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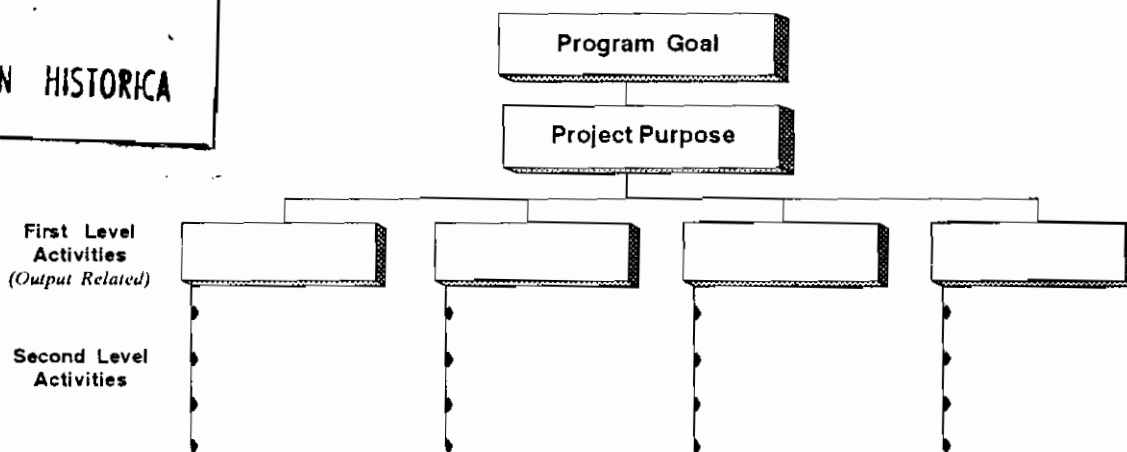
TRAINING MODULE ON PROJECT DESIGN

LOGICAL FRAMEWORK MATRIX

Narrative Summary	Indicators	Means of Verification	Critical Assumptions
GOAL (Wider Objective)			
PURPOSE (Immediate Objective)			
OUTPUTS			
INPUTS (Resources)			



WORK BREAKDOWN STRUCTURE



1.0 Introduction

- 1.1 Definition of a project
- 1.2 The project cycle
- 1.3 The LFA/WBS as a common tool for design, monitoring and evaluation
- 1.4 The project design document

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 - Used by many bilateral donors
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1.0 INTRODUCTION

1.1 Definition of a Project

- A specific set of activities or task that receive a fixed amount of money in a determined period of time to meet the proposed objective
- An undertaking that has a beginning and an end and is carried out to meet an established goal within cost, schedule and quality guidelines.

1.2 Stages in the Project Cycle of Donor Agencies

There are six main stages in the donor project cycle:

- Country Strategy formulation
This provides a long term perspective on a donor aid program to a particular country and represents the broad strategy and priorities.
- Country Program Development
This stage involves the identification and preparation of individual activities comprising the program. This is facilitated through sector studies and programming missions.
- Project Identification
This stage involves the identification and initial assessment of individual projects within the context of an agreed country strategy and program. A preliminary project outline and logframe is prepared.
- Project Design
This stage usually involves a pre-feasibility or feasibility study and the preparation of a design document. The logframe is finalized as is the work breakdown structure linking activities to outputs.

- **Project Implementation and Monitoring**

This stage usually involves the preparation of a memorandum of understanding representing a government to government agreement on the project to be implemented; the negotiation of the contract with the executing or implementation agency; a revised implementation document if needed; annual workplans; and progress reports.

- **Project Completion and Evaluation**

This stage involves the preparation of a project completion report. It also may require an end-of-project evaluation.

1.3 The LFA/WBS as a Common Tool for Design, Monitoring and Evaluation

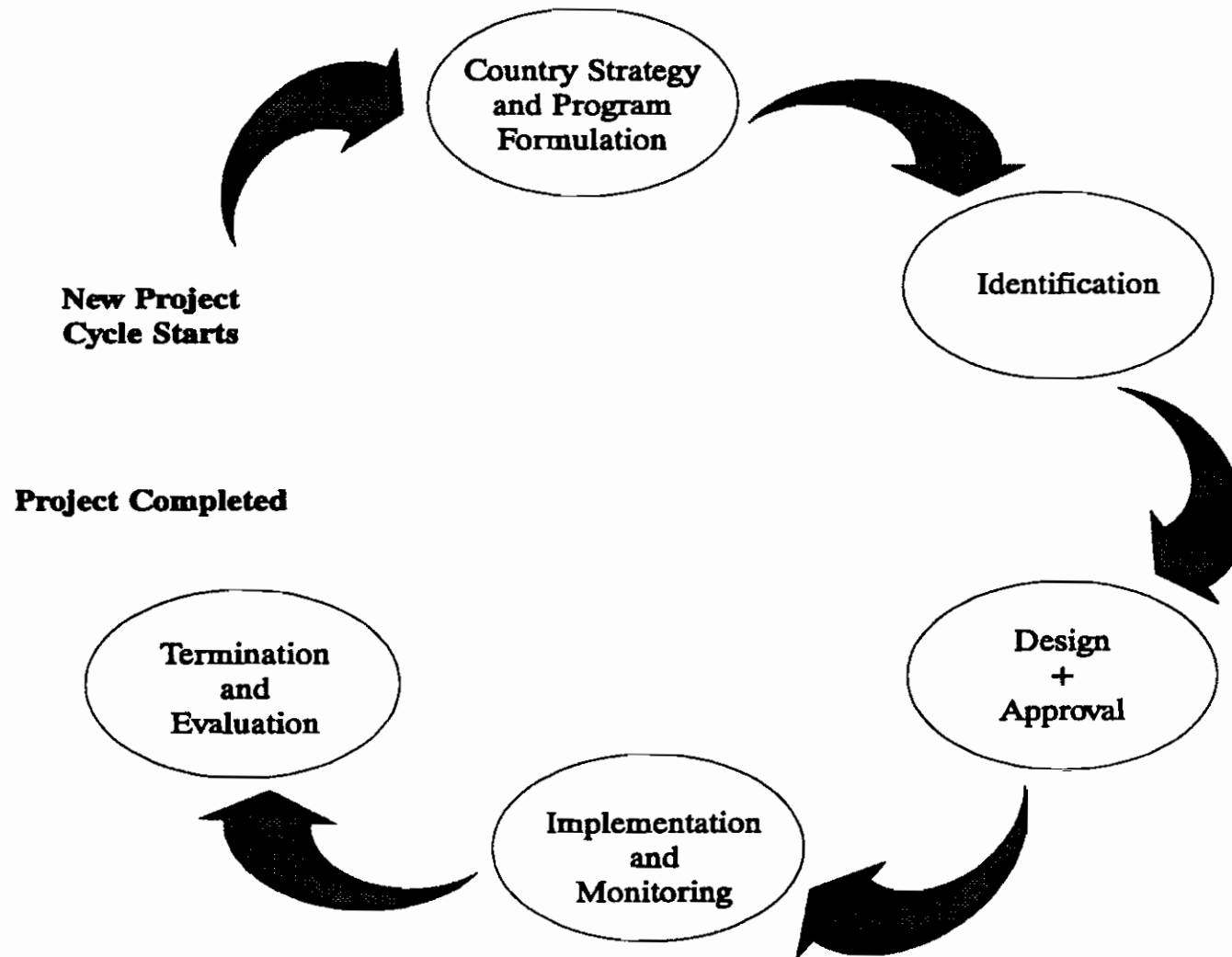
The logical framework analysis and work breakdown structure are approaches that facilitate completing several stages in the project cycle. More specifically, they offer a common approach that provide clear linkages between:

- Project Design
- Project Monitoring
- Project Evaluation

This is accomplished by defining from the outset the activities related to each desired output and specifying what objectively verifiable indicators can measure the project's inputs, outputs, purpose and goal.

Figure 1

The Project Cycle at Donor Agencies



1.4 The Project Design Document

The project design document should include sections on:

- **rationale** (introduction and origin of project; developmental problem and relevance; priority to national government and to donor; target group and anticipated impact)
- **project description** (LFA + WBS stating goal, purpose, outputs, inputs and activities; total costs; location, duration)
- **project management during implementation**
 - project organization and management
 - implementation schedule
 - budget schedule
 - reporting and monitoring requirements
- **evaluation (s)**
- **cross sectoral issues** (women in development and gender equity; environmental sustainability)

2.0 LOGICAL FRAMEWORK ANALYSIS (LFA)

2.1 Historical Background

The logical framework approach to project design was developed for the United States Agency for International Development by the firm Practical Concepts in 1969.

It has been adapted by several bilateral and multilateral donor agencies and is used in some form by:

- African Development Bank (ADB)
- Australian International Development Assistance Bureau (AIDAB)
- British Overseas Development Aid (ODA)
- Canadian International Development Agency (CIDA)
- Food and Agriculture Organization (FAO)
- German Agency for International Development (GTZ)
- Japan International Cooperation Agency (JICA)
- Netherlands Ministry of Foreign Affairs, Directorate General for International Cooperation (DGIS)
- Norwegian Agency for Development Cooperation (NORAD)
- United States Agency for International Development (US AID)

2.2 Advantages of the Logframe

- It ensures that fundamental questions are asked and weaknesses are analyzed in order to provide decision makers with better information to approve new projects

- It helps place the project within the larger context of a program or sector plan
- It improves planning by highlighting linkages between project elements and external factors
- It provides a better basis for systematic project monitoring and evaluation
- It presents essential project information in a concise and clear fashion
- It is relatively simple and easy to use. No special staff qualifications are needed
- It distinguishes between what we can produce and the effects we would like to generate as a result of that production
- It ensures continuity of approach when original project staff are replaced
- It clarifies the extent and limits of responsibilities for project management

2.3 The Logframe Methodology

The logical framework methodology consists of identifying a hierarchy of objective statements regarding the goal, purpose, outputs and inputs (including activities) of a project. This is illustrated in Figure 2.

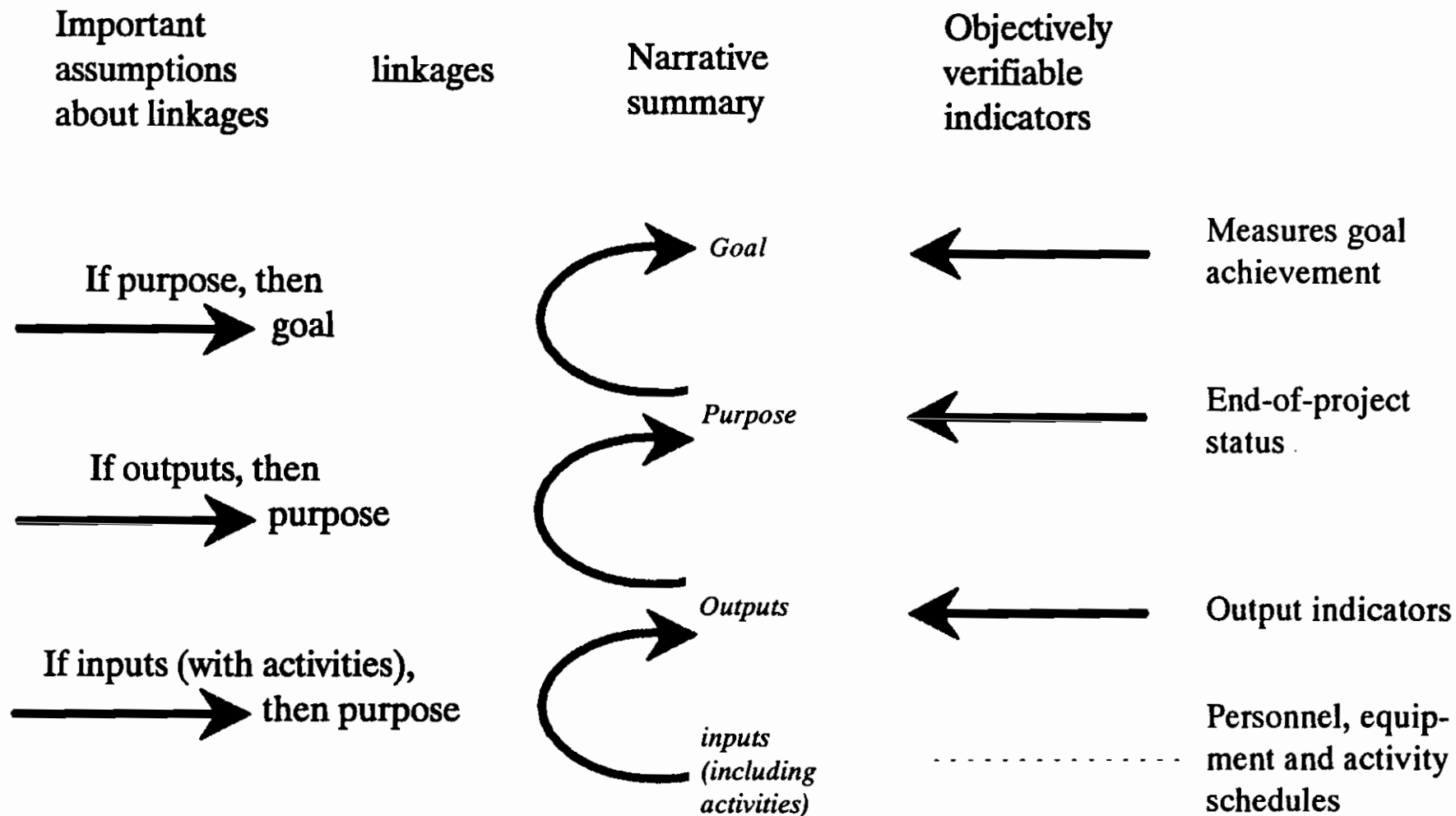
In the logframe methodology, the concept of causality, or cause and effect, is embodied. Examples of these causal linkages include:

