Chuka University College

PROCEEDINGS OF THE FIRST WORKSHOP ON
Writing of Competitive Research Proposals

HELD ON 24th JUNE, 2011
AT CHUKA UNIVERSITY COLLEGE

AUGUST 2011

TABLE OF CONTENTS

FOREWORD

Why Research?

Research being an investigation into the unknown provides new information and knowledge to use by consumers/stake-users/stakeholders, who may be: Government, Peers, Lecturers, Students, Policymakers, Planners, etc. University staff members are called upon to engage in research so as to contribute to meeting the tenets of various policy frameworks such as the MDGs and Kenyan Vision 2030.

Research proposals are often put to use in development of staff involved, e.g. when they lead to earning of higher qualifications such as Master's or Ph.D. degrees. Once executed, the results of a research investigation can be published and contribute to strengthening the CV of a staff member concerned to meet certain promotion criteria. The results are also compiled into text books used as references to help in teaching students. Grants earned through research proposals help develop hosting institutions through acquisition of equipment, sponsorship of students and payment of bench fees and administrative charges.

Responsibility

It is part of the responsibility of anybody engaged as a lecturer in an institution of higher learning to also participate in researching. University lecturers can engage in independent, collaborative, multi-disciplinary, or multi-institutional research. The collaborators can be drawn from within and outside the host institution. Internal collaborators include fellow lecturers (peers) or student mentees. External peers can be national, regional, international.

External collaborators can be drawn from: sister universities, government and private organisations such as Universities, KARI, KEMFRI, KEFRI, KEPHIS, KIPPRA, KENYA NATIONAL ARCHIVES, hospitals, industries/firms, etc. Regional organizations include: VicRES, ASARECA, RUFORUM, CGIAR, ILRI, CIMMYT, Syngenta, FORD Foundation, AGRA Foundation, BILL Gates Foundation, IAEA, AVRDC etc. Lecturers can undertake research that cuts across any discipline in these organizations, as long as it is fashioned to meet the organization's mandate/scope.

Financiers

Research proposals can be considered for funding and outputs utilized locally, nationally, regionally or globally. The funds that support execution of research proposals are drawn from local, regional or international public or private organisations. The government/public and the private financiers are therefore keen and anxious to see to it that the funds are put to good use, to make discoveries that will help solve immediate public or private problems of national, regional and international orientation.

Research proposals are of no use until funded, implemented and results put to use as appropriate by the up-taking entity. Financiers do often call for proposals; they advertise and open up the field for competition. The best proposals, win. Therefore, research proposals must be of high quality, relevance and impact to beat competition and provide value for money.

Mandate

It is the mandate of Chuka University College to offer staff this training as part of meeting the Strategic Plan Objectives numbers 2 and 3, and the Performance Contracting commitments. It is against this backdrop that this training was organized to equip staff members with knowledge and skills for drafting high quality and competitive research proposals so that they also start winning and engaging in serious research pursuit.

At the end of this training, staff will be expected to start drafting proposals and submitting to potential financiers, starting this year. Calls are always made for when to draft and submit for internal consideration. Staff members were required to be on the lookout for the calls and respond to them as appropriate. Assistance will be offered where necessary.

This workshop was made possible by an organizing committee comprising: Dr. Mwenda Mukuthuria (Chair), Prof. Levi M. Musalia, Dr. Teresia Wambui, Dr. George Nkonge Reche, Dr. James Kinyua Mutegi, Dr. Ombaka Ochieng', and Mr. Moses Kathuri. It was facilitated by Professor Erastus N. Njoka (Principal/CEO), Professor D. K. Isutsa (Deputy Principal, Academic Affairs), Dr. Mwenda Mukuthuria (Director, Board of Postgraduate Studies and Research), and Professor R. K. Obura(Deputy Principal, Academics & Research, Laikipia University College). The efforts of all these scholars is highly acknowledged and appreciated.

These proceedings were prepared using material provided by the facilitators. It starts with preliminary matter of a research proposal, followed by the main body of a research proposal, budget preparation and logical framework design. It is my sincere hope that staff will find the proceedings informative and useful in facilitating them draft competitive research proposals. Therefore, enjoy reading and applying the contents.

Professor D. K. Isutsa, Ph.D.
Deputy Principal (Academic Affairs)

WORKSHOP OBKJECTIVES: PROPOSAL WRITING FOR RESOURCE MOBILIZATION IN THE UNIVERSITY ARENA

Introduction and Background

Earlier observations show deficiencies in proposal writing skills among Academic Staff and Research Scientists that limit their ability to: Compete for competitive grants; Conduct quality research; and Guide graduate students.

Poor scientific and technical writing skills limit contribution to advancement in science and knowledge. Poor written communication skills impair visibility of NARIs Research for Development (R4D) in development and policy arena. The quality of the proposals is generally weak in the region. For instance, the International Foundation for Science (IFS) recognizes that proposals from Africa are very weak compared to those from other regions e.g. Asia. Therefore there is an urgent need to strengthen proposal and scientific writing skills in academic institutions/NARS to improve quality of research proposals and to pass these skills to others, particularly graduate students and young scientists.

The lecturers in Chuka University College have great ideas for research. The question is, how are we going to pay for it? The immediate answer is that we have to write a good research proposal, which refers to "*A formal, written document that describes scientific goals and research plan/methodology for soliciting the necessary resources from a funding agency*".

Remember, your proposal will be just one among many worthy proposals, and these days the sum of resources requested collectively often exceeds the resources actually available by up to ten fold. Therefore for us to succeed, we must write a research proposal that will in some way standout and succeed in a very crowded and competitive funding environment. Writing such a proposal requires a great deal of thought and hard work targeting mostly technical and discipline-specific issues.

The starting premise of this one day workshop is that many non-technical shortcomings should be mitigated. The odds for our proposals will be improved if we plan and write our proposal with an understanding of who and how our proposal will be evaluated.

Purpose and Objectives

Purpose of the workshop was to use skills learned earlier in proposal development among staff from our universities in Eastern, Central (ASARECA REGION) to develop full proposals.

By the end of the workshop, it is expected that the participants would be able to:

- Implement the ideas, knowledge & skills learnt through the PAPA framework.
- Apply knowledge and skills to develop competitive research/project proposals (Concept Notes to full proposals).
- Respond to different Calls/Request for Proposals by interpreting the formats and continue to write a fundable proposal for the three FIs.
- Plan, schedule and describe activities in writing a research and/or development project proposal.
- Develop effective and realistic research/project budgets.

- Identify different funding opportunities.
- Use the logical framework to plan, design and implement a research/project, including effective M&E.

Outputs
- Critical mass of researchers with knowledge and skills in writing proposals produced
- Competitive research proposals for e.g. EDULINK developed
- Appropriate written communication skills products for proposals writing developed
- Postgraduate students participation in CGS strengthened
- Individual? And/or collaborative proposals targeting specific CfPs/RFPs developed

Some Workshop Desires
- Introduce a number of issues pertaining to proposal writing.
- Lay out, in broad and practical terms the kinds of concerns and knotty problems that enter into the long and complicated process of:
    - Determining a project statement of the problem and framing it.
    - Designing, methodology, implementation of the project
    - Submission, Evaluation process-reviewers activities,
    - Obtaining funding for a researchable project

Nature of the Workshop
The workshop is designed to be:
- *Research-based* - premised on lessons from extensive review of the experiences, gaps, concepts and perspectives in proposal writing;
- *Experience-based* - building upon the field experiences of individuals and organizations who had planned, designed, written, reviewed, refereed and evaluated different research proposals;
- *Eminent Persons*- valuable contributions will help build or cement the experiences;
- *Participant-focused* - soliciting participants' identification of the key challenges he or she faces in writing FUNDABLE proposals;
- *Action-oriented* - each participant or institution makes a "pledge" outlining a specific and realistic plan ensuring that we come up with full proposals after this workshop; and
- *Output-based*- encouraging each participant to work around the proposed project proposals to step-by-step improve it, share it and eventually produce a fundable research proposal.

PICKING THE RIGHT TOPICS

Objectives of the Session

1. Identify which types of topics will be attractive to international donors.
2. Identify which questions a donor asks when first looking at a project topic.
3. Explain what makes a project manageable.
4. Explain the balance between risk and return in a project.

NOTE: Picking a good topic is the very first step in designing a project

Topics That Attract Donor Support Will:

- Be sufficiently important to be worth doing.
- Be internally approved, by your NARS management.
- Useful and seen as priorities by project beneficiaries
- Be "manageable," i.e. have a reasonable chance of achieving results within a limited amount of time, with a reasonable quantity of available inputs.
- Show the right balance of risk and return.
- Attract research partners that have a comparative advantage to carry out the project

Donor Questions on First Looking at a Research Project

- What is new about this project?
- As a result of this project, who will be better off and in what way?

Selecting a Topic That Will Be Internally Approved

- Does your topic fit in with your NARS strategic plan and annual work plans?
- Will your supervisor like it?
- Will your colleagues and partners have the time and be willing to work on the project? (Do not design a project that you cannot staff!)

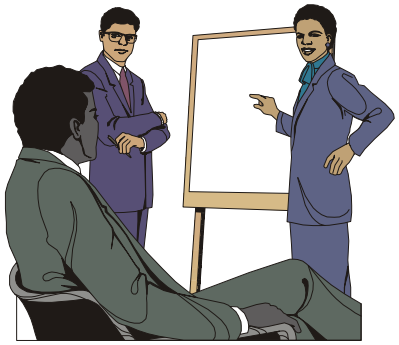
Selecting a Project Topic that is a Beneficiary Priority

- You need to demonstrate to the donor that the beneficiaries of your project want the research information and outputs you are seeking.
- Talk to the farmers! Ask them what they want!

Selecting a Manageable Topic

Issues to debate in your design group:

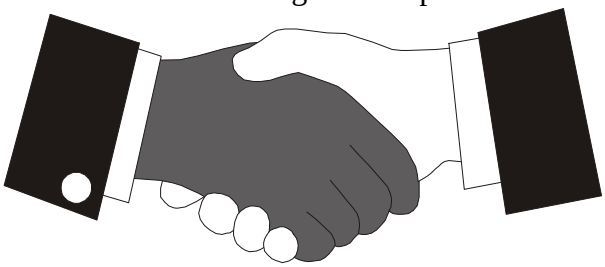
- Project duration
- Project size
- Project sites
- Practical considerations



Selecting a Topic Attractive to Partners

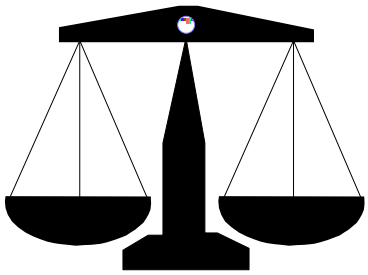
Remember that donors like partnership projects!!

- If appropriate, include partners from donors' countries.
- Treat your partner with respect.
- Involve the partner in every aspect of the project design.
- Be prepared for rejections from partners.
- Prove to the donor that you and your partners have a comparative advantage over others.
- Prove that you have assembled an ideal design and implementation team



Selecting a Topic with Right Balance of Risk and Return

- Donors are looking for projects that have low risks and high potential returns.
- When considering a new project topic, estimate the size of the risk and of the potential return.
- Reject topics that are high-risk with low returns, since these will never attract donor support.



PROJECT DESIGN AND MANAGEMENT

Key to Success: A Note

- While most grant writing "workshops" treat project/programme development and evaluation as separate from the writing of a proposal, this session demonstrates the relationship between overall project design/management and grant/proposal writing.
- The approach is of success in integrated/collaborative research projects.

Definition

Successful research projects are those that:

- Reach integration and project goals,
- Produce tangible outcomes/impacts,
- Contribute to progress in integrative research; and
- Provide positive experiences for their participants.

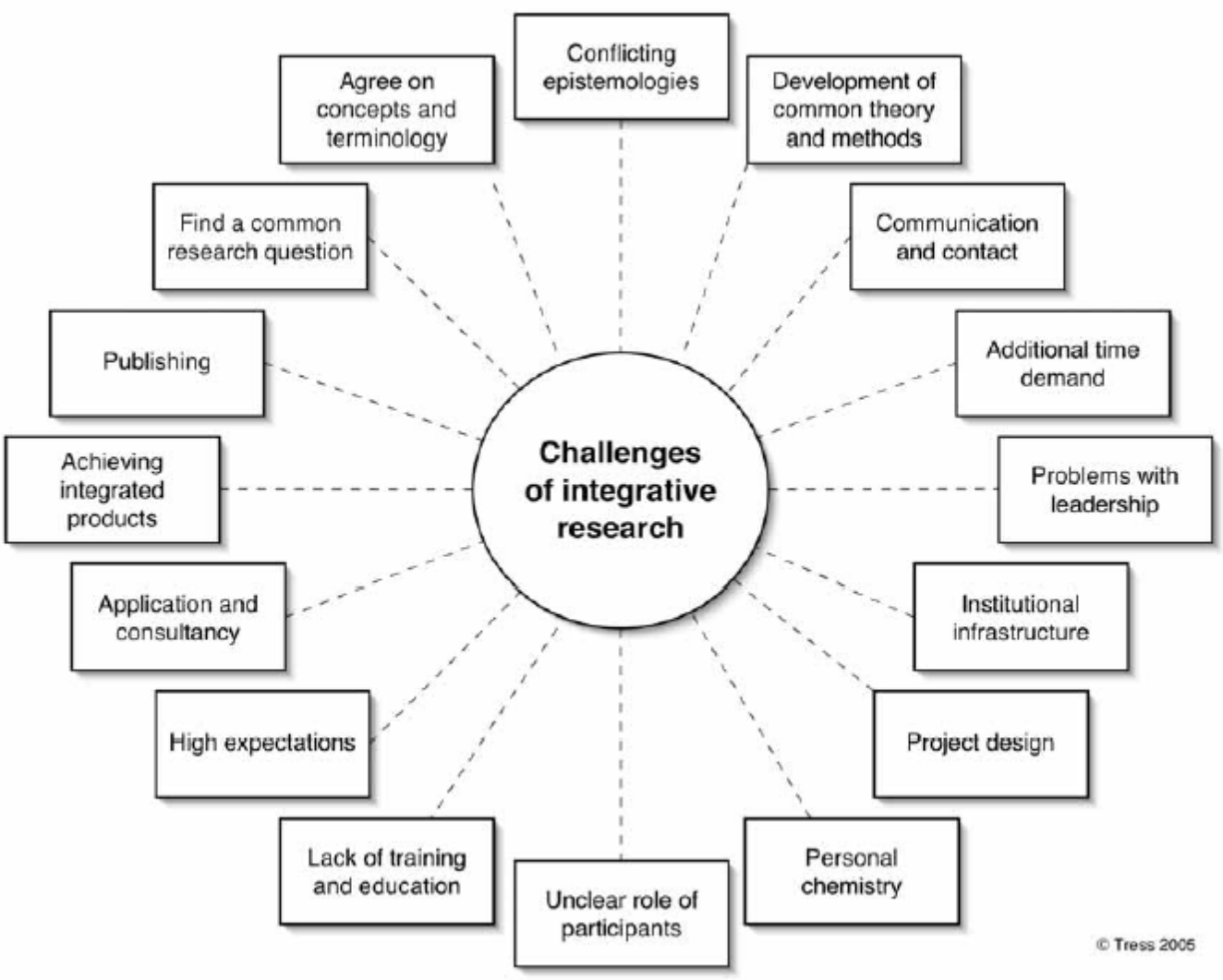
In a Nutshell

Research projects must be specifically organized to reach integration through the development of a Detailed Implementation Plan.

For Success:

- Projects should identify a common research question(s) and clear project goals; these will identify the relevant disciplinary expertise needed.
- Because integrative projects have a higher time demand, we should adopt time management practices and the allocation of realistic time budgets, especially at the beginning of projects.
- Strong leadership plays a crucial role in the success of integrative research and requires a high level of interpersonal skills as well as research credibility.
- Frequent meetings among the participants and the support of the wider research environment also help to achieve success.
- Project teams need to arrive at a common understanding and definition of the integrative concept and prepare for overcoming epistemological hurdles by acquiring basic skills in the disciplines involved.
- Projects should be planned for tangible project outcomes/deliverables, particularly in terms of scientific publications and positive impacts on beneficiaries.
- In case of research project with outreach of publication plan, the project should identify target groups, specify media and journals, list responsible authors, arrange writing meetings and sets milestones and submission dates.
- Projects should also agree on Monitoring and Evaluation criteria and use these to assess the project progress and its outcomes on a regular basis. Experiences contain valuable knowledge that will, over time, lead to more successful integrative research.
- Managed in a “participatory” and collegial manner.

Some Challenges of Integrated Research Projects



FRAMING PROJECT TITLES

- Introduction
- Materials & Methods
- Results & Discussions

Titles Matter

- A good title sells a novel in the same way a good proposal title sells a proposal.
- A memorable or arresting title will draw attention to your proposal.

Titles

- Will most probably be read more than any other section of your proposal.
- May be reprinted in bibliographies and subject indexes (databases).
- Are an important source of information.

A Good Title:

- Contains as few words as possible (15 words or fewer)
  - Programmes = Maize Breeding
  - Project = Marker Assisted Selection in Maize
  - Study (Look at the following titles)
    - Enhancement of resistance against northern leaf blight disease in maize in Uganda
    - Enhancement of resistance against northern leaf blight (*Exerohilum turcicum*) disease in maize (*Zea mays* L.) in Uganda.
    - A study on enhancement of resistance against northern leaf blight (*Exerohilum turcicum*) disease in maize (*Zea mays* L.) in Kabanyolo, Wakiso district, Uganda.
    - Increasing nitrogen utilisation efficiency in drought tolerant maize hybrid lines.
    - Increasing nitrogen (N) utilisation efficiency in drought tolerant maize (*Zea mays* L.) hybrid lines (Longe 4, Kawanda Composites, Katumani and Nalongo)
- Describes the contents of the proposal accurately.
- Describes the subject as specifically as possible within the limits.
- Avoids brackets, abbreviations, formulas and jargon.
- Usually omits the verb and is only a label.
- Is as easy to understand as possible.
- Contains key words, for the benefit of information retrieval.

Elements of the Title

- It draws in summary the content of the proposed study
- It points to the specific problem to be studied
- It should be concise, accurate and informative
- It should be understood by the general reader (not too technical)

- ➲ It should be catchy and also convey the urgency/importance/benefits of the project
- ➲ Phrases like "A study of", "An investigation of", "An inquiry into", "Observations on," etc. should be dropped because they do not help to convey what the study is about.
- ➲ Do not promise more than is in your proposal.
- ➲ Make the most important words stand out, usually by putting them first.
- ➲ Follow the style of institution.

Two-Part Titles: The Colon Trick

Remember that the colon trick might help you to write a title that is both catchy (first part before colon) and scientific (second part after the colon). Two parts titles:

1st Part: Short, snappy, easy to read

2nd Part: serious and informative

Examples

- ➲ Increased incomes for the poor: potato value addition technologies.
- ➲ Food Security for Africa: Enhancing potato and sweet potato productivity.

Please Comment on these Titles:

- ➲ Educating the girl child.
- ➲ An investigation of farmer participatory sorghum breeding in Uganda: A case study of Soroti district.
- ➲ Living from hand to mouth: Relationship between poverty indicators and land degradation.
- ➲ More people less erosion.
- ➲ Breeding for food security

ABSTRACTS/SUMMARY

The abstract/summary should be definitive rather than descriptive i.e., it should give facts rather than say the proposal is "about" something.

