% in the value of the NPV. Care should be taken to exclude correlated variables to avoid distortions in the results and double-counting.

Table 5.16 Example of use of sensitivity analysis to assess the criticality of key variables for the hypothetical Nkono Oil project

Variable	Variation in FNPV due to a +/-1% change in the variable	Criticality Judgement	Variation in ENPV due to a + or -1% change in the variable	Criticality Judgement
Investment Cost	9.1%	Critical	2.6%	Critical
Oil price	8.6%	Critical	3.4%	Critical
Gas Price	2.2%	Critical	2.2%	Critical
Oil recovery rate	8.6%	Critical	3.8%	Critical
Interest rate	2.2%	Critical	0.9%	Not Critical

5.89 Another useful application of sensitivity is to gauge the riskiness of a project by establishing how large or small a change in a given variable would be to bring the NPV to zero, or more generally, for the outcome of the project to fall below the minimum level of acceptability . For example, in table 5.17, if the global oil prices fell by -11.6% and 28.3%, this would make FNPV and ENPV equal to zero, respectively, thus the need to further investigate the causes of this risk, the probability of occurrence and identification of possible corrective measures.

5.90 Sensitivity analysis has a number of limitations:

a. It does not take into ccount the possibility that some risks are more unlikely to occur than others.

b. The variables are altered one at a time without taking into account the impact of other variables.

c. The results of a sensitivity analysis viewed depend on the risk preferences of investors or analysts. For this reason, it is difficult to derive a general decision rule about whether to accept or reject a project based on sensitivity analysis.

Table 5.17 example of sensitivity analysis on variations in the oil price for the Nkono Oil project

	FNPV UGX million	ENPV UGX million	ADSCR r 1	ADSCR r 2	ADSCR r 3	DSCR r 1
	233.3	1,015.9	4.8	2.9	2.9	4.7
-29.0%	(467.4)	(25.9)	2.9	(0.4)	2.4	5.2
-28.3%	(450.0)	-	2.9	(0.3)	2.4	5.2
-11.6%	-	619.2	4.0	3.2	3.1	4.3
-1.0%	213.2	981.7	4.7	2.9	2.9	4.7
10.0%	474.0	1,380.8	8.0	0.5	2.4	5.0
20.0%	663.3	1,715.3	7.9	0.8	2.4	5.4

Scenario Analysis

5.91 Scenario analysis deals with the major limitation of sensitivity analysis by recognizing that one at-a-time testing of variables is not realistic on account of the interrelation between variables. Scenario analysis allows a number of variables to be altered in a consistent manner at the same time.

5.92 Scenarios can be based on macroeconomic factors like the performance of the economy, industry-specific factors like the behavior of competing firms, or project-specific factors like the possibility of a technological breakthrough. Scenario analysis is conducted as follows:

Step 1: Identify the key sets of circumstances, usually based on major sources of uncertainty, that are likely to determine the success or failure of a project. Define the scenarios accordingly, e.g. (a) worst (pessimistic) case; (b) expected (best-guess) case, which is often the base case; and c) best (optimistic) case.

Step 2: The values of each of the variables in the financial analysis are adjusted to be consistent with each scenario.

Step 3: Calculate the NPV for each scenario. In some cases, the interpretation of the results is easy. For example, if the NPV is positive even in the worst case, accept the project. If the NPV is negative even in the best case, reject the project. However, if the NPV is sometimes positive and sometimes negative, the results are more difficult to interpret, but at least a decision can be made from the knowledge of the "downside" and "upside" risk potential.

5.93 Although scenario analysis allows for interrelationships between variables, it usually does not take into account the probabilities associated with each scenario. Probabilities could be assigned, but they are likely to be highly subjective and could be biased either in favor or against a project.

5.94 The scenarios themselves are likely to be discrete rather than continuous. This presents no problem in some cases where an event either happens or does not happen. But in other cases, the scenarios that are defined may not fully reflect all of the possible situations that could arise, e.g. the full range of

possible rates of growth for real GDP.

Monte Carlo Analysis

5.95 Monte Carlo analysis addresses the main concerns noted regarding sensitivity and scenario analysis by assigning the probability distribution of the critical variables of the sensitivity analysis, defined in a precise range of values around the best estimate, used as the base case. The probability distribution for each variable may be derived from different sources, such as experimental data, distributions found in the literature for similar cases, or subjective judgment by professional experts in the field.

5.96 The Monte Carlo method requires simple computation software. The method consists of repeated random extractions of a set of values for the critical variables, taken within defined intervals, and then the calculation of the performance indicators for the project (IRR or NPV) resulting from each set of extracted values. By repeating this procedure for a large number of iterations, one can obtain a pre-defined convergence of the calculation as the probability distribution of the IRR or NPV.

5.97 The analysis allows for re-modeling of a large number of scenarios that generate a random and methodologically objective probability distribution of the outcome resulting from the combined effect of all specified probability distributions. The resulting outcomes tell us the expected value of the outcomes as well as the probabilities of the higher or lower values for the outcome.

Table 5.18 Results of Monte Carlo simulation

Expected values	ENPV	ERR
Base case	36,649,663	7.56 %
Mean	41,267,454	7.70 %
Median	37,746,137	7.64 %
Standard deviation	28,647,933	1.41 %
Minimum value	(25895645)	3.65 %
Central value	55,205,591	7.66 %
Maximum value	136,306,827	11.66%
Probability of the ENPV being lower than zero or ERR being lower than the reference discount rate	0.053	0.053

Source: A guide to cost-benefit analysis of investment projects (European Commission December 2014)

5.98 The values obtained enable the analyst to infer significant judgments about the level of risk of the project. In the example shown in the table 5.18 above, ENPV can result in negative values (or ERR lower than the EOCK) with a probability of 5.3%, disclosing a project with a low risk level. In other cases, however, a mean (and/or median) value significantly below the base value can indicate future difficulties in the materialization of the expected project benefits.

5.99 The result of the Monte Carlo drawings expressed in terms of the probability distribution or cumulated probability of the IRR or the NPV in the resulting interval of values, provide provides more comprehensive information about the risk profile of a project (see Box 5.3) below.

Box 5.3 Key Steps underlying Monte Carlo Analysis:

i. Identify risk variables that not only constitute a large share of revenues or costs of the project but are also uncertain in nature.

ii. Link each risk variable into the financial cash flow of the deterministic case.Asses how likely the risk is to occur and determine if any truncation limits are needed.

iii. Select the appropriate probability distribution (uniform, triangular, normal, step or discrete) and the range of value for each risk variable.

iv. Identify and manage the relationship between correlated variables to avoid inconsistent and similar results.

v. Select the model results that the computer program is supposed to monitor and report during the simulation.

vi. Specify the desired number of simulation runs usually (1,000 – 10,000) and then run the simulations. Each run represents a scenario where a particular value for each identified risk variable is selected according to the specified probability distributions, correlation between variables.

vii. Present a series of statistical measures such as FNPV, ENPV and viability of the outcomes.

Source: Jenkins, Harberger & Kuo (2013).

Qualitative Risk Assessment

5.100 Qualitative analysis is another approach of risk assessment during project preparation and appraisal. The main difference between qualitative and quantitative risk analyses is that the former uses a relative or descriptive scale to measure the probability of occurrence whereas the latter uses a numerical scale. For example, a qualitative analysis would use a scale of "Low, Moderate, or High" to indicate the likelihood of a risk event occurring whereas the quantitative analysis will determine the probability of each risk event occurring. An instance would be if risk number 1 has a 10% chance of occurring; Risk number 2 has a 50% chance of occurring, and also gives the numerical impact of the risk on the project if it were to occur.

5.101 Qualitative risk analysis makes use of a risk matrix as the key tool for determining and preparing a risk mitigation plan. The first step in developing a risk matrix is to define the rating scales for likelihood and impact. Tables 5.19 and 5.20 below give examples of rating scales for likelihood and impact.

Table 5.19 Rating scale for the likelihood of risk

Rank	Likelihood	Description
L1	Very Low	Highly unlikely to occur. Has a 0-10% chance of occurring.
L2	Low	Unlikely to occur on the basis of infrequent occurrence in past projects. Has a 10-33% chance of occurring.
L3	Moderate	Possible to occur. Has 33-60% chance of occurring.
L4	High	Likely to occur. Has occurred in past projects. Has a 60-90% chance of occurring.
L5	Very High	Highly likely to occur. Has occurred in past projects and conditions exist for it to occur on this project. Has a 90-100% chance of occurring.

Table 5.20 rating scale for risk impact on the project

Rank	Impact	Description
i1	Very Low	No relevant effect on social welfare, even without remedial actions change in NPV
i2	Low	Minor loss of the social welfare generated by the project, minimally affecting the project long run effects. However, remedial or corrective actions-are needed. < 5% fall in NPV
i3	Moderate	Moderate: social welfare loss generated by the project, mostly financial damage, even in the medium-long run. Remedial actions may correct the problem.5-10% fall in NPV

i4	High	Critical: High social welfare loss generated by the project; the occurrence of the risk causes a loss of the primary function(s) of the project. Remedial actions, even large in scope, are not enough to avoid serious damage.10-20% fall in NPV
i5	Very High	Catastrophic: Project failure that may result in serious or even total loss of the project functions. Main project effects in the medium-long term do not materialize > 20% increase in budget.

5.102 The Risk level is the combination of Probability and Severity (P*S). Four risk levels can be defined as follows with the associated colours in figure 5.21.

Table 5.21 Example of a risk assessment matrix

			Impact					
Risk level	Colour	Likelihood		i.1	i.2	i.3	i.4	i.5
Low			L.1	Low	Low	Low	Low	Moderate
Moderate			L.2	Low	Low	Moderate	Moderate	High
High			L.3	Low	Moderate	Moderate	High	High
Very High			L.4	Low	Moderate	High	Very High	Very High
			L.5	Moderate	High	Very High	Very High	Very High

Risk Mitigation Plan

5.103 Once the level of the remaining risks (Likelihood and Impact) is established, it is important to identify the mitigation and/or preventive measures foreseen. The table 5.20 shows a qualitative way of mitigating project risks prevailing in the various areas as defined in the risk matrix table. The identification of these measures requires a thorough knowledge of the causes of risk and of the nature and the timing of the end effects. There are four possible strategies for dealing with risks that have a negative impact on the project, namely:

1. Avoid
2. Transfer
3. Preventive
4. Accept

5.104 Avoid: This involves taking action to either mitigate the probability of the risk or its impact to zero. In either case this response enables the risk to be circumvented entirely. For example using a contractor who in the past has had a bad reputation for shoddy work, could be avoided by selecting a more reputable contractor at the procurement stage.

5.105 Transfer: This involves transferring the risk to a third party who becomes responsible for its management and impact. This can be done by:

1. Taking out insurance (the insurance company is now liable).
2. Having the work done under a fixed contract (contractor is now liable).

5.106 Accept: Acceptance strategy is chosen where the likelihood and impact of the risk are low and undertaking a different course of action is not cost effective. This strategy is affected through establishing contingencies in the form of resources, money or time to handle the risks.

5.107 Preventive: This involves taking early action to reduce the likelihood and impact of a risk occurring, rather than wait to repair the damage when it has already occurred which is often a more expensive option. Adopting less complex processes, conducting more tests, relying on expert advice falls within this category.

Table 5.22 Risk mitigation plan options

<table>
<tr><td></td><td colspan="6">Impact</td></tr>
<tr><td rowspan="6">Likelihood</td><td></td><td>i.1</td><td>i.2</td><td>i.3</td><td>i.4</td><td>i.5</td></tr>
<tr><td>L1</td><td colspan="2" rowspan="3">Accept</td><td colspan="3" rowspan="3">Transfer</td></tr>
<tr><td>L2</td></tr>
<tr><td>L3</td></tr>
<tr><td>L4</td><td colspan="2" rowspan="2">Avoid</td><td colspan="3" rowspan="2">Mitigate</td></tr>
<tr><td>L5</td></tr>
</table>

5.108 Risk management involves identification of strategies to allocate risks to the parties involved, transfer to professional risk management institutions such as insurance companies and mitigating them. Risk management is a complex function. The sponsoring entity should follow the risk assessment and at least identify specific measures for the mitigation and/or prevention of the identified risks, according to international good practice. For a more detailed discussion about the assessment of acceptable risk levels and the definition of risk prevention and mitigation strategies see table 5.23.

Table 5.23 Risk Mitigation Matrix

Adverse Effect	Variable	Causes	Effect	Timing	Effect On cash flows	Likelihood	Impact	Risk Level	Prevention or mitigation measures	Residual Risk
Construction Delays	Investment Cost	Low contractor Capacity	Delay in service starting	Medium	Delays in establishing a positive cash flow including benefits materialization	Moderate	Moderate	Moderate	Set up a project implementation unit to be assisted by technical assistance for the project management during implementation	Low
Project Cost overrun	Investment Cost	Inadequate Design estimates	Investment costs higher than expected	Short	Higher social costs in the first phase of the project	high	Very high	Very High	The design of the project must be revised	Moderate
Landslides	Not Applicable	Inadequate site Investigation	Interruption of the service	Long	Extra costs to rehabilitate the service	Low	moderate	Low	Close monitoring	low
Delayed Obtainment of Permits	Not applicable	Low Political Commitment Mismanagement of licensing procedures process	Delay in commencement of works	Short	Delay in establishing a positive cash flow including benefits materialization	Low	low	Low	Close monitoring	low
Public Opposition	Not applicable	Inadequate market strategy. Underestimation of threats	Demand lower than expected	Medium	Lower revenues and social benefits	Moderate	Very High	High	An appropriate social plan, social acceptance	Moderate

Source: A guide to cost-benefit analysis of investment projects (European Commission December 2014)

5F. Distribution Analysis

5.109 The distributional module analyses all the people or institutions that have an interest in a project. As noted in chapter four of this manual, Stakeholders may determine a project's success or failure. They are either the project's allies, or sometimes maybe the people or institutions who block the successful implementation of the project if they are not effectively engaged. The preparation and analysis of the list of stakeholders will help in keeping all these groups in mind and to decide how to involve these stakeholders or deal with them in an effective manner. It will help you determine the importance of the person or institution, to best decide how you will engage or involve (or over-come a potential future blockage) to choose the most effective approach.