- resource inputs used with activities to produce outputs
- outputs used to achieve the project purpose
- achievement of the purpose used to help contribute to the attainment of a higher order goal.

The basic premise in this hierarchy is that the achievement of each level is necessary (but may not be sufficient) for the achievement of the next higher level.

Figure 2

The Logframe as a Hierarchy of Objectives



However, factors beyond the control of the project planner and manager may affect the achievement of higher levels in the hierarchy. Thus, the linkage or progress from one level to the next is conditional on the continuing validity of the stated assumptions.

Goal

The goal is a generalized statement of intent. It represents the broad program or sector objective to which this project and other projects are expected to contribute. It identifies the overall development aim of a project.

Example of Goal Statement

"To improve the standard of living and quality of life for the people of Province X."

Purpose

The purpose is the primary reason for doing the project and producing the outputs. It refers to the anticipated effect which is expected as a result of producing the project outputs. It describes the intended impact of the project on the direct beneficiaries, but is beyond the direct control of the project team since it relies on how the beneficiaries will make use of the project outputs.

Some donors (e.g., CIDA, US AID, The African Development Bank, and NORAD) insist there should only be one project purpose whereas others such as AIDAB accept that there can be several project purposes.

Example of Project Purpose

"To increase small farmer income in District Y of Province X."

Project Outputs

Project outputs are the identified and measurable results expected from the provision of the inputs together with the execution of the activities. They are the results that should be guaranteed by the project team.

Figure 3

The Logframe Matrix

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Goal:</p> <p>The broader (e.g., national level) objective to which the project contributes</p>	<p>Indicators of goal achievement</p>	<p>Statement of how data on goal are to be collected and measured</p>	<p>Assumptions for achieving goal targets</p>
<p>Purpose:</p> <p>The primary reasons for the project</p>	<p>Conditions that will indicate purpose has been achieved: end of project</p>	<p>How data on purposes will be collected and measured</p>	<p>Assumptions for achieving purpose</p>
<p>Outputs:</p> <p>The direct measurable results of the project</p>	<p>Magnitude of outputs</p>	<p>How data on outputs will be collected and measured</p>	<p>Assumptions for achieving outputs</p>
<p>Inputs:</p> <p>The resources made available to the project</p>	<p>Implementation target (type and quantity)</p>	<p>How implementation target will be monitored</p>	<p>Assumptions for providing inputs</p>

The outputs are the pre-conditions for achieving the project purpose. A project usually has 3 to 5 outputs needed to achieve the purpose.

Example of Outputs

- *Increased rice production*
- *Functioning fertilizer and high yield variety rice seed distribution system in place*
- *Farmers trained*
- *Functioning credit system in place*

Project Inputs and Activities

Project inputs are the resources made available to the project and may include people, equipment or finance. Project inputs, together with project activities, allow the achievement of outputs.

An activity is an action which is necessary to transform given inputs into planned outputs within a specified period of time. Project monitoring is based on observation of the execution of activities.

Example of Project Inputs and Activities

Donor: \$.....

- *Technical Assistance/Consultants* \$.....
- *Equipment* \$.....
- *Supplies* \$.....

Activities:

- *Design distribution system*
- *Construct storage facilities*
- *Train staff*
- *Recruit farmers*
- *Develop training facilities and materials*
- *Conduct training*
- *Hire credit specialist*
- *Develop credit system procedures*
- *Train credit staff*

Vertical Logic

The vertical logic (see Figure 4) is based on the principle of causality from inputs to goal. There are three causal links from a project's inputs to its ultimate goal:

- between activities and outputs
- between outputs and purpose
- between purpose and the ultimate goal.

The cause and effect linkages may be expressed in terms of "if...then" statements.

The inputs should be considered both **necessary and sufficient** to achieve the outputs. Outputs should also be necessary to achieve the purpose, but are usually not sufficient. Similarly, the achievement of the purpose is necessary, but usually not sufficient to achieve the broad goal. Other complementary projects may also be necessary to achieve the goal.

The Critical Assumptions are conditions that must exist if the project is to succeed, but which are not under the direct control of the project. They represent elements of uncertainty or risk. Where the risk is considered excessive, the project planner may wish to eliminate the assumption by including that area of concern in the project as an activity over which there is some control and certainty.

The hypothesis required by the Logical Framework Analysis at each level of the project is that all the items in the project necessary to achieve the results at the next higher level plus the assumptions made explicit about factors outside the project constitute the necessary and sufficient conditions to produce the results at the next higher level.

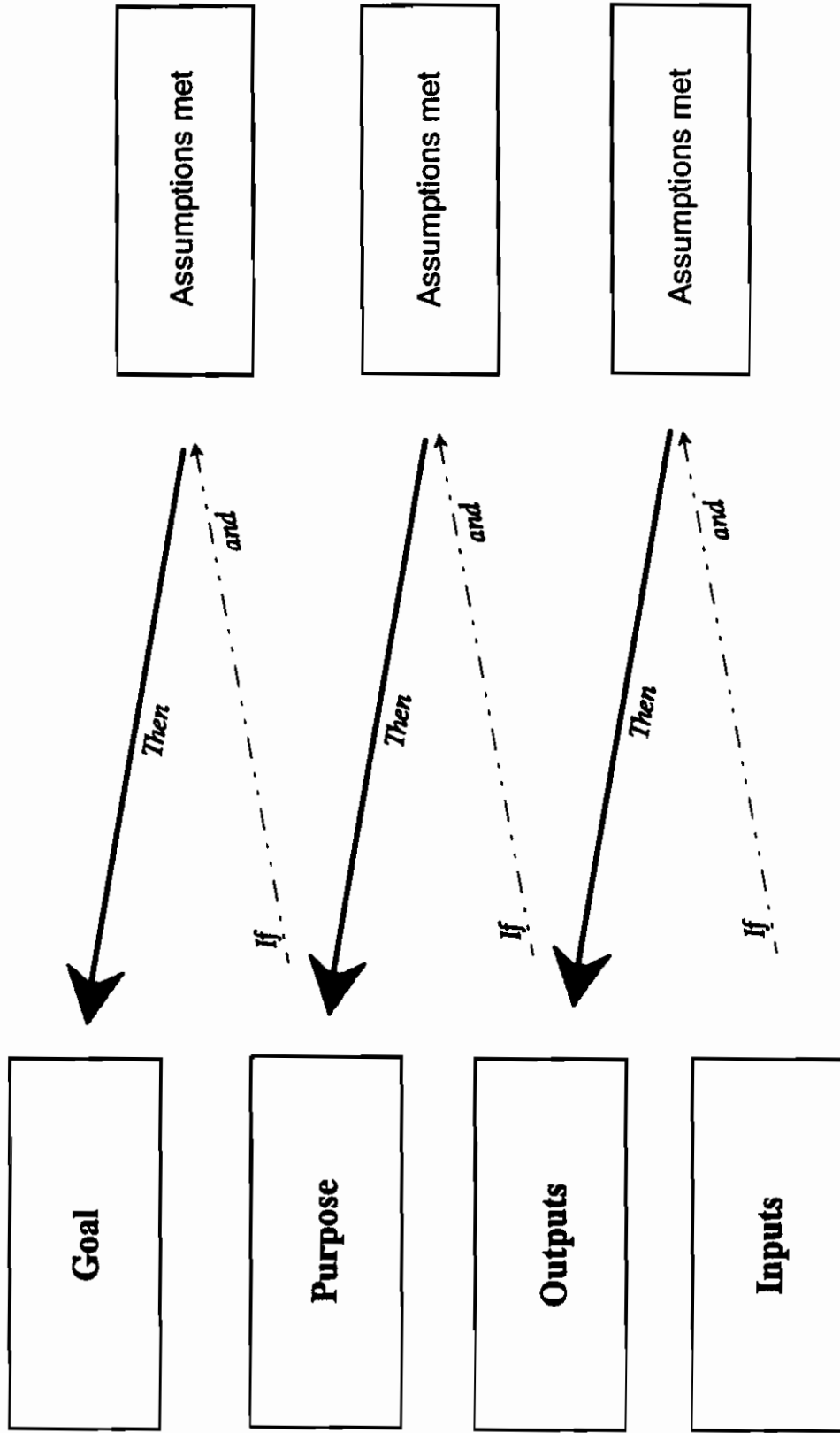
Horizontal Logic

The horizontal logic identifies and measures the results to be produced by the project at the various levels in the hierarchy.

There is a **narrative summary** of the goal, purpose, outputs and inputs.

The Vertical Logic In The Project

Figure 4



The **objectively verifiable indicators** are the direct or indirect measures which verify the achievement of an objective. The indicators define the performance standard to be reached. They are the means for establishing what conditions will signal successful achievement of the project objectives in terms of:

- target group (*for whom*)
- time (*by when*)
- quantity (*how much*)
- location (*where*)
- quality (*how well*)

Indicators provide a basis for monitoring and evaluation. Due to the importance of the project purpose, the set of indicators at this level have been given the special name "End-of-project status."

Once the indicators are formulated, the sources of information to use them must be specified. The **means of verification** indicate:

- what information is to be made available
- in what form; and
- who should provide the information



Steps in Formulating the Indicators

Objective: *Increased agricultural production*

- Identify indicator
(e.g., *increased rice yield*)
- Specify target group
(e.g., *small farmers cultivating 3 ha or less*)
- Set quantity
(e.g., *500 small farmers increase yields by 50%*)
- Specify time frame
(e.g., *between June 1993 and June 1994*)
- Set location
(e.g., *district X*)

Sample Phrasing of Indicator:

500 small farmers in district X (cultivating 3 ha or less) increase their rice yield by 50% between June 1993 and June 1994, maintaining the same quality of harvest as the 1992 crops.

3.0 WORK BREAKDOWN STRUCTURE (WBS)

3.1 Definitions

The WBS is both:

- a systematic process of breaking down a project into hierarchical levels of work, gradually reducing the scope and complexity of the work packages.
- a graphic description of a project

The elements or the first level activities are the large discrete work packages of a project that are defined in terms of the project's outputs.