A Good Abstract

- ➲ Is short – usually 200 – 250 words, usually 1 paragraph (in case of journal papers); for theses summary usually >1 page, max 5.
- ➲ Stands on its own, is complete in itself
    - It may be published separately in secondary sources.
    - The objective of the research, its extent and scope.
    - The methods proposed.
    - The expected results including any impacts.
- ➲ Contains all key words by which the proposal should be indexed.
- ➲ These are sometimes listed separately below the abstract.
- ➲ A good abstract should not contain.
    - References to tables or figures. These appear only in the proposal.
    - Abbreviations of acronyms unless they are standard or explained.
    - References to literature cited.
    - Any information or conclusion not in the proposal itself.
    - Sweeping statements-General statements or findings should be given as hard facts.

FORMULATING RESEARCH/PROJECT OBJECTIVES

Session's Objectives
At the end of this session you should be able to:
- **State** the reasons for writing objectives for your research project.
- **Define** and describe the difference between general and specific objectives.
- **Define** the characteristics of research objectives.
- **Prepare** objectives in an appropriate format for the project you are developing.
- **Develop** further research questions, and research hypotheses, if appropriate for your study.

The OBJECTIVES summarize what is to be achieved by the study/project.
Note: **Objectives** should be closely related to the statement of the problem.
General Objective: States what researchers expect to achieve by the study in general terms.
Specific Objective: Smaller, logically connected parts. They systematically address the various aspects of the problem.

Why Should Research Objectives be Developed?
- Focus the study or project (narrowing it down to essentials).
- Avoid the collection of data which are not strictly necessary for understanding and solving the problem you have identified; and
- Organize the study/project in clearly defined parts or phases.

How Should You State Your Objectives?
Take care that the objectives of your study:
- Cover the different aspects of the problem and its contributing factors in a coherent way and in a logical sequence;
- Are clearly phrased in operational terms, specifying exactly what you are going to do, where, and for what purpose;
- Are realistic considering local conditions; and
- Use action verbs that are specific enough to be evaluated.

Action Verbs
- Examples of action verbs are: to determine, to compare, to verify, to calculate, to describe, to train, to build, to set up and to establish.
- Avoid the use of vague non-action verbs such as: to appreciate, to understand, or to study.

Remember
- When the project is evaluated, the results will be compared to the objectives.
- If the objectives have not been spelled out clearly, the project cannot be evaluated.

Note
- The formulation of clear and comprehensive objectives is critical to the development of all the other components of a research/project design, as well as to subsequent data analysis and report writing.
- Formulation of good objectives is a skill with which many have difficulty.

Two Types of Problems in Objectives Formulation

- Difficulties with developing concise, operational objectives that focus clearly on what the study/project hopes to accomplish and cover all parts of the study/project in a logical order;
- Difficulties in understanding the difference between programme/project objectives and research objectives.

Objectives of Development *vs.* Research Objectives

Development Project	Research Project
Objective …	Objective …
To change the well-being of a group of people	To test a hypothesis To solve a problem in science
To change the status/condition of society, environment, economy, etc	To overcome a constraint To clarify unknowns

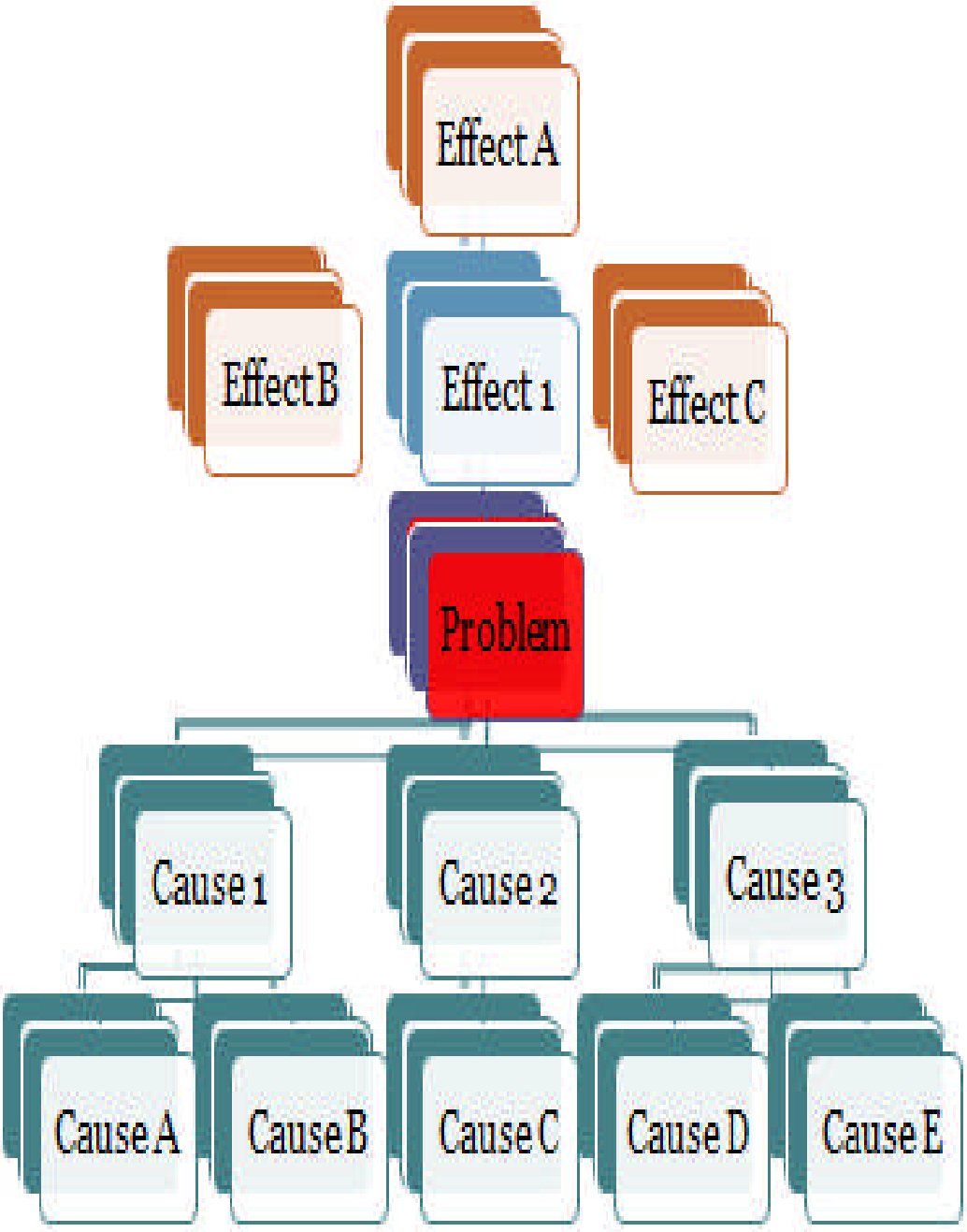
Tools/Approaches to Problem and Objectives Formulation

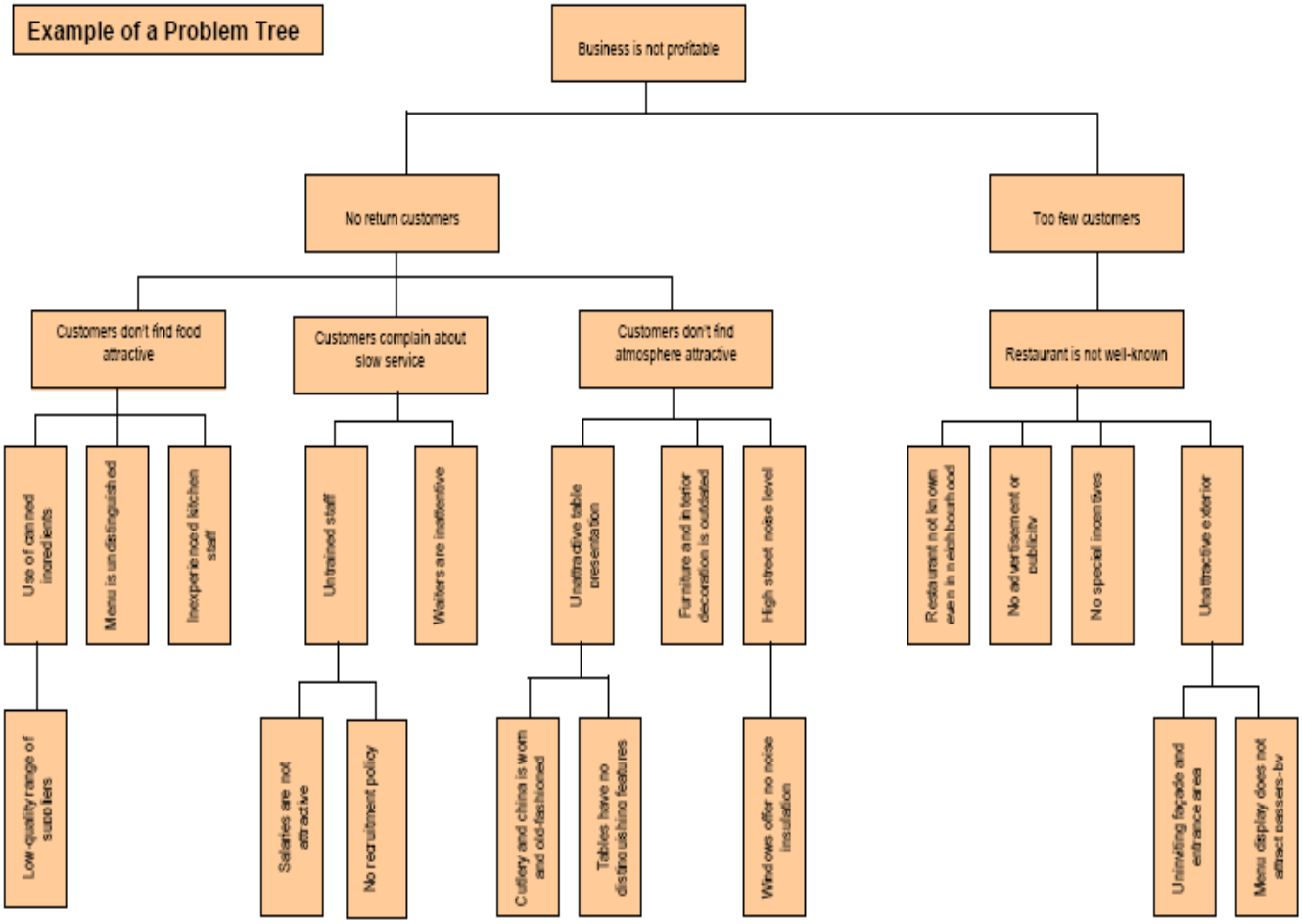
- Problem/Objectives Analysis Chart
- Problem/Objectives Tree

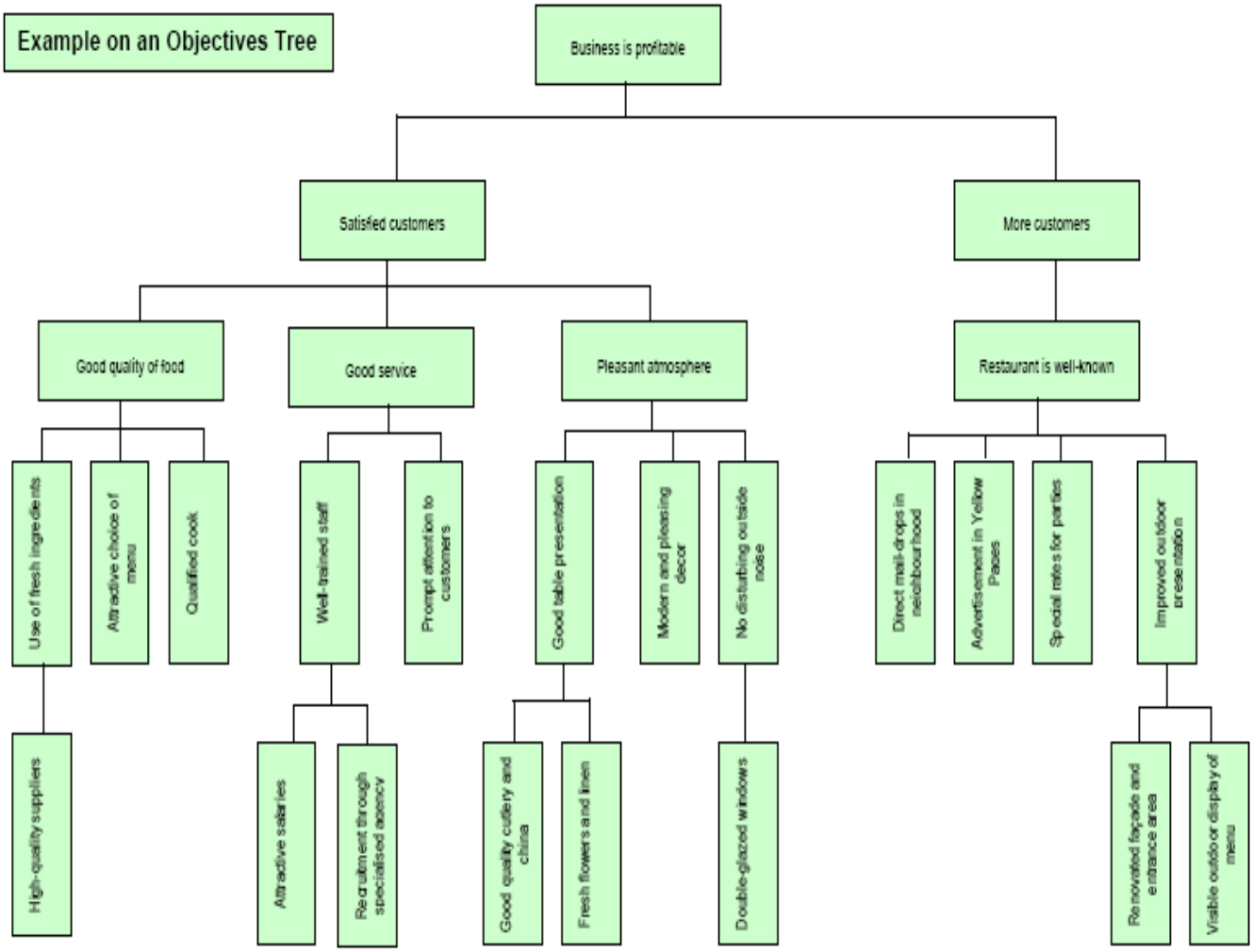
Problem/Objective Analysis Chart/Matrix

Factor/ Cause	Effect	Evidence/ Indicator	Coping Mechanism/Solution

The Problem Tree




Example of a Problem Tree
Business is not profitable
No return customers
Too few customers
Customers don't find food attractive
Customers complain about slow service
Customers don't find atmosphere attractive
Restaurant is not well-known
Use of canned ingredients
Menu is undistinguished
Inexperienced kitchen staff
Untrained staff
Waiters are inattentive
Unattractive table presentation
Furniture and interior decoration is outdated
High street noise level
Restaurant not known even in neighbourhood
No advertisement or publicity
No special incentives
Unattractive exterior
Low-quality range of suppliers
Salaries are not attractive
No recruitment policy
Cutlery and china is worn and old-fashioned
Tables have no distinguishing features
Windows offer no noise insulation
Uninviting façade and entrance area
Menu display does not attract passers-by


Example on an Objectives Tree
Business is profitable
Satisfied customers
More customers
Good quality of food
Good service
Pleasant atmosphere
Restaurant is well-known
Use of fresh ingredients
Attractive choice of menu
Qualified cook
Well-trained staff
Prompt attention to customers
Good table presentation
Modern and pleasing decor
No disturbing outside noise
Direct mail-drops in neighbourhood
Advertisement in Yellow Pages
Special rates for parties
Improved outdoor presentation
High-quality suppliers
Attractive salaries
Recruitment through specialised agency
Good quality cutlery and china
Fresh flowers and linen
Double-glazed windows
Renovated façade and entrance area
Visible outdoor display of menu

PREPARING A PROPOSAL BUDGET: TIPS AND GOOD PRACTICES

Introduction

- Preparing Budgets is the Single Biggest step in moving from CN to proposal.
- It offers details and explanations for the funds requested.
- Budget is one of the most important sections of a proposal.
- Some readers will only look at the summary, objectives and budget.

The Budget

- The budget may be the key to your proposal.
- Your are asking for money and your budget statement is the concrete way to show that you need it and you will use it justifiably.
- Many funding agencies complain that they often read through an entire proposal and still are not exactly sure what is needed in terms of money.
- The requested amount should be stated explicitly at the beginning of your proposal.
- The proposal must support each item in the budget-and it must be clear to the reviewers what costs are associated with each activity.
- The budget summary and detailed justification pages should have the total project cost, broken out by requested amount (from the funder), organizational contribution and other outside sources (combined).

Tips on Preparing Good Budgets

- Use consistent budget format unless donor has preferred outline.
- Budgets should be clear, transparent and easy.
- Every line item should be foot noted with unit costs.
- Budgets should be shown in figures rounded to nearest 000.
- Budgets should be realistic, but not greedy.
- Under-budgeting should be avoided.
- Bay windows can help in budget negotiations.
- Indirect costs are legitimate costs and should be included in all budgets.
- Every proposal, no matter how small, should have a summary budget.
- Larger proposals may require additional budgets by partner, by site or by activity.

Typical Line Item Costs

- Personnel Salaries and Wages/Fringe Benefits
- Consultant and Contractual Services
- Space Costs/Consumable Supplies
- Equipment Purchases; Equipment Rental
- Utilities e.g. electricity and fuel
- Travel/transport/Telecommunications
- Programme Income
- Special Project Costs/Other Costs e.g. office and building maintenance services, postage, repair and maintenance charges for rental equipment, meeting costs, etc
- Overhead/Indirect Costs–administrative costs

Matching Share

In general, matching share represents that portion of project costs that is not borne by the funding source. Matching share may consist of:

- Charges incurred by the applicant as project costs, but not paid with grant funds;
- Project costs financed with cash contributed or donated to the grantee by other public and private sources; and

- Project services-borrowed or donated by other public and private sources.
- Salaries and fringe benefits;
- Travel costs; Postage;
- Office supplies; and
- New equipment purchased (with prior grant approval).

Cash Flow

While developing a research/project budget, you should address the question of cash flow:

- The relationship of the organization's disbursement needs with the funding or reimbursement process of the funding agency.
- Activity schedule should be consistent with disbursement and host institution's cash flow practices/needs.
- A monthly measure of actual program expenditures versus planned program expenditure.

Future Funding

This section shows the funding agency that you are looking into the future. Discussion should focus on several areas:

- Do you anticipate the possibility of a spin-off?
- What are the chances that the project can become free-standing after the funding period?
- Will you seek future funding from the same source and/or other sources?
- What are the implications for the project's continuation if outside support declines?
- Can your organization operate the project without outside funding, and if so, what are the plans to continue on?
- What would it cost to operate any given research/program next year?

Organizations would profit by analyzing past costs in each line item and estimating future cost of each line item considering:

- Inflation;
- Cost of living or other scheduled pay increases;
- Retirement benefits, vacation accrued, other fringes;
- Changes in social security deductions or workers' compensation laws; and
- Changes in rent, insurance, audits, postage, and other normal expenses.

The Bay Window

- A bay window in a new house is an "extra" – something nice but not necessary.
- In a project a bay window is the same thing – something that improves the project but something you can do without.
- A bay window is something you can give away during budget negotiations.
- It is useful to include one or two bay windows.

Examples of bay windows:

Additional project site, Extra workshop, Further year of field trials, Second training program

Minimum Budget Requirements

- Title
- Currency Denomination
- Degree of Rounding
- Totals for each year and line item
- Grand total
- Footnotes
- Inclusion of all costs (partners, others)

WRITING A FULL PROPOSAL

Session's Objectives

- Explain when to proceed to a full proposal.
- Analyze a few donor formats.
- Identify a possible basic proposal format for your NARS.
- Discuss the qualities of a convincing proposal.
- Discuss the nine steps involved in writing a proposal.
- Identify ways of reviewing and improving key sections, such as the objectives and activities sections.
- Discuss the concepts of evaluation and milestones.
- Identify milestones for a specific project.
- Use the logical framework approach to break down the project objectives into specific objectives and to establish links between activities, the objective, and the goal.
- Demonstrate how to use the logical framework in the research project planning process.
- Discuss tips on preparing good proposal budgets.
- Identify budget formats.
- Discuss budget guidelines.
- Describe the qualities of a good budget.