5.110 The second reason for distributional analysis is to see if the benefits of the project will actually go to the targeted groups, as well as to ensure that no specific group is subjected to undue burden as a result of a project. The magnitude of any burden can be measured by the present value of the incremental net benefit flows that are expected to be realized by that group. Among the main stakeholders affected by a project are generally the project's suppliers, consumers, project competitors, labor, and the government. The impact on government is mainly derived from the externalities generated by taxes and subsidies.

5.111 The financial and economic analysis of the Integrated Project Analysis will provide the basic data for estimating the specific stakeholder impacts by analyzing each group's benefits and costs to determine who gains and who loses as a result of a project.

5.112 A traditional financial analysis examines the financial feasibility of the project from the owners' and total investment points of view whereas economic analysis evaluates the feasibility from the point of view of the whole economy (Jenkins, Kuo, and Harberger, 2013). The difference between the financial and the economic values (externalities) of an input or output therefor represents a benefit or cost that accrues to a party other than the financial sponsors of the project. These externalities can be analyzed by undertaking a distributive analysis through their allocation to the affected parties. A distributive analysis is recommended to include six distinct steps:

i. Identify the externalities.

ii. Measure the impact of the externalities in each market as the real economic values of resource flows less the real financial values of resource flows.

iii. Measure the values of the various externalities through the life of the project and calculate their present values using the economic opportunity cost of capital.

iv. Allocate externalities across the various stakeholders of the project.

v. Summarize the distribution of the project's externalities and net benefits according to the key stakeholders in society; and

vi. Reconcile the economic and financial resource flow statements with the distributional impacts.

Allocation of externalities among stakeholders

5.113 Table 5.24 shows the distributional impacts of the hypothetical Nkono Oil project. The externality values in column 4 are derived by taking the difference between the economic values (column 3) and the financial values (column 2). The financial and economic values constitute net present values of each of the rows from the financial appraisal of the cash flows and resource flow statements in tables 5.9 and 5.11.

Table 5.24 Allocation of net benefits for the Nkono Oil project (UGX billions constant prices)

Inflows	Financial	Economic	Externalities	Govt	Consumers	Labor	Farmers	Tourism Industry	Exis ting Oil companies	Total
1	4,919.4	5,520.9	601.5	758.8	104.9				(262.2)	601.5
Oil revenue	1,157.5	1,332.6	175.1	220.9	30.5				(76.3)	175.1
Gas revenue	(145.2)	(148.5)	(3.3)	(3.3)						(3.3)
Change in A/R	1.1	0.9	(0.2)	(0.2)						(0.2)
Salvage Value	210.0	-	(210.0)	(210.0)						(210.0)
Land subsidy	6,142.8	6,705.9	563.1	766.3	135.4	-	-	-	(338.5)	563.2
Total Inflows										
Outflows	**2,574.7**	**2,193.3**	**(381.4)**	**(381.4)**	**-**	**-**	**-**	**-**	**-**	**(381.4)**
Investment Costs	**1,065.6**	**871.0**	**(194.6)**	**(194.6)**						**(194.6)**
Wells	1,296.1	1,161.2	(134.8)	(134.8)						(134.8)
Facilities	187.4	133.6	(53.7)	(53.7)						(53.7)
other costs	-	-	-	-						-
Past Exploration Costs	-	-	-	-						-
Land	25.7	27.4	1.7	1.7						1.7
Site Restoration (2018)	3,562.4	3,496.6	-65.7	-763.9	-	(63.0)	380.6	380.6	-	-65.7
Operating Costs	**267.6**	**242.2**	**(25.5)**	**(25.5)**						**(25.5)**
Wells	515.7	466.6	(49.1)	(49.1)						(49.1)
Maintainance	84.9	76.8	(8.1)	(8.1)						(8.1)
Insurance	659.3	660.3	1.1	64.1		(63.0)				1.1
Labour	26.1	23.6	(2.5)	(2.5)						(2.5)
Logistics and Vehicles	493.1	448.4	(44.7)	(44.7)						(44.7)
Catalysts and chemicals	10.6	9.6	(1.0)	(1.0)						(1.0)
Effluent disposal (Non-tradable)	23.3	-	(23.3)	(23.3)						(23.3)
Surface Rental (% of block licenced)	2.4	2.3	(0.0)	(0.0)						(0.0)
Development phase training	9.3	9.9	0.6	0.6						0.6
Production phase train ing	(4.6)	(5.0)	(0.3)	(0.3)						(0.3)
Change in A/P	368.9	-	(368.9)	(368.9)						(368.9)
Income Tax	286.2	-	(286.2)	(286.2)						(286.2)
Royalty	819.8	800.8	(19.0)	(19.0)						(19.0)
State Profit oil	-	761.1	761.1				380.6	380.6		761.1
Loss in tourism and agricultural revenues	6,137.1	5,690.0	(447.1)	(1,145.3)	-	(63.0)	380.6	380.6	-	(447.1)
Total Outflows	**5.7**	**1,015.9**	**1,010.3**	**1,911.5**	**135.4**	**63.0**	**(380.6)**	**(380.6)**	**(338.5)**	**1,010.3**
Stake holder Impacts	**5.6**	**1,079.9**	**1,074.3**	**1975.3**	**135.4**	**63.0**	**-380.4**	**-380.4**	**-338.5**	**1074.3**

5.114 Using the hypothetical case, distribution of the net benefits for the project is as summarized below:

i. The consumers (users) of oil and gas products generated by the oil firm are expected to receive a positive externality of Shs 135.4 billion this being the result of a fall in price of petroleum products previously imported. The fall in price is on account of the elimination of freight costs and will lead to higher demand of the products.

ii. The Government will have positive benefits in the form of the foreign exchange premium on the foreign exchange savings arising out of reduced imports. It is worth noting that at the moment

there is no import duty on petroleum products which otherwise attracts excise duty. There will therefore be no loss in government revenue on account of reduced imports. However, there will be increased revenue to government on account of VAT collected on increased use of petroleum products. The total expected benefit is estimated at Shs 766.2 billion.

iii. The existing oil companies are expected to lose part of their market on account of the expected reduction in petroleum products especially due to the expected fall in price driven by elimination of freight costs by the new producers. The loss is estimated at Shs 339 billion.

iv. The local labor that is bound to get jobs with the oil company is expected to have positive benefits on account of the salaries that are bound to lie above the going economic wage. The benefit is estimated at Shs 63 billion.

v. The tourism industry and the local farming community in the locality of the oil production operations are expected to suffer some loss in income on account of land that will no longer be available for farming (380.4 billion) and the limited access to game reserves previously viewed from within the area by tourists (380.4 billion).

5G. Cost Effectiveness Analysis

5.115 This is an appraisal technique primarily used in social sector infrastructure projects where it is difficult to quantify and valorize benefits in monetary terms. For instance, when there are two or more alternative approaches to improving the nutrition levels among children in a community, the selection criterion could simply be to select the alternative which has the least cost. The benefits, in such cases, are treated as identical. Therefore, it is not necessary to quantify them or place a monetary value on them. This approach is also useful for choosing among different technologies for providing the same services (for example, when there are two alternative technologies related to irrigation).

5.116 In applying the Cost Effectiveness Approach (CEA), the Present Values of Costs (PVC) have to be computed. While using the CEA, it is important to correctly estimate the salvage values at the end of the projects and to choose the discount rate carefully. The preferred outcome may change with a change in discount rate. The rate at which the two alternatives are the same is referred to as the "cross over discount rate".

5.117 The CEA can be used in two forms. First, the "constant effects method", in which the least cost alternative that provides a stated level of benefits including intangible benefits is chosen. Second, the "constant cost method", in which the cost per unit of benefit, also called cost effectiveness ratio, is calculated. In the latter approach, it is necessary to quantify the benefits although there is no need to put a monetary value to them. For instance, CEA is used in the field of health services in terms of a ratio where the denominator is a gain in health (years of life, premature births averted sight years gained) and the numerator is the cost associated with the health gain. The alternative that minimizes the discounted present worth of cost per unit, or that maximizes the discounted present worth of units of output per unit of invested currency, is the better alternative.

5.118 It may be noted that the CEA does not need an estimation of benefits and, by the same token, it cannot give a measure of the worth of a project or program.

5H. The Public Private Partnership Project Appraisal

Public Sector Comparator (PSC)

5.119 Government adopted Public Private Partnerships (PPPs) as one of the modalities for the provision of public services and infrastructure in Uganda. This followed the approval by Cabinet of the PPP Policy in 2010 and the enactment of the PPP Act (2015) to provide for a strong legal and institutional framework to guide the implementation of PPPs.

5.120 The Act defines Public Private Partnership (PPP) as a commercial transaction between a contracting authority and a Private Party where the private party performs a function of and on behalf of the contracting Authority, for a specified period and:

i. Acquires the use of the property, equipment or other resources of the contracting authority for the purposes of executing the agreement; or

ii. Assumes substantial financial technical and operational risks in connection with the performance of the function or use of the property; or

iii. Receives a benefit for performing the function through payment by the contracting authority or charges or fees collected by the private party from the users of the infrastructure or service.

5.121 Notwithstanding the role of the private sector in PPPs, the view taken in this manual is that PPPs are an integral part of the Public Investment Management (PIMS) Framework and must be subjected to the key principle that public resources should only be invested in those projects that provide a net benefit to society. Within the PIMS reforms adopted by Government, it is a requirement that every project idea shall be subjected to the PIMS processes to decide whether its objectives are best served if implemented as a PPP or through traditional public investment project approach at the pre-feasibility study stage.

5.122 A major tool to use in the evaluation of PPPs is the Public Sector Comparator (PSC). Conceptually, the PSC is a comparison of the value for money of delivering a project via the traditional public sector project modality or through the PPP option. The key decision rule is that the project should be delivered as a PPP only if this is better value for money than the traditional approach. A PSC can be undertaken in two ways, namely:

i. Using the quantitative approach

ii. Using the qualitative approach

The Quantitative PSC

5.123 The quantitative PSC is an assessment based on a financial model. The model compares the risk adjusted life cycle costs of the implementation of the proposed project through traditional public procurement, on the one hand, and using the PPP, on the other hand. In other words, the public option will involve an estimate of how much it costs government to deliver the project itself including the costs associated with government's share of risks while the PPP option would include its own risks as well as estimations for private efficiency.

5.124 Given that a major component of the PSC is the risk sharing, the public sector needs to draw a detailed register of risk sharing where analysis of the likely impact and probability of occurrence is indicated. With this register, allocation of risk between the public and private bidders is easily ascertained and, therefore, the value of transferrable risk has to be included in the PSC. For the PSC, it is advisable to include the full risk adjustment as this helps to give a more accurate picture of the cost of the project.

5.125 Establishing VfM in PPP project using a Public Sector Comparator (PSC) for a PPP project involves comparing the savings obtained as a result of procuring a project under a PPP instead of traditional procurement. Therefore, you construct two hypothetical models where model one is the purely public procurement model including risks of the project and model two is the PPP reference model. From these, the one which represents value for money is chosen. From this, a decision will be taken if a sponsoring agency should procure a project under PPP model or not. The following steps may be followed in constructing a risk PSC model:

i. Provide a technical definition of the project (in terms of outputs).

ii. Calculate the direct costs and indirect costs of the project: The costs must be recent and up to date.

iii. Calculate any revenues (these could be in terms of user fees paid for all or part of the service, unitary fees from public sector client or any existing public sector assets used to generate revenue).

iv. Explain all assumptions used in construction of the model such as the discount rate, depreciation, inflation, treatment of assets and available budget and expenditure plans for the project.

v. Allocation of risk

vi. Identify all risk, its probability of occurrence and quantify its impact.

vii. Identify strategies of mitigating the risk and attach a cost of mitigating each risk.

viii. Construct the risk allocation matrix by allocating the risk between public and private party.

ix. Construct a risk adjusted PSC Model (PSC +Risk allocation).

x. Establish if the project is still affordable with the risk adjusted-PSC, if not, then the project may be dropped or discontinued.

5.126 The next step is to construct the PPP model where the public sector estimates a hypothetical private party bid to deliver the same specified outputs and in that way the likelihood for Public VFM is established. The steps are as follows:

i. Confirm the type of PPP Contract.

ii. Describe PPP project structure and sources of funding like private debt, private equity, public supports, and returns to sources of funding.

iii. Develop core components of PPP payment mechanism.