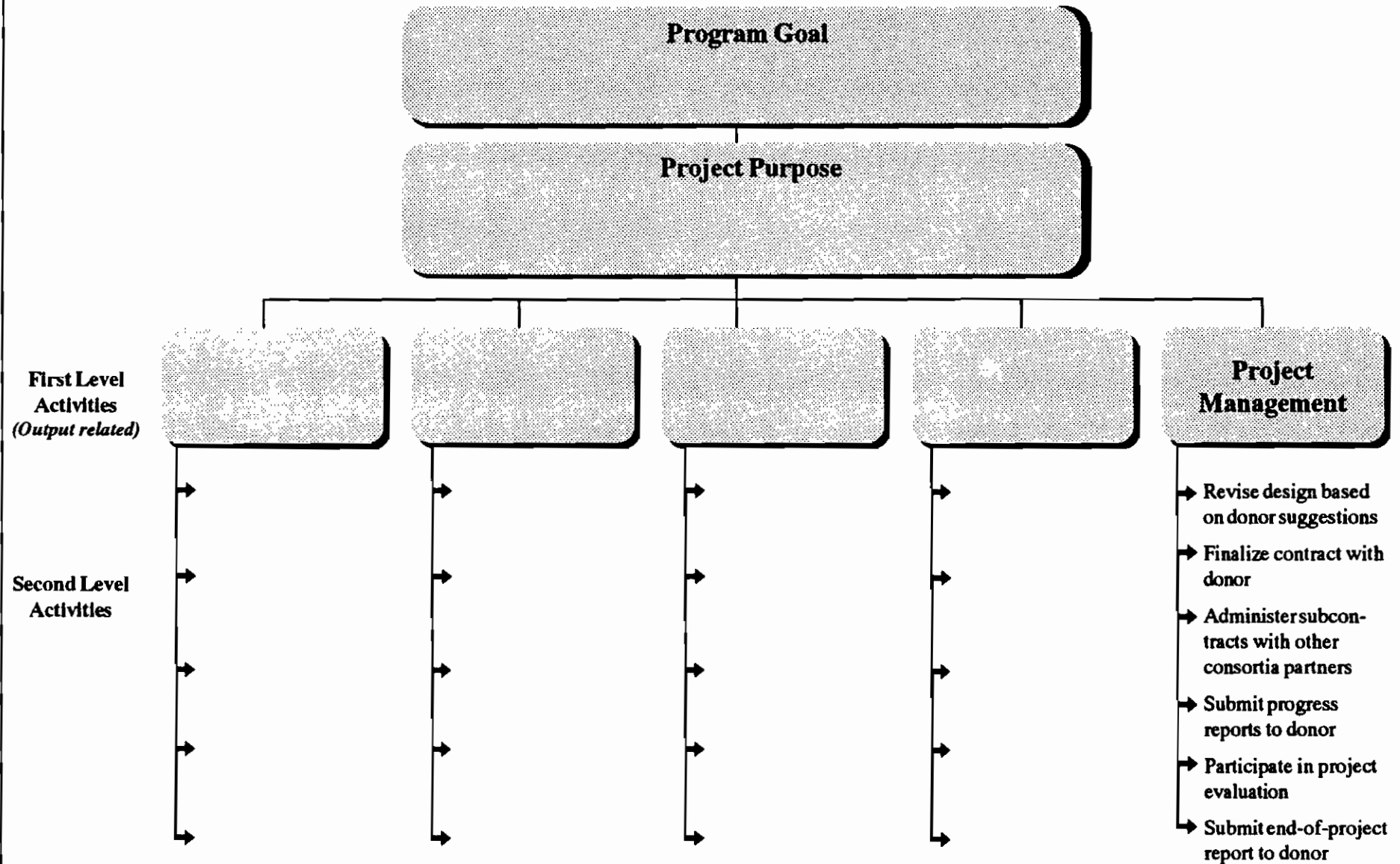
The second level activities are smaller specific work packages that must be executed within a specific time frame and financial limit.

The WBS facilitates the design and management of project that are defined in terms of result-oriented work packages that can be identified, costed, scheduled, organized, implemented, monitored and controlled.

A sample format for a WBS is shown in Figure 5.

Figure 5

Example of a Work Breakdown Structure Linking Project Activities to Project Outputs



3.2 Linkage of the LFA

Project designers should first complete a LFA for the project. The outputs specified in the LFA become the link to the WBS and form the elements or first level activities that must be successfully completed in order to attain the project purpose. The linkage between the LFA and WBS is shown in Figure 6.

3.3 Advantages of the WBS

The Work Breakdown Structure links activities to specific outputs. It provides the basis for project management by activity. Breaking a project down into discrete work packages of activities provides the following advantages:

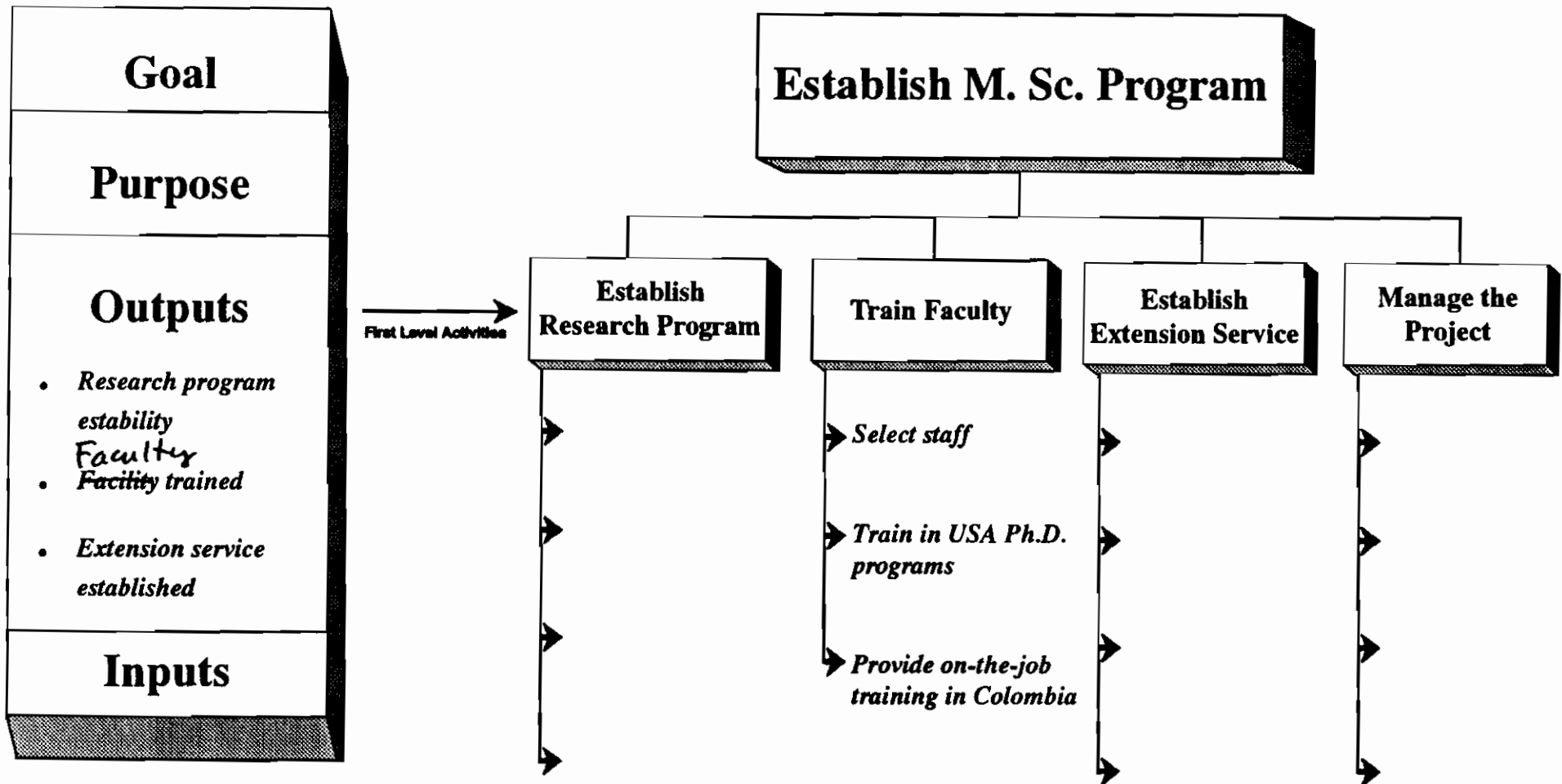
- the same activity groupings are used for design, reporting, monitoring and evaluation
- the responsibilities and accountability implementing various work packages is clarified
- control of the project throughout project implementation is facilitated by comparing actual activities (in financial, quality, and schedule terms) with planned activities
- the one page graphical presentation of the project provides donors with an easily understandable overview of the entire project.

Figure 6

Link Between the LFA and WBS

Logical Framework Analysis

Work Breakdown Structure



4.0 MANAGEMENT ISSUES ADDRESSED IN PROJECT DESIGN

4.1 Organization, Roles and Responsibilities

The project designer must provide a clearly defined organizational chart for managing the project. This should identify reporting lines between the various major participants as well as those between the organization designated as the executing agency and the donor agency. A sample organization chart is shown in Figure 7.

Each project should have a designated Project Coordinator who will be held accountable for coordinating the delivery of the project.

Should several organizations be cooperating in a consortia for the execution of a project, there should be a clearly designated lead organization which will have overall responsibility with the donor for contracting, implementation and reporting. The lead organization or executing agency will sub-contract the other collaborating partners to provide specific services.

The roles and responsibilities for each consortia member must be clearly defined.

4.2 Implementation Schedules

The project designer should prepare an implementation schedule for each first and second level activity identified in the Work Breakdown Structure.

The easiest way to graphically illustrate the commencement, duration and termination of each activity is in the form of a Gantt chart. An example of an implementation schedule in the form of a Gantt chart is shown in Figure 8.