Objectives of the part below

- Explain when to proceed to a full proposal
- Analyze a few donor formats
- Identify a possible basic proposal format for your NARS
- Discuss qualities of a convincing proposal
- Discuss the nine steps involved in writing a proposal
- Identify ways of reviewing and improving key sections, e.g. objectives and activities sections
- Discuss the concepts of evaluation and milestones
- Identify milestones for a specific project
- Preparing a *concept note* takes a fraction of the time needed to prepare a *proposal*

- So only proceed to the development of a full proposal when you have:
    - Internal support
    - Enthusiastic partners and beneficiaries
    - Some indication of donor interest; ideally a request for a full proposal.

Concept Note to Proposal

- A good concept note is the basis for preparing a convincing proposal.
- Some sections will need to be expanded.
- Provide additional details to persuade the donor you are ready to start work
- Rethink different aspects of the project (e.g. sites, scope of activities, inclusion of different elements)
- Strengthen linkages with partners.
- Update your design in light of changing internal and external realities.
- Many donors have a preferred format and guidelines on how to submit proposals.
- If you are in doubt about whether a donor has guidelines, always ask before you write.

- ➲ If a donor does not have a preferred format and special rules, use the format and method described in this session.
- ➲ Re-assemble the concept note design team plus partners, and have a meeting to plan the preparation of the proposal.
- ➲ When you have a first draft of the full proposal, have it discussed internally and at a public proposal review.

Qualities of a Convincing Proposal

All good proposals convey the following message:

- ➲ Something important needs doing right away!
- ➲ By doing it, many currently underprivileged people will be better off. If it is not done, these people are going to suffer.
- ➲ Here is a sensible and cost-effective way of doing it.
- ➲ The proposing partners are staffed, equipped, and eager to do the job!
- ➲ All that is necessary is the donor's support.

Very Important Note: In addition to *good development logic* and *important goals and objectives*, a convincing proposal needs PASSION.

Basic Proposal Format (submit your proposal in this order)

1. **Summary** (What is the proposal about?)
2. **Background** (Why should the project be implemented?)
3. **Objectives** (What do you hope to achieve?)
4. **Activities** (What will you do?)
5. **Work Plan** (How will you achieve your objectives?)
6. **Outputs and Impacts** (Who will be better off at the end of the project, and why?)
7. **Monitoring and evaluation** (How can you test if the project is working?)
8. **Budget** (How much will it cost?)

But Write the Proposal in this Order:

1. Objectives
2. Activities
3. Work plan
4. Outputs & impacts
5. Budget
6. Background
7. Evaluation
8. Summary
9. Review and editing
10. Cover letter

Proposal Step 1: Objectives

- ➲ Review the objectives from the concept note:
    - Do they still express what you want to achieve?
    - Are the objectives easily measurable?
    - Consider the suggestions from the potential donor.

- Set aside quality time (1 hour) to brainstorm the substance and the wording of the objectives.

Proposal Step 2: Activities
- This section needs considerable expansion.
- For all major elements of the project define exactly who will do what, when, where, and for how long.
- Use the active voice and write short, clear sentences to convey the urgency of the problem and your passionate desire to start work right away.
- Remember to organise activities by some elements. Choose one of: Output; Partner or team member; Site or country; Objective' OR Year.

Proposal Step 3: Work or Management Plan
- Spend considerable time preparing this section
- Explain what combination of inputs will be needed, when, and in what quantities to achieve the desired outputs.
- You will need a section on project management arrangements and one on inputs
- You will also need a time line for the project
- You may also need:
    - Level of effort
    - Site selection
    - Training plan
    - Workshop plan
    - Equipment funding plan

Proposal Step 4: Outputs and Impacts
- Review the output and impacts in the concept note.
- Stretch your imagination; brainstorm with colleagues.
- Organize your outputs and impacts by categories.
    - One approach is to show the effect on each group of people.
    - Another is to show outputs and impacts by objective, site, or project component.

Proposal Step 5: Budget
- Much more needs to be done.
- Get help from finance office.
- Check budget needs of partners.
- Be realistic, but not greedy.

Proposal Step 6: Background
- Add any sections you think will strengthen your appeal to the donor.
    - What is your comparative advantage for implementing the project?
    - What do the partners bring to the project?
- Use a soft approach-do not oversell or overpraise yourselves!
- Keep this section short, sharp, and readable (2-3 pages in a short proposal)
- Use subheadings to break up the material.

Proposal Step 7: Evaluation and Milestones

- Donors like monitoring and evaluation, so consider having a separate activity and budget line item in your proposal.
- In the evaluation section, describe how the project managers will monitor the project.
- A milestone is an intermediate output. Milestones are useful for tracking as a project evolves.
- Include milestones for the end of each middle year of a project

Proposal Step 8: Summary

- The most important part of the proposal-the only part that some people will read.
- Always write this section last.
- Take care with the wording.
- Refer to all other sections of the proposal.
- Be brief-one page or less.
- Mention any known donor interests.
- Do not avoid the request for funds.

Proposal Step 9: Review and Editing

- Before sending the proposal for review, sleep on it.
- Re-read it critically.
- Eliminate errors, repetitions, and inconsistencies.
- Edit to shorten the proposal, making it crisp, clear, punchy, and appealing.
- Do not omit this step, and learn to do it yourself!

When to Proceed to a Proposal

Preparing a concept note takes a fraction of the time needed to prepare a good proposal. Given the competitive environment, it is sensible not to invest your time or that of your partners unless you have a pretty good idea that a donor will take a full proposal seriously.

The most obvious signal is a request by the donor. Donors ask for project ideas by issuing RFPs. They also fund a host of competitive grant programs. To compete for these, you need to know about them. This is discussed later. Sometimes donors do not ask, but tell orally at meetings, or in published documents. By reading and listening you can find out which donors like which sort of projects in any particular year.

Proceed to the development of a full-blown proposal if:

- You have internal support,
- You have enthusiastic partners and beneficiaries, and
- There is some indication of donor support.

Without these elements, you may have to abandon your project idea, or redesign.

Preparing the Full Proposal

Once a donor has indicated some interest in a project idea, further elaboration of the idea will be needed. Many donors have a preferred format for the proposals they receive and review. If the donor does not have a preference, use the format provided below. If the project has multiple partners, ensure that the proposal is prepared in a collegial and collaborative fashion by

involving representatives from all groups in all design decisions. Once finished, the proposal should be discussed at a proposal review meeting.

Qualities of a Convincing Proposal

All good proposals convey that:

- Something important needs doing right away.
- If we implement it, many currently underprivileged people will be much better off; if we do not, these people are going to suffer.
- We have a sensible and cost-effective way of doing this project; we (with our partners) are staffed, equipped, and eager to do the job.
- All we need is your support.

Proposal Formats

Your NARS will need a basic proposal format for internal projects and for when the donor does not provide a preferred format. The following is a basic format you might find useful.

Basic Proposal Format

1. **Summary** (What is this proposal all about?)
2. **Background** (Why should this proposal be implemented?)
3. **Objectives** (What do you hope to achieve?)
4. **Activities** (What will you do?)
5. **Work Plan** (How will you achieve your objectives?)
6. **Outputs and Impacts** (Who will be better-off at the end of the project, and why?)
7. **Evaluation** (How can you test if the project is working?)
8. **Budget** (How much will it cost?)

This is the order in which you would send the proposal. But when writing a proposal, the following order is recommended.

Proposal Preparation Order

Prepare proposals in the following order:

1. Objectives
2. Activities
3. Work plan
4. Outputs and impacts
5. Budget
6. Background
7. Evaluation and milestones
8. Summary
9. Review and editing
10. Cover letter

Concept Note to a Proposal

A good concept note is the ideal basis for preparing a convincing proposal. However, some sections need to be considerably expanded. Essentially, you are now providing additional details

to persuade the donor that you know what you want to do-that you can hit the ground running as soon as you receive the funds.

You also have the opportunity to rethink different aspects of the project (e.g. sites, scope of activities, inclusion of different elements), and to strengthen linkages with partners. You can also update your design to take into account changing internal and external realities-it will have taken some time from having the first project idea to getting the nod from a donor to proceed to the proposal stage.

Proposal Step 1: Objectives
Review the objectives as expressed in the concept note. Do they still express what you hope to achieve? Have suggestions in the concept review or from the potential donor given you ideas on how to improve the objectives? Are the objectives easily measurable? If not, can you reformulate them, to make future evaluation easier? Try to set aside at least an hour to brainstorm for one final time the substance and wording of the proposal objectives.

Proposal Step 2: Activities
You will need to expand the activities session of the concept note considerably. For all major elements of the project spell out exactly **who** will do **what, when,** and **where.** Ideally, make sure that every sentence includes who will do what, when, and where. Remember to use the active voice and to write short, clear sentences. Such sentences convey the urgency of the problem and hence your passionate desire to start work right away. Remember that you need to tell the reader who will do what, when, for how long and where, and sometimes how. You should review what you have already done, and seek improvements. Here are two examples to show you how.

Example 1: "Then we plan to introduce the pesticide on half the fields."
What is wrong with this active sentence? Answer: You should never use "we" in a proposal, because it is so vague. Who is we? A particular scientist? A group of NARS staff? Farmers? Project Partners? Always be specific about who is doing the action. Also, the *we-form* is rather too informal for most full proposals. Additionally, "then" is rather vague when specifying time. An improved version would be: "The NARS agronomist and the 15 women farmers participating in the project will introduce the pesticide on half the fields during the first month of the project."

Example 2. "Sixteen workshops will be held, four each in Cameroon, Nigeria, Ghana, and Togo." What's wrong? Answer: This sentence uses the passive ("will be held"), which is vague. Who will do the action? There is also nothing on the timing of the activity. An improved version would be: "The project manager, together with country leaders from Cameroon, Nigeria, Ghana, and Togo, will prepare and implement four workshops in each of the countries; one each in years 1 and 2, and two in year 3 of the project."

Proposal Step 3: Work Plan
You will need to spend considerable time preparing this section, since it has only been lightly sketched in the concept note. In this section you are explaining what combination of inputs will be needed, when, and in what quantities, to achieve the desired outputs.

You will need a section on project management arrangements, which explains which party will do what, when, and where. Be sure to include the roles and responsibilities of all project personnel, including, as appropriate, NARS staff, people from NGOs, government agencies, farmers' groups, universities, IARCs, ARIs, etc.

Ideally this section should be prepared with partners, and should answer questions like: Who will lead the project? What other positions will be involved? From which organizations will the positions be filled? Will there be project meetings? When? Who will attend? How will beneficiaries be involved?

You will also need to list your inputs and level of effort, perhaps in a short table. Here's an e.g.:

Personnel Inputs

Dept. of Horticulture agronomist	6 person-months/year – total 18 p.m.
Dept. of Horticulture fruit specialist	2 p.m. in years 2 and 3 – total 4 p.m.
University of White Land research assistant	9 person months/year – total 27 p.m.
Project secretary/Logistics assistant	Full time – total 36 p.m.

You will need to include a time plan showing when activities will be undertaken. The best way is to use a flow chart or other graphic device. In this section you should also include a brief reporting plan, explaining how often you will report back to the donor. If the donor has not specified the reporting requirements, suggest an annual report, and a final report.

Depending on your project you may also need to write sections to cover:

- Site selection
- Training plans
- Workshop plans
- Computer purchase plans, etc.

Use graphs, charts, boxes, and maps to the fullest extent. The more details you provide, the more the donor will feel you have thought the project through, are competent to implement it, and are indeed ready and eager to begin, needing only the donor funding to get going.

Proposal Step 4: Outputs and Impacts

Review what you have already written in the concept note, and seek to strengthen this section; remember that outputs and especially impact are what sell the project to the donor.

You may wish to invite a complete outsider or group of outsiders to help you brainstorm once more on all the likely outcomes of your project, if it is implemented. Really stretch your imagination! Then write it all down in clear, simple language.

You need to organize your outputs and impacts by categories. One approach is to show the effects on each group of people involved in the sector in which you are working. Another is to show outputs and impacts by objective, by site, or by project component.

Proposal Step 5: Budget
Here a lot more work will need to be done, and you may need to get the help of the finance office. You will also need to be sure that you and your partners are happy with the proposed allocation of funds.

Preparing the budget section of proposals is probably the single most important task in moving from the concept note to the proposal stage.

Your finance office should be able to help you with budget *guidelines* to ensure that everyone who designs projects is following the same assumptions.

In your budgeting, be realistic, but not greedy. Session 14 provides information on how to prepare a good proposal budget.

Back-up Budgets
In complex projects involving multiple partners, you may also need *back-up budgets* such as:
- Budgets by partners
- Budgets by site or country
- Budgets by activities
- Budgets by objectives

Unless project partners have considerable experience in collaborating on projects, it is always advisable to have separate budgets for each partner, agreed and approved by each organization, before the proposal is submitted to the donor.

Proposal Step 6: Background
In the concept note you will have written only on "The problem and why it is urgent," and "What has already been done." In the full proposal, you have the opportunity to add any sections you think will strengthen your appeal to the donor for funds. Two that would be useful are:
- What are your comparative advantages and special qualifications for implementing the project?
- What do the partners bring to the project?

Use a soft/modest approach—do not oversell or over-praise yourselves!
In terms of presentation, this section comes early in the proposal—if you write too much, you may turn your reader off. So keep this section as short, sharp, and readable as possible. Two to three pages in a short proposal, three to five in a major proposal are good limits. For many donors, everything else should go in an annex, or be left out altogether. Use subheadings to break up the material.

Proposal Step 7: Evaluation and Milestones
In this section you describe how the project's managers will monitor the project to ensure that it is working as planned and is likely to achieve the desired outputs and impacts. Include a brief description here of how projects are usually monitored and evaluated in your organization. An evaluation device donors look for nowadays is the use of *milestones*, key project achievements that allow you, your partners, and donors to ensure that progress is being made towards attaining outputs and impacts at regular intervals in the project's life. A milestone may be thought of as an

intermediate output; something you expect to achieve at a certain moment during the life of the project. You should specify "milestones" for all projects over 18 months in duration. The ideal milestone is something worthwhile and tangible. A good milestone early in the project helps to keep donors, beneficiaries, and project staff enthusiastic and on track. Explain that you will consider project redesign if milestones are not regularly achieved. If in doubt, design specific milestones for the end of each year of the project. The final year milestones are the project outputs.

Proposal Step 8: Summary

This section tells what the proposal is all about. It is a vital selling tool for the project, since it comes first in presentation and may be the only part that some people read.

- Always write this section last!
- Take great care with the wording.
- Refer to all other sections of the proposal.
- Be very brief. Two pages is the absolute maximum—one page is better.
- Highlight any known donor interests.
- Write simply and in a straightforward way.

Sample Summary

If you use the following outline, and fill in the blanks, you will have a good proposal summary.
This proposal requests ...(donor) to provide $ ... to institution and …(partners) to ... (project objectives summarized) in ...(country, site). The proposed project will take ... years and involve ... person years or months of the institutions and ... (partners) time.

The need for this project is pressing; (tell why in one or two sentences). The interested parties (name them) are anxious to achieve the desired outputs and impacts as soon as possible; ... (tell what the various partners will do in the project in one or two sentences). The project will benefit ... (tell who) by .. (tell what.) As a result, impact on .. (tell which goal)... is expected in ... (site? nation? region? sector?) by… (date -- tell how soon after the project is over). This project builds on previous work by your organization and others that ... (tell what has already been done). You and your partners are ideally suited to conduct the follow-on activities because ... (tell why.) Conferment

Proposal Step 9: Review and Editing

- Before sending the proposal on for a formal proposal review, sleep on the proposal.
- Re-read it critically.
- Share it with someone who has never read it before.
- Read to eliminate errors, repetitions, and inconsistencies.
- Edit to substantially *shorten* the proposal, making it crisp, clear, punchy, appealing.
- Do not omit this step!
- Do not expect someone else to do this for you—learn to do it for yourself!

Note: The tenth and final step in preparing a proposal is to prepare a covering letter. This step is so important; it will be covered in a separate session, session 16, Submitting and Following up on Project Proposals.

CONCEPT NOTE GUIDELINES/EXAMPLE

RESEARCH PROPOSAL FOR COMPETITIVE RESEARCH FACILITY

PROJECT TITLE:
IARC:
PROJECT MANAGER:
PRINCIPAL INVESTIGATOR:
ADDRESS:
COLLABORATOR(S):
ADDRESS:
TOTAL COST OF PROJECT: £
DURATION OF PROJECT:
DATE OF SUBMISSION:
LOCATION OF PROJECT:
1. Overseas Location(s):
2. UK Location(s):

Background
Describe how the project will contribute to the Purpose of the DFID Renewable Natural Resources Research Strategy by generating benefits for poor people through the application of new knowledge to natural resource systems. Explain the importance of the researchable constraint(s) that the project is seeking to address and give a brief summary of any significant research already carried out.

Project Goal
The project goal is the higher-level objective or longer-term impact of the project. The work must contribute to the Purpose of the Strategy as set out in the Renewable Natural Resources Research Strategy log-frame.
The work must fall within the TAC-approved programs of the CGIAR Centers.

Project Purpose
The purpose is the measurable near-term objective which the project aims to accomplish. The project should be demand-led and its place along the research continuum from basic, through strategic, applied, and adaptive research must be shown.

Research Activities
Describe the research studies, surveys, experiments, etc., needed to achieve the objective. Activities should be associated with each output of the project; the strategy for accomplishing each output should be defined.

This section should also include any facilities or expertise already available to the investigator and/or collaborator that will be utilized in the implementation of the project. In addition, the location of specific components of the research to be carried out and any resources required to implement the project should be specified.

Outputs
Define the project outputs. These are the expected research results or products appropriate to the project objectives.

The pathway by which the project's outputs will deliver benefits to the intended beneficiaries must be shown. This may be by means of follow-on development activities and/or through formal or informal institutions that will take up the products of research and engage in the process of transferring knowledge/technology/methodology to the beneficiaries.

Beneficiaries
Give an indication of the main beneficiaries of the research outputs.
The beneficiaries should be poor people whose livelihoods will be enriched in a sustainable way, for example by gaining social, economic or environmental advantage from the application of the research results. They may be identified in, for example, the household, the village community, or the global community.

Financial Summary:

ITEMS	Year 1	Year 2	Year 3	Total
Staff				
Travel				
Overseas Costs				
Consumables				
Equipment				
Training/Publications				
Overheads				
Contingency				
TOTALS				

German Federal Ministry for Economic Cooperation and Development (BMZ)
STANDARD GUIDELINES[1]
For Requests for Targeted Research Funding From International Agricultural Research Centers

Annex 1 - Instructions for Preparing Requests for Research Funding from International Agricultural Research Centers

The request shall be based on the framework, the criteria, and the definitions for Restricted Project Funding, as outlined in the Standard Guidelines. The document is to allow a comprehensive peer review of the product including the work plan and methodology. The request shall elaborate which guideline criteria may or may not be relevant as the basis for funding.

Proposals should not exceed 20 pages. An Annex may be included. The project summary, placed at the beginning of the request, shall give an overview of the entire request and is to outline the project's major aspects using simple (non-specialized) language.