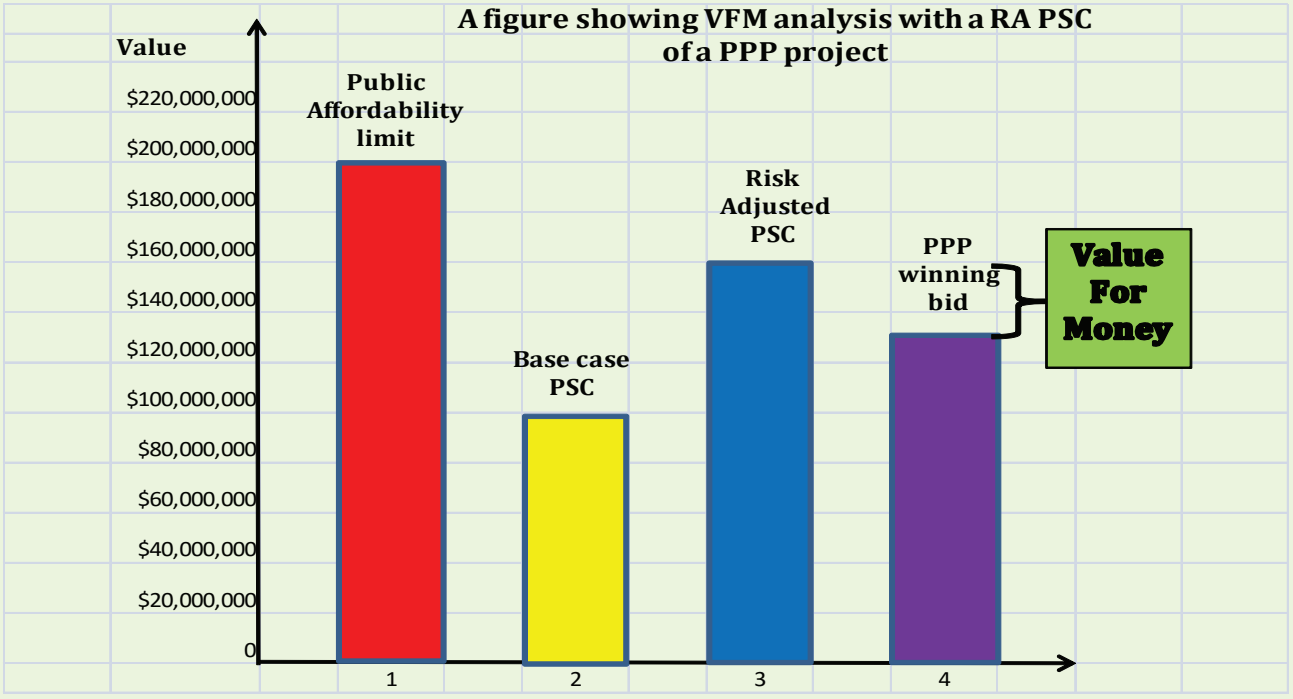
iv. Calculate and consolidate all costs.

v. Construct the PPP reference model and explain all assumptions. (The PPP reference model should use the same assumptions as PSC on inflation, discount rate, depreciation, etc.)

vi. Risk allocation is equally attached to this model.

5.127 When all models have been established, one compares the RA PSC and the PPP reference model. From this comparison, one indicates if the public sector should continue with PPP tendering or not. The PPP reference model provides the benchmark against which to compare private sector bids. Figure 5.4 illustrates PSC and value for money in PPPs.

Figure 5.4 Illustration of the concept of Value for Money



5.128 From the figure above, two things should be noted:

i. If the RA PSC and the PPP reference model are above the affordability limit, then the project should be dropped or not pursued.

ii. If there is no saving from the PPP reference model compared to the RA PSC, then the project should not be procured using a PPP rather employ the traditional procurement.

5.129 The VfM is positive when the TIP cost of provision, adjusted by risk, is higher than the cost of provision by PPP. When the VfM is negative, the risk-adjusted cost of private provision will be higher than TIP (in this case, the value is destroyed if it is structured as a PPP). This idea can be presented in the following scheme.

Equation (4) presents the formula to estimate the VfM:

$$VfM = \sum_{t=0}^{n} \frac{BC_t - PEP_t + RRC_t + TRC_t + PFC_t}{(1+r)^t} - \sum_{t=0}^{n} \frac{Sub_t - FPC_t + RRP_t + AC_t - EG_t - NTE_t}{(1+r)^t}$$

(4)

Where:

BC: Base Cost of the project

PEP: Public Earnings of Project

RRC: Retained Risk Cost

TRC: Transferred Risk Cost

PFC: Public Finance Cost (best alternative)

Sub: Subsidies under construction and subsidies under operation

FPC: Financing Project Cost (on PPP mode)

RRP: Renegotiation Risk of Project

AC: Administration Cost

EG: Efficiency Gains

NTE: Neutrality Tax Effects

r: Discount Rate

t: years

Qualitative Approach

5.130 Carrying out a quantitative PSC analysis requires a large amount of data and estimates of costs and benefits. In countries where the experience with PPPs is limited, historical data to facilitate the estimates may not be available. Under such circumstances, a qualitative PSC may suffice.

5.131 A qualitative PSC assessment is based on the analysis of the proposed project structure, risk allocation and other factors. The qualitative assessment tests whether the PPP arrangement is likely to yield net benefits compared to the traditional public sector procurement. A qualitative PSC would consider factors such as:

i. General viability of the project and the public alternative.

ii. Whether the project has sufficient scope for private innovation or efficiency.

iii. Performance regime of the private party.

iv. Incentive impacts of the private party.

v. Capability and interest of firms.

vi. Manageability of the project.

vii. Involvement of lenders and their oversight.

Guideline no 5: Integrated Project Appraisal

5.1 In order to ensure that public resources are allocated to the most productive investments that have the maximum impact on the welfare of the Ugandan society, Government has adopted the Integrated Project Analysis approach which calls for all new projects to be subjected to pre- feasibility and feasibility studies. As prescribed in guideline number 3 of this manual, the mandatory studies include analytical modules relating to:

i. Financial analysis;
ii. Economic analysis;
iii. Stakeholder distributional analysis and;
iv. Risk analysis.

Financial Analysis

5.2 Integrated Project Analysis begins with the financial analysis module which involves assessing a project's financial costs and benefits in order to:

i. Assess the project viability
ii. Verify the project cash flows are sufficient to implement the project (sustainability), and
iii. Outline the cash flows which underpin the calculation of the socio-economic costs and benefits.

5.3 The financial analysis methodology used shall be based on the Discounted Cash Flow (DCF) method. In this regard, only cash inflows and outflows are considered in the analysis, i.e. depreciation, reserves, price and technical contingencies and other accounting items which do not correspond to actual flows are disregarded.

5.4 The cash flow forecasts should cover a period equivalent to the useful economic life of the physical assets created by the project and appropriate to the project's long term effects and shall have four components:

i. The financial receipts (benefits) plan
ii. Investment expenditure plan
iii. The operating expenditure plan
iv. The financing plan

Guideline no 5: Integrated Project Appraisal

5.5 Improper accounting for the impacts of inflation when conducting financial analysis could have detrimental effects not only on the financial sustainability of a project but also on its economic viability. Financial analysis shall be carried out at constant prices. When the analysis is carried out at constant prices, the discount rate will be expressed in real terms. When the analysis is carried out at current prices, a nominal discount rate will be used.

5.6 The assessment of project profitability will be done by the following key indicators including: The financial cost benefit ratio (CBR), the financial net present value (NPV), and the financial internal rate of return (IRR).

Economic Analysis

5.7 As part of the integrated project analysis, an economic analysis must be carried out for each project to appraise its contribution to welfare. This shall involve the use of shadow prices to reflect the social opportunity cost of goods and services, instead of prices observed in the market, which may be distorted.

5.8 The market distortions referred to are externalities like: taxes, subsidies, trade tariffs, price controls, monopoly markets, environmental impacts (such as pollution or congestion), and open access or common property situations. Also, it is necessary to take into account externalities in the price of capital (discount rate), in the price of foreign exchange (because of trade distortions and controls in the foreign exchange markets), and in the labor market (where the financial wage rate may be different from the economic price of labor).

5.9 When the markets for the outputs and inputs are perfectly competitive and when there are no other reasons for economic externalities to exist, market prices will measure economic prices. Under these conditions, and where a project introduces only small changes in the demand for its inputs and in the supply of its outputs, the financial analysis of a project will serve as a good proxy for the economic analysis.

Guideline no 5: Integrated Project Appraisal

5.10 In the majority of cases, these requirements are not satisfied and in that case, market prices no longer provide a reliable measure of marginal economic benefits or costs. Economic analysis requires that a series of adjustments be made to convert estimates of incremental cash receipts into incremental economic benefits and estimates of incremental cash disbursements into incremental economic costs. The following adjustments should be:

i. Fiscal corrections; in respect of taxes and subsidies which are transfer payments that do not represent real economic costs or benefits for society as they involve merely a transfer of control over certain resources from one group in society to another.

ii. Conversion from market to shadow prices: When market prices do not reflect the opportunity cost of inputs and outputs, they should be converted into shadow prices to be applied to the items of the financial analysis

iii. Evaluation of non-market impacts and correction for externalities.

5.11 After market prices adjustment and non-market impacts estimation, costs and benefits occurring at different times must be discounted. The discount rate in the economic analysis of investment projects, the Social Discount Rate (SDR), reflects the social view on how future benefits and costs should be valued against present ones.

5.12 The economic performance of the project shall be measured by calculating the following indicators:

i. Economic Net Present Value (ENPV): the difference between the discounted total social benefits and costs;

ii. Economic Rate of Return (ERR): the rate that produces a zero value for the ENPV;

iii. B/C ratio, i.e. the ratio between discounted economic benefits and costs.

Risk Analysis and Distributional Analysis

5.13 A risk assessment must be included as part of the Integrated Project analysis. This is required to deal with the uncertainty that always permeates investment projects.

5.14 A distributional analysis should also be undertaken to determine the impact of the project on the various stakeholders

Annex 1

Summary of roles and responsibilities in the PIMS

S/N	Responsibility centre	Tasks
1	Ministry of Finance, Planning and Economic Development	i) MoFPED has the overall responsibility for providing oversight to the PIMS. ii) It will therefore put in place regulations, guidelines and templates to ensure effectiveness of the PIMS as well as convene DC. iii) Mobilize, disburse and allocate resources for the PI$_s$
2	Development Committee	1. To issue regulations, manuals, methodologies, guidelines and templates for project identification, project preparation and project appraisal. 2. To appraise investment projects and studies in order to validate their bankability. 3. To monitor and review ongoing projects and ensure they are in line with their planned out puts and activities. 4. Provide necessary approvals along the project cycle.
3	Line Ministries, Departments, Agencies and Local Governments	i) Develop project ideas in line with the sector strategic objectives. ii) Assist in implementation, monitoring and evaluation of Public Investments. iii) Development project profiles and studies for consideration. iv) Participate in DC. v) Provide project information for the data base. vi) Produce project completion reports and submit to DC.
4	National Planning Authority	1. Formulate National investment Objectives. 2. Provide guidance to SWGs to ensure their plans are aligned to the National Objectives. 3. Review concept notes as members of DC. 4. Monitor ongoing projects. 5. Undertake performance evaluation and ex-post analysis of completed projects
5	Office of the Prime Minister	a. Review concept notes and ongoing projects as members of DC. b. Monitor ongoing projects c. Undertake performance evaluation and ex-post analysis of completed projects

6	Office of the Auditor General	1. Review on-going projects. 2. Undertake VFM audits on completed projects
7	Office of the President	1 Review concept notes and on-going projects as members of DC. 2 Ensure investments meet public interests and regulations. 3 Monitor on-going projects 4 Undertake performance evaluation and ex-post analysis of completed projects
8	Parliament	i) Provide oversight role over the implementation of PI. ii) Approving resources for PIs
9	Sector Working Groups	1.1 Convene meetings on a regular basis to consider the project concept notes submitted by MDAs. 2.1 Authorize MDAs to submit concept notes to MoFPED. 3.1 Ensure that all projects are well sequenced in the sector Investment Plans.
10	Development Partners	i) Participate in the consideration of project concept notes as members of the SWGs. ii) Align their interventions to the country's investment plan. iii) Provide financial and technical support.

Annex 2

Template for project concept notes

Purpose of the template: To enable the Development Committee and the Sector Working Group assess whether the proposed project idea is consistent with the strategic priorities of Government and if so, obtain approval for the preparation of a project profile.

Project Summary	
Sector	
Vote	
Vote Code	
Program	
Program Code	
Project Title	Let it be as clear as possible, avoiding duplication of names within the Public Investment Plan.
Project Duration (Financial Years)	
Estimated Project Cost	Quote figures in UGX and give (in brackets) the exchange rate used where funds are in a foreign currency
Officer Responsible	Preferably give the contact office in the Ministries Departments and Agencies that is well versed with the history and developments of the project. This is intended to ease flow of information and allow for quick and reliable inquiries as need may arise.
Date of Submission	This should tally with the date of the letter submitting the profile to the Permanent Secretary/Secretary to the Treasury and Projects and Public Private Partnerships Department will in-turn capture this vis-a-vis the date of receipt at the Ministry of Finance, Planning and Economic Development registry and the date of registration into the Integrated Bank of Projects (IBP)
Section 1: Project Background	
1.1 **Situation analysis** Provide a background to the project idea or the problem your project will focus on by: (i) describing current situation including past and ongoing interventions; ii) recent developments in the area of interest, achievements and challenges if any, iii) Explain projected trends using published forecasts. Quote official statistics to support your narrative	
1.2 Problem Statement Provide an explicit definition of the problem to be addressed in terms of challenges, constraints or gaps that the market or private sector cannot resolve and: i) Mention the likely causes of the problem both direct and indirect, ii) Give a brief insight of the likely consequences if no government intervention is made.	
1.3 Relevance of the Project Idea Justify the need for the proposed project by: (i) linking the project to the National Development Plan (NDP) strategic interventions by identifying the objective (s) that the proposed project is expected to contribute to; (ii) Linking the proposed project to Sector Investment Plan (SIP) objectives by describing the sector outcomes that the project is expected to impact.	

Section 2: Technical Approach

2.1 Stakeholders

Identify the key stakeholders that are likely to be affected by the interventions including: (i) Direct Beneficiaries (ii) Indirect Beneficiaries (iii) Project affected persons. Give a brief description of the likely impact of the project on the stakeholders.

2.2 Project Outcomes

Define the project objectives in terms of the positive impact that the project is expected to have on the economy and key stakeholders.

2.3 Proposed Project Interventions

Describe the interventions, project outputs/components that need to be undertaken by government through the proposed project to address the problem. For each output briefly highlight the major activities that you propose to implement in order to achieve the objectives mentioned in Section 2.2 above. Describe the strategy you will adopt to implement the proposed activities.