Figure 7

Sample Project Organization Chart

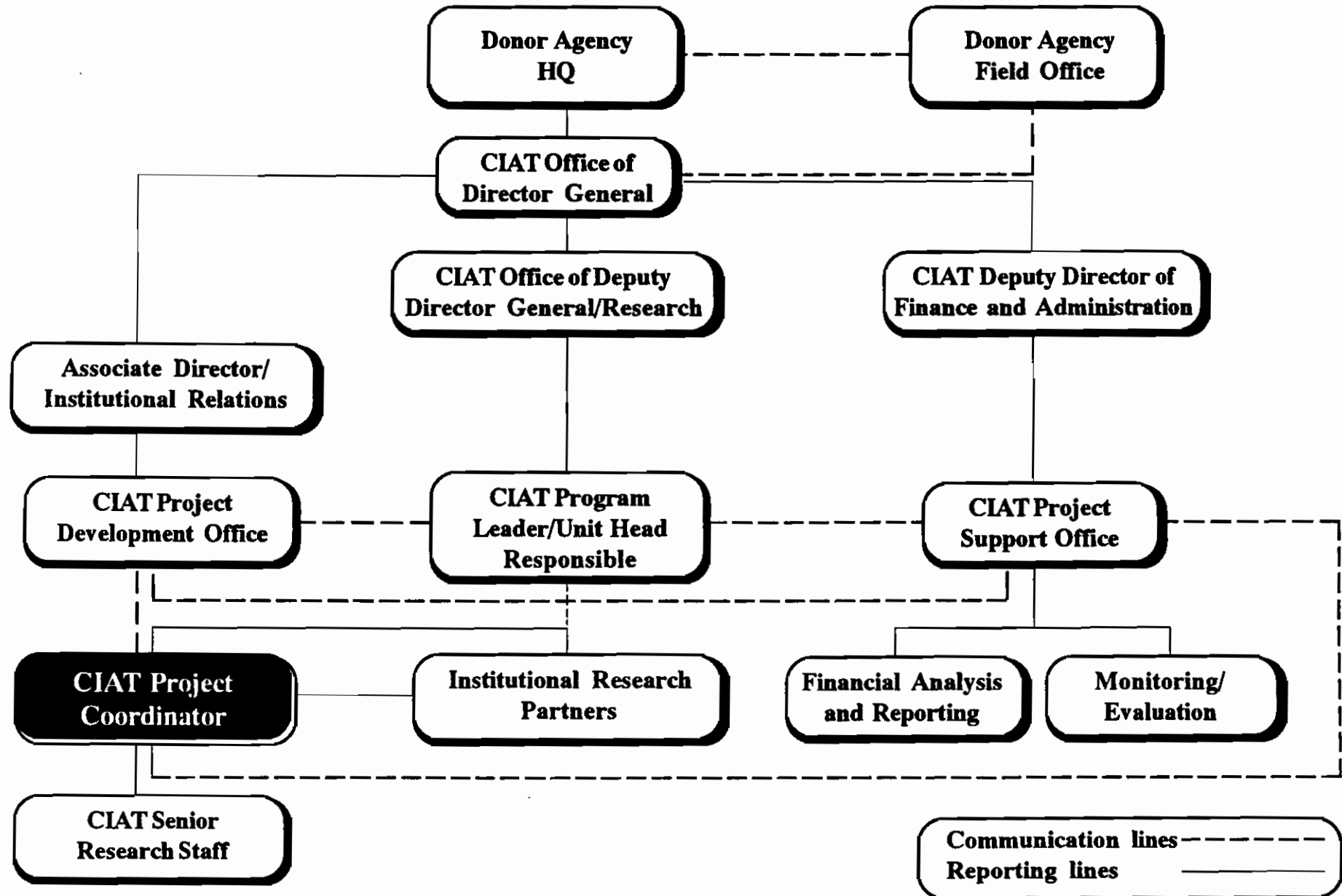


Figure 8

Sample Gantt Chart for Proposal Implementation Schedule of Activities by Quarter

Activity		Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
100	TRAINING												
110	Conduct needs analysis		■										
120	Prepare training materials			■	■								
130	Deliver training workshops							■		■		■	
200	RESEARCH												
210					■	■	■	■	■				
220					■	■	■	■					
300	PROJECT MANAGEMENT												
310	Finalize contract with donor agency	■									■		
320	Finalize sub-contracts with institutional partners	■											
330	Prepare Annual Work Plans	■											
340	Participate in Project's Annual Steering Committee Meetings	■											
350	Submit semi-annual project technical and final progress reports		■		■		■		■		■		■
360	Participate in end-of-project evaluation												■
370	Submit end-of-project report to donor agency												■

The implementation schedule identified in the project design facilitates the process of monitoring and evaluation because it provides the planned schedule against which actual progress in implementation can be compared.

4.3 Budget

The project designer must prepare the budget to cover the entire implementation period. It is preferable to show the budget broken down by both activity and standard object of expenditure as shown in Figure 9. Providing an activity-based budget facilitates monitoring and evaluation because it enables a comparison of actual versus planned expenditures for work packages that are directly linked to the project's outputs.

The project designer should ensure the budget includes:

- cost projections by standard object-of-expenditure (e.g., personnel, travel, supplies and services, document acquisitions, vehicle leases, indirect costs)
- cost projections by major activity (e.g., field research, training, policy development and information dissemination)
- cost projections by year of project and a grand total
- costs separated for executing agency and for sub-contracts with collaborating partners
- provision for indirect costs (e.g., 25%)
- provision for inflation (state assumption of inflation rate and indicate budget figures are stated in current \$)
- rationale or underlying assumptions for each major budget item (e.g., costs for salary and benefits per full-time senior staff members; post doctoral fellow; research associate, research assistant, secretary, etc.)

Figure 9

Sample Budget Format

DONOR - GRANT NUMBER - AND PROJECT NAME
 BUDGET BY ACTIVITY FOR THE YEAR ____
 IN US\$ DOLLAR

ITEM	Activity I		Activity II		Activity III		Activity IV		Activity V		Activity VI		GRAND TOTAL	
	COSTS C	US \$	COSTS C	US \$	COSTS C	US \$	COSTS C	US \$	COSTS C	US \$	COSTS C	US \$	COSTS C	US \$
PERSONNEL														
Senior Staff		-		-		-		-		-		-		-
Support Staff		-		-		-		-		-		-		-
Clerical Staff		-		-		-		-		-		-		-
Temporary		-		-		-		-		-		-		-
Honoraria		-		-		-		-		-		-		-
Total Personnel		-		-		-		-		-		-		-
Travel														
National Travel		-		-		-		-		-		-		-
International Travel		-		-		-		-		-		-		-
Total Travel		-		-		-		-		-		-		-
OPERATIONS														
Supplies and Services		-		-		-		-		-		-		-
Research Station Support		-		-		-		-		-		-		-
Steering Committee		-		-		-		-		-		-		-
Total Operations		-		-		-		-		-		-		-
INSTITUTIONAL DEVELOPMENT														
Workshop/Conferences		-		-		-		-		-		-		-
Information dissemination		-		-		-		-		-		-		-
Document acquisitions and materials development		-		-		-		-		-		-		-
Staff Training		-		-		-		-		-		-		-
Support for Projects at other institutions		-		-		-		-		-		-		-
Total Institutional Development		-		-		-		-		-		-		-
DIRECT COSTS														
Vehicles Use (leasing, rental)		-		-		-		-		-		-		-
Space Use (land, office)		-		-		-		-		-		-		-
Total Direct Cost		-		-		-		-		-		-		-
INDIRECT COSTS		-		-		-		-		-		-		-
CAPITAL														
Vehicles		-		-		-		-		-		-		-
Office		-		-		-		-		-		-		-
Field and laboratory		-		-		-		-		-		-		-
Total Capital		-		-		-		-		-		-		-
GRAND TOTAL		-		-		-		-		-		-		-

- provision for a mid-project or end-of-project evaluation
- signature on budget page by financial controller

4.4 Monitoring and Reporting

Based on discussions with the donor agency, the project designer should specify the reports which the executive agency must submit to the donor. Project reporting is activity based and normally includes:

- annual work plans
- semi-annual or annual financial and technical progress reports
- end-of-project report

4.5 Evaluation

The project designer must identify whether mid-project and/or end-of-project evaluations are both planned and budgeted.

The project designer should also prepare a one page evaluation matrix specifying how the issues of rationale, effectiveness, efficiency and impact can be addressed in an evaluation. A sample evaluation matrix is shown in Appendix B and illustrative evaluation questions are shown in Appendix C.

The preparation of an evaluation matrix in the design stage facilitates later evaluation because it identifies what types of information must be collected throughout the implementation of the project.

5.0 CROSS SECTORAL DESIGN ISSUES

5.1 Women In Development (WID) and Gender Equity

Most donors attach priority to strengthening the full participation of women as equal partners in the development process. This is assumed to be fundamental to the achievement of sustainable development. In the case of small farm agriculture women play a role in all major activities including planting, fertilizing, weeding and harvesting.

Project designers must ensure that gender equity issues are addressed in the design and evaluation of development projects.

WID should be viewed as a policy and set of guiding principles that pervade all development activities. It is a cross-cutting issue in that it cuts across sectors, countries and donor aid instruments.

Women should be explicitly identified as part of the target group for the project. Gender disaggregated baseline data (pre-project) should be established. Project activities must be analyzed as to their potential to effect segments of the population in either a positive or negative manner. Results and impact must be analyzed in a way that can address gender equity issues.

The project design should explicitly identify which of the following groups of women are included as agents or beneficiaries of the project.

- female government officials
- female community leaders
- female poor
- female farmers
- female children
- female consumers

5.2 Environmental Issues

The project design document should specify:

- what are the environmental impacts
- how will negative impacts be minimized, controlled and monitored.

6.0 APPENDICES

6.1 Examples of Logframe Matrix and WBS

PROJECT MATRIX DESIGN CHECKLIST

These 29 steps will help you evaluate the strength of your project design. The Checklist has been tested in hundreds of projects over the past 17 years. In our opinion, it is the best checklist in existence. Put every MPDE Project Matrix design to this rigorous test.

1. The project has one Project Objective.
2. The Project Objective is not a reformulation of the Outputs.
3. The Project Objective is outside the management responsibility of the project.
4. The Project Objective is clearly stated.
5. All the Outputs are necessary for accomplishing the Project Objective.
6. The Outputs are clearly stated.
7. The Outputs are stated as results.
8. The Activities (components) define the action strategy for accomplishing each Output.
9. The Goal is clearly stated.
10. The if/then relationship between the Project Objective and Goal is logical and doesn't skip important steps.
11. The Assumptions at the activity level do not include any conditions precedent. (These are required before Activities (components) can begin).
12. The Outputs plus the Assumptions at that level produce the necessary and sufficient conditions for achieving the Project Objective.
13. The Project Objective plus the Assumptions at that level describe the critical conditions for achieving the Goal.
14. The relationship between the Activities and the Outputs is realistic.
15. The relationship between the Outputs and the Project Objective is realistic.
16. The relationship between the Activities (components) and Inputs/Resources is realistic.
17. The vertical logic among Activities (components), Outputs, Project Objective and Goal is realistic as a whole.
18. The Indicators at the Project Objective level are independent from the Outputs. They are not a summary of Outputs but a measure of the Project Objective.
19. The Project Objective Indicators measure what is important.
20. The Project Objective Indicators have quantity, quality, and time measures.
21. The Output Indicators are objectively verifiable in terms of quantity, quality, and time.
22. The Goal level Indicators are objectively verifiable in terms of quantity, quality, and time.
23. The Inputs described at the Activity (component) level define the resources, (people, materials, time, cost), required for accomplishing the Project Objective.
24. The Means of Verification column identifies where the information for verifying each Indicator will be found.
25. The Activities (components) identify any actions required for gathering Means Of Verification.
26. The Outputs define the management responsibility of the project.
27. When reviewing the Project Matrix, you can define the evaluation plan for the project.
28. The Project Objective Indicators measure the project impact to be sustained.
29. The Output strategy includes a description of the project management systems.

LOGICAL FRAMEWORK ANALYSIS

(2)