Outline for Requests for Restricted Project Funding

1. Project Summary

Title of funding request Theme (one line), Objective(s) of Research Abstract (characterization of the entire project; about 10 lines), Mode of cooperation (staff make-up and scientific relationship: e.g. knowledge transfer via research associate and NARS student), IARC program and unit/department IARC project coordinator(s), Collaborating institution(s), NARS and ARO (institute/university and principal scientist(s) directly involved) Project scientist(s) assignment and qualification of staff to be financed, Project duration, Budget summary (budget total and BMZ contribution per year and per cooperation partner), Status (date of submission).

2. Background

This section is to provide sound justification for the research and information on the possible impact for beneficiaries as follows:

* thorough analysis of the development problem within the political, economic, and cultural framework, explanation of how the problems of the beneficiaries (i.e. by which means and institutions) have contributed to formulating the research, analysis of relevant current research and review of pertinent literature (research and methodology), positioning of the project in the research-development continuum, summary of conclusions from completed and ongoing activities (IARC and collaborating institutions) for the proposed research (publications are to be quoted), identification of the project in relation to the IARC's core projects or programs; specific links and expected contribution to the objectives of the approved medium-term plan (e.g. chart), expected use and users of research results and contribution to solving the development problem, mode of dissemination of research results, expected benefits of the project for NARS.

[1] http://www.dainet.deibmz4l4/StJPPORT/guide-l.htm

3. Project Goal, Purpose, Outputs and Indicators

Goal, purpose, outputs and indicators shall be formulated. Collaborating research partners and users of research results should participate in the elaboration. The logical framework approach shall be applied for describing the project, keeping the criteria for funding and the limited project duration in mind:

- Precise definition of a project's goal, purposes, outputs and indicators
  - Goal: Output of the research project
  - Purposes: Utilization of the research outputs by those who receive them.
  - Outputs: Defined products (tangible/intangible) delivered by the projects, for which the center is responsible, even though it might not implement all the work
  - Indicators: Performance standards with observable characteristics, which permit monitoring the achievement of outputs, purposes and goals.
- Reference to the CGIAR overarching goals (log frame)
- Indicators on cost benefit ratio of the research project at micro and at macro levels
- Precise identification and differentiation 'including gender' of beneficiaries, possible disadvantaged groups and (ultimate) users of research results

4. Activities and Work Plan

The work program is to be outlined in detail. Collaborating research partners and users of research results should participate in the elaboration of the outline. Requests for project funding may refer to established procedures or methodologies. The following points must be addressed:

description of the scientific approach (research methodology and procedure) and of the activities to achieve the outputs defined under section 3, specification of milestones[2] at activity level used to monitor progress of the project, identification of all inputs, including project staffing requirements (numbers and qualification: e.g. visiting scientist, research associate of fellow), based on the activities, roles and responsibilities of the collaborating institutions/partners during implementation (IARC, NARS, ARO), specifying operational and technical aspects, direct relation of the activities in the work plan to the individual budget positions (a time chart for implementation is to be included), provisions to manage the progress and focus of research including type of documentation available upon completion of project, and mechanisms for disseminating results to target groups.

5. Probability of Success

Statement on assumptions as well as risks; assessment of their constraints or potential to bring about successful completion of the project.

6. Training and Scientific Interaction

Rationale and specification of training activities and their relation to project purposes and outputs (e.g. on-the-job-training for NARS professionals, workshop(s), postgraduate degrees, education, etc.).

[2] Milestones: Key intermediate targets to achieve outputs.

7. Expected Patentable Research Results and Biosafety

- Results and products of research are considered public goods; the IARC is requested to indicate if patentable results are expected and to ensure that third parties do not use results to claim patent rights.
- Experimentation in the area of genetic engineering/biotechnology requires that developing and implementing the project complies with the 1ARC's policy and procedures on biosafety, which adhere to international standards, and strictly considers national regulations of the target countries.

8. Budget

8.1 Figures are to indicate the total input by partners as well as the specific budget requested from the BMZ. The budget is to be structured according to the activities stated in the work plan (corresponding to outputs and activities outlined under 3 and 4) and to be spelt out on an annual basis. All budget items should be clearly justified by the work plan included in section 4; a detailed breakdown is given according to item, year, IARC / ARO and NARS partner.

8.2 Budget Items (Summary Table)

- Personnel (specifying the period of employment/No. of person months for each staff member identified in the work plan)
- Supplies and operations (specifying in casual labor, materials and quantities)
- Equipment/investment (detailed justification if applicable; in exceptional cases only)
- Training – workshops
- International travel (destination, number of persons, duration)
- Publication(s)
- Other expenditures
- Overheads

8.3 Overheads

Overheads should be calculated according to CGIAR policy. However, with the present rate of unrestricted core fund provisions by BMZ overheads principally do not justify to be funded for restricted core contributions. Overheads will be made available only in exceptional cases.

9. References

Milestones Exercise

Remember that all projects longer than about 18 months need to have milestones built into their design. Milestones are mid-project achievements for which you will be aiming as you implement your project.

Here are some examples

In a three-year training project, you might aim to have at least 100 participants trained every six months. Your milestones might therefore be:

Date	**Minimum Milestone**
End of Year 1	200 trained
End of Year 2	400 trained
End of Year 3	600 trained

If only 130 people have been trained by the end of the year 1, you will need to explain to your donor why you have not achieved the proposal target. There may be very good reasons for this, and you may well not be to blame. But missing a milestone needs always to be explained in the interests of long-term good donor relations.

In a two-year, multi-country project designed to identify, analyze and share the results of successful strategies used by livestock farmers in East Africa, you might use the following milestones to help you monitor progress and ensure can finish in time you.

With these examples to guide you, prepare milestones for the White Land project proposal in your pack. Because the project outline is very skimpy, you will have to make some big assumptions in designing your milestones.

Date	**Minimum Milestone**
End of Month 6	one team of researchers subcontracted in each of seven countries, all beginning to work, some already producing draft reports
End of Month 12	four final reports and three draft reports received, with a minimum of 20 case studies each
End of Month 18	• Two workshops held to discuss results and share case studies • All reports received, approved and to the publisher • Arrangements for end-of-project conference finished, • Invitations issued
End of project	• Seven reports published in French and English, available at the final conference • Conference held for 300 participants from seven countries, (predominantly livestock farmers with some 30 specially invited donors, and NGO and government observers)

LOGICAL FRAMEWORK

Summary of Contents

- Use the logical framework approach to break down the project objectives into specific objectives and to establish links between activities, the objective, and the goal.
- Demonstrate how to use the logical framework in the research planning process.

Logical Framework

A tool to help in:

- Planning
- Monitoring
- Evaluation of research projects

Characteristics of the Logical Framework

- An instrument to verify and synthesize.
- Lays the foundation for implementing a monitoring and evaluation system.

The log frame is also required by many donors in full research proposals

Logical Framework Matrix

	Narrative summary	**Objectively verifiable indicators (OVI)**	**Means of verification (MOV)**	**Important assumption**
Goal				
Purpose				
Outputs				
Activities				

Elements of the Logical Framework of a Research Project

- **Goal**: Linked to a research programme
- **Purpose**: Linked to a constraint
- **Outputs:** Linked to research
- **Activities:** Project elements: field work, lab experiments, questionnaires
- **Indicators:** Measure to verify expected objectives (start by defining the indicators of the goal, then of the purpose, then of the outputs)
- **Means of verification**: Information sources on objectives and indicators.

If—Then Properties of the Log-frame Matrix

	Narrative summary	Important assumptions
Goal Purpose	yes then then	and
Outputs	yes	and
Activities	then yes	and

The indicators and the means are not needed to establish the logic of the framework

Completed Logical Framework Matrix

	Narrative summary	Objectively verifiable indicators	Means of verification	Important assumptions
Goal	Income and nutritional standards of farm households in west Africa increase	Farm household incomes have increased by 6% compared with household incomes in 1995	World bank country statistics	
Purpose	Farmers use new maize varieties in regions of west Africa that are infested with striga	10 groups of farmers use new varieties in 12/1998	End of project reports	Seed multiplication system of selected varieties is implemented.
Outputs	Maize varieties that are striga resistant	Identification of 2 hybrid varieties and 2 open-pollinating varieties in 12/1998	Research reports, publications	Agricultural inputs (tools, seeds) available on local market
Activities	1. Get hybrid lines from IITA 2. Implement field trials 3. Harvest and measure yield 4. Analyze results	18person-months researcher 24 person-months technicians. 24million CFA	Documentation of planning, research proposal	Research method is appropriate for developing technology to avoid loss due to striga

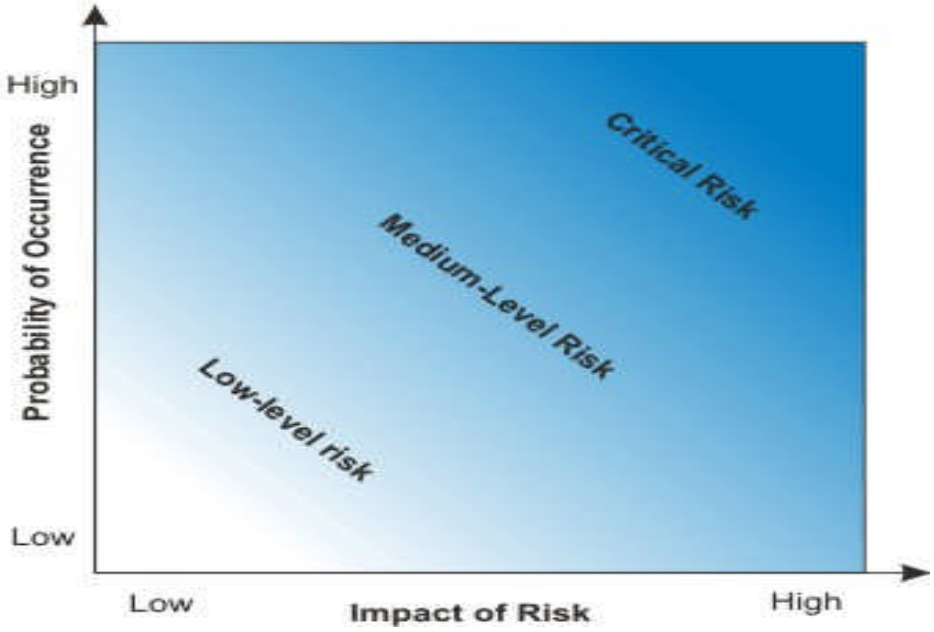
Key Elements of a Checklist

- The project has a purpose
- The purpose is not a reformulation of expected outputs
- The purpose is not the only project incentive
- All outputs are necessary to achieve the purpose
- Outputs depend on accomplishment, of the project
- Means and sources of verification indicate where information is available to verify every indicator
- From lower to higher level, the relation "yes — then" is logical and continuous

Assumptions and Risk

- Assumptions are a positive way of dealing with risks
- A risk is a negative event that "may" occur
- It is out of the control of the project or program
- The probability of a risk occurring can range from just above 0% (low) to just below 100% (high)
- Depending on the probability, the risk can be converted into an assumption
- Only risks with potential critical impact are included (important assumptions)

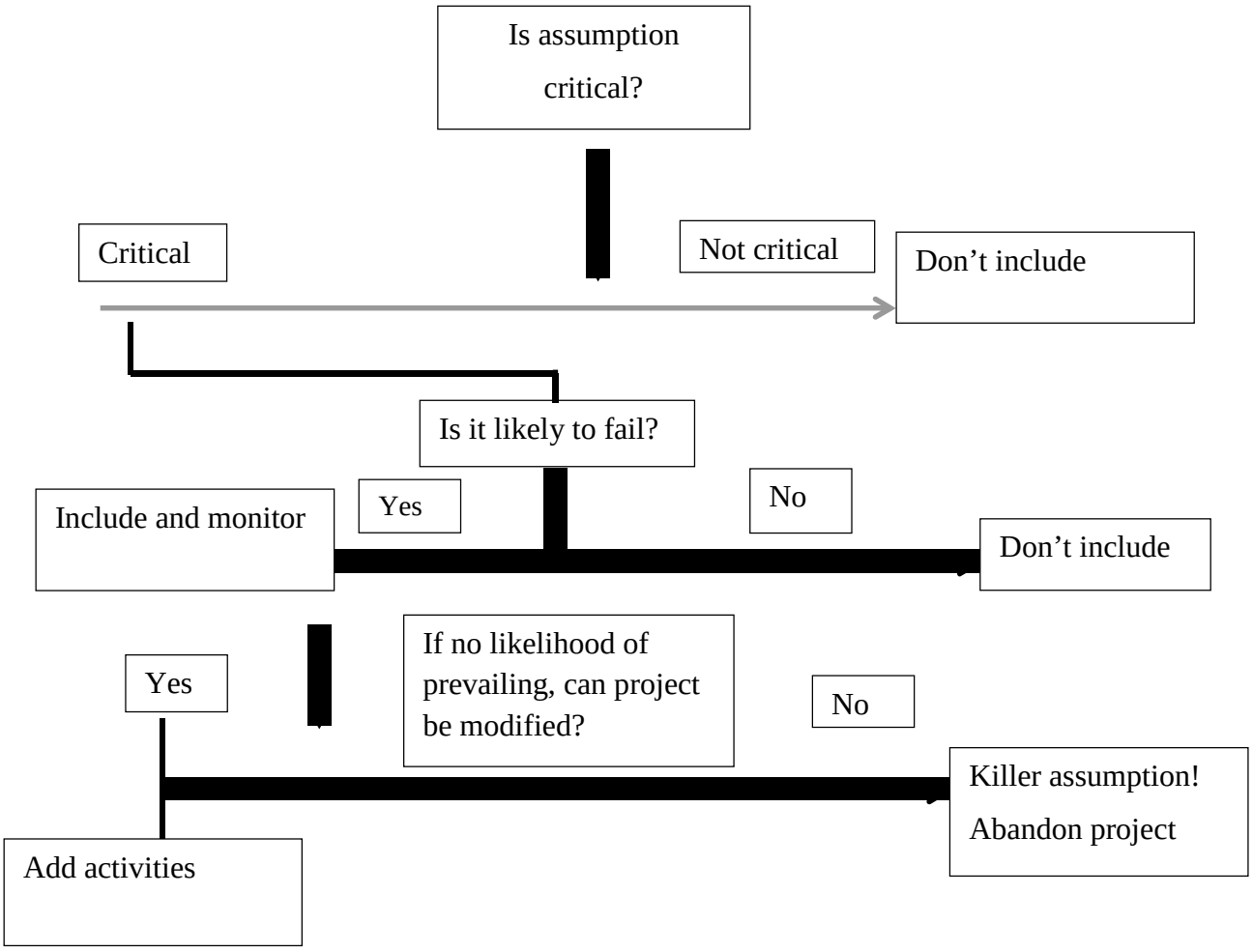
Figure 1: The Risk Impact/Probability Chart



How to Manage Risk

- Low impact/Low probability - Low level, and you can often ignore them
- Low impact/High probability - Moderate importance - can cope with them and move on. Try to reduce the likelihood that they'll occur.
- High impact/Low probability - High importance but very unlikely to happen. Have contingency plans in place just in case
- High impact/High probability – Critical. Pay close attention-need additional objectives, otherwise killer assumption.

Checklist: Assumptions



DEVELOPMENT OF SPECIFIC OBJECTIVES AND THE CONCEPT OF THE LOG-FRAME FOR RESEARCH PROJECTS

(Summary of presentation)

1. The development of specific objectives constitutes the first step of the research project management cycle.
2. During the program planning process, a major constraint linked to development was identified. This constraint corresponds to a global objective—the objective of the program. The global constraint is the result of several sub-constraints for which corresponding research objectives can be developed. Each of these objectives, representing a solution to the constraint, will be achieved by a research project.
3. In the beginning, the objective of the program is vaguely defined. During the first step of the cycle, this objective will be broken down into specific objectives.
4. These objectives, besides being clear and logical, have to be realistic and achievable, depending on the available resources and the methods to be used. Equally, they have to be expressed in terms of problems encountered by the users of the research results.
5. The logical framework can help to determine these specific objectives.

6. The logical framework is an example of a tool that can help research managers to ensure proper planning, monitoring, and evaluation of the research project. It helps those who conduct planning and evaluation to specify the key elements of the projects, and to identify the logical links between the identified needs and the developed objectives.
7. The logical framework is an instrument for verification and synthesis. It helps to synthesize the different elements of the project (objectives, activities, results) and it helps to verify if these elements have been articulated in a logical manner. The indicators and the means of verification developed in the logical framework represent the basis for monitoring and evaluation.
8. The logical framework is composed of a 4-by-4 matrix in which the rows represent the goal, the objective (or purpose), the result (or output), and the necessary activities for their realization (the vertical logic); the columns indicate how realization of these objectives can be verified (the horizontal logic). The logical framework also takes into account the external environment of the project. In the last column, it identifies external factors (important assumptions) that could have an effect on implementation of the research activities and the realization of the objectives.

Note: There are modified versions of the log-frame, for example, the ZOPP method (project planning by objective) which conducts a constraints analysis with the help of visualization techniques to foster greater participation of the partners. In this workshop, a much simpler framework will be used.

The terminology used to describe the different rows of the 4x4 matrix varies. US organizations prefer to use: goal, objective, results, activities; while European organizations are more used to: goal, purpose, outputs, activities, and other organizations may even use the terms in a different order. This can indeed be quite confusing, but it should be kept in mind that the definitions are the same. When developing the log-frame it is important to ensure that the levels are logically linked by the "if—then logic" and that the level of objective or purpose describes the "end of project status"—the achievement at the end of the project duration.

9. Definitions of the elements of the logical framework:
    - *Goals and objectives*: linked to the research program
    - *Results*: linked to the research
    - *Activities*: these are the elements of the project, for example, field experiments, laboratory experiments, and surveys
    - *Indicator*s: measurable parameters linked to the expected results (starting by defining the indicators of the goal, then those of the objective and those of the results)
    - *Assumptions*: factors that are beyond the influence of the project or the research in general, but which are necessary to achieve the objective
    - *Means of verification*: sources of information, and the results and indicators
10. The key concept of the logical framework is the cause- and -effect relation between the different rows. If a series of activities is conducted, then the results have to be achieved; if the results are achieved (specific achievements or products delivered) then the objectives will be achieved; if the objectives are achieved (the objective of the project) then the project contributes to the realization of the goal (the ultimate objective).

The logical framework will be used during the following planning steps, and during monitoring and evaluation. One has to make sure that all the elements are included. The control list can help to achieve this.

LOGICAL FRAMEWORK[1]

What is a Logical Framework?

The logical framework (log-frame) is a tool for planning, monitoring and evaluating projects in the broader context of programs and national goals. It can be used to clarify the logical links between project inputs and objectives: project activities and outputs, broader purposes, and the ultimate goal. Research managers can use the log-frame to identify the indicators by which a project's progress is monitored and evaluated and the conditions necessary for the project to achieve the expected results.

The logical framework (log-frame) is a tool for the preparation, monitoring, and evaluation of projects. It is also useful for analyzing the components of a project and the logical linkages between means and ends. Originally developed by the US Department of Defense, the log-frame approach was adopted by the US Agency for International Development (USAID) in the late 1960s. Since then, it has been adopted and further developed by the Overseas Development Administration (ODA) in the UK, the International Fund for Agricultural Development (IFAD), the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) in Germany, the United Nations Development Programme (UNDP), the Organisation for Economic Co-operation and Development (OECD), and many other development agencies. Several agencies now use participatory planning and evaluation procedures based on the logical framework.

Usefulness for NARS

The log-frame can be used by researchers and managers to design projects and programs, to review progress, and to check that objectives are being achieved. It is particularly useful for realistic planning of the activities, resources, and inputs required to meet project objectives. It is also useful for planning M&E activities.

The log-frame may appear to be quite simple, but its use requires an understanding of some basic concepts, as well as their application. As with all planning and evaluation frameworks, the log-frame should not be applied mechanically-project managers need to be able to learn as they implement plans and to adjust to changing circumstances.