2.4 Coordination with other Government Agencies

Identify specific activities and issues for which you will need to coordinate implementation of activities with other government agencies. List the relevant Government partner agencies and briefly describe their roles

Section 3: Estimated Project Cost and funding sources

3.1 Project Cost (Annualized Costed work plan)

Give an estimate of the total project cost and disaggregate by year for each output/component or intervention described in 2.3 above. The project period should correspond to the period it takes to have the physical infrastructure in place and ready to be operated.

	Year 1	Year 2	Year n	Total cost
Output 1				
Output n				
Total Cost				

Section 4: Attachments

Please attach to these submission minutes of the Project Preparations committee and Sector Working Group meetings. Strong evidence of discussions and deliberations of the approval of the concept at vote and sector working group level.

Annex 3

Template for project profile (Framework)

Purpose of the template: To enable the Development Committee assess whether the proposed project is backed by a logically sound framework for monitoring implementation and evaluation of intended outcomes and, if so, obtain approval for the project sponsor to undertake a prefeasibility study.

Project Summary	
Sector	
Vote	
Vote Code	
Program	
Program Code	
Project Title	Let it be as clear as possible, avoiding duplication of names within the Public Investment Plan.
Project Duration (Financial Years)	
Estimated Project Cost	Quote figures in Ugx and give (in brackets) the exchange rate used where funds are in a foreign currency.
Officer Responsible	Preferably give the contact office in the MDA that is well versed with the history and developments of the project. This is intended to ease flow of information and allow for quick and reliable inquiries as need may arise.
Date of Submission	This should tally with the date of the letter submitting the profile to the PS/ST and PAP will in-turn, capture the date of receipt at the MFPED registry and the date of registration into the Integrated Bank of Projects.

Section 1: Project Background

1.4 **Situation analysis**

Provide a background to the project idea or the problem your project will focus on by: (i) describing the current situation including past and ongoing interventions, recent developments in the area of interest, achievements and challenges, if any. Quote official statistics to support your narrative. ii) Explaining projected trends using published forecasts.

1.5 **Problem Statement**

Provide an explicit definition of the problem to be addressed in terms of challenges, constraints or gaps that the market or private sector cannot resolve and:

iii) Mention the likely causes of the problem both direct and indirect, and
iv) Give a brief insight of the likely consequences if no government intervention is made.

1.6 **Relevance of the Project Idea**

Justify the need for the proposed project by: (i) linking the project to the NDP through a description of the national development objective (s) that the proposed project is expected to contribute to; (ii) Linking the proposed project to sector strategic objectives by describing the sector outcomes that the project is expected to impact on.

1.7 Stakeholders

Identify the key stakeholders that are likely to be affected by the interventions including: (i) Direct Beneficiaries (ii) Indirect Beneficiaries (iii) Project affected persons. Give a brief description of the likely impact of the project on the stakeholders.

Section 2: Project Framework

This section is intended to help present the project in a logical manner with a detailed description of the objectives which include: the project goal, outcomes, outputs and activities.

2.1 Project Goal

Describe the project goal. This should be in relation to the development objective that the project is designed to contribute to. Identify an indicator that will be used to measure success of the project against the goal and briefly explain how information on this indicator shall be obtained. This could be through surveys or secondary data sources.

2.2 Project Outcomes

Define the project outcomes to include the effects that will result from the utilization of products or services delivered by the project. These could be the eventual benefits to society that the project interventions are intended to achieve and are reflected in terms of what people will be able to do better, faster, or more efficiently, or what they could never do before.

For each project outcome identified, you will be required to define at least one indicator that will be used to measure performance of the project against the relevant outcome and briefly explain how information on this indicator (s) shall be obtained. This could be through surveys or secondary data sources.

2.3 Proposed Project Interventions

Describe the direct/tangible results that the project is expected to deliver. These outputs shall be the basis for the components around which the project shall be built.

Some examples of project deliverables could be: trainings delivered, feasibility studies prepared, technical designs, infrastructure built / renovated, etc. Outputs are usually the immediate and concrete consequences of the implemented activities and resources used.

With the exception of the project management, monitoring and evaluation components, the project outputs should relate to physical assets and must contribute at least 80% of the total project.

For each project output identified, you will be required to define at least one indicator that will be used to measure performance of the project against the relevant output and briefly explain how information on this indicator (s) shall be obtained. This could be through surveys or secondary data sources.

2.4 Project Activities

For each output defined in 2.3, identify and describe the major tasks that need to be carried out to deliver the planned results. To obtain the results of a project, a number of activities have to be undertaken.

For each activity identified, you will be required to define at least one indicator that will be used to measure performance of the project against the work planned to be undertaken and briefly explain how information on this indicator (s) shall be obtained.

2.5 Results Matrix

Obj ective Hierachy and Description	Indicator	Means of Verification	Baseline	T arget	Assumptions
1 .Goal					
2.Outcomes 2.1 2.2 2.3					
3.Outputs 3.1 3.2 3.3					
4.Activities 4.1 4.2 4.3 4.4					

In addition to the detailed description of the logical relationship between the project objectives and planned activities, project sponsors shall be expected to develop a framework for measuring success of the proposed project. This shall involve; the identification of measurable indicators for every objective, setting targets to be achieved for each indicator and disclosure of the baseline level against which the target is to be measured.

It is also a requirement that each indicator is supported by a disclosure of the sources of information that will be used to verify performance and the assumptions underlying the attainment of each objective. A sample matrix is as reflected above.

Section 3: Estimated Project Cost and Activity Plan

3.1 Project Cost

Give an estimate of the total project cost and disaggregate by year for each activity or intervention described in 2.3 above. The project period should correspond to the period it takes to have the physical infrastructure in place and ready to be operated.

	Year 1	Year 2	Year n	Total cost
Output 1 Activity 1 Activity ... Activity n				
Output 2 Activity 1 Activity ... Activity n				
Output n Activity 1 Activity.. Activity n				
Total Cost				

Section 4: Attachments

Please attach to this submission minutes of meetings at vote level in support of the approval of the project profile.

Annex 4

Template for Pre-feasibility study

This template enables the Development Committee to obtain assurances that the project sponsors have considered and compared an adequate range of options available and that the alternative that offers the greatest benefit to society is being proposed for implementation.

Project Summary	
Sector	
Vote	
Program	
Program Code	
Project Title	Let it be as clear as possible, avoiding duplication of names within the Public Investment Plan.
Project Duration (Financial Years)	
Estimated Project Cost	Provide the total cost incurred in undertaking the pre-feasibility study.
Total Cost of the Pre-feasibility Study	
Consultants/Advisors	If the feasibility study was undertaken by consultants, provide details on the consulting firm.
Officer Responsible	Preferably give the contact office in the MDA that is well versed with the history and developments of the project. This is intended to ease flow of information and allow for quick and reliable inquiries as need may arise.
Date of Submission	This should tally with the date of the letter submitting the profile to the PS/ST and PAP will in-turn capture this vis-a-vis the date of receipt at the MFPED registry and the date of registration into the Integrated Bank of Projects
Executive Summary	
In this section of the template, describe to the reader any key headline information from the components of the pre-feasibility assessment the options evaluated, key results and recommendations.	
Section 1: Introduction	
Address the following : 1. Project Background: Rationale and genesis. 2. Objectives of the pre-feasibility study. 3. Approach and methodology of the pre-feasibility study. 4. Organization of the pre-feasibility study	

Section 2: Demand (Needs) Analysis

This section assess the need for public investment this may involve the elements listed below

Problem Statement. Provide an explicit definition of the problem to be addressed, identify the likely causes of the problem, both direct and indirect, and give a brief insight of the likely consequences if no government intervention is made.

Relevance of the Project Idea. Justify the need for the proposed project by linking the project goal outcomes to NDP and sector strategic objectives.

Proposed Project Interventions. Describe the interventions (project investments/ outputs) that need to be undertaken by government through the proposed project to address the problem.

Stakeholders. Identify the key stakeholders that are likely to be affected by the interventions.

Demand analysis. Identifies the need for public investment by assessing: (i) current demand (based on statistics provided by service suppliers/ regulators/ ministries/ national and regional statistical offices for the various types of users); (ii) future demand (based on reliable demand forecasting models) in both the scenarios with- and without-the-project.

Section 3: Strategic Options Analysis

Undertaking a project entails the simultaneous decision of not undertaking any of the other feasible options. Therefore, in order to assess the feasibility of a project, an adequate range of options should be considered for comparison through an options analysis. For this purpose the project sponsoring agency shall undertake the following analysis:

- Establish a list of all alternative strategies to achieve the intended objectives including the option of whether to adopt PPP modality, or not.
- Compare the listed alternatives using qualitative listing of advantages and disadvantages using a multi-criteria analysis of the five building blocks that include technical analysis, environmental analysis, and legal, administrative, etc. This analysis should allow for at most 3 preferred options which will be further assessed in the next step.
- Undertake a cost benefit analysis (CBA) for the shortlisted 3 preferred options using the economic, financial, risk and distributional analysis. From this CBA analysis, the entity can determine if a project can best be implemented as a PPP or traditional project procurement.
- Select the best option to proceed to the detailed feasibility study.

Section 4: Attachments

Attach the full pre-feasibility study report in support of the submission.

Annex 5

Project Feasibility Study Template

Purpose of the template: To enable the Development Committee summarize the results of the feasibility study report and to obtain assurances that a detailed investigation of the proposed project has been undertaken to determine its technical, financial and economic feasibility.

Project Summary	
Sector	
Vote	
Program	
Program Code	
Project Title	Let it be as clear as possible, avoiding duplication of names within the Public Investment Plan.
Project Duration (Financial Years)	
Estimated Project Cost	Provide the total cost incurred in undertaking the pre-feasibility study.
Total Cost of the feasibility Study	
Consultants/Advisors	If the feasibility study was undertaken by consultants, provide details on the consulting firm.
Officer Responsible	Preferably give the contact office in the MDA that is well versed with the history and developments of the project. This is intended to ease flow of information and allow for quick and reliable inquiries as need may arise.
Date of Submission	This should tally with the date of the letter submitting the profile to the PS/ST and PAP will in-turn capture this viz-a-viz the date of receipt at the MFPED registry and the date of registration into the Integrated Bank of Projects.

Executive Summary

In this section of the template, describe to the reader any key headline information from the components of the feasibility assessment the options evaluated, key results and recommendations.

Section 1: Introduction

Describe the following :

- Project Background: Rationale and genesis,
- Objectives of the feasibility study
- Approach and methodology of the feasibility study.
- Organization of the feasibility study.

Section 2: Market/ Demand Analysis
This section assess the need for public investment this may involve the elements listed below:

Problem Statement. Provide an explicit definition of the problem to be addressed, identify the likely causes of the problem, both direct and indirect, and give a brief insight of the likely consequences if no government intervention is made.

Relevance of the Project Idea. Justify the need for the proposed project by linking the project goal outcomes to NDP and sector strategic objectives.

Proposed Project Interventions. Describe the interventions (project investments/ outputs) that need to be undertaken by government through the proposed project to address the problem.

Stakeholders. Identify the key stakeholders that are likely to be affected by the interventions.
Demand analysis. Identifies the need for public investment by assessing: (i) current demand (based on statistics provided by service suppliers/ regulators/ ministries/ national and regional statistical offices for the various types of users); (ii) future demand (based on reliable demand forecasting models) in both the scenarios with- and without-the project.

Section 3: Technical or Engineering Module

A summary of the proposed project solution shall be presented with the following headings.

Location: description of the location of the project including a graphical illustration (map). Availability of land is a key aspect: evidence should be provided that the land is owned (or can be accessed) by the beneficiary, who has the full title to use it, or has to be purchased (or rented) through an acquisition process. In the latter case, the conditions of acquisition should be described. The administrative process and the availability of the relevant permits to carry out the works should also be explained.

Technical design: description of the main works components, technology adopted, design standards and specifications. Key output indicators, defined as the main physical quantities produced (e.g. kilometers of pipeline, number of overpasses, number of trees planted, etc.), should be provided.

Production plan: description of the infrastructure capacity and the expected utilization rate. These elements describe the service provision from the supply side. Project scope and size should be justified in the context of the forecasted demand.

Costs estimates: estimation of the financial needs for project realization and operations are imported in the CBA as a key input for the financial analysis. Evidence should be provided as to whether cost estimations are investor estimates, tender prices or out-turn costs.

Implementation timing: a realistic project timetable together with the implementation schedule should be provided including, for example, a Gantt chart (or equivalent) with the works planned. A reasonable degree of detail is needed in order to enable an assessment of the proposed schedule.

Section 4: Environmental module

Describes and specifies the economic effects on environmental norms and possible compensations for ecological damages. Key questions to address:

- The likely environmental impacts from undertaking project?
- What is the cost of reducing the negative impact?
- Evaluation of the environmental impacts and risks with and without
- Technical measures are taken to reduce these impacts?
- Are there alternative ways of supplying the good or service of project Without incurring these environmental costs?
- What are the costs of these alternatives?

Section 5: Human resources and administrative support module

Points out the human resource requirements for implementation and operation, in terms of quantities and specialties; identifies the sources of the work force. Also, it determines the management capacity and the functional structure of the operating entity. Key Issues to be addressed:

- What are the managerial and labor needs of the project?
- Does the organization have the ability to get the managerial skills needed?
- Is timing of project consistent with quantity and quality of Management?
- What are the wage rates for labor skills required?
- Manpower requirements by category are reconciled with availabilities and project timing

Section 6: Institutional and legal module

Studies the legal restrictions that may obstruct or impede construction or operation. For example, limitations in localization and in the use of soil, special tax considerations in the case of public–private partnerships, etc.

- Is the entity that is supposed to manage the project properly organized and its management adequately equipped to handle the project?
- Are the capabilities and facilities being properly utilized?
- Is there a need for changes in the policy and institutional set up?
- Outside this entity, what changes may be needed in policies of the local, regional and central governments?