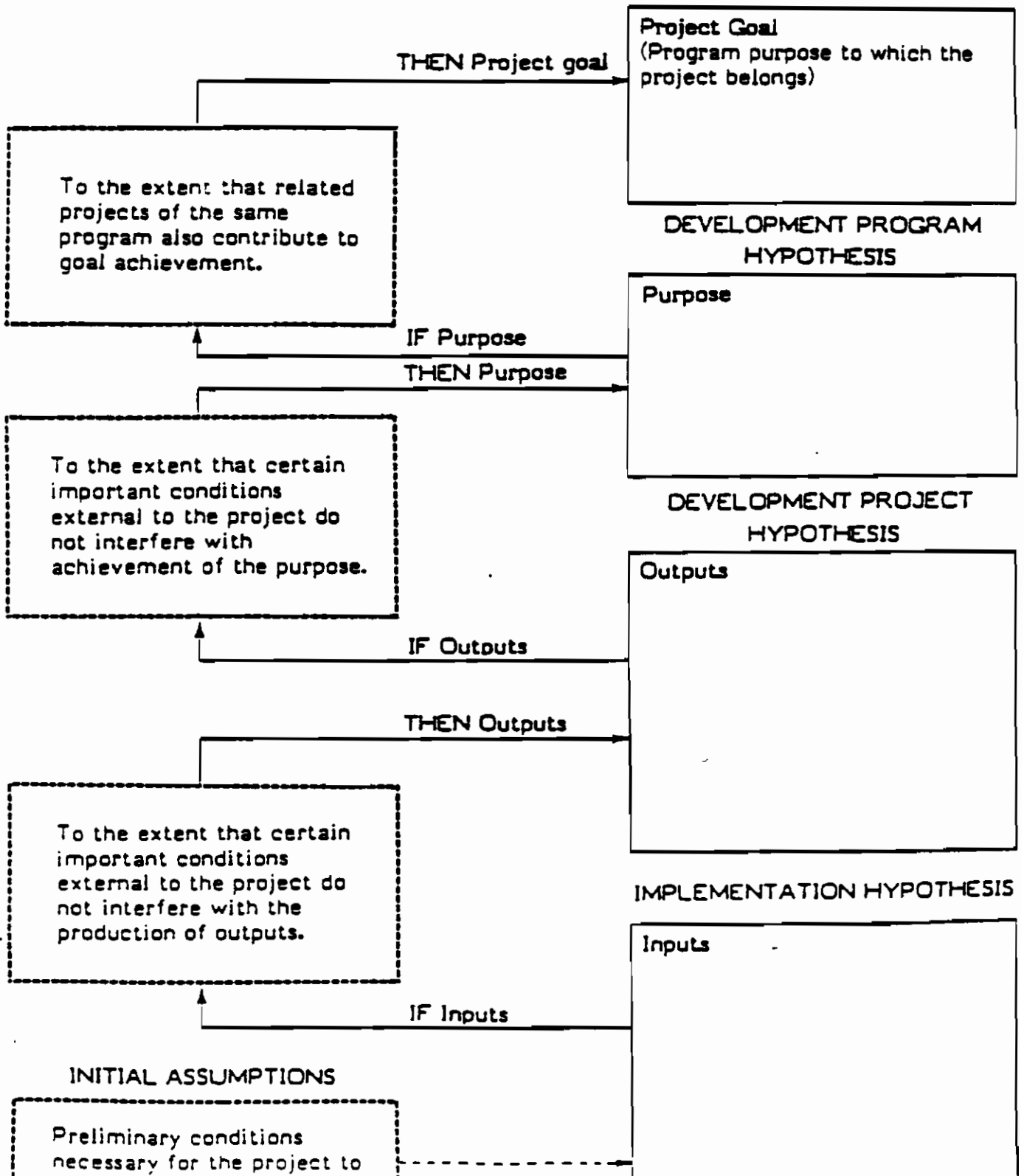
NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS (OVI)	MEANS OF VERIFICATION (MOV)	IMPORTANT ASSUMPTIONS
GOAL LONG-TERM IMPACT	INDICATORS THAT GOAL IS <u>BEING</u> ACHEIVED	SOURCE OF CONFIRMATION DATA	ASSUMPTIONS FOR ACHIEVEMENT OF GOAL
PURPOSE WHAT <u>THIS</u> PROJECT ACHIEVES	INDICATORS THAT PURPOSE <u>HAS BEEN</u> ACHEIVED	SOURCE OF CONFIRMATION DATA	ASSUMPTIONS FOR ATTAINMENT OF PURPOSE
OUTPUTS MAJOR RESULTS WHICH <u>TOGETHER</u> PRODUCE "PURPOSE"	MAGNITUDES OF OUTPUTS DATES OF ACHIEVEMENT	SOURCE OF CONFIRMATION DATA	ASSUMPTIONS FOR PRODUCTION OF OUTPUTS
INPUTS RESOURCES FROM BOTH COUNTRIES FOR <u>THIS</u> PROJECT	QUANTITIES - COSTS - TYPES	SOURCE OF CONFIRMATION DATA	ASSUMPTIONS FOR PROVISION OF INPUTS

ILLUSTRATION OF VERTICAL LOGIC

Vertical logic attempts to describe the logical presentation of differing levels of objectives (NARRATIVE SUMMARY) of a project as well as external factors (IMPORTANT ASSUMPTIONS) which could influence their achievement.

IMPORTANT ASSUMPTIONS

NARRATIVE SUMMARY



**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number: RICE PRODUCTION

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <p>Small Farmer income increased in Northeastern Region.</p>	<p>Measures of Goal Achievement:</p> <ol style="list-style-type: none"> 1. Average farmer income raised from 100 baht per year in 1976 to 130 baht/yr. in 1978. 2. Small farmer income raised from 70 to 110 baht in same period. 	<ol style="list-style-type: none"> 1a. Sales & Market price figures. b. Tax figures. c. Ag. extension agent reports. 2a. As for 1 above. 	<p>Assumptions for achieving goal targets:</p> <ol style="list-style-type: none"> 1. Inflation doesn't exceed 12%/yr. 2. Sufficient "luxury" goods available for farmers to spend "Disposable" income. 3. Farmers protected from unscrupulous merchants.
<p>Project Purpose:</p> <p>Small farmer rice production increased in Northeastern Region.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ol style="list-style-type: none"> 1. 30,000 farmers (owning 7 rai or less) increase rice yields by 50% between October 1976 and October 1978. 2. Rice harvested by small farmers in 1978 is of better or equal quality (X% cracked) to rice harvested by same farmers in 1976. 3. 95% of farmers buy HYV seed for 1979 planting season. 	<ol style="list-style-type: none"> 1a. Harvest Records: Dept. of Ag. extension agents surveys. b. 1976 DOA records. 2a. Review & Analysis by DOA experts. 3a. Credit system records. b. Survey of farmers for program satisfaction. 	<p>Assumptions for achieving purpose:</p> <ol style="list-style-type: none"> 1. Price of rice does not fall below X baht/ton in 1977, and X baht/ton in 1978. 2. Market absorbs total increased production each harvest. 3. No spoilage or waste occurs in marketing/storage system.
<p>Outputs:</p> <ol style="list-style-type: none"> 1. Functioning fertilizer and high yield variety rice seed distribution system in place. 2. Farmers trained. 3. Functioning credit system in place. 	<p>Magnitude of Outputs:</p> <ol style="list-style-type: none"> 1a. 10 distribution centers constructed by 12/78. b. X tons fertilizer and X tons seed distributed to target group by 12/78. c. 96% of all purchases paid for within 2 months of purchase. 2a. 35,000 farmers trained by 12/78. b. 98% of those trained use new planting and cultivating techniques appropriately. 3a. 8m baht issued in credits to 25,000 small farmers by 1978, by 30 credit area offices b. Default rate does not exceed 2% of total loans. c. Credit terms acceptable to local farm leaders. 	<ol style="list-style-type: none"> 1a. Project records. b. Project records, extension agent survey. c. Project A/C records. 2a. Project records. b. Extension agent reports. c. Spot check survey by project manager. 3a. Credit systems records. b. Ag. extension agent report. 	<p>Assumptions for achieving outputs:</p> <ol style="list-style-type: none"> 1. Extension agents correctly supervise farmer application of fertilizer. 2. 10 inches of rain falls between May and October each year. 3. Price of soya seed stays at 1976 levels so farmers will stay with rice project and <u>not</u> convert to soya.
<p>Inputs:</p> <ol style="list-style-type: none"> 1.a. Design distribution system. b. Construct storage facilities. c. Training staff. 2.a. Recruit farmers. b. Develop training facilities and materials. c. Conduct training. 3.a. Hire credit specialist. b. Develop system procedures. c. Train staff. 	<p>Implementation Target (Type and Quantity)</p> <ol style="list-style-type: none"> 1a. 6 manmonths \$15,000 baht 600,000 etc., etc. 	<ol style="list-style-type: none"> 1a. Project manager records. b. Subcontractor records and reports. c. Project manager reports. 	<p>Assumptions for providing inputs:</p> <ol style="list-style-type: none"> 1. Farmers willing to accept new cultivation methods. 2. Fertilizer prices do not exceed \$__ per ton. 3. Can recruit locally 150 agricultural extension agents.



Canadian International Development Agency / Agence canadienne de développement international

PROJECT DESIGN SUMMARY LOGICAL FRAMEWORK

SCHEMA DE L'ELABORATION D'UN PROJET CADRE LOGIQUE DU PROJET

Life of Project - *Durée du projet:*
 From FY - *De l'AF* 1981/82 to FY - *à l'AF* 1986/87
 Total CDN Funding - *Financement can. total* \$26.3 million
 Date Prepared - *Préparé le:* 5/1/81

Project Title & Number / *Titre et numéro du projet* CHITTAGONG UREA FERTILIZER (170/08006): CANADIAN COMPONENT

NARRATIVE SUMMARY <i>RÉSUMÉ</i>	OBJECTIVELY VERIFIABLE INDICATORS <i>INDICATEURS OBJECTIVEMENT VÉRIFIABLES</i>	MEANS OF VERIFICATION <i>MOYENS DE VÉRIFICATION</i>	IMPORTANT ASSUMPTIONS <i>SUPPOSITIONS IMPORTANTES</i>
<p>Program or Sector Goal The broader objective to which this project contributes: <i>Objectif du programme ou du secteur</i> L'objectif général auquel ce projet contribue</p> <p>To contribute to the improvement of agricultural productivity in Bangladesh.</p>	<p>Measures of Goal Achievement: <i>Mesures de la réalisation de l'objectif.</i></p> <ul style="list-style-type: none"> - Production of rice and wheat higher than the 13 million tons produced now annually. - Production of jute more than the 65 million bales produced now annually. 	<p>Ministry of Agriculture Crop Statistics.</p>	<p>Assumptions for achieving goal targets: <i>Suppositions permettant de réaliser l'objectif:</i></p> <ul style="list-style-type: none"> - No major crop damage due to flood, droughts, or cyclones. - Delivery of related inputs (irrigation, seeds, credit) not less than 1981/82 levels. - Distribution of urea in Bangladesh effective.
<p>Project Purpose: <i>But du projet</i></p> <p>To erect a urea fertilizer plant in Chittagong which will utilize local natural gas from the Bakhrabad gas field as feedstock and fuel.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status. <i>Conditions attendues à la fin du projet.</i></p> <ul style="list-style-type: none"> - Plant with design capacity of 561,000 MT of urea per annum, operating at 50% of capacity in first year (11-85 to 10-86), rising to 90% in third year. - Annual net foreign exchange savings of US\$85 million during economic life of plant (11-85 to 10-97). 	<ul style="list-style-type: none"> - Commissioning and handover reports - Plant production statistics - Plant sales records 	<p>Assumptions for achieving purpose: <i>Suppositions permettant de réaliser le but:</i></p> <ul style="list-style-type: none"> - Implementation of gas pipeline from Bakhrabad to Chittagong completed prior to plant commissioning (IBRD co-ordinated project). - Skilled manpower available to manage and operate plant.
<p>Outputs (Canadian component only): <i>Genre d'extrants</i></p> <p>A) Auxiliary steam generating facility to generate steam for ammonia plant start-up, urea plant process purposes, and electric power generation in an associated captive power plant. B) Other distinct plant components (e.g. ammonia storage facilities) and other equipment and materials.</p>	<p>Magnitude of Outputs: <i>Ordre de grandeur des extrants:</i></p> <p>A) Three 40 ton per hour package type natural gas fired steam boilers to produce superheated steam at a pressure of 100kg/cm² (1420 psi) and a temperature of 485°C (900°F), complete with stack, piping, instrumentation, and all ancillary equipment. B) Scope subject to final design and subsequent agreement amongst donors on final allocation of funds to components.</p>	<ul style="list-style-type: none"> - Commissioning and handover reports including factory test records, drawings, and operational test records. - Operating records and logs. - Visual inspection. 	<p>Assumptions for achieving outputs: <i>Suppositions permettant de produire les extrants:</i></p> <ul style="list-style-type: none"> - Final equipment specifications & ratings do not materially change from those envisaged in the conceptual design - actual specifications & ratings will be subject to the process licence selected & final design by the General Contractor. - A supply of natural gas in adequate quantity and quality delivered to the plant. - An adequate supply of suitably treated water for boiler feedwater & blowdown purposes. - All basic plant services.
<p>Inputs (Canadian component only): <i>Intrants</i> A.CIDA:</p> <ol style="list-style-type: none"> 1. Steam Equipment & Spares (FAS Canadian port), Vendor Services 2. Other Equipment 3. Project Monitoring & Evaluation <p>B. GOB:</p> <ol style="list-style-type: none"> 1. Local labour 2. Construction materials <p>C. OTHER DONORS:</p> <ol style="list-style-type: none"> 1. Detailed Design 2. Procurement 3. Supervision 4. Construction 	<p>Implementation Target (Type and Quantity) <i>Calendrier d'exécution (type et quantité)</i></p> <p>A. 1. C\$16.5 million 2. C\$ 8.5 million 3. C\$ 1.3 million (70 man-months)</p> <p>B. 1 + 2 = Equivalent of C\$12 million (est.)</p> <p>C. 1 to 5 = C\$4 million (est.)</p>	<ul style="list-style-type: none"> - CUFL's monthly progress reports, quarterly unaudited financial statements, annual audited financial statements. - 4-monthly project review missions. - Liaison with ADB and GOB. 	<p>Assumptions for providing inputs: <i>Suppositions permettant de fournir les intrants:</i></p> <ul style="list-style-type: none"> - No undue delays in project execution. - Sufficient personnel with requisite skills assigned by GOB to the project. - Rate of inflation not materially higher than anticipated. - All necessary funds for local costs provided promptly by GOB. - Sufficient foreign exchange allocated to project by other donors, and remain available to the project.