[1] Horton, D. et al. (editors) 1993. Monitoring and evaluating agricultural research: A sourcebook. Wallingford. UK: CAB International

It can provide a useful framework for participatory planning and review of a project, involving the project teams as well as expected beneficiaries and other interested parties. One advantage of the log-frame is that it can act as a framework for other planning, monitoring, and evaluation techniques, such as cost-benefit analysis, checklists, or external reviews.

Using the Log-frame

A project log-frame usually consists of a 4-by-4 matrix (table 1). The rows correspond to the project's activities and three levels of objectives: direct project outputs, the broader purposes of

the project, and the ultimate goal. The columns are used to describe: purposes, activities, inputs, and outputs of the project; to define indicators for measuring them and means of verification; and to specify the main assumptions on which the project design is based. A log-frame should be prepared before implementation begins, and it should be regularly reviewed and updated.

The basic steps involved in developing a project log-frame are listed below:

- *Begin with the narrative summary*: project inputs, outputs, purposes, and overall goals.
- *Define the critical assumptions* for delivering inputs and achieving objectives at each level.
- *Verify the vertical logic*.
- *Define the indicators* by which research progress can be monitored and evaluated.
- *Define the means of verifying* what has taken place at each level: data to be gathered, sources, and techniques for data collection and analysis.
- Review the log-frame periodically in light of research progress and changing circumstances.

Narrative Summary

The narrative summary is a brief statement of each of the project's goals, purposes, outputs, and activities and inputs. The goal is the ultimate objective of a program and is usually something like increasing farm incomes. A portfolio of projects normally shares a common goal. The purpose is a statement of the purpose or purposes of the project. It describes the desired impact of the project, such as increasing production. The outputs are what the project aims to accomplish-the specific results for which the project manager can be held directly accountable, such as release of a maize variety or training of a group of farmers. Activities are the actions necessary to achieve each output. Inputs define what is needed for implementing the project, including personnel, funds, facilities, and management procedures.

The Vertical Logic

From a project's inputs to its ultimate goal there are three causal links: one between activities and outputs, one between outputs and purposes, and one between purposes and the ultimate goal. In the design of a log-frame, the inputs of the project should be both necessary and sufficient to achieve the outputs. Outputs should also be necessary to achieve the purpose, and achievement of the purpose should be necessary to achieve the goal. However, a project's outputs by themselves are seldom sufficient to achieve broad purposes and goals; other, complementary, projects and programs may be needed. Purposes and goals may also be affected by institutional factors and by external conditions beyond the direct control of the project.

Indicators

In the second column of the log-frame, indicators specify what evidence could indicate that objectives have been achieved. For example, in table 1, under purpose in the second row, the measurable indicator for development of striga-resistant maize varieties is an increase in maize yield in striga-infested research areas. Indicators should be defined with 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).

Means of Verification
The means of verification specify how the indicators can be measured and how the desired information may be obtained. For example, in table 1, seed company records are listed as one of the means of verifying that goal number 2 under outputs has been achieved.

Assumptions
Assumptions are statements about uncontrolled factors that can influence the achievement of objectives. Some examples of important assumptions are that farmers will use recommended cultivation methods, that inputs will be available, or that there will be good weather. If the assumptions are not met, the project may not achieve its objectives.

Examples
Bolivia. The log-frame is used mainly by development agencies to plan and evaluate large-scale projects. In recent years, some agricultural research organizations have begun to use the log-frame in planning and evaluating research programs and projects. For example, in 1989 the Bolivian national potato program used the log-frame for a participatory planning exercise. In 1991 the program's log-frame provided the basis for an external review. The same year, the log-frame approach was applied to other research programs at the Instituto Boliviano de Tecnología Agropecuaria (IBTA).

Ghana. The log-frame was recently used in planning a research system in Ghana. It was very successful in bringing researchers and extensionists together and in providing the basis for a structured discussion of the goals of the plan and the measurable indicators and means for verification.

The Instituto Nacional de Tecnología Agropecuaria in Argentina uses the log-frame approach for project planning. The log-frame has also been used for planning and evaluating the SADC/ISNAR project for in-service agricultural research management training in sub-Saharan Africa.

Table 1. Sample Log-frame

Project Name: Maize Research Project			
Narrative Summary	**Measurable Indicators**	**Means of Verification**	**Important Assumptions**
Goal: 1. Agencies use new maize varieties in striga-infested areas of sub-Saharan Africa.	1.0. 10 projects using new varieties and extension service recommendations by 12/1996. 1.1. Average yields increased by 20% compared to non-striga projects by 1998.	1.1. Documentation, extension bulletins, national agricultural surveys.	
1. Purpose: Striga-resistant maize varieties created for use in sub-Saharan Africa.	1.1 Production of maize in striga- infested research areas increased by 40% by 12/1994	1.1 On-farm research studies; end-of-project research reports	**(Purpose to Goal)** 1. Funds and mechanisms available to adapt maize varieties for local production. 2. Farm inputs, including tools & fertilizers, available on local market. 3. Price policies, infrastructure, and extension support spread use of technology
Outputs: 1. Striga-resistant maize varieties identified. 2. Seed multiplication; capacity of selected sub-Saharan seed companies increased. 3. Striga research capacity of selected sub-Saharan research institutes increased. 4. Information network for striga researchers established.	1.1. 2 hybrid, 2 composite, and 4 open varieties identified by 12/1992. 2.1. National seed company producing 200 mt of certified maize annually by 12/1994. 3.1. 2 maize breeders, 2 weed scientists, 1 agronomist, and 1 plant biochemist trained by 2/1995. 4.1. Research methods/ results disseminated through semiannual network reports & conferences from 1994 to 1996.	1.1. Research reports, peer review, publications. 2.1. Seed company records, monitoring mission reports. 3.1. Project progress reports, training records, institute personnel records. 4.1. Network newsletters and mailing lists, reports on conferences.	**(Output to Purpose)** 1. Research approach remains most feasible means of reducing losses from striga infestation. 2. Research program is well managed and provides peer review. 3. National seed company functioning at 80% capacity. 4. Trained staff continue to work for research project.

Table 1. (continued)

Project Name: *Maize Research Project (continued)*			
Narrative Summary	**Measurable Indicators**	**Means of Verification**	**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. 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) 4.2.	(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.

Sources of Further Information

- TEAM Technologies, Inc.
  3810 Concorde Parkway, Suite 1600
  Chantilly, Virginia 22021, USA
  Developers of PClog-frame R&D, an easy-to-use computer program (created jointly with the World Bank) for project design using the logical framework. The manual contains step-by-step suggestions for preparing a project framework, gives examples, and provides a checklist for evaluating a project design.

- Overseas Development Group. School of Development Studies. University of East Anglia
  Norwich NR4 7TJ, UK
  Organizers of a three-month course on monitoring and evaluation. Course materials contain a detailed and comprehensive review of the logical framework. Students are provided with a thorough description of an integrated rural-development project in Malawi and are requested to prepare a logical framework for the project.

- Center for Development Information and Evaluation (CDIE),
  United States Agency for International Development (USAID)
  SA-18 220 B
  Washington, DC 20523-1082, USA
  Carries out evaluations and works to improve M&E of USAID-supported activities. Can provide many methodological pieces on various topics, including the logical framework.

THE USE OF A LOGICAL FRAMEWORK IN RESEARCH PLANNING AND EVALUATION[3]

Research management concerns many people: policymakers, national research leaders, development organizations, program leaders, station managers, and researchers. To make the most of the resources available to research, managers must be aware of the research priorities defined by policymakers and national leaders, the agricultural constraints and technical opportunities for research, and the capabilities of researchers. Research managers must formulate programs which have the best likelihood of fulfilling national research objectives, taking into account the perceived needs of farmers, and the technical and resource constraints that exist. This is a complex task, one which requires consideration of many things including the following:

- Relationship of programs to national research objectives.
- Determination of programs, whether based on commodities, regions, factors, or disciplines.
- Allocation of resources among programmes, based upon opportunities for success and potential impact.
- Determination of projects within programs from among the many possible alternatives, bearing in mind the importance of staff capability, institute resources, complementarity with other projects, and the likelihood of results which justify the investment.

In this working paper, we describe a framework for conceptualizing research projects and programs called the logical framework (figure 1). The logical framework is simply a tool which provides a structure for specifying the components of an activity and the logical linkages between a set of means and a set of ends. It places the project in its larger framework of objectives, within the program and within the national research system. It serves as a useful tool for defining activities, inputs, timetables, assumptions for success, outputs, and indicators for monitoring and evaluating performance. Learning to use the logical framework requires some concentrated efforts It is often offered in management training courses. It is not an essential technique but is a highly effective planning tool. Whether or not this technique is used, the basic information it provides is essential to adequate planning, and so an introduction to the framework is useful.

A Logical Framework Matrix

Before beginning a discussion of the logical framework, it is necessary to define the terms "program" and "project," since they have different meanings in different research organizations. Programs are coordinated research activities whose combined scientific outputs address national research objectives. Programs are long-term and somewhat continuous, and are composed, in some cases, of subprograms and of projects. Projects address specific research program objectives, and have explicitly defined time frames, resources, and targets. Each project, in turn, comprises a number of specific operations or experiments.

[3] McLean, D. 1988. The logical framework in research planning and evaluation. Working paper no. 12. The Hague, The Netherlands: ISNAR. (Revised 1996.)

Figure 1. Logical Framework Matrix

	Narrative summary	**Objectively verifiable indicators**	**Means of verification**	**Important assumptions**
Goal				
Objective				
Outputs				
Activities				

The logical framework, or "log-frame," can be used at any level of planning and decision making, from the development of programs to experiments. It is most aptly used by small groups, as a framework for brainstorming and discussion. The program log-frame is best completed by compiling more specific, detailed log-frames for each individual project under the program; these in turn are based on step-by-step work plans for each operation. These programming documents help to define the key indicators used in monitoring and evaluation, and provide the framework for progress reporting.

The information required both to design and evaluate an activity can be summarized in its four-by-four matrix: the rows represent different levels of project objectives, including the means required to achieve them (the vertical logic); the columns indicate how the achievement of these objectives can be verified and the assumptions that were made (the horizontal logic). Table 1 indicates what type of information would be included in the analysis of a research program with various component projects. Using this as a guideline should make supplying specific information easier.

The Vertical Logic

From the bottom to the top in the left column is a "narrative summary" of the four levels of objectives of a project, including the activities, outputs, purpose, and goal. It should provide a clear, concise statement of project objectives and indicate the plausibility of the assumed linkages between levels (Table 1).

Activities are the actions needed to achieve each output. In research projects these may include experimental tasks, training, capacity building, improvement management processes, information exchange, etc. Research activities are usually described in the methods section of a proposal. Activities are accomplished with **inputs** which comprise the needed manpower, infrastructure, equipment, supplies, support services, and funds. The specific requirements are defined from the development of an operational work plan. In research activities it is also valid to include leadership and a defined set of research objectives as inputs.

Outputs include research, training, or other results derived directly from the management of activities. For example, a maize-breeding project within the maize program with sufficient manpower, facilities, and support (inputs) would be expected to perform activities which should result in the identification or development of new germplasm with certain targeted characteristics in an estimated time frame (outputs).

Table 1. Logical Framework: Research Project

	Narrative summary	Objectively verifiable indicators	Means of verification	Important assumptions
Then	**Goal: program or national research objectives**			
	New technology contributes to important R&D objectives	Production data Changes in crop patterns/inputs Reduced erosion Increased incomes	Farm surveys Input statistics Survey methods Village surveys	Positive economic environment Stability Adequate roads, markets, etc.
if then	**Purpose: research project objectives**			
	New knowledge exists of interest to research, extension, and policymakers	Released technologies or recommendations	Program records Certification Research/extension Communications on policy	Inputs available Prices favorable Extension services Seed multiplication capacity
if then	**Outputs: results of project activities**			
	Preliminary research results Completed research results Research capacity strengthened	Data from surveys/experiments Recommendations by program comm. Improved staff and facilities	Research reports Program records Annual reports Administrative records Peer review	Scientific standards upheld Procedures exist for release of new technology
if	**Activities: according to operational work plans**			
	Experiments Studies Training Processes and procedures Infrastructure development	Inputs: Staff Equipment and supplies Support services Funds Time targets	Quarterly and annual reports Accounting and administrative records Training records Personnel data	Funds and staff approved will be timely and available Courses available Time for and means of staff supervision

The **purpose** is what the project is expected to achieve once completed. In the example of a breeding project, it is assumed that if a variety is identified with the desired characteristics (output), and seed multiplication and distribution systems are developed (output) or already exist

(assumption), then that seed will be appropriate and available to farmers (purpose) and production will increase (goal).

The **goal** is the greater reason for undertaking the research project. In the broad context of national development it is usually a desired economic achievement for which the attainment of research project or program objectives is necessary but not always sufficient. Here, using the maize program example, the expectation is that if better maize technology is available (output), farmers will adopt the technology (purpose), thereby contributing to a national goal of more widespread increases in production. It should be evident that improved maize technology alone is not sufficient to ensure national food production increases, which rely also on policies, marketing infrastructure, etc.

A direct cause-and-effect relationship is presumed between activities, outputs, and purpose. This cause-and-effect linkage can be expressed in terms of an IF—THEN relationship.
IF activities are undertaken, THEN outputs will be produced.
IF outputs are produced, THEN the purpose will be achieved.

The relationship between purpose and goal is less direct and causal, since many exogenous factors may influence goal attainment. In this case, achieving the project purpose is considered necessary but not sufficient for achieving the goal.

IF the purpose is achieved, THEN the goal may be achieved if other causal factors are also active.

At the activities-outputs-purpose levels, the research manager has a great deal of influence over the attainment of objectives. At all levels, the assumptions listed should indicate the necessary conditions for achieving the planned objectives. Evaluators should be able to articulate clearly the cause-effect relationship which was presumed when a given objective was assigned to research. Table 2 is an example of a logical framework used to describe a specific research activity.

Table 2. An Example of a Research Project Log-frame
Project name: maize improvement toward striga resistance

Narrative summary	Objectively verifiable indicators	Means of verification	Important assumption
Goal: 1. Agencies use new maize varieties in striga-infested areas of sub-Saharan Africa	1.1 10 projects using new varieties and extension service recommendations by 12/1996 1.2 Average yields increased by 20% compared to non-striga projects by 2002	1.1.Documentation, extension bulletins, national agricultural surveys	1. Price policies, infrastructure, and extension support spread use of technology
Purpose: Striga-resistant maize varieties created for use in sub-Saharan Africa	1.1 Production of maize in striga-infested areas increased by 40% by 12/1996	1.1.On-farm research studies: End-of project research reports	**(Purpose to Goal)** 1. Funds and mechanisms available to adapt maize varieties for local production 2. Farm inputs, including tools and fertilizers available on local market
Outputs: 1. Striga-resistant maize varieties identified 2. Seed multiplication: capacity of selected sub-Saharan seed 3. Striga research capacity of selected sub-Saharan research institutes increased 4. Information network for striga researchers established	1.1 2 hybrid, 2 composite, and 4 open varieties identified by 12/1992 2.1 National seed company producing 2000 mt of certified maize annually by 12/1994 3.1 2 maize breeders, 2 weed scientists, 1 agronomist, and 1 plant biochemist trained by 2/1995 4.1.Research methods/results disseminated through semiannual network reports and conferences from 1994-1996	1.1.Research reports, peer reports, publications 2.1 Seed company records, monitoring mission reports 3.1 Project progress reports, training records, institute personnel records 4.1 Network newsletters and mailing lists, reports on conferences	**(Output to Purpose)** 1. Research approach remains most feasible means of reducing losses from striga infestation 2. Research program is well managed and provides peer review 3. National seed company functioning at 80% capacity 4. Trained staff continue to work for research project
Activities: 1.1.Obtain IITA hybrid lines 1.2.Plant test plots 1.3.Harvest & measure yields 1.4.Analyze and report results 2.1.Institutional assessment 2.2.Define equipment needs 2.3.Procure and 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:** Technical assist. researchers 4.5 progr. Leadership 0.6 network coord. 0.2 peer reviewers 0.4 Equipment/supplies 2.3 Operating funds 0.9 *Total 8.9* Time frame: 1992–1996	1.1. Research proposals, peer review plan, project disbursement records 2.1 Project planning and documents and 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

Table developed by D. McLean for Team Technologies

The Horizontal Logic

The second column, *objectively verifiable indicators (OVI)*, specifies the type of evidence needed to verify the achievement of objectives at each level, and the third column, *means of verification (MOV)*, indicates how that evidence can be found and measured. Both have consequences for monitoring and evaluation:

-They define the data collection and reporting requirements during the implementation of the activity (monitoring).

-They define from the outset of an activity the standard against which actual results will be measured (evaluation).

Indicators and their MOV must be carefully selected. Because there are costs associated with collecting and analyzing data, indicators should be kept to a minimum. They should:

- Clearly indicate the criteria for attaining objectives
- Specify the nature, quantity, quality and time required for the objective to be achieved; location may also be important
- Be of an appropriate scale, and focus on key processes
- Be sufficient in number and detail to adequately measure the achievements of objectives
- Be independent of the biases of evaluators, and
- Be objectively verifiable and unambiguous

Indicators for the activities of a project are easy to determine, since they can be expressed in terms of resources of events such as personnel time, supplies used, courses attended, or funds expended. These inputs are usually specified, and can be measured or assessed; verifying that activities are proceeding as planned requires tracking actual inputs against proposed inputs in a given time frame, for instance by keeping logs of staff time and activities undertaken.

Monitoring project leadership, research quality, and management procedures is more difficult and must be dealt with in more qualitative ways, e.g. through peer review and regular reporting.

When selecting indicators at the outputs level, it is helpful to think of the expected output and purpose of the activity in terms of targets, answering the questions of **what**? **how** many? **with which** characteristics? and **when**? If one of a program's expected outputs is a new variety of maize which permits double cropping and higher yields, then an appropriate indicator might be the certification of a variety by year 7, which has a 90-day cycle and which yields more than 2 tons/ha under farm conditions. The means of verification in this case would be records from experimental trials, results of on-farm testing and verification, and records from the varietal certification boards.

At the activities-outputs-purpose levels of inquiry, documents of program planning meetings, quarterly and annual research reports, research proposals, survey results, and scientific publications can be used to evaluate research project implementation. In an ideal system these reports would have been routinely gathered and monitored by researchers and management to identify implementation problems. Figure 2 summarizes some of the indicators suitable for research program M&E and their means of verification. This table isn't exhaustive; it's a list which may guide research managers in defining an appropriate list for their systems.

The last column, *important assumptions*, lists those factors that are not controlled by the project but which influence its implementation and chances of success. For example, fixed national commodity prices could influence the purpose-to-goal relationship by making maize production unattractive, even if better technology is available. Assumptions at this level are often difficult to influence, but they should be defined in advance and monitored.

The assumptions column is meant to keep decision makers realistic in their expectations; if a situation looks particularly hopeless, these leaders should reorient their research projects to take this into account. Sometimes, where national policies are concerned, research managers can be successfully involved in policy dialogue to ensure that an assumption comes to pass. Assumptions are particularly important for research managers at the activities and output levels, where the list of assumptions serves as a red flag to management that they must *actively* monitor and assure that the conditions listed are achieved.

While research managers are primarily interested in activities, outputs, and purpose information, ex ante and impact evaluations are concerned with the relationship of research projects to larger development objectives; therefore, the entire framework is useful. The primary purpose of conducting any analysis at this level is to squarely understand the expectations placed upon the national research system, the validity of these expectations and whether the research projects planned and operating in a country are logical responses to these expectations. Table 3 shows how a log-frame can be modified into a responsibility chart for monitoring by designating a column for persons responsible for data collection and analysis.