Section 7: Financial or private evaluation module

Describe the financial costs and benefits at market prices, studies alternative financial leverage methods.

- Integration of financial and technical variables from demand module, technical module, and management module.
- Construct cash flow (resource flow) profiles of project.
- Identify key variables for doing economic and social analysis.

Key questions:

a. What is relative certainty of financial variables?
b. What are sources and costs of financing?
c. What are minimum cash flow requirements for each of the stakeholders?
d. What can be adjusted to satisfy each of the stakeholders?

Section 8: Economic or social evaluation module

Economic adjustments from financial data using conversion factors; after that, costs and benefits are appraised from the point of view of the entire economy.

- Examines the project using the whole country as the accounting entity
- Evaluation of externalities including environmental effects.
- What are the differences between financial and economic values for a variable?
- What causes these differences?
- With what degrees of certainty do we know values of these differences?
- What is the expected value of economic net benefits?
- What is the probability of positive economic feasibility?

Section 9: Distributional module

The project is appraised from the point of view of stakeholders receiving economic benefits or costs. Economic externalities have to be calculated and distributed among different actors (stakeholders)

What is done:
• Identification and quantification of extra-economic impacts of project.
• Distributive Appraisal
• Income, Cost, and Fiscal Impacts on various stakeholders
• Poverty Alleviation and Political Necessities
• Basic Needs: Evaluate the impact of project on achieving basic needs objectives. (Basic needs will vary from country to country)

Key Questions:
a. In what ways does the project generate beneficial and cost impacts on stakeholders?
b. What stakeholders could the project impact?
c. Who benefits and who pays the costs?
d. What are the basic needs of the society that are relevant in the country?
e. What impact will the project have on basic needs?
f. What alternative ways are there to generate desirable social impacts?
g. Is the project relatively cost effective in generation of desirable social impacts?

Section 10: Risk (uncertainty) analysis module

The flow of costs and benefits throughout the project life is uncertain. Given that uncertainty, consideration has to be given to the costs that those risks imply. The objective of this module is to simulate various scenarios and generate guidance on how to reduce the risk exposure through relevant contractual clauses.

Section 11: Recommendations and conclusions

Attachments: Detailed feasibility study reports and Soft copies of the financial and economic models

Annex 6

Template for a project Proposal

Purpose of the template: To provide a brief summary of the project and facilitate the Development Committee to prioritize projects.

Project summary	
Sector	
Vote	
Program	
Program code	
Project Title	Let it be clear and precise
Project Duration- Financial year	
Estimated project cost	Quote figures in Ugx and give (in brackets) the exchange rate used where funds are quoted in a foreign currency.
Expected source of funding	GoU: …… Donor: …….. Private sector: ……
Officer responsible	The contact person in MDA and their phone number

Section 1:Project Background

1.1 **Situation analysis**

Provide a background to the project idea or the problem your project will focus on by: (i) Describing the current situation including past and ongoing interventions, recent developments in the area of interest, achievements and challenges, if any. Quote official statistics to support your narrative. ii) Explaining projected trends using published forecasts.

1.2 **Problem Statement**

Provide an explicit definition of the problem to be addressed in terms of challenges, constraints or gaps that the market or private sector cannot resolve and:

i. Mention the likely causes of the problem, both direct and indirect, and

ii. Give a brief insight of the likely consequences if no government intervention is made.

1.3 **Relevance of the Project**

Justify the need for the proposed project by: (i) Linking the project to the NDP through a description the national development objective (s) that the proposed project is expected to contribute to; (ii) Linking the proposed project to sector strategic objectives by describing the sector outcomes that the project is expected to impact on.

Section 2: Project Framework

This section is intended to present the project in a logical manner with a detailed description of the objectives which include: the project goal, outcomes, outputs and activities.

2.1 Project Goal

Describe the project goal. This should be in relation to the development objective that the project is designed to contribute to. Identify an indicator that will be used to measure success of the project against the goal and briefly explain how information on this indicator shall be obtained. This could be through surveys or secondary data sources.

2.2 Project Outcomes

Define the project outcomes to include the effects that will follow from the utilization of products or services delivered by the project. These could be the eventual benefits to society that the project interventions are intended to achieve and are reflected in terms of what people will be able to do better, faster, or more efficiently, or what they could never do before.

For each project outcome identified, you will be required to define at least one indicator that will be used to measure performance of the project against the relevant outcome and briefly explain how information on this indicator (s) shall be obtained. This could be through surveys or secondary data sources.

2.3 Proposed Project Components and key activities

Describe the direct/tangible results that the project is expected to deliver. These outputs shall be the basis for the components around which the project shall be built.

2.4 Results Matrix, Monitoring and Evaluation Plan

Obj ective Hierachy and Description	Indicator	Means of Verifi-cation	Baseline	Target	Assumptions
1 .Goal					
2.Outcomes 2.1 2.2 2.3					
3.Outputs 3.1 3.2 3.3					
4.Activities 4.1 4.2 4.3 4.4					

In addition to the detailed description of the logical relationship between the project objectives and planned activities, project sponsors shall be expected to develop a framework for measuring success of the proposed project. What are the performance indicators for the project?
It is a requirement for each indicator ~~is~~ to be supported by a disclosure of the sources of information that will be used to verify performance and the assumptions underlying the attainment of each objective. A sample matrix is as reflected above.

Section 3: Environmental impact assessment

What are the project environmental impacts and its counter measures; these should be in line with the environmental impact assessment undertaken.

Section 4: Execution and Management Plan

Describe the 'road map' the Project Team plans to adopt to deliver the agreed project outputs. Clearly outline the responsibilities of the key project team and stakeholders. Specifying the operational management procedures and control plans including; detailed project plans, resource schedules, quality and reporting procedures.

Section: 5 Institutional and Legal Framework

Specify the legal aspects that affect project implementation and/ or operation.

Section 6: Financial or private evaluation

Describe the costs and benefits of the project and determine the financial viability of the public investment at market prices.

Section 7: Economic or social evaluation

Describe the economic costs and benefits of the project adjusted to the whole country as the accounting entity.

Section 8: Distributional/Stakeholder impact assessment

Describe the economic costs and benefits from the stakeholders' point of view. These have to be distributed among different actors (stakeholders).

Section 9: Risk (uncertainty) management

Describe the uncertainty/ risks that are likely to affect project operation and the costs that those risks imply. Simulate various scenarios and generate guidance on how to reduce the risk exposure through relevant contractual clauses.

Section 10: Sustainability Plan

Detail the mechanisms that have been embedded in the project to ensure that the problem addressed will not re-occur.

Section 11: Estimated Project Cost and Activity Plan

Give an estimate of the total project cost and disaggregate by year for each activity or intervention described in 2.3 above. The project period should correspond to the period it takes to have the physical infrastructure in place and ready to be operated.

	Year 1	Year 2	Year n	Total cost
Output 1 Activity 1 Activity... Activity n				
Output 1 Activity 1 Activity. Activity n				
Output n Activity 1 Activity .. Activity n				
Total Cost				

Section 11: Proposed Funding	
	UGX billion
GoU -new resources	
GoU-savings within MTEF on account of exiting projects	
Development Partner (Grant financing)	
Development Partner (Loan Financing)	
Private Sector	
Total Funding	

Section 12: Attachments
Please attach the detailed project proposal

Annex 7

Sector specific guidance on identifying project benefits and costs

Sector	Economic Benefits	Economic Costs
Roads	• Savings in vehicle operating costs • Savings in time for existing and new road users • Reductions in the cost of accidents. Accident costs include damage to vehicles, medical costs and costs related to loss of life and injury • Savings in road maintenance costs. • Improved access to social services and markets	Negative environmental externalities: • Air pollution • Increased noise and vibration • Visual impact on landscape • Pollution of water courses from run-off • Damage to heritage sites • Social dislocation from resettlement and community severance • Projects that generate additional traffic may increase overall CO2 emissions with negative impacts globally on climate change.
Solid Waste Management	Health improvements from removal of waste. These can be valued in terms of : • Reductions in medical costs and lower income losses from absences from work. • Enhanced urban environment. Forecast changes in land values can serve as a proxy measure of improvements in urban amenity. • Energy recovery and savings in use of environmentally damaging energy sources.	Negative environmental externalities in the locality of the treatment or disposal facility: • Damage to health due to air, water or soil pollution • Water and soil contamination • Negative impacts on landscape • Additional traffic

Sector	Economic Benefits	Economic Costs
Water Supply and Wastewater Treatment	• The value of the additional water supplied and/or treated compared to the situation without the project (where there may be considerable suppressed demand if water pressure is low or there are supply interruptions). • The economic value of the water will generally be higher than the financial price charged to users, which can be seen as representing the lower bound of benefits. The difference represents consumer surplus in the case of households and producer surplus in the case of enterprises. • Consumer surplus can be measured by making estimates of willingness to pay (WTP) for households by reference to the cost of the next best alternative sources being used, for example, water from tankers, bottled drinking water and home purification. In the case of sanitation, use of septic tanks can be more expensive than connection to mains sewers and the difference in costs can be a measure of consumer surplus. • The value of time spent fetching water from wells or standpipes is another measure of WTP. Care must be taken not to double count or exaggerate benefits when using consumer surplus measures. • Enhanced property values in areas with piped wastewater collection systems can be a proxy measure of benefits. Care must be taken not to double count benefits estimated by other means when using property values as a proxy. For supply of water to industry or agriculture, • It is possible to estimate the added value of the additional output that is attributable to increased water availability. It is, however, not easy to do this and estimates need to be scrutinized carefully for the realism of assumptions. • Health benefits may arise from reducing diseases caused by contaminated water supplies, poor sanitation arrangements or discharge of untreated wastewater into water courses. These can be measured in terms of reduced treatment costs plus the lower value of income lost due to days off work. • Exploitation of more suitable water resources or leakage reduction programs may preserve water resources for other alternative uses. Treatment of wastewater before discharge into water courses protects or improves water bodies for alternative uses and enhances amenity value. These uses can be identified and valued, although valuation is not necessarily straightforward. Values will tend to be higher where water is scarce.	Negative environmental externalities arise from the construction of facilities and from the use of scarce water resources in meeting new demands.

Sector	Economic Benefits	Economic Costs
Electric Power (and Other Forms of Energy) - Distribution and Production	• The monetary value of the additional energy supplied compared to the situation without the project (where there may be considerable suppressed demand if there are frequent electricity black-outs or brown-outs). • The economic value of the energy will generally be higher than the price charged - this difference represents consumer surplus in the case of households and producer surplus in the case of enterprises. • This can be measured by making estimates of willingness to pay (WTP) for households by reference to the cost of the next best alternative sources being used, for example, if households are using generators to meet supply shortages. Similarly, if businesses are using their own generators this cost can be a measure of producer surplus. There needs to be strong evidence of consumers' willingness to pay more. • Benefits in terms of reduced use of environmentally damaging energy sources through the use of renewable energy sources or by means of energy saving projects.	• Negative environmental externalities in the locality of the generation or distribution facility from construction and operation: • Air and noise pollution • Negative visual impacts on landscape • Additional traffic • Wider negative externalities, from increasing energy production using fossil fuels and adding to global CO2 emissions.
Education Infrastructure	• Improved employability in more productive jobs and increased life-time earning potential of pupils, students and trainees. • There is much quantitative evidence on the personal returns to education in terms of higher incomes which tend to increase with educational level. • Many diffuse but important benefits to society from an educated population which are more difficult to measure.	No obvious negative externalities apart from local traffic effects. As evidence, residential property values tend to be higher the closer an economic agent is to education establishments.
Hospital and Health Infrastructure	• Savings in future health costs from timely and appropriate treatment. • Savings in lost output (and income) because of the lower number of working days lost for patients and their families. • Reduction in suffering for patients and their families – increased life expectancy and improved quality of life • Deaths prevented, which can be valued using the value of a statistical life.	No obvious negative externalities apart from local traffic effects.

Source: Adopted from the Government of Cyprus for pre-selection and appraisal of public Investment Projects.

Annex 8

A) The Public Private Partnership (PPP) Project

Uganda has an established legal framework through which PPPs should be implemented (PPP Act, 2015). The Act defines Public Private Partnership (PPP) as a commercial transaction between a contracting authority and a Private Party where the private party performs a function of the contracting Authority on behalf of the contracting Authority, for a specified period and:

(i) Acquires the use of the property, equipment or other resources of the contracting authority for the purposes of executing the agreement; or

(ii) Assumes substantial financial technical and operational risks in connection with the performance of the function or use of the property; or

(iii) Receives a benefit for performing the function through payment by the contracting authority or charges or fees collected by the private party from the users of the infrastructure or service.

Principles governing implementation of PPPs in Uganda

(i) Ensuring Value for Money through optimal allocation of risks to private parties and maximization of benefits to be obtained from expertise and financing by private parties

(ii) Protection and respect of the rights and interests of users of the infrastructure or Services offered under a Project

(iii) Ensuring that the procurement of a PPP does not restrict competition among bidders and that it is conducted on equal terms and uses objective criteria.

(iv) Ensuring that all bid notices are advertised as prescribed and that the bidders have access to the same information.

(v) Accountability of the contracting authority to the users of the infrastructure or service to be offered under the project.

(vi) Promotion of participation of Ugandans as private parties in Public Private Partnerships.

(vii) Protection of intellectual property of bidders at all stages of a Project.

(viii) Stimulating growth and development through harnessing private sector innovation and efficiency

(ix) Providing policy stability in order to reduce private sector uncertainty on investment returns.

(x) Developing institutional capacities for technical analysis, negotiation to mention but a few of Public Private Partnership Contracts

In simple terms, a PPP may apply to a government service or private business venture that is funded and operated through a partnership of government and one or more private sector companies to promote overall economic development. PPPs take a wide range of forms varying in the extent of involvement and risk taken by the private party. These forms include:

(i) Concession: A concession is the lease of an asset of the contracting authority or Government to a private party for a long period of time where the risk of funding, developing, managing and operating the assets transferred to the private party.