Project Title and Number: PAKISTAN - WAPDA MAINTENANCE TRAINING

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS (OVI)	MEANS OF VERIFICATION (MOV)	IMPORTANT ASSUMPTIONS
<p><u>Programme or Sector Goal: The Broader Objective to which this Project Contributes:</u></p> <p>To contribute to the optimal development and efficient utilization of Pakistan's power transmission systems.</p>	<p><u>Measures of Goal Achievement:</u></p> <ul style="list-style-type: none"> - increased power availability to the WAPDA distribution systems; - decreased level of overall system maintenance costs; - decreased occurrence of system failure. 	<ul style="list-style-type: none"> - WAPDA reports and statistics - IBRD data on power generation consumption 	<p><u>Assumptions for Achieving Goal Targets:</u></p> <ul style="list-style-type: none"> - generating capacity continues to grow; - technical capability to maintain existing and future 500 KV transmission systems at level approved in design; - trained maintenance staff are retained in Pakistan in sufficient numbers to effect a proper maintenance systems.
<p><u>Project Purpose:</u></p> <p>To ensure that a capability exists within WAPDA for the Maintenance of 500 KV and 220 KV transmission systems.</p>	<p><u>Conditions that will Indicate Purpose has been Achieved: End of Project Status:</u></p> <ul style="list-style-type: none"> - An on-going maintenance training school that has produced graduate trainees for two years following the end of the Canadian on-site participation. - A minimum of 100 students graduated over this time period. - 500 and 200 KV maintenance systems are in operation. 	<ul style="list-style-type: none"> - WAPDA reports, statistics and financial statements - Reports generated by "follow-up teams" sent to field four times during period June 1985 to December 1986 	<p><u>Assumptions for Achieving Purpose:</u></p> <ul style="list-style-type: none"> - trained instructors are retained at the school for sufficient time to permit the training of additional instructors; - adequate trainees can be found who are capable enough in English; - proper management of maintenance resources made available to the field; - Pakistan's financial contribution will be available on a continuing basis for the maintenance and operations of the school; - 500 KV system operational and sufficient spares available for system to function.
<p><u>Outputs:</u></p> <ul style="list-style-type: none"> - 500/200 KV maintenance training school; - trained maintenance staff; - trained instructors; - 500/200 KV maintenance system. 	<p><u>Magnitude of Outputs:</u></p> <ul style="list-style-type: none"> - one school (fully operational); - 20 protection/implementation graduates; - 24 electrical maintenance graduates; - 45 transmission line graduates; - 5 trained instructors; - maintenance procedures, schedules, and manuals. 	<ul style="list-style-type: none"> - Consultant reports - Periodic monitoring/evaluation - Past reports - End-of-project/evaluation 	<p><u>Assumptions for Achieving Outputs:</u></p> <ul style="list-style-type: none"> - negligible failure and drop-out rate of trainees and instructor trainees; - training methodology of "sandwich program" is functioning in that trainees return to school to complete programs; - trainee instructors are not reassigned to other field operations; - school facilities are provided as specified.
<p><u>Inputs:</u></p> <ul style="list-style-type: none"> - school type facilities capable of being converted into a training school; - 30 p/a project manager; - 120 p/m electrical, POC and line instructors; - 8 maintenance vehicles; 	<p><u>Implementation Target (Type and Quantity):</u></p> <ul style="list-style-type: none"> - project approved by October 1, 1981; - training school facilities completed January 1/82; - training begins January 23/82; - training completed December 3/83; - evaluation completed June 1/84; - four follow-up visits completed 	<ul style="list-style-type: none"> - Project status reports from field - Project reviews and evaluations - ERS Disbursements 	<p><u>Assumptions for Providing Inputs:</u></p> <ul style="list-style-type: none"> - availability of sufficiently qualified WAPDA trainees and instructors (including the use of English); - availability of Pakistan's financial contribution schedule; - CIDA funding approved; - Canadian Consultant is available.

Table 1. Sample Logframe

Project Name: <i>Maize Research Project</i>			
Narrative Summary (NS)	Measurable Indicators (OVI)	Means of Verification (MOV)	Important Assumptions
<p>Goal:</p> <p>1 Agencies use new maize varieties in Striga infested areas of sub-Saharan Africa</p>	<p>1.1 10 projects using new varieties and extension service recommendations data by 12/1996.</p> <p>1.2 Average yields increased by 20% compared to non-Striga projects by 1998.</p>	<p>1.1 Documentation, extension bulletins, national agricultural surveys.</p>	<p>(Goal to Supergoal)</p> <p>1 Price policies, infrastructure and extension support spread and use of technology.</p>
<p>Purpose:</p> <p>1 Striga-resistant maize varieties for use in sub-Saharan Africa created.</p>	<p>1.1 Production of maize in Striga infested research areas increased by 40% by 12/1994.</p>	<p>1.1 On-farm research studies End of Project research reports.</p>	<p>(Purpose to Goal)</p> <p>1 Funds and mechanisms available to adapt maize varieties for local production.</p> <p>2 Farm inputs including tools & fertilizers available on local market.</p>
<p>Outputs:</p> <p>1 Striga-resistant maize varieties identified.</p> <p>2 Seed multiplication capacity of selected sub-Saharan seed companies increased.</p> <p>3 Striga research capacity of selected sub-Saharan research institutes increased.</p> <p>4 Information network for Striga researchers established.</p>	<p>1.1 2 hybrid, 2 composite, and 4 open varieties identified by 12/1992.</p> <p>2.1 National seed company producing 200 mt of certified maize annually by 12/1994.</p> <p>3.1 2 maize breeders, 2 weed scientists, 1 agronomist and 1 plant biochemist trained by 2/1995.</p> <p>4.1 Research methods/results disseminated through semiannual network reports & conferences from 1994-1996.</p>	<p>1.1 Research reports, peer review, publications.</p> <p>2.1 Seed company records, monitoring mission reports.</p> <p>3.1 Project progress reports training records, institute personnel records.</p> <p>4.1 Network newsletters and mailing lists, reports on conferences.</p>	<p>(Output to Purpose)</p> <p>1 Research approach remains most feasible means of reducing losses from Striga infestation.</p> <p>2 Research program is well managed and provides peer review.</p> <p>3 National seed company is functioning at 80% capacity.</p> <p>4 Trained staff continue to work for research project.</p>

Project Name: *Maize Research Project* (continued)

Narrative Summary (NS)	Measurable Indicators (OVI)	Means of Verification (MOV)	Important Assumptions
Activities 1.1 Obtain IITA hybrid lines. 1.2 Plant test plots. 1.3 Harvest & measure yields. 1.4 Analyze & report results. 2.1 Institutional assessment. 2.2 Define equipment needs. 2.3 Procure & install equipment. 3.1 Training assessment. 3.2 Identify trainees. 3.3 Conduct training. 4.1 Form secretariat. 4.2 Establish membership. 4.3 Produce newsletter. 4.4 Conduct conferences. 4.5 Publish findings.	Inputs/Resources: Project Budget (million US\$) Technical assist. 5.7 researchers 4.5 Prog. leadership 0.6 Network coord. 0.2 Peer reviewers 0.4 Equip./supplies 2.3 Operating funds 0.9 Total 8.9	1.1 Research proposals, peer review plan, project disbursement records. 2.1 Project planning documents & disbursement records. 3.1 (same as above) 4.1 (same as above)	(Activity to Output) 1 Constraints have been adequately analyzed and researchable problems identified. 2 Peer reviewers competent and process is timely. 3 Results from requisite research available. 4 Research program funding is for 8-10 years. 5 Seed company continues to have good management. 6 Qualified researchers available for advanced training. 7 Striga researchers willing to join cooperative network.

Indicators

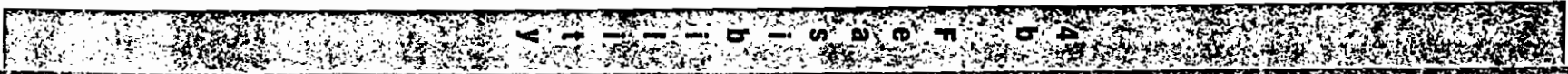
In the second column of the logframe, *indicators* specify what type of evidence could be taken as a sign of achievement of objectives. Indicators should be defined in the same degree of detail as the objectives in the narrative summary column. They should be stated in terms of quantity, quality and time (and sometimes also in terms of place and cost). For example, an output indicator could be improved pest management practices distributed to one-quarter of the farmers in the area.

Annex 1

Example Logframe matrix

Summary Logframe

Objective level/code	Narrative summary	Verifiable indicators	Means of verification	Assumptions
Goal	:An improved standard of living and quality of life for the people of Western Province	:Primary school graduates :Secondary school graduates :University graduates :KAP indicators (knowledge, attitudes and practice) :Water supply quality and quantity meet national standards :Use of Water Systems :Revenue raised from users of the Health Service :People's acceptance of Malaria control spraying	:Department of Education records :Department of Health Records and KAP health surveys :DOH records and Department of Environment surveys :Records maintained by Water Users Association :Records maintained at the Health Centres :Malaria control spray records	:That the people will use the improvements in health conditions to improve their living conditions and quality of life :That the water developed will be used by the people of the Province :That the people of the Province will contribute to the on-going maintenance of the health system :That the people of the Province will accept methods to be employed for the control of the mosquito



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Objective level/code	Narrative summary	Verifiable indicators	Means of verification	Assumptions
Purposes	:(Component Objectives)	:	:	:
:	:	:	:	:
:	:	:	:	:
Component 1	:To develop sustainable water supplies for the people of Western Province	:Viable village water/ environmental health committees	:Village survey and/or Village Health records	:
Component 2	:To develop a manageable rural health service accessible to all in Western Province	:Operating health services :Mobilisation of voluntary health workers	:Department of Health records :Village survey and/or village records	:
Component 3	:To reduce the incidence of malaria in children in Western Province	:Incidence of malaria in children	:Department of Health records	:
Component 4	:To efficiently and effectively manage the Community Health Project for the achievement of defined implementation targets and project objectives	:Project management efficiency and effectiveness indicators :Participation of target communities in defining and implementing small scale water and health plans at community level	:Project Reports :- Annual Plans :- Monthly Reports :- Half Yearly Reports :- Project Completion Report :Project records	:

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Component Logframe

Objective level/code	Narrative summary	Verifiable indicators	Means of verification	Assumptions
COMPONENT	WATER DEVELOPMENT COMPONENT			
1	<p>COMPONENT OBJECTIVE</p> <p>:To develop sustainable water supplies for the people of Western Province</p>			
	<p>OUTPUT</p>			
1.1	<p>:New or rehabilitated wells in 160 villages</p>	<p>:New and rehabilitated wells in the 160 villages</p> <p>:Village contributions to well operation and maintenance</p>	<p>:Village water record system for the Province in the Department of Health</p> <p>:Water supply contribution record maintained by the Water Users Associations</p>	<p>:That the villages having been involved in the planning and design of water supplies will contribute to the operation and maintenance of their supplies</p>
	<p>ACTIVITIES</p>			
1.1.1	<p>:Survey existing wells and other water sources</p>	<p>:Number of surveys and their location</p> <p>:Survey, planning and implementation relationship</p>	<p>:Survey record maintained by the Department of Health</p> <p>:Assessment to ascertain the extent of relationship</p>	<p>:That planning will take place following this survey</p>