Figure 2 indicates how the logical framework matrix can be used specifically as a monitoring and evaluation tool. The targets against which performance is measured are found in the OVI column. The actual data monitored are in the MOV column for each level of the management hierarchy. The assumptions are usually better defined and more "manageable" at the input and output levels than at the purpose and goal levels, and can, therefore, be more easily monitored and evaluated.

Figure 2. M&E Applications from the Logical Framework Matrix

Narrative summary	Objectively verifiable indicators	Means of verification	Important assumptions
Goal: impact evaluation			
Contribution to national research and development goals	Targets	Data to be collected	Non-research factors affecting impact
Purpose: comprehensive program evaluation			
Program strategy and achievement of objectives of component projects	Targets (3-10 years)	Data to be collected	Assumptions to be monitored/managed Consider project complementarity
Outputs: project evaluation			
Project efficiency and effectiveness	Targets (annual and final)	Data to be collected	Assumptions to be monitored/managed
Activities	Specified time frame and resources	Data to be collected	Assumptions to be monitored/managed

Table 3. Responsibility Chart for Monitoring Project Indicators

Narrative summary	Objectively verifiable indicators	Means of verification	Responsibility for data collection
Goal: national research objectives			
• Increased crop production • Intensified land use • Conservation and land use • Increased income • Improved nutrition	• Production data • Changes in crop patterns and inputs • Reduced erosion • Resource planning • Per capita change • Increased spending • Decreased disease & mortality	• Farm surveys • Input statistics • Survey methods • Planning document • National data • Village surveys • Nutrition surveys	• Statistics department • Development ministry • Land use body • Planning body • Statistics department • Development ministry • National health services
Purpose: research project objectives			
New knowledge of interest to research, extension, and policymakers	Released technology or recommendations	Program records Certification Research/extension communications Policy documents	Program leader Extension service NARS director
Outputs: results of project activities			
– Preliminary research results – Completed research results – Research capacity improved	Research data from experiments Program committee recommendations Trained personnel & improved facilities	• Research reports, publications, and surveys • Program records • Annual reports • Training records • Administration records	• Scientist • Project leader • Program head • NARS director • Training officer • Station director
Activities: based on operational work plans			
– Experiments – Studies – Infrastructural development – Processes and procedures – Training	• Scientific and support staff time • Funds • Construction • Equipment • Supplies • Support services • Project support • Program support • Training courses	• Time sheets • Accounting data • On-site report • Procurement data • Procurement data • Lab/station logs • Meeting reports • Meeting reports • Training records	• Individual reports or personnel office • Accounting office • Institute engineer • Accounting office • Accounting office • Lab/station manager • Project head • Program head • Training officer

Project evaluations primarily focus on the targets set and the assumptions made at the activities and outputs levels. Project performance (efficiency), quality, and relevance are all considered. Comprehensive program evaluations are concerned with program strategies and the achievement of program objectives and are therefore focus more on purpose-level achievements. Project complementarity within the program is also considered.

Impact evaluations, or the effect research has on national development objectives, are most concerned with those indicators monitored at the goal level. These indicators are usually socioeconomic in nature, more expensive to collect, and analyzed 10-15 years after the technology from research has been released. Figure 3 shows an evaluation framework created from a log-frame. By specifying criteria and issues, OVIs, MOVs, responsible parties, and time frames, an evaluation plan can be easily generated.

Figure 3. Evaluation Framework

Criteria to be evaluated	Objectively verifiable indicators	Means of verification	Responsible parties	Time frame
Can include technical, managerial, financial criteria, e.g., performance, quality, and relevance considerations May also include processes, resources, responsiveness of management to change, etc.	Indicators determined during planning stage and monitored during on-going research	Products of project monitoring and other sources of information	Person(s) responsible for carrying out each issue to be evaluated	Target dates for completing each aspect of the evaluation

In summary, the logical framework is an effective tool for research managers for both planning and evaluating research. By following a log-frame approach, managers are apt to more thoroughly consider the resources needed, the time frame of the research, the expected targets, and the conditions assumed necessary for the research to be successful. In addition, the logical framework places the research project in a larger framework of program and national research objectives, thus increasing the likelihood that research projects will be complementary within programs, and that they will address important, defined national research objectives.

REFERENCES

Agency for International Development. 1980. Design and evaluation of AID-assisted project. Washington, DC., USA: Training and Development Division, AID.

Murphy, J. 1985. Monitoring and evaluation of agricultural research, concepts, organization, methods. Draft. The Hague, The Netherlands: ISNAR.

TEAM Technologies. 1988. PC Log-frame R&D. Chantilly, VA, USA.

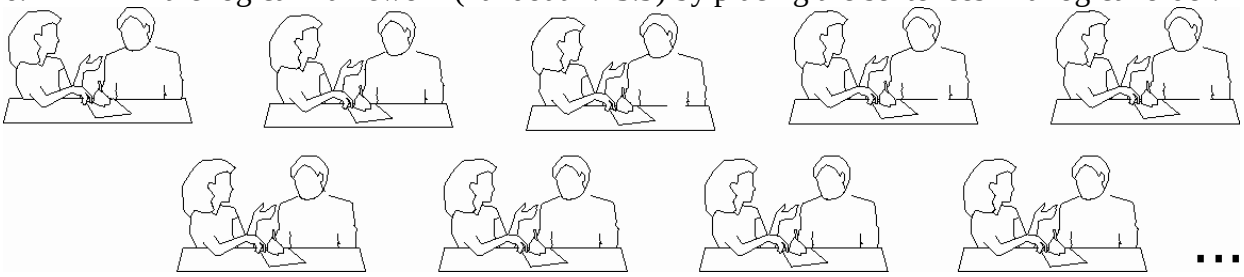
IDENTIFYING THE RELATIONSHIPS BETWEEN PROJECT OBJECTIVES AND ACTIVITIES USING THE LOGICAL FRAMEWORK HIERARCHY (GROUP EXERCISE)

Phase 1. Plenary exercise (15 minutes)

1. Fill in the worksheet (handout 4.13.6), keeping in mind the cause-and-effect relationship.
2. The Facilitator invites some participants to tell how they have filled in the log-frame. A general discussion follows.
3. The Facilitator summarizes the lessons learned and distributes handout 4.13.7 with the answers to the exercise.

Phase 2. Work in pairs (20 minutes)

4. Pair up with a neighbor.
5. Read the sentences on handout 4.13.8 regarding the improvement of olive-harvesting techniques. These sentences are in a mixed (random) order.
6. Fill in the logical framework (handout 4.13.9) by placing the sentences in a logical order.



Phase 3. Presentation and discussion (30 minutes)

7. The results are discussed in a plenary session.
8. The Facilitator distributes handout 4.13.10 with the results and asks a few participants to provide feedback on this exercise to close this session.

Form for Exercise 13—Phase 1: Linked Hypotheses

Indicate the cause- and -effect logical relationship among each of the following sets of statements by labeling them 1, 2, 3, and so on, beginning with the first cause.

A.

___ Increase in export of agricultural products
___ Increase in agricultural production
___ Efficient and effective research institute
___ Production of relevant agricultural technology

B.

___ Reduction of costs relative to the consumption of water
___ Training of producers in the use of water resources
___ Increase in producers' income
___ Increase in productivity by unit of water

C.

___ Increase in milk and meat production

___ Production and distribution of vaccines for cattle
___ Development of milk and meat-producing agroindustry
___ Increase in income and improvement in living standards of producers
___ Improvement of sanitary norms for animals

D.
___ Training of agricultural research personnel
___ Production of relevant agricultural research results
___ Implementation of operational research programs in the short term
___ Planning of a training seminar on strategic planning
___ Preparation of research plan for the mid and long term

E.
___ Implementation of plans for strengthening human resources
___ Improvement in quality and relevance of research results
___ Increase in credibility and impact of research
___ Implementation of operational research programs
___ Development of technologies responding to producers' needs

Answers to Exercise 13—Phase 1

A. 1. Efficient and effective research institute
A. 2. Production of relevant agricultural technology
A. 3. Increase in agricultural production and income
A. 4. Increase in export of agricultural products

B. 1. Training of producers in the use of water resources
B. 2. Increase in productivity by unit of water
B. 3. Reduction of costs relative to the consumption of water
B. 4. Increase in producers' income

C. 1. Production and distribution of vaccines for cattle
C. 2. Improvement of sanitary norms for animals
C. 3. Increase in milk and meat production
C. 4. Development of milk and meat-producing agroindustry
C. 5. Increase in income and improvement in living standards of producers

D. 1. Planning of a training seminar on strategic planning
D. 2. Training of agricultural research personnel
D. 3. Preparation of research plan for the mid and long term
D. 4. Implementation of operational research programs in the short term
D. 5. Production of relevant agricultural research results

E. 1. Implementation of plans for strengthening human resources
E. 2. Implementation of operational research programs
E. 3. Development of technologies responding to producers' needs
E. 4. Improvement in of quality and relevance of research results
E. 5. Increase on credibility and impact of research

PHRASES OF THE LOGICAL FRAMEWORK OF THE PROJECT—IMPROVEMENT OF OLIVE-HARVESTING TECHNIQUES

1. Monitoring reports
2. Increase in oil content of olives (8%)
3. Farmers use improve harvesting techniques for olives
4. Lab-days: 102 days
5. Trials to determine the optimum harvesting date for oil olives in Saiss, Tadla, and Haouz
6. The results of the project are disseminated
7. The quality of table olives and olive oil meets international standards
8. Credits are given to small and medium producers to acquire the necessary equipment for mechanical harvesting
9. Operational: 129 thousand Dirhams
10. Rentability studies of different harvesting techniques
11. Reports from accounts
12. Researchers: 30 person-months
13. Harvesting procedures that take into account the conditions of the plantation and which are adapted to the socio-economic context are developed
14. The necessary resources are made available in time to the project
15. Monthly reports by Moroccan customs
16. Quality oil and table olives achieve a good price on the market
17. Decrease in acid content of olives (-3%)
18. The results regarding the optimum harvesting dates by region are published
19. Surveys in oil mills and processing factories
20. Trials to compare manual harvesting techniques in Tadla and Haouz
21. The improved harvesting procedures are published
22. The optimum dates for harvesting oil olives are determined for Saiss, Tadla, and Haouz
23. Increase in quality of table olives (5%)
24. Trials to adapt mechanical harvesting methods in Saiss, Tadla, and Haouz
25. Technicians: 15 person-months
26. The percentage of lots not accepted for export is lower than 5%
27. National publications
28. Surface area: 29 ha
29. Material: 166 thousand Dirhams

Answers to exercise 13—phase 2
Matrix of the logical framework for the project: "Improvement of olive-harvesting techniques"

	Summary description	Objectively verifiable indicators	Means of verification	Assumptions
Goal	The quality of table olives and olive oil meets international standards.	The percentage of lots not accepted for export is lower than 5%.	Monthly reports by Moroccan customs.	
Purpose	Farmers use improved harvesting techniques for olives.	• Increase of oil content of olives (18%). • Decrease of acid content of olives (-3%). • Increase of quality of table olives (5%).	Surveys in: - oil mills - processing factories	• Quality oil and table olives achieve a good price on the market.
Outputs	• The optimum dates for harvesting oil olives are determined for Saiss, Tadla, and Haouz. • Harvesting procedures that take into account the conditions of the plantation and which are adapted to the socioeconomic context are developed.	• The results regarding the optimum harvesting dates by region are published. • The improved harvesting procedures are published.	• National publications.	• The results of the project are disseminated • Credits are given to small and medium producers to acquired necessary equipment for mechanical harvesting.
Activities	• Trials to determine the optimum harvesting date for oil olives in Saiss, Tadla, and Haouz. • Trials to adapt mechanical harvesting methods in Saïss, Tadla, Haouz. • Rentability studies for different harvesting techniques. • Trials to compare manual harvesting techniques in Tadla and Haouz.	Resources necessary for duration of project: - researchers: 30 person-months - technicians: 15 person-months - surface area: 29 ha - lab-days: 102 days - operational: 129 thousand Dirhams - material: 166 thousand Dirhams	• Monitoring reports • Reports from accounts	• The necessary resources are made available in time to the project .

HOW TO PREPARE PROPOSAL BUDGETS	
	Instructions to Facilitators
SESSION 14	14:30 – 15:15 Session 14. How to Prepare Proposal Budgets 15:15 – 15:30 Tea/Coffee Break 15:30 – 16:15 Session 14. (Continued)
OBJECTIVES	By the end of this session, the participants will be able to do the following: • Discuss tips on preparing good proposal budgets. • Identify budget formats. • Discuss budget guidelines. • Describe the qualities of a good budget. Use overhead 4.14.1 to present this session's objectives.
PROCEDURE	Training techniques: presentation, group work, modified trip around the tables.
PRESENTATION	*(experience)* Give a brief presentation on how to prepare proposal budgets. Thirteen overheads 4.14.2 through 4.14.14 support the presentation. At the end of the presentation, distribute handouts 4.14.1 and 4.14.2 and ask if clarification is needed. (30 minutes)
EXERCISE 14	**Exercise 14. Analyzing and improving proposal budgets.** (45 minutes) 1. *(experience)* Distribute handouts 4.14.3 and 4.14.4. Handout 4.14.3 gives clear instructions for the exercise. Go over the instructions with the participants step by step. Ask if any clarifications are needed. Emphasize and remind the participants about the time. (5 minutes) **Phase 1. Group work (45 minutes)** 2. Divide the participants into three groups and ask each group to elect a rapporteur. (5 minutes) 3. *(experience, process)* The groups read and discuss handout 4.14.2 and refer to item 9 (minimum budget requirements) to do this exercise. They also discuss sample summary budgets and respond to the questions. The rapporteurs summarize the results on handout 4.14.4. 4. *(experience)* As the groups work, circulate from group to group to check progress. Also clarify any concerns they may have while working. Be sure to keep the group aware of the time remaining for this exercise. 5. *(experience)* When the time comes, invite the rapporteurs to exchange their results with another group as assigned in the exercise sheet. **Phase 2. Presentation and discussion (30 minutes)** 6. *(process, generalize)* Invite the rapporteurs to share the results. Use the expected answers sheet to respond. Invite the rapporteurs for a brief discussion, including strengths and weaknesses of this exercise. (20 minutes) 7. At the end of the exercise, synthesize the key points raised in the discussion about preparing a good proposal budget. (10 minutes)
CLOSURE	**Closure** (5 minutes) 1. *(application)* Ask the participants, "What might you do differently in your job as a result of what you have learned?" Ask volunteers to give examples. 2. Make a transition to the next session.
	16:15 – 16:30 Feedback on the Day's Activities and PAPA
OBJECTIVES	By the end of this session participants will be able to do the following: • Provide feedback on the day's activities. • Consider possible actions they would like to implement in their own organizations.
PROCEDURE	Training technique: individual exercise.
FEEDBACK	Highlight positive and negative points of the day. Note areas that may need additional attention in the workshop. Participants can describe some strengths and weaknesses of this day on handout 4.14.5. (15 minutes)
PAPA	*(application)* Ask the participants to take some time to jot down some action ideas they may have as a result of today's activities. They can use handout 4.14.6. (15 minutes)

SUMMARY OF CONTENTS

- Discuss tips on preparing good proposal budgets
- Identify budget formats
- Discuss budget guidelines
- Describe the qualities of a good budget

Tips on Preparing Good Proposal Budgets (1)

- Use a consistent budget format in all proposals, except for those where the donor has a preferred budget outline
- Prepare *Budget Guidelines* to ensure that everyone in your organization is preparing budgets under the same financial assumptions, and that the same costs are offered to all donors in all proposals
- Budgets should be clear, transparent, and easy to read
- Every line item in a budget should be footnoted with unit costs
- In general, budgets should be shown in figures rounded to the nearest $000

Tips on Preparing Good Proposal Budgets (2)

- Budgets should be realistic, but not greedy
- Avoid under-budgeting
- Bay windows can help in budget negotiations
- Indirect costs are legitimate costs and should be included in all budgets
- Every proposal, no matter how small, should have a summary budget; larger projects may require additional budgets, by partner, by site, or by activity

Budget Formats

Every organization has a different budget format

Example: Illustrative Budget Format

- Personnel
- Travel
- Supplies and Services
- Institutional Development
- Evaluation
- Capital and Related Costs
- Indirect Costs
- Contract Research
- Inflation
- Contingency

Budget Guidelines

- Ensure consistency by issuing Proposal Budget Guidelines (PBG)
- PBG will give guidance to proposal writers on such things as how to price key inputs such as: personnel, communications, equipment, supplies and services, workshops, training courses, indirect costs, etc.
- PBG will most likely be prepared by your finance office, approved by your director and, if necessary, your board

Qualities of a Good Budget

- A good budget should be clear, transparent, and easy to read.
- Anyone should pick up your budget and understand it, without you having to be there to explain your cost assumptions.

Footnotes – *Example*

These footnotes show exactly how you achieved your line item totals

Line item	**Year 1**	**Year 2**	**Total**
Personnel (1)	15	20	35
Travel (2)	5	10	15
Equipment (3)	70	10	80
Sub-total	90	40	130
Indirect costs(4)	18	8	26
Total	**108**	**48**	**156**

(1)Three person-months of a senior agronomist @ $5,000/month in both years, plus one month of an economist @ $5,000/month in Year 2.

(2) One round trip airfare and per diem from Site A to Australia @ $3000 in both years, plus $2,000 for in-country travel and vehicle maintenance in both years, plus $5,000 for participant travel to Site A for five participants @ $1,000 each.

(3) In Year 1 the project will need to purchase $10,000 worth of seedlings, $20,000 worth of fertilizers, and $30,000 worth of hand tools and wheelbarrows for the participating farmers. $10,000 will be spent in both years to pay for the rental of well-digging equipment.

(4) Organization X has a board-approved indirect cost recovery rate of 20%. The rate is charged on personnel, travel, and equipment costs, but not on contract research.

Rounding to the Nearest 000s

Item of expense	**Year 1**	**Year 2**	**Year 1**	**Year 2**
Personnel				
Lecturer	42,580	42,580	43	43
Laborer	24,500	24,500	24	24
Honoraria	17,000	17,550	17	18
Operating costs				
Supplies and	15,525	16,750	16	17
services	2,000	2,000	2	2
Sundries				
Administrative				
Fee	12,352	12,202	12	12
Contingency	3,103	2,920	3	3

Set A Set B

Set B is easier to read than set A!

Rules for Good Budget Preparation

- An under-budgeted project is frustrating
- If you lack the funds to do a good job, you and your partners, and your beneficiaries are all going to be disappointed.
- Do not promise too much for the money available.
- If a donor cuts your budget, cut the objectives and activities accordingly, and be sure your donor understands that fewer outputs will be delivered.
- A padded, greedy budget will turn off your donor completely.
- Do not be tempted to inflate salaries or travel costs.
- Offer a moderate, realistic budget within which you are convinced you can deliver the promised outputs

Bay Windows

- A bay window in a new house is an "extra"— **something nice** but not essential
- A bay window in your project is something that would improve your project, but you can do it without it if necessary.
- A bay window is something you can give away during budget negotiations, or eliminate if your budget is a suddenly cut.
- It is useful to include one or two bay windows in all proposal budgets

Some examples include:

- An additional project site
- Another partner
- An extra workshop
- A further year of field trials
- A second training program, etc

Indirect Costs

- All projects have direct costs (personnel, travel, equipment, etc.).
- In addition, a project has indirect costs (rent, electricity in your office, the library in your institute, services of your finance office, supervision by your DG).
- These indirect cost items are needed to implement the project.
- It is difficult to say exactly how much of each is needed for each project, so a fixed rate is used.
- Your organization will have calculated the rate you should use in your proposal.