(ii) Operation and maintenance agreement: An operation and maintenance agreement shall be used where a private party is to operate and maintain a property of the contracting authority in accordance with an agreement made under this Act.

(iii) Lease, develop and operate agreement: A lease, develop and operate agreement shall be used where a private party is to invest in the operation and expansion of the infrastructure and to recover the cost of the investment over the duration of the lease period.

(iv) Build, own and maintain agreement: A build, own and maintain agreement shall be used where a

private party is to build, own and maintain an infrastructure, such as a school or a hospital, and the contracting authority is to lease that infrastructure, from the private party.

(v) Design, build, finance and operate agreement: A design, build, finance and operate agreement shall be used where a private party is to design, build, finance and operate as infrastructure for a specified period and to transfer the infrastructure to the contracting authority at the end of that period.

(vi) Build, own and operate agreement: A build, own and operate agreement shall be used where the private party is to own the project in perpetuity.

(vii) Other public private partnership agreements: The Ministry may by statutory instrument, prescribe any other type of public private partnership agreement to be used for a project.

The framework offers guidance on management of PPPs as well as PPP processes, procurement rules and methods. It also provides for the design, construction, maintenance, and operation of infrastructure or services to be provided under the following projects:

(i) Road, rail, subway, water and air transport facilities including harbour and port facilities, airports and airport facilities;

(ii) Information and computer technology, telecommunication and telecommunication networks;

(iii) Social infrastructure including health care facilities and education facilities;

(iv) Water management facilities including dams, water storages, supply irrigation and drainage systems, sewerage and waste management systems;

(v) Gas pipelines and gas storage, refinery, conveyance and distributional systems;

(vi) Energy related facilities and other facilities for generation, preservation, transmission and distribution of electricity;

(vii) Sports and recreational facilities;

(viii) Tourist infrastructure facilities;

(ix) Agricultural processing industries, etc.

B) The PPP process required by Law

PPPs often involve complex planning and sustained facilitation. Infrastructure projects such as roads and bridges, water supply, sewerage and drainage involve large investment, long gestation period, poor cost recovery, and construction, social, and environmental risks. A PPP process is often characterized by detailed risk and cost appraisal, complex and long bidding procedures, difficult stakeholder management, and long-drawn negotiations to financial closure. To deal with these procedural complexities and potential pitfalls of PPPs, a streamlined process has been put in place to clearly track the progress of the various PPP projects from inception to execution stage. The following stages include:

(i) ***The Project Inception Stage:*** This stage of the PPP process involves identifying and selecting potential public infrastructure and services to be developed on a PPP basis either by the Government or by the Private entrepreneur. The selected projects should be part of the government's overall program of public infrastructure and service delivery, and should also be suitable for development as PPPs. A project concept note is prepared at this stage. A Project team and a Project Officer should be formed to spearhead the Project for better follow up and progress of the Project. A Project pre-feasibility study should be carried out which is submitted to the Ministry of Finance Planning and Economic Development. (MFPED).

After conducting the Prefeasibility studies, there is test suitability of the Project evaluating all alternative and possible options, including the Traditional approach of implementing projects, the Project may be determined as a PPP and channeled to the PPP unit in line with the PPP Act or implemented as a TIP which will then be carried out under the process of the Public Investment Management System (PIMS). The contracting Authority should be able to ascertain whether it has the capacity and Budget to take on the proposed Project either as a PPP or a TIP.

(ii) ***Feasibility study approvals:*** after approval of the Project concept, by MFPED, the Ministries, Departments and Agencies (MDAs) then carry out feasibility studies to assess the affordability, value for money and risk transfer of the Project. The feasibility study is then submitted to MFPED for approval.

(iii) ***Procurement Preparation:*** following approval of the Feasibility Study by the PPP Committee, the respective MDAs are responsible for conducting a competitive procurement that will lead to successful appointment of a private sector partner at good terms. The success of the procurement will depend on how well prepared the MDA is in terms of whether the market for the project has been developed, the procurement approach followed, and the quality of the procurement documentation. This stage concerns preparation of the project bidding documentation for a competitive procurement process. The main outputs of this stage are selection of an appropriate procurement strategy, a package of bidding documents for the project, and approval to launch the formal procurement / tendering stage.

(iv) ***Evaluation of bids:*** At this stage, the contracting Authority evaluates the competitive tender process with support of the Transaction Advisor to verify the economic and financial standing of the bidder, the ability of the bidder to secure credit, and the technical and professional capability of the bidder. The contracting Authority then submits the negotiated PPP contract to MFPED.

(v) ***Approval of bid and contract award:*** the negotiated PPP contract is submitted to the PPP unit for evaluation and approval. The contract is then passed on the Cabinet for approval before being signed off by the accounting officer.

(vi) ***Project take off and implementation:*** this stage involves project implementation and monitoring. The implementing agencies monitor performance of the Project while MFPED carries out overall performance.

(vii) ***Monitoring of the PPP:*** the contracting authority monitors the project to determine whether it has complied to the conditions of the agreement, remedial measures should then be taken to correct any defaults. Penalties are also imposed where there are defaults.

C). The concept of Value For Money (VfM)

Value for Money (VfM) analysis is a process used to compare the financial impacts of a PPP project against those for the Traditional Public Sector (TPS) modality alternative. For a PPP project to be considered successful, literature suggests that it should provide more VfM than if it was procured using traditional procurement, using the same amount of money the public sector would spend for a similar project. VfM is not only a direct measure of the provision cost of the service but also takes into account a mix of quality, costs, resource use, time and convenience to assess how these factors interact together (how they provide “adequate value”). The methodology for carrying out a VfM analysis involves creating a Public Sector Comparator (PSC) which estimates the whole-life cost of carrying out the project through a traditional approach vis-a-vis the whole-life cost of the Project using a PPP alternative.

D) The Public Sector Comparator (PSC)

In simple terms, the PSC estimates the hypothetical risk-adjusted cost if a project were to be financed, owned and implemented by government. In other words, it provides a benchmark for estimating VfM from alternative bids. A Public Sector Comparator (PSC) is used by a government to make decisions by testing whether a private investment proposal offers VfM in comparison with the most efficient form of public procurement. It is important to note that:

(i) PSC is expressed in terms of NPV.

(ii) PSC is based on the current method of public sector provision (including all the efficiency gains in the short, medium and long term)

(iii) PSC considers fully the risks faced during the bidding phase.

Then TPS mechanism should be used only when it represents VfM in the bidding process, in terms of the optimum combination between the costs of the project over the entire life cycle and the quality of the goods or services to be procured, or their ability to match the needs of the users.

E) Simplified proposal to appraise PPP.

PSC is a tool to compare TPS with PPP. The standard of comparison is the VfM which serves as an indicator to determine the contracting mode, to assess if private participation in public infrastructure provision involves a greater benefit than public sector provision. To do this, it is necessary to estimate the total costs of the TPS alternative considering the cost of risks that public sector takes on traditional procurement mode compared with the estimated projections of total payments to be made under a PPP mechanism.

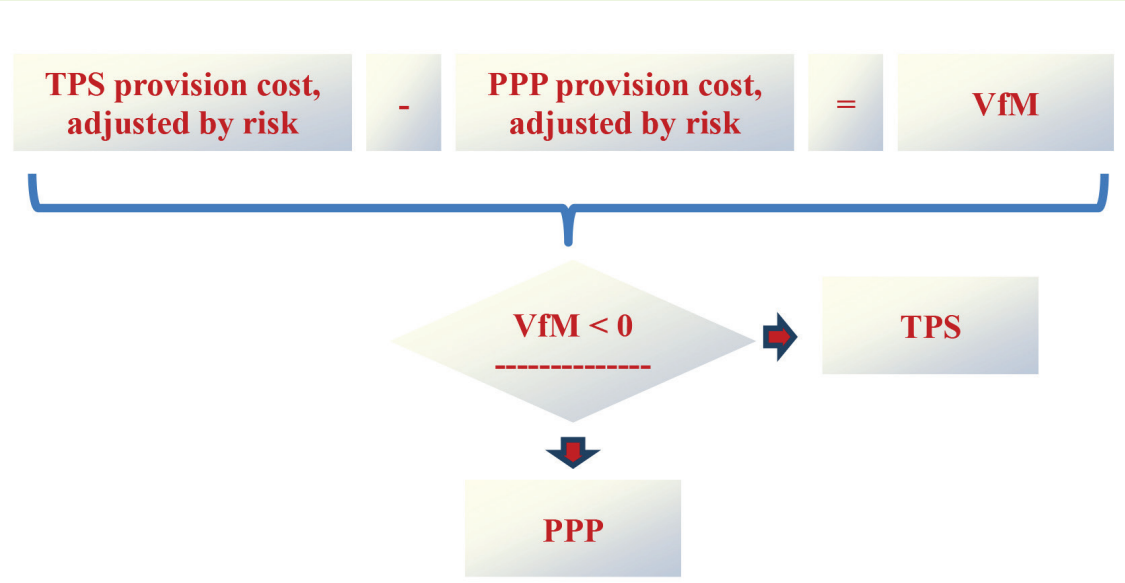
The basic assumption is that if both alternatives can provide the same level of service in a period N; then, the costs starting point for both schemes is also the same. The level of service corresponds to a condition to be established by Public Authority, whether in the design, maintenance and operation, and contracted services. The level of service related to the conditions of the service is established, ex-ante, by the contracting authority. The identification and estimation of TPS costs and risks against the alternative (private) provision is the key to ensuring that the best scenario is chosen to provide value.

Project appraisal, through CBA analysis, aims to find out if the project is good for the entire society as a whole, whereas the VfM analyses the most convenient mode or way to run a more efficient procurement. In both cases, make a number of assumptions because information does not exist at the time of the assessments or it cannot be obtained at a reasonable cost. This analysis compares the cost of the project implemented by TPS or by PPP. The comparison is done by looking at all costs in the project life cycle (construction, operation and maintenance). However, there are risks in the project that can be transferred to the private sector and other risks that can be retained by the public sector.

Once risks are assessed according to the mode of execution, VfM can be calculated as the difference between the risk-adjusted costs of a TPS project against a PPP cost project. The VfM is expressed in present value terms and it is based on the recent experience of public provision of infrastructure, incorporating efficiencies that are reasonably expected in one or another embodiment. In addition, it should take into account the risks and their causes.

The VfM is positive when the TPS cost of provision of a Public good adjusted by risk is higher than the cost of provision by PPP. When the VfM is negative, the risk-adjusted cost of private provision will be lower than TPS (in this case, the value is destroyed if it is structured as a PPP). This idea can be presented in the following scheme.

Figure N°4.8. VfM Analysis



Source: based in international best practices

Below is the formula for estimating the VfM:

$$VfM = \sum_{t=0}^{n} \frac{BC_t - PEP_t + RRC_t + TRC_t + PFC_t}{(1+r)^t} - \sum_{t=0}^{n} \frac{Sub_t - FPC_t + RRP_t + AC_t - EG_t - NTE_t}{(1+r)^t}$$

Where:

BC: Base Cost of the project

PEP: Public Earnings of Project

RRC: Retained Risk Cost

TRC: Transferred Risk Cost

PFC: Public Finance Cost (best alternative)

Sub: Subsidies under construction and subsidies under operation

FPC: Financing Project Cost (on PPP mode)

RRP: Renegotiation Risk of Project

AC: Administration Cost

EG: Efficiency Gains

NTE: Neutrality Tax Effects

r: Discount Rate

t: years

Annex 9

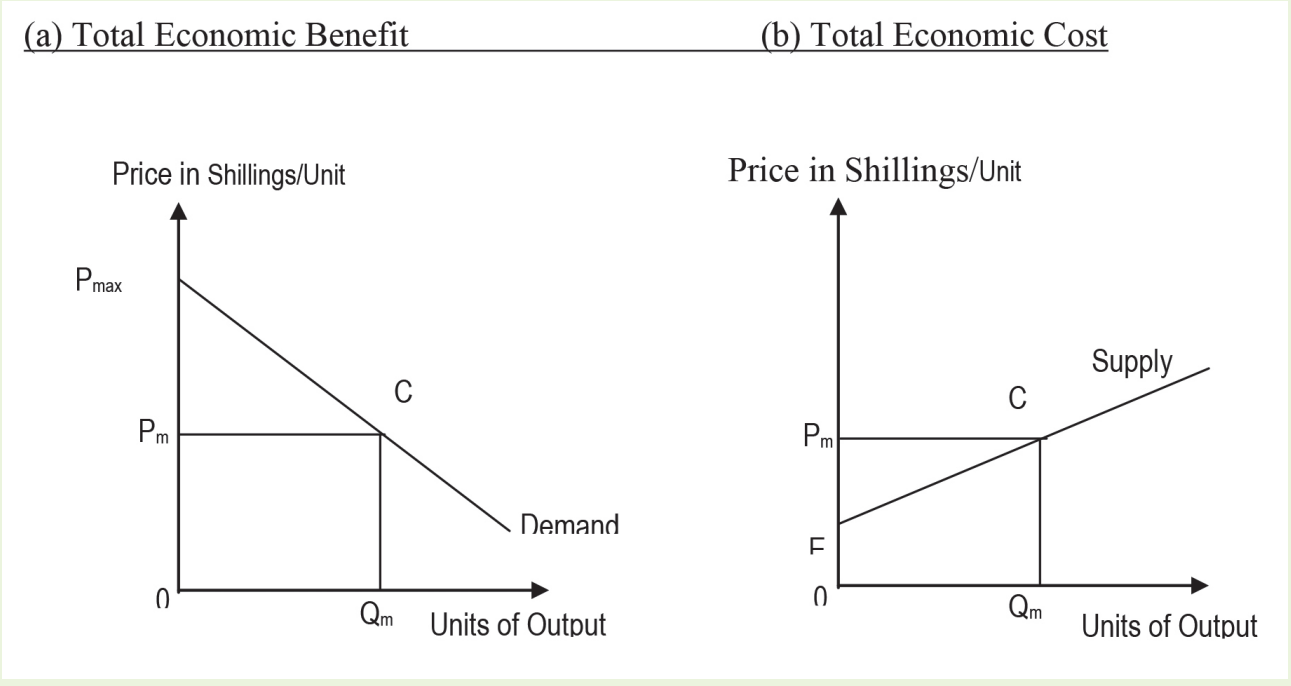
a. Applying the three postulates of Harberger.