Objective level/code	Narrative summary	Verifiable indicators	Means of verification	Assumptions
1.1.2	:Conduct resistivity tests :and determine numbers :of wells	:Number of tests and their :location :Wells in villages	:Resistivity records maintained :by the Department of Health :Water supplies inventory :maintained by the Department :Health	:That there will be at :least one well in each :village
1.1.3	:Carry out construction :and rehabilitation works	:Implementation activities :Village involvement	:Review of implementation :schedule maintained by the :Department of Health :Village contracts negotiated :and kept by the Department :of Health	:That the construction :will be carried out by :contract with the :villagers with the :project providing the :equipment
OUTPUT				
1.2	:Village technical staff :trained in pump and :well maintenance	:Trained technical staff	:Water User Association records	
ACTIVITIES				
1.2.1	:Identify local people for :training and determine :existing skills	:Technical people in :the villages	:Records in the Department of :Health	:That there are people in :the village with a :background suited to :skills training

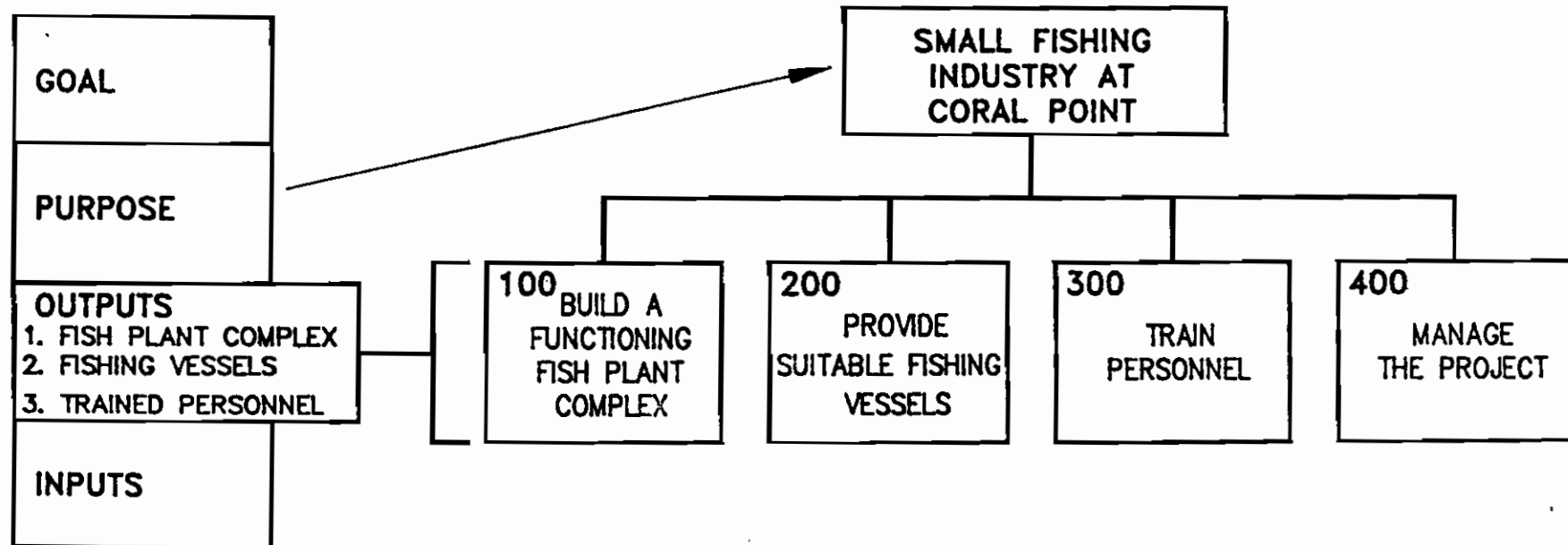
Objective level/code	Narrative summary	Verifiable indicators	Means of verification	Assumptions
1.2.2	: Plan content of courses	: Course outlines	: File in Department of Health	: That the courses are
	:	:	:	: appropriate to the needs
	:	:	:	: and skills of village
	:	:	:	: level technicians
1.2.3	: Set up training facilities	: Training complex within the	: Observation	:
	:	: Department of Health	:	:
	:	:	:	:
1.2.4	: Conduct courses	: Courses in accordance with	: Records in the Department of	:
	:	: planned implementation	: Health	:
	:	: schedule	:	:
	: INPUTS	:	:	:
	: (GOA - FUNDED)	:	:	:
	:	:	:	:
Personnel	: Technicians x 2	:	:	:
	: Hydrogeologist x 1	:	:	:
	: Groundwater Engineers x 2	:	:	:
	: Drilling Adviser x 1	:	:	:
	: Training Specialist	:	:	:
	: Well Maintenance Specialist	:	:	:
	:	:	:	:
Procurement	: Motor Cycles	:	:	:
	: Vehicle	:	:	:
	: Resistivity Equipment	:	:	:
	: Office Equipment	:	:	:
	: Drilling Rig	:	:	:
	: Well Casing and Screens	:	:	:
	: Hand Pumps	:	:	:
	: Hand Tools	:	:	:
	: Pump Manuals	:	:	:
	: Training Equipment	:	:	:
	:	:	:	:
Training	: Survey Training on Site	:	:	:
	: Resistivity Short Course	:	:	:

#4

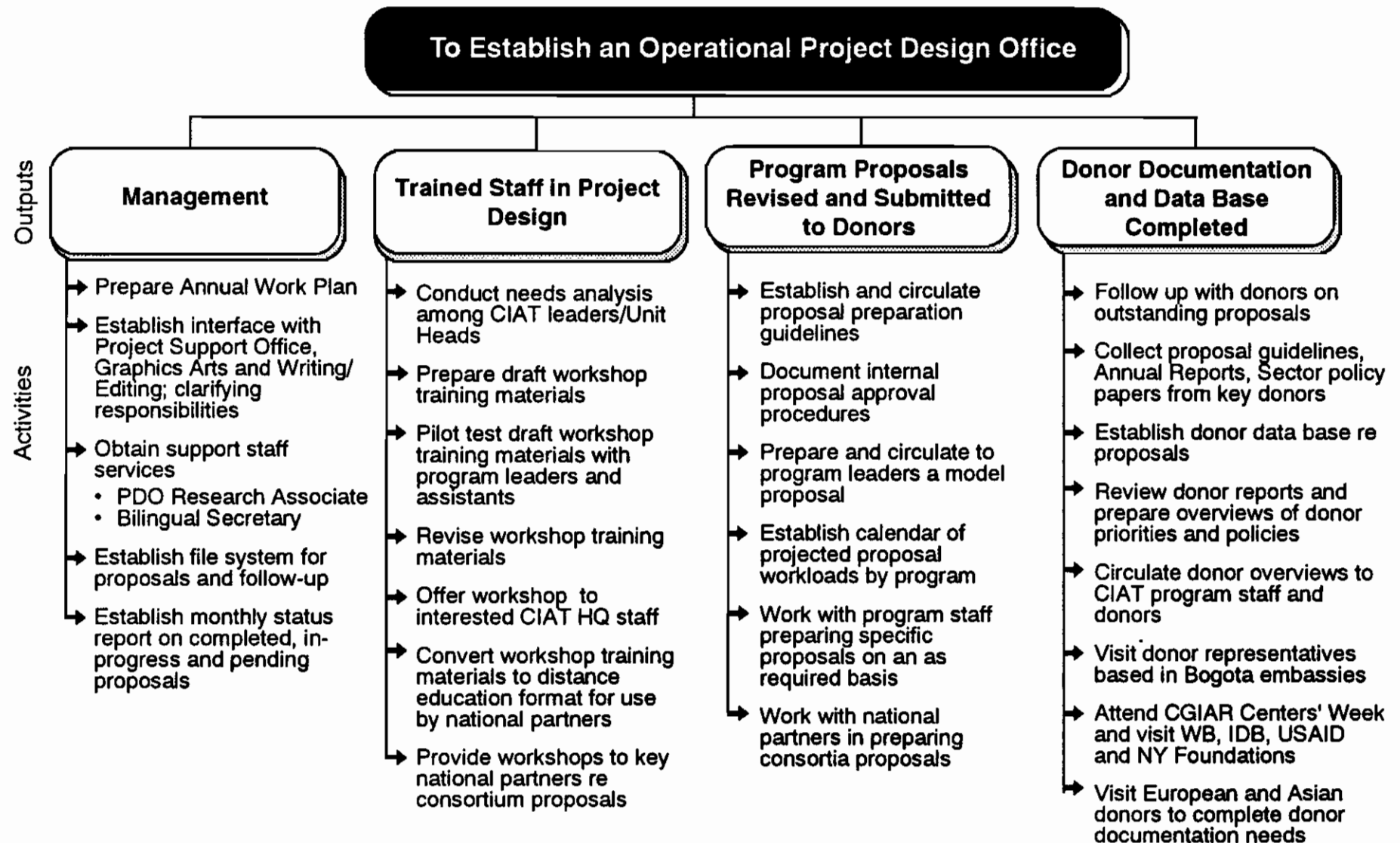
LINKS BETWEEN THE LFA AND THE WBS

LOGICAL FRAMEWORK
ANALYSIS

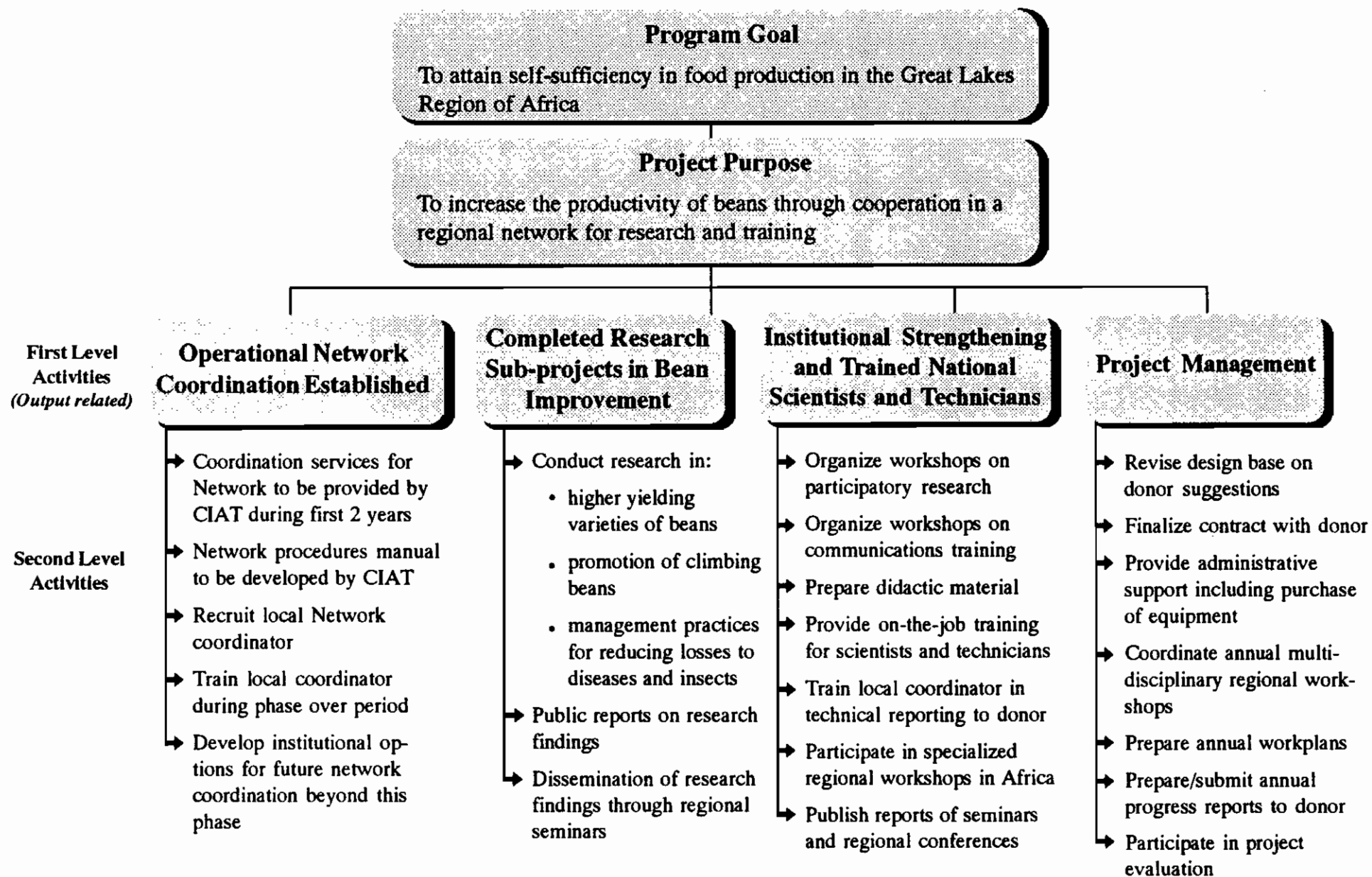
WORK BREAKDOWN STRUCTURE



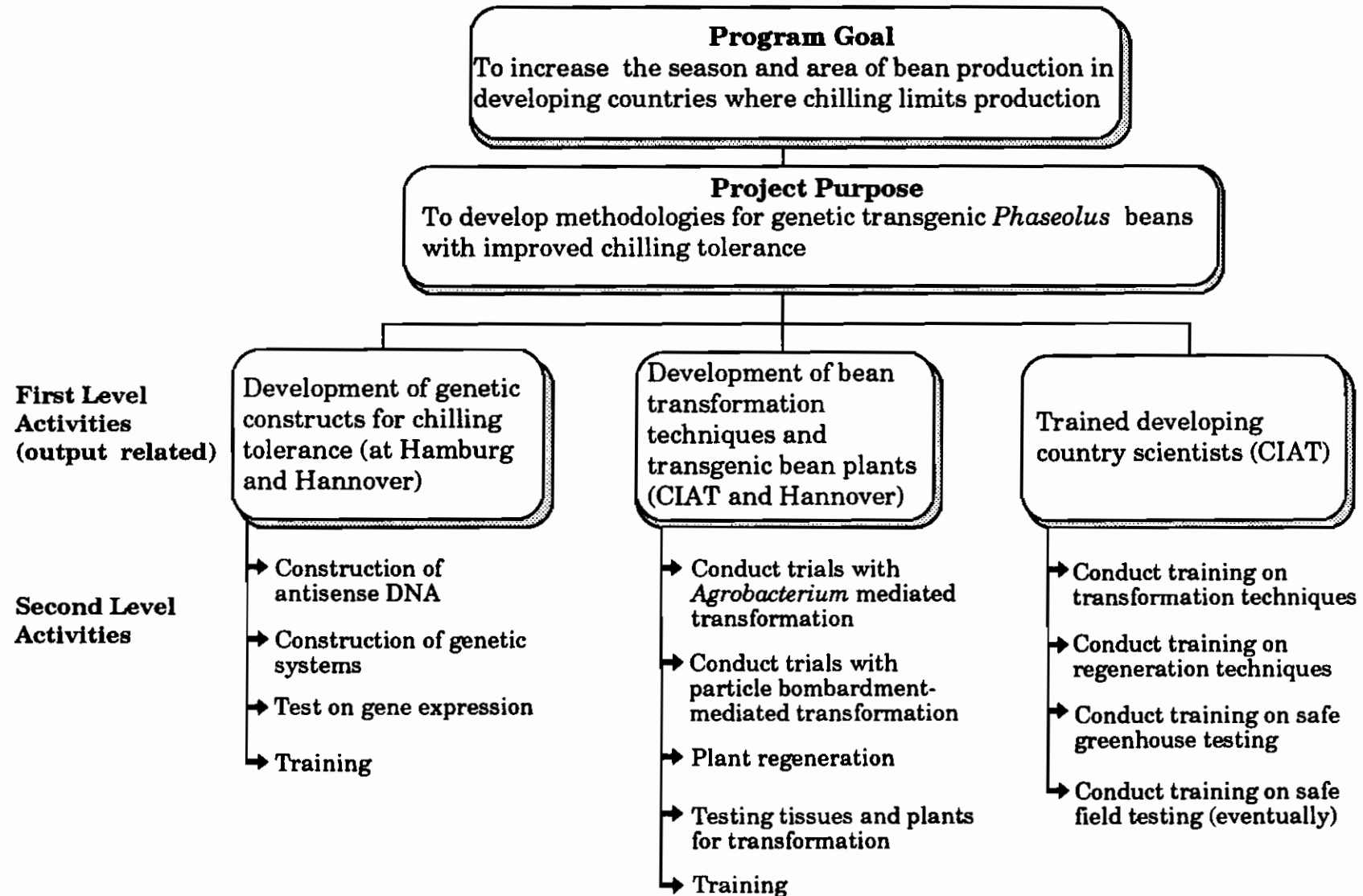
Work Breakdown Structure for Establishment of Project Design Office (Activities Linked to Outputs)



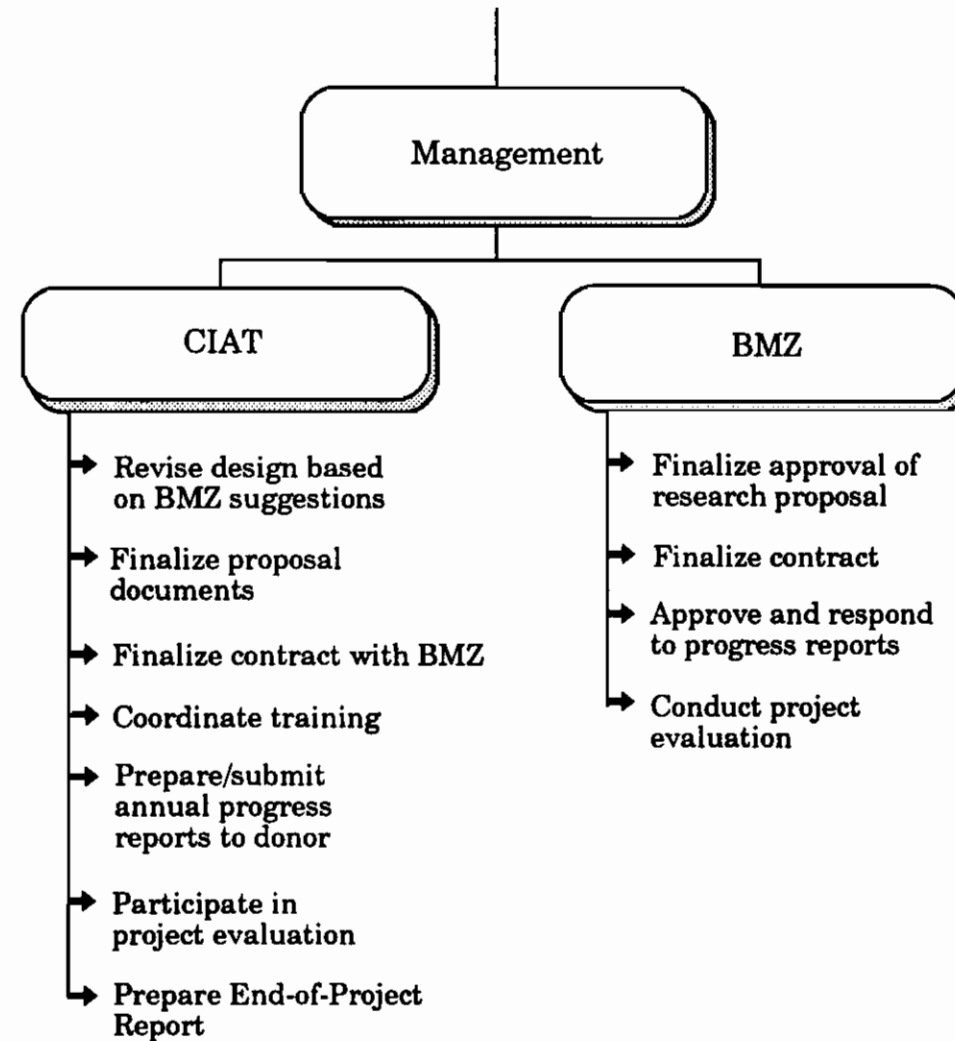
Work Breakdown Structure of Project Activities



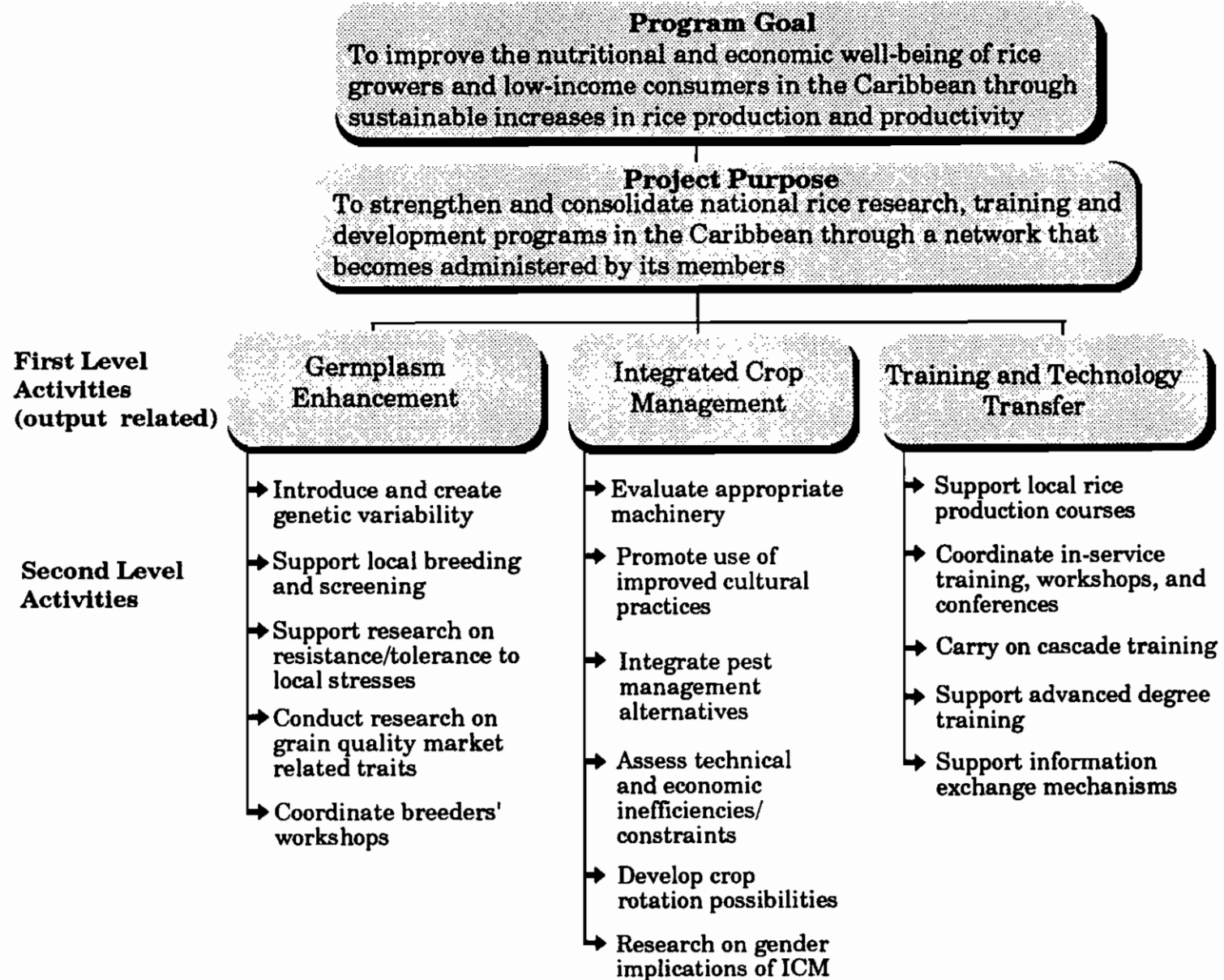
Work Breakdown Structure of Project Activities



Con'td
Work Breakdown Structure for Project Management



Work Breakdown Structure of Project Activities



Cont'd
Work Breakdown Structure for Project Management