Indirect Costs Recovery Rate

- The *Indirect Cost Recovery Rate* is obtained by dividing all the costs not directly attributable to a project (including costs of the board, secretaries, gardeners, motor pool, etc.) by the number of activities and projects.
- This rate is usually audited by professionals each year, and approved by your board
- Indirect cost recovery rates vary greatly, depending on the type of organization.
- In agricultural research, rates of anything from 5% to 35% are fairly common.

- Donors will not be put off by the inclusion of an indirect cost line item in your budget if:
    - You include this in all your proposals to all donors
    - If the rate is properly derived and audited.

- Some donors will ask to see your institute's financial books before approving the indirect cost line item.
- Once a donor has paid this line item in one project, it is very likely that it will be approved in all subsequent projects.

Minimum Budget Requirements
- A title
- Currency denomination
- Degree of rounding
- Totals for each year and each line item
- A grand total
- Footnotes for each line item

Inclusion of all costs, including those of partners, and any contributions (including in-kind contributions) that will not be requested from the donor

How to Prepare Proposal Budgets

Introduction: A proposal budget needs far more detail than the financial detail required for a concept note. *Preparing the budget section of the proposal is probably the single biggest job in moving from the concept note to the proposal stage.* The proposal budget is one of its most important sections; many readers will look only at the summary, the objectives, and the budget, and may base their accept-or-reject decision on only those sections. So it is very important to get your proposal budget right.

Tips on Preparing Good Proposal Budgets
- Organizations should use a consistent budget format in all proposals, except for those where the donor has a preferred budget outline.
- Organizations should issue *budget guidelines* to ensure that everyone in the organization is preparing budgets under the same financial assumptions, and that the same costs are offered to all donors in all proposals.
- Budgets should be clear, transparent, and easy to read.
- Every line item in a budget should be footnoted with unit costs.
- Budgets should be shown in figures rounded to the nearest 000.
- Budgets should be realistic, but not greedy.
- Under budgeting should always be avoided.
- Bay windows (described later) can help in budget negotiations.
- Indirect costs are legitimate costs and should be included in all budgets.
- Every proposal, no matter how small, should have a summary budget; larger projects may require additional budgets, by partner, by site, or by activity.

These tips are elaborated below.

1. Budget formats

Every organization has a slightly different budget format. Some donors prefer certain formats, others will accept whatever is usual for the grantee. Here is a fairly typical format:

Illustrative Budget Format	
I.	**Personnel** (staff, partners, consultants)
II.	**Travel (**international, national, per diem, etc.)
III.	**Supplies and Services** (expendable supplies, research stations support, communications)
IV.	**Institutional Development** (training, workshops, support for partners)
V.	**Evaluation** (if separately cost)
VI.	**Equipment** (purchase or rental and maintenance of vehicles, equipment, office space, etc.)
VII.	**Indirect Costs**
VIII.	**Contract Research** (include also all pass-through funds)
IX.	**Inflation** (charge on second and subsequent years)
X.	**Contingency**
Grand Total	

Whichever outline or format you use, be sure to use the same format for all proposals that come from your organization, to ensure consistency in internal financial management, and to allow a consistent budget image to develop for your institute.

2. Budget Guidelines

If your organization is going to have a steady stream of proposals being submitted to different donors, you will need to ensure consistency be issuing corporate *proposal budget guidelines.* This document will give guidance to proposal writers on such things as how to price key inputs such as: personnel, communications, equipment, supplies and services, workshops, training courses, indirect costs, etc. These guidelines will most likely be prepared by your finance office and approved by your director and, if necessary, your board.

3. Qualities of a Good Budget

A good budget should be clear, transparent, and easy to read. This means that anyone can pick up your budget and understand it without you having to be there to explain your cost assumptions. The following sections will provide you with tips on how to make your budget a good one.

4. Footnote Every Line Item

A transparent budget shows exactly how you achieved your line item totals. You do this by footnoting each line item to show the unit costs. Here are some examples.

Line Item	**Costs in US$ 000s**		
	Year 1	**Year 2**	**Total**
Personnel (1)	15	20	35
Travel (2)	5	10	15
Equipment (3)	70	10	80
Sub-total	**90**	**40**	**130**
Indirect Costs (4)	18	8	26
Total	**108**	**48**	**156**

Footnotes:

(1) Three person-months of a senior agronomist @ $5,000/month in both years, plus one month of an economist @ $5,000/month in Year 2.
(2) One round trip airfare and per diem from Site A to Australia @ $3000 in both years, plus $2,000 for in-country travel and vehicle maintenance in both years, plus $5,000 for participant travel to Site A for five participants @ $1,000 each.
(3) In Year 1 the project will need to purchase $10,000 worth of seedlings, $20,000 worth of fertilizers, and $30,000 worth of hand tools and wheelbarrows for the participating farmers. $10,000 will be spent in both years to pay for the rental of well-digging equipment.
(4) Organization X has a board-approved indirect cost recovery rate of 20%. The rate is charged on personnel, travel, and equipment costs, but not on contract research.

5. Rounding to the Nearest '000s

Look at the following two sets of numbers and say which is easier to read:

	Set A		Set B	
Item of Expense	**Year 1**	**Year 2**	**Year 1**	**Year 2**
Personnel				
Lecturer	42,580	42,580	43	43
Labourer	24,500	24,500	24	24
Honoraria	17,000	17,550	17	18
Operating Costs				
Supplies and Services	15,525	16,750	16	17
Sundries	2,000	2,000	2	2
Administrative				
Fee	12,352	12,202	12	12
Contingency	3,103	2,920	3	3

Any reader would find the figures in set B easier to read than in set A. Notice, however, that neither of these sets has unit prices footnoted, nor do they have a title or denominated currency. Set B needs all those elements if it is to become a good proposal budget.

6. The "Ethics" of Budgets

Nothing is so frustrating as an under budgeted project. If you lack the funds to do a good job, you and your partners, your donors, and your beneficiaries are all going to be disappointed. So resist the temptation to promise too much for the money available. If a donor cuts your budget, be sure to cut the objectives and activities accordingly, and be sure your donor understands that fewer outputs will be delivered.

At the same time, a padded, greedy budget will turn off your donor completely. Do not be tempted to inflate salaries or travel costs. There is going to be some eagle-eyed finance person in the donor agency who is going to catch any and all inflated unit prices. In sum, offer a moderate, realistic budget within which you are convinced you can deliver the promised outputs.

7. Bay windows

A bay window in a new house is an "extra"—something nice but not essential. A bay window in your project is the same thing—something that would improve your project, but something that you can do without if necessary.

A bay window is therefore something you can give away during budget negotiations, or eliminate if your budget is a suddenly cut.

It is useful to include one or two bay windows in all proposal budgets. Some e.g. include:
- An additional project site
- An extra workshop
- A further year of field trials
- A second training program.

8. Indirect costs

All projects have direct costs. These are the inputs to the project and include personnel costs, travel costs, equipment costs, etc. In addition, a project has indirect costs. These are the costs of such things as rent and lighting in your office, the library in your institute, the services of your finance office, the supervision by your DG. You need these items to implement the project, but only a little bit of each, and it is very difficult to say exactly how much of each will be needed for each project. To spare you the time and effort involved in calculating how much of these items you will need for each project, your organization will have calculated an amount for all these things for each project. That amount is called an *indirect cost recovery rate*. The rate is obtained by dividing all the costs not directly attributable to a project (including the costs of the board, the secretaries, the gardeners, the motor pool, etc., etc) by the number of activities and projects. This rate is usually audited by professionals each year, and approved by your board.

Indirect cost recovery rates vary greatly, depending on the type of organization. In the business of agricultural research, rates of anything from 5% to 35% are fairly common.

Donors will not be put off by the inclusion of an indirect cost line item in your budget if (a) you include this in all your proposals to all donors, and (b) if the rate is properly derived and audited. Some donors will ask to see your institute's financial books before approving the indirect cost line item. Once a donor has paid this line item in one project, it is very likely that it will be approved in all subsequent projects.

9. Minimum Budget Requirements

Every project, no matter how small, must have at least one, summary budget. This will include the following elements:
- A title
- Currency denomination
- Degree of rounding
- Totals for each year and each line item
- A grand total
- Footnotes for each line item
- Inclusion of all costs, including those of partners, and including any contributions (including in-kind contributions) that will not be requested from the donor

This last point needs to be clear. The proposal should include a budget summarizing the entire cost of all the inputs to the project, even if you are only asking the donor to fund certain items.

There are several reasons for this. First, you, your supervisor, your partner, and your donor all want to know the "true" cost of the project. This means costing out all the inputs, such as the volunteer time of the farmers and your own time inputs, even if these are paid by your institute or ministry. Second, all donors like to think that they are getting a bargain. If some of the inputs are being paid for by another source, they will be pleased, and find the project more attractive. Third, you need to put a proper value on the "hidden" costs of low-profile people in the project like farmers, women, youth, laborers, university students, etc.

In a relatively simple project, a single summary budget may be all you will need. But in some larger projects, you may need to have back-up budgets, breaking down the costs by site or country, for example, or by activity, or by partner organization.

10. A Good Summary Proposal Budget

The sample summary budget below shows all the elements of a good proposal budget. It is clear, transparent, and easy to read. It has a title, denominated currency, footnotes for all line items, the inclusion of indirect costs, figures rounded to the nearest 000, and totals for all line items and years. You may use this as a sample of a good budget in all future project development. (Note, by the way, that when you refer to the bottom line of this budget in a sentence, you would present it as $2.465 million, or you might round it to "just under $2.5 million.")

Sample Summary Budget in US $ (000s)

	Year 1	Year 2	Year 3	Total
i. Personnel[4]	150	150	150	450
• Project leader/biologist	100	100	50	250
• Virologist	35	35	150	220
• Economist	60	60	60	180
• Site project managers	30	30	30	90
• Site field workers				
ii. Travel[2]	100	120	100	320
iii. Supplies and services[5]	35	40	45	120
iv. Institutional development	55	50	45	150
v. Evaluation[6]	10		15	25
vi. Capital costs[7]	100	15	20	135
Sub total	**675**	**600**	**665**	**1,940**
Indirect costs[8]	160	145	110	415
Contract research[9]	25	10	10	45
Subtotal	**860**	**755**	**785**	**2,400**
Inflation and contingency[10]		35	30	65
GRAND TOTAL	**860**	**790**	**815**	**2,465**

[4] IARCA will supply the project manager, virologist and economist. Salary and benefit costs are at IARCA's normal rate of $150k per annum. The NARS partner will supply the other staff; site managers will be remunerated at the rate of $25k per year; field workers at $100/month.

[5] Includes communication costs estimated at $20k per year, and research station support at $2k per year.

[6] Funds will be used to hire an NGO to survey local farmers views at the beginning of the project and a local consulting firm or an NGO to conduct an evaluation at the end of the project.

[7] Three motorbikes will be purchased at the beginning of the project and allocated to the site project managers. Portable computers will be purchased for NARS personnel in all sites.

[8] IARCA's board-approved indirect cost recovery rate for off-station research is 24%; NARS rate is 20% in country 1 and 15% in the other two countries.

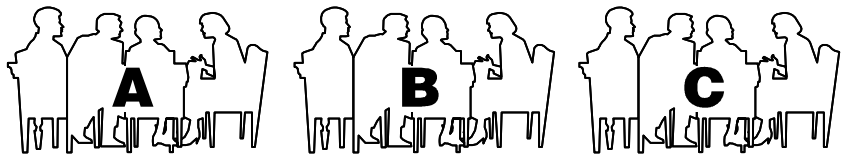
[9] IARCA will contract with a local university to conduct an assessment of the impact of the project; work will begin in Year 1 to gather baseline data.

[10] According to The Economist, inflation in country 1 is currently running at 10% per annum, and in countries 2 and 3 at over 14% per annum. About 25% of the costs of the project will be in local currency; IARCA therefore believes inflation charges of 4.5% in Years 2 and 3 are reasonable.

EXERCISE 14. ANALYZING AND IMPROVING PROPOSAL BUDGETS (MODIFIED "TRIP AROUND THE TABLES")

Please refer back to the tips for writing good proposal budgets, and remind yourself of the elements that you need to include. With this information in mind, you are going to judge and improve the Rainbow Land budgets in the following exercise.

1. Form three groups, each group electing a rapporteur.



Phase 1. Group work (45 minutes)

2. Group members read handout 4.14.2 and then refer to item 9 (minimum budget requirements) to analyze and improve the Rainbow Land proposal budgets in the following way: (25 minutes)
   Group A will look at Green Land
   Group B will look at Grey Land
   Group C will look at White Land

3. Each group discusses the proposal budget. The sample summary budget presented in handout 4.14.2 could also be an excellent source of information for this exercise. Then proceed to the following:
   - ➲ List strengths and weaknesses of the proposal budget.
   - ➲ List all additional improvements that will be needed to make it into a good proposal budget. Number your list.

4. The rapporteurs use handout 4.14.4 to record the numbered list.

5. The Facilitator will invite the rapporteurs to spend about 5 minutes exchanging the results (the numbered list) with another group in the following way and return to their own groups. (10 minutes)
   Group A to group B
   Group B to group C
   Group C to group A

6. The groups will check to see that each group has included all the missing elements.

7. The rapporteurs write the group results on the flipchart. (15 minutes)

Phase 2. Presentation and discussion (30 minutes)

8. The Facilitator invites the rapporteurs to present the results and facilitates a brief discussion, including the strengths and weaknesses of this exercise.

9. At the end of the discussion, the Facilitator identifies the group that has caught the most missing elements in the proposal budget.
10. The Facilitator summarizes the results and highlights the aspects of preparing a good proposal budget.
11. The Facilitator provides feedback on this exercise and closes the session.

Exercise 14. Worksheet

Strengths and Weaknesses

List up to three things you liked about the workshop on Day Four

1.
2.
3.

List up to three suggestions to improve the workshop

1.
2.
3.

Guidelines to Provide Feedback on the Workshop

1. **The Module**

Content

- usefulness/relevance
- amount of information

Structure

- sequence
- duration
- balance between Facilitators' and trainees' participation
- instructions to Facilitators
- visual aids
- handouts, exercises
- extra readings
- PAPA
- evaluation

2. **Process: Training Techniques and Direction**

- usefulness/relevance/effectiveness

- group interaction
- clarity of questions/exercises instructions
- opening and closure of the days

3. Facilitators', Facilitators', and Trainees' Performance

- presentation/communication skills
- interaction/effective participation
- punctuality/interest/commitment/willingness to facilitate learning/willingness to participate
- other attitudes

4. Logistical Support

- organization
- accuracy
- punctuality
- willingness to assist participants
- services provided in general

5. Workshop Environment

- physical (training facilities, training material, hotel facilities in general)
- psychological (personal feelings such as self-motivation, interest, satisfaction, self-achievement)
- social (development of friendship, relaxed, comfortable among participants, etc.)

6. Workshop Results/Outputs

- personal and professional assessment
- recommendations

7. General Comments

FIRST STAGE

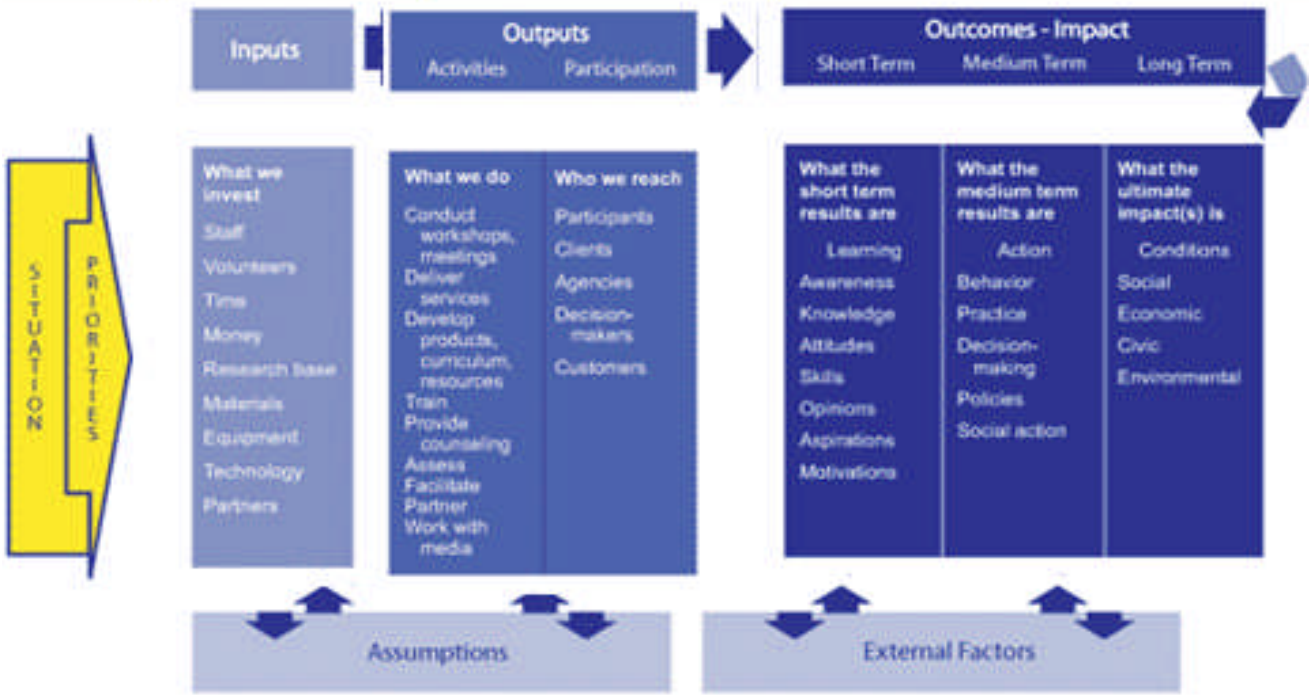
PAPA – Ideas for Action Items

Workshop title	:	**How to Write a Convincing Proposal: Strengthening Project Development, Donor Relations, and Resource Mobilization in Agricultural Research**
Date/venue	:	
Name	:	
Organization	:	

Ideas I would like to try out when I return to work at my research institute, based on what I have learned in this training workshop.

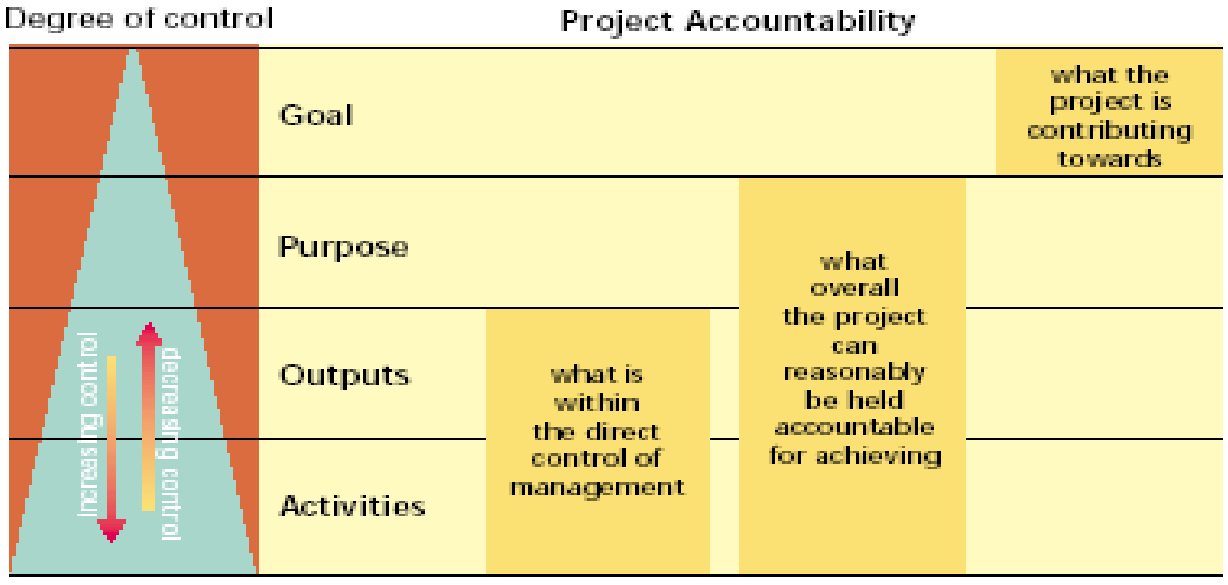
Note: You can use the workshop objectives, what you learn during the workshop, the handouts, conversations with participants, and Facilitators, etc., to come up with ideas.