The framework for analyzing the economic benefits and costs for public investment projects is based on the three postulates of Harberger (seen in Chapter 1). The demand curve of a good shows the maximum price that consumers are willing to pay for successive units of the good given the prices of all other goods and services, and the income of consumers. If the market-determined price of the good is Pm and the quantity consumed at that price is Qm, then the economic benefit of the last (marginal) unit consumed is Pm but the benefits of earlier (infra-marginal) units will be greater than Pm. Applying the first postulate, the benefits of the successive units consumed are determined by the corresponding prices on the demand curve. Consequently, the economic benefit of the output of this industry (the quantity, Qm) is given by the area PmaxOQmC. Figure No.3.9 (a).

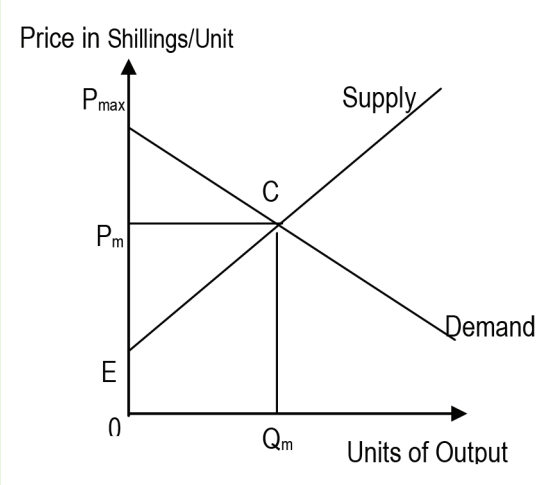
On the other hand, the supply curve or marginal cost curve reflects the resource cost for producing successive units of the good. At the market-determined price Pm, the quantity Qm is produced. While the resource cost of the marginal unit produced is Pm, that of each of the inframarginal units is less than Pm. Following the second postulate of Harbeger, the economic resource cost of producing Qm is OECQm.

Following the third postulate, economic costs and benefits can be added to determine the net gain or loss in this industry. Since the benefits are represented by the area PmaxOQmC in Figure N°4.1. (a) and the costs are given by the area OECQm in Figure N°4.1. (b), the net economic benefit is given by the triangle PmaxEC in Figure N°4.1. (c).

Figure 1 Demand and Supply Curves and Benefits and Cost



(c) Economic Benefits and Costs



Source: Jenkins, Harberger & Kuo (2013).

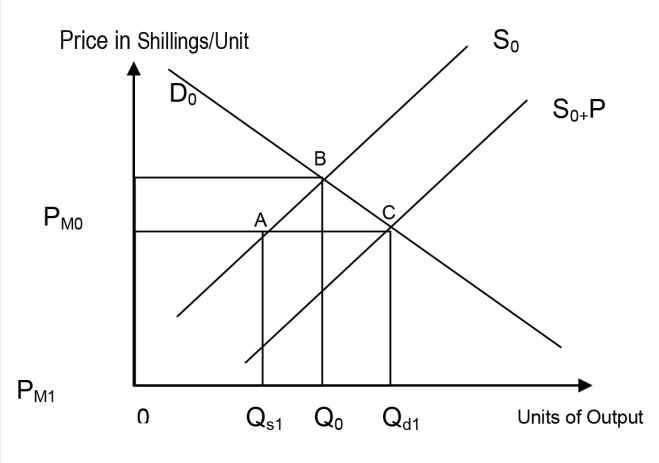
The only price observable in the market is Pm and all Qm units are bought and sold at this price. Consumers value each unit they consume at its corresponding price as given by the demand curve but they pay less than that price for all units consumed except the last one. This difference between what consumers value the output at and what they actually pay for it is a net gain to consumers and is known as consumer surplus. Consumers pay an amount equal to OPmCQm but enjoy a gross benefit of PmaxOQmC.

The fact that all units are sold at a price Pm implies that industry revenues, OPmCQm are larger than the economic costs, OECQm. The excess of revenues over resource cost, the triangle EPmC, represents a net profit to the owners of the factors of production. This difference is known as the economic rent or producer surplus. It now becomes evident that the net economic benefit in this industry as determined using the three postulates is shared between the owners of the industry and its consumers.

b. Measuring the effects of the project in undistorted markets

Suppose a project that produces a non-tradable good such as concrete. Figure 2 shows the supply and demand for this non-tradable good. The industry demand and supply curves prior to the introduction of the new project are denoted by D0 and S0 respectively. The new project produces a quantity Qp and results in a shift in the industry supply curve from S0 to S0+P. The additional supply by the project results in a drop in the market price from Pm0 to Pm1. As a result of the decrease in price, consumers demand more and total consumption increases from Q0 to Qd1. Also due to the decline in price, existing suppliers will cut back their production from Q0 to Qs1 as some of them can no longer supply the same amount of the good at the new (lower) price Pm1. Qp, the quantity produced by the project, equals the sum of the two quantities Q0-Qd1 and Q0-Qs1.

Figure 2. Economic Benefits of a New Project in an Undistorted Market



Source: Jenkins, Harberger & Kuo (2013).

Since the project sells its output at the new prevailing market price Pm1, the gross financial receipts to the project are given by (Qp × Pm1) which is area Qs1ACQd1. To estimate the gross economic benefits of the project, it is needed to determine the economic value of the new consumption to the demanders, and the value of the resources released by existing suppliers. These values are estimated using the first two postulates as follows:

i. The additional consumption is valued, according to the first postulate, by the demand price for each successive unit, or by the area under the demand curve (Q0BCQd1).
ii. The resources released by other producers are valued, according to the second postulate, by the supply price (resource cost) of each successive unit or by the area under the supply curve (Q0BAQs1).

The gross economic benefits are given by the sum of the two areas above (Qs1ABCQd1). It is important to emphasize that these benefits are gross (still it is not netted from the economic costs of producing these goods). The positive gross benefits alone do not indicate whether the project is economically viable or not, the same way as positive gross financial receipts do not indicate whether the project is financially profitable or not.

Box 4.3 Integration of financial and economic analysis

It is worth noting that the gross economic benefits are equal to the sum of the financial receipts to the projects' owners (QslACQdl), plus the gain in consumer surplus (PmOBCPml), less the loss in producer surplus (Pm0BAPm1). In addition to the gross receipts to the project owners, consumers gain due to the reduction in price and producers lose economic rents due to the reduction in price. From a distributional perspective, it is interesting to note that consumers' gain fully offsets the loss in economic rents to the existing producers. It may be noted that the changes in consumer and producer surplus result from the price drop.

It is often the case that the quantity produced by the project is relatively small compared to the size of the market and there is no change in the market price. In such a situation and given that we are operating in an undistorted market, the gross financial receipts will be equal to the gross economic benefits. In other words, there is no difference between the financial revenues generated by a project and its economic benefits to the society. The difference arises only when the project has a huge impact on the industry.

The following example demonstrates how the economic cost of a non-tradable item demanded by a project can be estimated using the three postulates. The industry demand and supply curves without the additional demand by the new project are denoted by D0 and S0 respectively (Figure N°4.3.). The new project demands a quantity Qp and results in a shift in the industry demand curve from D0 to D0 + P. The additional demand by the project results in a rise in the market price from Pm0 to Pm1. As a result of the increase in price, existing consumers will cut back their consumption from Q0 to Qd1 and producers will increase their production from Q0 to Qs1 at the new (higher) price Pm1. Qp, the quantity demanded by the project, equals the sum of the two quantities Q0-Qd1 and Q0-Qs1.

The project buys its requirement at the new prevailing market price Pm1, and incurs a gross financial expenditure of (Qp×Pm1) which is the area Qd1CAQs1. To estimate the gross economic costs of the input demanded by the project, it is needed to determine the economic value of the consumption that is foregone by the existing consumers, and the value of the additional resources utilized to accommodate the project's demand. These values are estimated using the first two postulates as follows:

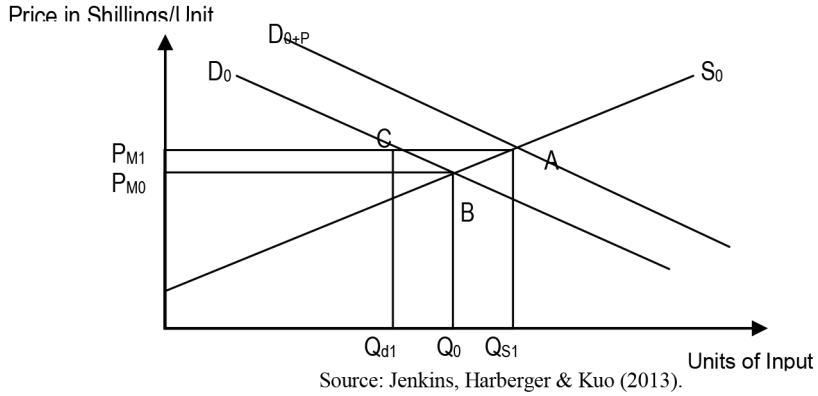
i. The cutback in consumption is valued, according to the first postulate, by the demand price for each successive unit given up or by the area under the demand curve (Q0BCQd1).
ii. The additional resources used to accommodate the expansion in output are valued, according to the second postulate, by the supply price (resource cost) of each successive unit or by the area under the supply curve (Q0BAQs1).

iii. The gross economic cost for this input is given by the sum of the two areas above (Qs1ABCQd1). By determining the economic cost of each input used by the project in a similar way, and the economic benefit of its output as outlined above, we will be in a position to determine the economic viability of the project by subtracting all economic costs from the gross economic benefits.

Box 4.4 Tradable and Non-Tradable Goods

A good or service is considered tradable when an increase in demand (supply) by a project does not affect the amount demanded (supplied) by domestic consumers (producers). The increase in demand (supply) by a project is eventually reflected as an increase/decrease in imports or a decrease/increase in exports, depending on whether the project is demanding or supplying the importable or exportable commodity. Importable goods include imported goods and all goods produced and sold domestically that are close substitutes for either the imported goods or potentially imported goods. Exportable goods include exported goods and domestic consumption of goods of the same type or close substitutes for the exported goods. An increase in demand for an importable commodity as a result of a project results in an increase in demand for imports. An increase in demand for an exportable commodity as a result of a project results in a reduction in exports. A commodity or service is non-tradable from a country's point of view if its domestic price lies above its FOB export price or below its CIF import price[7]. The international transportation cost may be very high compared to the value of the product so that no profitable trade is feasible. Alternatively, an importable good becomes non-tradable if it receives such a high level of protection in the form of trade quotas or prohibitive tariffs that no import transactions will take place.

Figure 3. Economic Cost of an Input Demanded by a Project in an Undistorted Market



Source: Jenkins, Harberger & Kuo (2013).

Source: Jenkins, Harberger & Kuo (2013).

Measuring the effects of the project in distorted markets

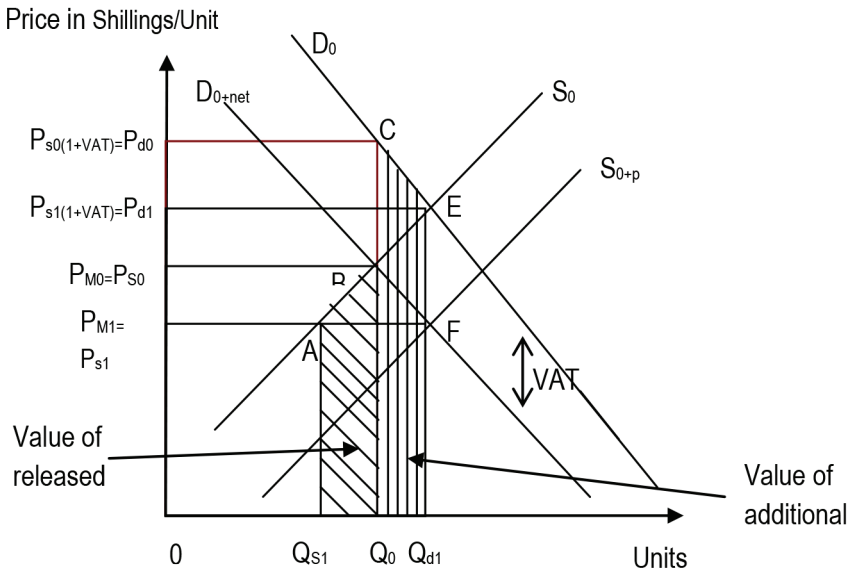
In general, the markets for a project's outputs or inputs are distorted. In the presence of external effects, the estimation of the economic costs and benefits, as well as the distributional impacts will be slightly more involved. With the introduction of distortions in the form of taxes and subsidies, another stakeholder enters the picture in the form of the government. Consequently, when estimating the economic costs and benefits of goods and services in distorted markets, it is expected that additional benefits or costs and new players are added to the list of beneficiaries or losers affected by the project.

Suppose a market for an industry's output, distorted by a value-added tax (VAT). The tax will drive a wedge between the maximum price that consumers are willing to pay for successive units of the good and the net of tax (effective demand) price they pay to supplier (Figure N°4.4.). D0 is the gross-of-tax (undistorted) demand curve that measures consumers' willingness to pay, and D0+net is the net-of-tax or effective demand curve that reflects the prices consumers are prepared to offer the producers. D0+net lies to the left of the original

[7] FOB price implies "free-on-board" export price and it is the price of a good at the Jordan border before it is shipped abroad. Thus, it includes transportation and handling in moving the good to the port. CIF price implies "costs of insurance and freight" import price and it is the price at the border before any transportation and handling is incurred to move the good inland, to the project site.

curve, D0, because the prices that consumers are prepared to offer to suppliers for successive units of the goods are now reduced by the amount of the VAT. The market-clearing price, Pm0, and quantity, Q0, are determined by the intersection of the net-of-tax demand curve, D0+net, and the supply curve, S0, as shown in Figure No.3.12. While suppliers receive Pm0, which is equal to the resource cost of the marginal unit produced, consumers have to pay the VAT in addition to the market price Pm0. Thus the price that consumers pay is Pd0.

Figure 4 Economic Benefits of a New Project in a Distorted Market



Source: Jenkins, Harberger & Kuo (2013).

The above situation depicts the market without the new project. To determine the gross economic benefits of a new project in this market, it is needed to follow the same logic and mechanics used to estimate the economic value of a project's output in an undistorted market. The new project produces a quantity Qp and results in a shift in the industry supply curve from S0 to S0+P. The additional supply by the project results in a drop in the market price from Pm0 to Pm1 and subsequently in the demand price from Pd0 to Pd1. As a result of the decrease in price paid by consumers, they increase their consumption from Q0 to Qd1. Also due to the decline in price, existing suppliers will cut back their production from Q0 to Qs1 as some of them can no longer supply the same amount of the good at the new (lower) price Ps1. Qp, the quantity produced by the project, equals the sum of the two quantities Q0-Qd1 and Qs1 - Q0.

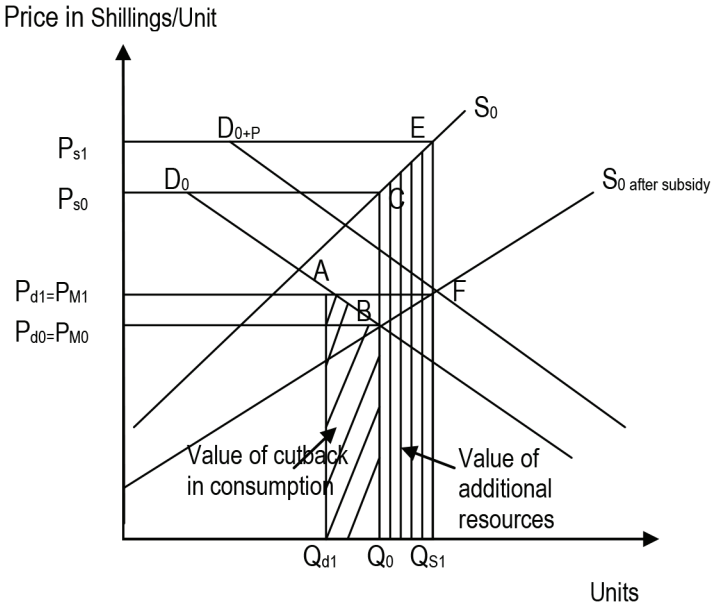
Since the project sells its output at the new prevailing market price Pm1 (which is also equal to the new supply price, Ps1), the gross financial receipts to the project are Qp × Ps1. To estimate the gross economic benefits of the project, it is needed to determine the economic value of the new consumption to the demanders, and the value of the resources released by existing suppliers. Following the first postulate, the value of additional consumption is measured by area under the undistorted (gross-of-tax) demand curve—the area Q0BCEFQd1. Following the second postulate, the value of resources freed is measured by area under the supply curve—the area Q0BAQs1. The gross economic benefits are the sum of these two areas: Qs1ABCEFQd1.

From a distributional perspective it is interesting to determine who has gained and who has lost as a result of the project. The gross economic benefits can be broken down into the gross receipts, net of VAT, to project owners (Qs1AFQd1); the gain in consumer surplus (Pd0CEPd1); the loss in producer surplus (Ps0BAPs1) and gain in government tax revenues (Pd1EFPs1-Pd0CBPs0).

Suppose a market for one of the project's inputs distorted by a subsidy. The subsidy will drive a wedge between the true resource cost of the successive units of the good and the prices that suppliers are now willing to charge consumers (Figure N°4.12.). S0 is the before-subsidy supply curve, which measures the true resource cost of the units produced; and S0 after subsidy is the after-subsidy supply curve that reflects the prices that suppliers are prepared to charge consumers. S0 after subsidy lies to the right of the original curve, S0, because the prices that suppliers are willing to charge consumers for the successive units of the goods are now reduced by the amount of the subsidy they receive from the government. The market clearing price,

Pm0, and quantity, Q0, are determined by the intersection of the after-subsidy supply curve, S0 after subsidy, and the demand curve, D0, as depicted in Figure N°4.6. While consumers pay Pm0, which is equal to their willingness to pay for the marginal unit consumed, producers will receive a government subsidy in addition to the market price, Pm0, they receive from consumers. The price per unit, that suppliers finally receive (which also reflects the resource cost of the marginal unit), is Ps0.

Figure 5. Economic Cost of Input Demanded by a Project in a Distorted Market



Source: Jenkins, Harberger & Kuo (2013).

Now suppose a project demands an input in this market. The former logic is used to determine the gross economic costs of this input. The new project demands a quantity Qp and results in a shift in the industry demand curve from D0 to D0+P. The additional demand will bid up the market price of the input from Pm0 to Pm1 and subsequently the supply price from Ps0 to Ps1 as shown in Figure N°4.5. The increase in price will result in additional production by suppliers from Q0 to Qs1, and a cutback in consumption by the existing demanders from Q0 to Qd1. Therefore, Qp, the quantity demanded by the project, equals the sum of the two quantities Qd1 - Q0 and Q0 - Qs1.

The economic cost of the project's input is measured by the value of the additional resources used to accommodate the expansion in production from Q0 to Qs1, and the value of the cutback in consumption by existing consumers. Following the second postulate, the value of additional resources used is measured by area under the before-subsidy supply curve—the area Q0BCEFQs1. Following the first postulate, the value of the postponed consumption by other demanders is measured by the area under the demand curve—the area Q0BAQd1. The gross economic cost is the sum of these two areas: Qd1ABCEFQs1.

For the distributional analysis of the project's demand, it can breakdown the economic costs of the input into its financial expenditures–after subsidy—paid by the project (Qd1AFQs1); the loss in consumer surplus (Pd1ABPd0); the gain in producer surplus (Ps0CEPs1); and the loss in government expenditures on the subsidy (Pd0BCPs0- Pd1FEPs1).

The analyses presented here are carried out under the assumption that despite the distortions that might exist in the form of taxes and subsidies, or that can be expressed as a tax or a subsidy in the markets for these non-tradable goods or services, there are no quantitative restrictions on the demand for or supply of these goods or services.
Same analyses apply when instead of distortions such as taxes and subsidies, the market has externalities as external effects in consumption or in the production of goods and services.

Annex 10

Construction of National Parameters

Box 4.5: The National Parameters

In the initial stages of PIMS installation, is key to estimate two of the most important shadow prices. These two prices are also known as National Parameters: the Economic Opportunity Cost of Capital (EOCK) and the Foreign Exchange Premium (FEP).

In relation to the EOCK, different approaches have been used to determine the economic cost of capital. One of the practical ways to measure this parameter is to use the economic opportunity cost of public funds where the funds will be drawn from various sectors of the economy according to their response to changes in interest rates due to borrowing in capital markets. In a small, open and developing economy, like the Philippines, there are normally three alternative sources for these public funds. The first source comes from those resources that would have been invested in other investment activities, but those other activities have been either displaced or postponed. Another alternative source is from individual savers whose resources would have been spent on private consumption, but the consumption is forgone due to an increase in domestic savings. Finally, the third source is additional foreign capital inflows.

Based on these three alternative sources of public funds, the EOCK can be estimated as a weighted average of the rate of return on displaced or postponed investments, the rate of time preference to savers, and the cost of additional foreign capital inflows. It can be expressed in the following form:

$$EOCK = f_1 \bullet \pi + f_2 \bullet \gamma + f_3 \bullet MC_f$$

where π = the economic cost of funds drawn from the displaced investment

γ = the rate of time preference to savers

MC_f = the cost of foreign savings

The economic cost of funds drawn from the displaced investment (π) is measured by the forgone gross-of-tax return to domestic capital, the rate of time preference (γ) is the cost of postponed consumption due to the response by households to save more, and the cost of foreign savings (MC_f) is valued at marginal cost of foreign borrowing by the government. The corresponding weights (f_1, f_2, and f_3) are the proportions of funds diverted or sourced from each sector, and $f_1 + f_2 + f_3 = 1$.

These weights can be expressed in terms of elasticities of demand and supply of funds with respect to changes in financial costs or rate of return.

$$\frac{\eta}{\varepsilon_r\left(S_r/S_t\right)+\varepsilon_f\left(S_f/S_t\right)-\eta}$$

Parameter f_1 may be shown as:
Parameter f_2 may be shown to be equal:

$$\frac{\varepsilon_r\left(S_r/S_t\right)}{\varepsilon_r\left(S_r/S_t\right)+\varepsilon_f\left(S_f/S_t\right)-\eta}$$

Parameter f_3 may be shown to be equal:

$$\frac{\varepsilon_f\left(S_f/S_t\right)}{\varepsilon_r\left(S_r/S_t\right)+\varepsilon_f\left(S_f/S_t\right)-\eta}$$

Where: ε_r = the supply elasticity of household savings

ε_f = the supply elasticity of foreign funds
η = the elasticity of demand for capital relative to changes in the interest rate
S_t = the total saving available in the economy
S_r = the contribution to the total savings by households
S_f = the total contribution of net foreign capital inflows.

In an economy, there are more than one group of investors and savers. Therefore, the elasticities ε_r, ε_f and η used in the equation are the weighted average of elasticities for the various groups of savers and investors.
Expressing f_1, f_2, and f_3 by the weights in terms of elasticities of funds, equation (A8.1.1) can then be rewritten as follows:

$$EOCK = \frac{\varepsilon_r\left(S_r/S_t\right)\bullet\gamma+\varepsilon_f\left(S_f/S_t\right)\bullet\text{Ø}_f-\eta\bullet\pi}{\varepsilon_r\left(S_r/S_t\right)+\varepsilon_f\left(S_f/S_t\right)-\eta} \qquad \text{(A8.1.2)}$$

Related to the FEP, when the numeraire is at the level of domestic prices, the foreign exchange impact of tradable goods must be converted into domestic values to express them in terms of the price level of non-tradable goods. The rate at which this conversion is done is critical to the analysis of the project. If the market exchange rate is distorted, it will not accurately reflect the economic value of a unit of foreign exchange in relation to domestic currency. The economic analysis of a project will be flawed if the distorted values of the exchange rate are used for this conversion. In such a situation, it is necessary to make an adjustment for the divergence between the market price of foreign exchange and its economic price. It is this economic (shadow) exchange rate that should be used to convert the values of tradable goods. The numeraire proposed for the analysis of projects is the willingness to pay at the domestic price level. Among the main advantages of using this numeraire is that it facilitates the understanding of the differences between the economic and financial prices.

When a project demands foreign exchange, it exerts pressure on the domestic currency to depreciate. In other words, the demand for foreign currency by a project in Uganda will lead to an increase in the number of Ug.Shillings required per unit of foreign currency. As a result of the depreciation of the local currency, imports will become more expensive and some importers will react by cutting back their demand for imported goods. Exporters, now receiving more Ug.Shillings per unit of foreign currency, will increase their supply of exports. The project's demand for foreign exchange will be met partly by a cutback in demand for foreign exchange by importers and partly by additional supply of foreign exchange by exporters. Following Harberger's postulates, the economic value of foreign exchange will be a weighted average of the value of foreign exchange given up by importers and the value of resources used to generate the additional exports.

Since the demand for imported goods is generally distorted by import tariffs and perhaps quotas, and the supply of exports is distorted by export taxes and subsidies, there will be a difference between the economic price of foreign exchange and its market price. This difference represents the loss of import tariff revenues and quota rents associated with foregone imports; as well as losses or gains due to the distortions associated with the additional production of exports.

The difference between the financial and the economic exchange rates also reflects losses in indirect tax revenues in both the traded and non-traded sectors. The depreciation in domestic currency resulting from the project's demand for foreign exchange leads other importers to cut back their demand for foreign exchange. Consequently, the domestic indirect taxes associated with the goods and services that are no longer imported are foregone. On the supply side, the resources required to produce additional exports have to come from the non-traded sector, which will reduce the supply and, due to change in prices, the corresponding quantity demanded for non-traded goods and services. The associated value added tax (VAT) and other indirect tax revenues on these non-traded goods and services will also be reduced. All these losses in trade and other indirect tax revenues have to be accounted for when estimating the foreign exchange premium.

The above analysis deals with the case when a project demands foreign exchange and the consequent impacts on the traded and non-traded sectors in the economy. The same conceptual framework will also hold (but in reverse) when a project generates foreign exchange. When a project is exports-oriented, the supply of foreign exchange increases which results in the appreciation of the domestic currency (less Uganda Shilling per unit of foreign currency). The cheaper foreign currency results in an increase in imports as well as a cutback in exports by some exporters. The economic value of the foreign exchange generated by the project will be estimated as a weighted average of the value of the new imports and the value of resources that were used for producing exports and are now saved. There is a gain in import and indirect tax revenues due to the additional imports. Also, the resources that are no longer used to produce exports will be largely diverted to the non-traded sector where they will generate indirect tax revenues.

Therefore, a foreign exchange premium must be applied to the foreign exchange component of the goods demanded or supplied by a project when undertaking an economic analysis of a project. This adjustment will ensure that the project's use or generation of foreign exchange adequately reflects the economic opportunity cost of foreign exchange in the country.

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