The Logical Framework Model



Useful in Research/Project Design, M&E, . . .

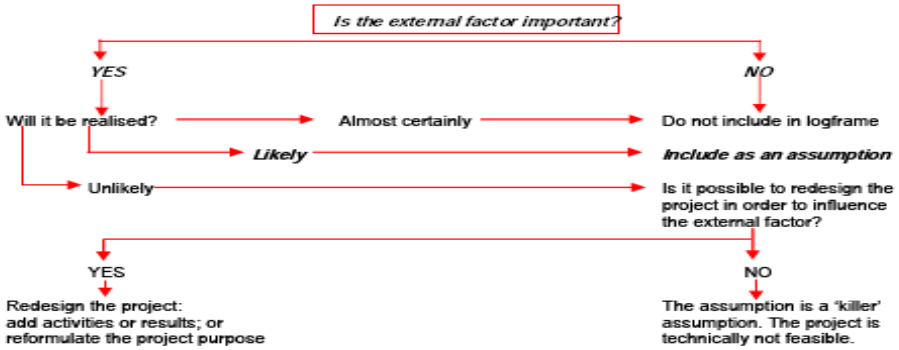
Degree of Project Control



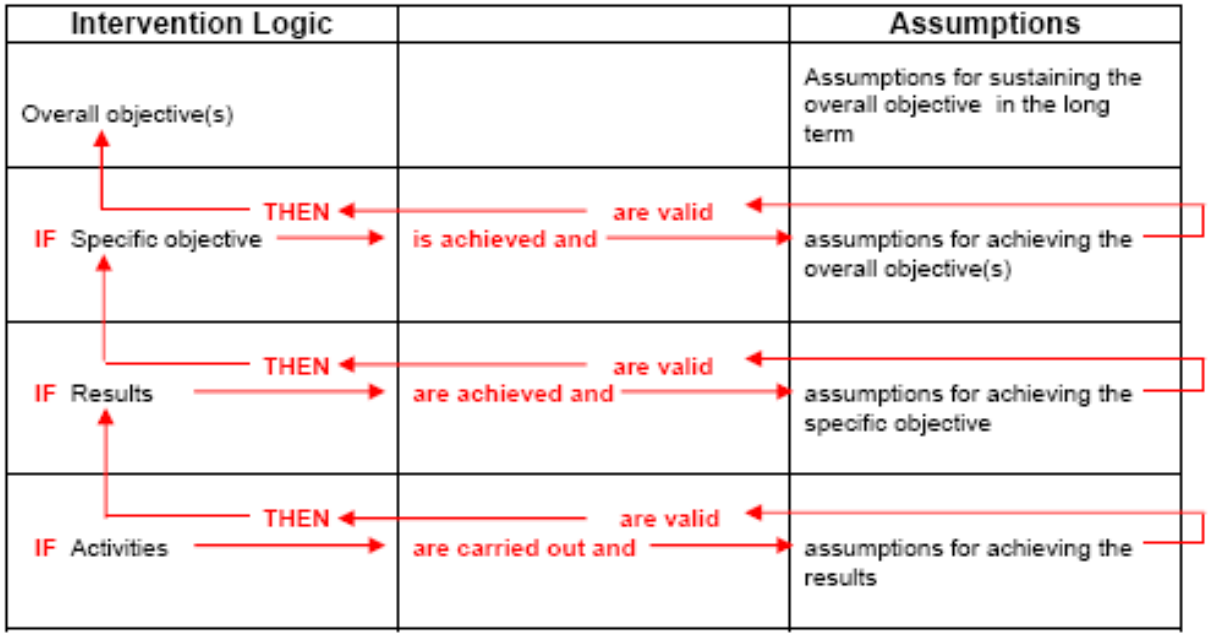
The Elements of the Logical Framework

	Intervention logic	Objectively Verifiable Indicators of achievement (OVI)	Sources and means of verification (MOV)	Assumptions
Overall objective(s)	What is/are the overall broader objective(s), to which the project aims to make a contribution?	What are the quantitative ways of measuring, or qualitative ways of judging, whether these broad objectives are being achieved?	What sources of information exists, or can be provided in a cost-efficient manner?	What external factors are necessary for sustaining objectives in the long run?
Specific objective	What is the specific objective the project expects to achieve by its own efforts?	What are the quantitative measures or qualitative evidence by which achievement and distribution of impacts and benefits can be judged	What sources of information exists or can be provided in a cost-efficient manner? Must provision for collection be made under activities (and in the budget)?	What conditions external to the project are necessary if achievements of the specific objective is to contribute to reaching the overall objective(s)?
Expected results Indicate each of the results that are to be produced by the project in order to achieve the specific project objective	What are the various results (outputs) that must be produced, which, taken together, will allow to achieve the project's specific objective?	What kind and quantity of results, and by when will they be produced? (quantity, quality, time)	What are sources of information?	What are the factors not within the control of the project which, if not present, are liable to restrict progress from results to achievements of the specific project objective?
Activities Indicate each of the activities that must be undertaken in order to accomplish the results.	What activities must be carried out to achieve each of the expected results?	Try to show OVI's for all activities. This is essential for later reporting and monitoring against the Logical Framework.	What are sources of information?	1) What external factors must be realised to obtain planned results on schedule? 2) What kind of decisions or actions outside the control of the project are necessary for inception of the project?

Formulating Assumptions



The Logic Framework Flow



Intervention Logic	OVIs	MOVs	Assumptions
IF this is one of the expected results	THEN this will measure whether it has been achieved	AND this is where to find the information that will tell us	AND if these assumptions are valid, the result will lead to achieving the specific project objective

LOGICAL FRAMEWORK DESIGN CHECKLIST

Adapted from World Bank Log-frame Hand book

(H*elps in Constructing Relevant LogFrame*)

Check list ensures:

- The project has one Purpose (DO).
- That the purpose is not a reformulation of the outputs.
- The purpose is outside the management accountability of the project.
- The purpose is clearly stated.
- All the Outputs are necessary for accomplishing the Purpose.
- The Outputs are clearly stated as Results.
- The components define the action strategy for accomplishing each Output.

- The GOAL is clearly stated and is not a reformulation of the Purpose.
- The "IF/THEN" relationship between the Purpose and Goal does not skip important steps.
- The assumptions describe in positive forms the important conditions external to the project which have a downside risk of not materializing.
- The assumptions at the component level do not include any "conditions Precedent" (these are required before components can begin).
- The outputs plus the assumptions at that level produce the necessary and sufficient conditions for achieving the Purpose.
- The purpose plus the assumptions at that level describe the critical conditions for achieving the Goal.
- The relationship between the inputs and the components is realistic.
- The relationship between the Purpose and the output is realistic.
- The vertical logic among components Output, Purpose and Goal is realistic as a whole.
- The indicators at the Purpose level are independent from the outputs i.e. they are not a summary of Outputs BUT a measure of Impact.
- The inputs described at the activity level define resources required for accomplishing the Purpose.
- The Goal level indicators are objectively verifiable in terms of Quantity, Quality and Time
- The M&E system column identifies where the information for verifying each indicator will be found and process for improving the design
- The Outputs define the management responsibility of the project.
- When reviewing the log-frame, you can define the evaluation plan for the project

RESEARCH PROPOSAL WRITING SUPPORT SERVICES AT CUC

1. **Peer review teams** will be created. You can suggest how you would like them to be structured: faculty-based, directorate-based or division-based. Peer review of proposals is a requirement of many funding bodies. Thus before a proposal is submitted to an organization it should be subjected to internal peer-review. However, to us this service is optional. If an organization asks for it we shall facilitate you to get. If an organization does not require it, you will be at liberty to submit your proposal directly to the grantor.
2. **Research Policy**: Our University will develop one. It will provide direction on many issues such as: **time allocation** between teaching and researching; **funding levels**, **proposal selection criteria**; **Intellectual Property Rights** (IPR) protection, patenting and sharing; **copyright sharing** of published manuscripts; **administrative charges**; and **researchers' monetary gain** from won research grants. Therefore, a committee of members drawn from amongst our staff will be formed to help develop the policy.
3. **Conferences/workshops/seminars/symposia attendance** and **organization**: You will continue to be supported to attend meetings, particularly local ones that are inexpensive. We are also going to encourage you to participate in organising them here at CUC. These events will provide you with a chance to communicate and share your research findings to stakeholders, colleagues, peers, Network, or get novel researchable ideas.
4. **Internal training**: This will be continued to equip you with more skills on how to write fundable research proposals. For example: how to start from a concept note to a full proposal.
5. **Motivational guest speakers:** The strategy will encompass bringing here scholars to address topical issues such as Intellectual Property Rights (KIPI/KIPO, KEBS), funding structures and arrangements (RUFORUM, DAAD), National Council for Science and Technology (NCST) etc.
6. **Literature databases:** Our library is now very well connected to literature sources, including but not limited to e-books, e-journals (OARE, HINARI, AGORA), TEEAL, etc. The University College is also continuing to stock it with hard copy text books.
7. **Funding organizations database**: It will be compiled and availed to you through the library or email. Most organizations simply require you to subscribe free of charge to them and then they will keep you posted through email!

For a start get to know the following research proposal funding agencies:

- **fundsforngos.org <feedblitz@mail.feedblitz.com**: They compile and publicise through email. They have published guidelines on how to write fundable proposals.
- **Scholarship-Positions.com** <admin@scholarship-positions.com. They compile and publicise through email.
- **IFS**: v. good for young scholars on study or just beginning to launch careers.
- **DAAD**: The German Academic Exchange Programme. They offer in-country, out of the country degree scholars, staff development fellowships, short courses, short visits to Germany etc. They have urged us to formation of sub-branches of its alumni.
- **KAPAP**: Kenya Agricultural Productivity and Agribusiness Programme
- **IUCEA/VICRES/ASARECA**
- **RUFORUM**: They have participating Universities. We are encouraged to twin with Universities that are already members to submit proposal to them. They way it works is that staff develop the proposal and then recruit students to trained through undertaking of some of the proposed work.
- **USAID/CRSP/USA**
- **EU**: European Union
- **IDRC**/Canada: International Development research Centre
- **DANIDA/SIDA**:
- **IAEA**/Austria:
- **NCST/CHE:** National Council for Science and Technology/Commission for Higher Education. They give funds and support research equipment provision, such the AAS donated to us recently. Three other University Colleges were also beneficiaries. They are also strong proponents of innovative research.
- **JICA/Japan**
- **AWARD**: African Women in Agricultural Research and Development – a mentorship programme for women-staff-leaders development.
- **Beca hub** is in ILRI, Nairobi: It is open to use of its laboratories to conduct research. They charge bench fees and require partnering with them.

Take home message: Read each organization's requirements and follow them closely to increase chances of success

ATTENDANCE LIST
ATTENDANCE LIST

SN	STAFF NAMES	DESIGNATION	SEX	DIVISION/FACULTY/DEPT	EMAIL ADDRESS
1	Prof. Erastus N. Njoka	Professor (Principal)	M	Principal	prof_njoka@yahoo.com
2	Prof. Dorcas K. Isutsa	Associate Professor	F	DP (Academic Affairs)	dorcaski@yahoo.com
3	Prof. Levi Musalia	Associate Professor	M	Environmental Sciences	mugalavai@gmail.com
4	Dr. Zachariah K. Mbugua	Senior Lecturer	M	Education & Resources Dev't	mbuguazk@yahoo.com
5	Dr. Mwenda Mukuthuria	Senior Lecturer	M	Arts & Humanities	mukuthuria.mwenda@gmail.com
6	Dr. Zachary N. Waita	Senior Lecturer	M	Arts & Humanities	znwaita@yahoo.com
7	Dr. Veronica K. Nyaga	Lecturer	F	Education & Resources Dev't	veronicanyaga@yahoo.com
8	Dr. George M. Muthaa	Lecturer	M	Education & Resources Dev't	gmuthaa@yahoo.com
9	Dr. Peter Kinyua Muriungi	Lecturer	M	Arts & Humanities	muriungip@yahoo.com
10	Dr. David Nyaga Bururia	Lecturer	M	Arts & Humanities	nyagabururia@yahoo.com
11	Dr. George Nkonge Reche	Senior Lecturer	M	Education & Resources Dev't	gnreche@yahoo.com
12	Dr. Teresa Wamboi	Lecturer	F	Arts & Humanities	wambui241@yahoo.com
13	Dr. Ochieng' Ombaka	Lecturer	M	Science, Engineering & Tech.	ombakaochieng@gmail.com
14	Dr. George Ngugi King'ara	Assistant Lecturer	M	Arts & Humanities	Ngugik2001@yahoo.com
15	Rev. Dr. Dickson N. Kagema	Assistant Lecturer	M	Arts & Humanities	dicknkonge@gmail.com
16	Dr. Joseph Amesa Omega	Lecturer	M	Agricultural Sciences	amesaomega@yahoo.com
17	Dr. John M. Kobia	Senior Lecturer	M	Arts & Humanities	jkobia2001@yahoo.com
18	Dr. Colomba K. Muriungi	Lecturer	F	Arts & Humanities	colombak@yahoo.com
19	Andrew T. Muguna	Senior Lecturer	M	Business Studies	tmuguna@gmail.com
20	Mr. Kenneth M. Munene	Assistant Lecturer	M	Agriculture & Env. Studies	kenmhoro@yahoo.com
21	Justo Masinde Simiyu	Assistant Lecturer	M	Business Administration	jsimiyu2002@yahoo.com
22	Grace N. Ngigi	Assistant Lecturer	F	Arts & Humanities	ngiginy@yahoo.com
23	Lemmy Mureti Muriuki	Assistant Lecturer	M	Environmental Sciences	lemmiemk@yahoo.com
24	Andrew N. Ngugi	Lecturer	M	Business Administration	andrewngugi75@yahoo.com
25	Eric Mwenda Elias	Assistant Lecturer	M	Education & Resources Dev't	eliasericmwenda@yahoo.com
26	Kaimba George Kinyua	Assistant Lecturer	M	Business Administration	kinyuakaimba@yahoo.com
27	Lenity Kananu Maugu	Assistant Lecturer	F	Business Administration	maugukan@yahoo.com
28	Agnes Wamai Wamuyu	Assistant Lecturer	F	Education & Resources Dev't	agnes_wamai@yahoo.com
29	David Gitonga Mwathi	Assistant Lecturer	M	Science, Engineering & Tech.	mwathis@yahoo.com
30	John Njoroge Maara	Assistant Lecturer	M	Business Studies	johnmaara75@yahoo.com
31	Nkari Isaac Micheni	Lecturer	M	Business Administration	isaacnkari@yahoo.com

32	Mary Karuri	Assistant Lecturer	F	Arts & Humanities	nyanjugun200@yahoo.com
33	Lewis Kinyua Kathuni	Assistant Lecturer	M	Business Administration	lewiskathuni@yahoo.com
34	Joel Mwangi Gichumbi	Assistant Lecturer	M	Science, Engineering & Tech.	jsmwangi2003@yahoo.co.uk
35	Edward Njagi Silas	Assistant Lecturer	M	Science, Engineering & Tech.	edward_njagi@yahoo.com
36	Enock Seme Matundura	Assistant Lecturer	M	Arts & Humanities	bitugi@yahoo.com
37	Ruth Mueni Muli	Assistant Lecturer	F	Arts & Humanities	
38	Duncan Nyang'ara	Assistant Lecturer	M	Business Administration	dnayngara@yahoo.com
39	Elizabeth Wambui Njoroge	Assistant Lecturer	F	Business Administration	elizawn@gmail.com
40	David Kibaara Ithigi	Assistant Lecturer	M	Science, Engineering & Tech.	davidkibaara@yahoo.com
41	Jackson Gikunda Njogu	Assistant Lecturer	M	Arts & Humanities	mwanoba@yahoo.com
42	Gilbert C. Abura Odilla	Assistant Lecturer	M	Education & Resources Dev't	gilbura@yahoo.com
43	Joyline M. Muchiri	Assistant Lecturer	F	Education & Resources Dev't	joylinemugambi@yahoo.com
44	Njogu Samson Muriuki	Assistant Lecturer	M	Science, Engineering & Tech.	
45	Patricia Gachambi Mwangi	Assistant Lecturer	F	Business Administration	gachambip@yahoo.com
46	Michael Gachaga Kanyi	Assistant Lecturer	M	Education & Resources Dev't	michaelgachaga@yahoo.com
47	James Kamau Mwangi	Assistant Lecturer	M	Business Administration	kamausavudie@yahoo.com
48	Nabea Henry Nkoru	Assistant Lecturer	M	Arts & Humanities	nabeankoru@yahoo.com
49	Mugenda Nebat Galo	Assistant Lecturer	M	Business Administration	galonebat@yahoo.com
50	Kenneth Mutuiri Nthuni	Assistant Lecturer	M	Business Administration	kmpungu@yahoo.com
51	Kamweru Paul Kuria	Assistant Lecturer	M	Science, Engineering & Tech.	
52	Susan Muthoni Kinyua	Assistant Lecturer	F	Education & Resources Dev't	
53	Sammy W. Musundi	Assistant Lecturer	M	Science, Engineering & Tech.	sammusundi@yahoo.com
54	Thomas Mochoge Motindi	Assistant Lecturer	M	Business Administration	tmotindi@yahoo.com
55	Henry Kimathi	Assistant Lecturer	M	Business Administration	henrykimathi@yahoo.com
56	Munyiri Shelmith Wanja	Assistant Lecturer	F	Agricultural Sciences	Wanja_munyiri@yahoo.co.uk
57	Rael Nkatha Mwirigi	Assistant Lecturer	F	Business Administration	raelmwirigi@yahoo.com
58	Ngugi Harun Njenga	Assistant Lecturer	M	Science, Engineering & Tech.	ngugihn@yahoo.com
59	Michura Anne Jerotich G.	Assistant Lecturer	F	Science, Engineering & Tech.	
60	Charles Mbogo Kariuki	Assistant Lecturer	M	Agricultural Sciences	mbogokariuki@gmail.com
61	Noel Uside Otiende	Assistant Lecturer	F	Education & Resources Dev't	nmbaka39@gmail.com
62	Alice L. M. Murwayi	Assistant Lecturer	M	Science, Engineering & Tech.	almurwaya@yahoo.com
63	Hillary Kipngeno Barchok	Lecturer	M	Education & Resources Dev't	barchokhillary@yahoo.com
64	Naomi Keeru Kithure	Assistant Lecturer	F	Arts & Humanities	jckimbe@yahoo.com
65	Rose Nyakio Kimani	Assistant Lecturer	F	Arts & Humanities	nyakiorose@yahoo.com

66	Benson Kinoti Mutuerandu	Lecturer	M	Business Administration	
67	Mr. Jediel N. Sendeyo	Senior Admin. Assistant	M	Business Studies	nsendeyo@yahoo.com
68	Mr. Charles K. Gitonga	Senior Technologist	M	ICT	gitongakcharles@gmail.com
69	Mr. Jackson Ndolo M.	Assistant Lecturer	M	Business Administration	
70	Mr. Shadrack Gikunda K.	Senior Technologist	M	Agricultural Sciences	
71	Mr. Moses Kathuri	Senior Admin. Assistant	M	BPGS&R	
72	Mr. Anthony M. Ngereki	Senior Technologists	M	ICT	Tongere@gmail.com