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THIRD REGIONAL COURSE ON ANIMAL AND PLANT HEALTH MONITORING

PROJECT IDENTIFICATION AND FORMULATION

St. Augustine Campus
University of the West Indies
Trinidad

July 1 - 12, 1991

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1. INTRODUCTION TO PROJECTS

1.1 General

Projects are the basic building blocks of development. Without successful project identification, preparation and implementation, development plans are no more than wishes and nations would remain stagnant or regress. Projects, Gittinger[1] claims, are the "cutting edge" of development. Hirschman[2] calls them "privileged particles of the development process".

Programmes and projects are increasingly used in Caribbean countries in the process of economic and social development. They represent a crucial element in both the formulation and implementation of development plans. Projects have also been the primary instruments for grant, credit, loan and technical aid to Caribbean countries by international assistance agencies.

Recent assessments of development planning and administration, and of the lending practices of assistance agencies highlighted the importance of well prepared and executed projects. As critical leverage points in the development process, projects translate plans into action. As vehicles for social and economic change, they can provide the means of mobilizing resources and allocating them to the production of new economic goods and social services.

The paucity of well conceived projects is a primary reason for the poor record of plan implementation in many Caribbean countries. The inability to identify, formulate, prepare and execute projects continues to be a major obstacle to increasing the flow of capital into the poorest societies.

Despite more than a quarter of a century of intensive experience with project development, international funding institutions and Ministries of Agriculture of Caribbean countries still report serious problems in project execution. Many are due directly to ineffective planning and management. Analysts have found that most developing nations simply do not have adequate institutional capacity or trained personnel to plan and implement projects effectively. As the number of projects increase and their components become more complex, international funding institutions face increasing problems in planning and administration.

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[1] J.Price Gittinger. Economic Analysis of Agricultural Projects. (BALTIMORE: The John Hopkins University Press, 1972).

[2] ALBERT O. Hirschman. Development Projects Observed. (Washington: Brookings Institution, 1967)

1.2 What is a Project?

We generally think of an agricultural project as an investment activity in which financial resources are expended to create capital assets that produce benefits over an extended period of time. In a broader context however, the whole complex of activities in the undertaking that uses resources to gain benefits constitutes the agricultural project. An enormous variety of agricultural activities may usefully be cast in project format. Financial institutions lend for agricultural projects as different as irrigation, livestock, rural-credit, land settlement, tree-crops, agricultural machinery, and agricultural education, as well as for multisectoral rural development projects with major agricultural components.

Often projects form a clear and distinct portion of a larger, less precisely identified program. The whole program might possibly be analyzed as a single project, but by and large it is better to keep projects rather small, close to the minimum size that is economically, technically and administratively feasible. Similarly, it is generally better in planning projects to analyse successive increments or distinct phases of activity; in this way the return to each relatively small increment can be judged separately. If a project approaches program size, there is a danger that high return from one part of it will make low returns from another.

While there are many definitions for development projects, the important thing is to understand a project's characteristics. The more salient characteristics of a development project are the following:

1. Projects have a physical dimension which establishes limits to their available resources.

2. Projects have a temporal dimension. Since they begin and end at specific times, they can be differentiated from ongoing institutional activities.

3. Projects conform to a well-defined unit (group of actions) which can be evaluated to determine its success.

4. Projects have clearly defined objectives which tend to be innovative, rather than perpetuating an existing situation.

Hence, a project is a set of interrelated activities aimed at a common goal/objective and implemented during a given period of time with a predetermined quantity of resources (goals + resources + activities + time).

If we accept this definition of a project, then we can prepare a

project document:

1. Defining its goals, objectives and expected outputs;

2. Describing the project's principal activities;

3. Indicating the resource requirements; and

4. Establishing a time frame for the beginning and ending of the project.

1.3 Plans and Projects

Virtually every developing country has a systematically elaborated national plan to hasten economic growth and further a range of social objectives. Projects provide an important means by which investment and other development expenditures foreseen in plans can be clarified and realized.

Sound development plans require good projects, just as good projects require sound planning. The two are interdependent. Therefore, effective project preparation and analysis must be set in the framework of a broader development plan. Projects are a part of an overall development strategy and a broader planning process; as such, they must fit appropriately. Governments must allocate their available financial and administrative resources among many sectors and many competing programs. Projects analysis can help improve this allocation, but it alone cannot be relied upon to achieve the optimal balance of objectives. Within the broad strategy, analysts must identify potential projects that address the policy or production targets and priorities. Further, to make a realistic estimate about the course of a project, some idea must be gained of what other development activities will be taking place and what policies are likely to be pursued.

1.4 The Project Format

1.4.1 Outline of Project Format

While different people and organizations use different outlines for project documents, basically they all contain the same type of information to greater or lesser degrees. Based on our definition of a project given above, the following minimum information should be included in a project document:

1. **Title** (reflects the most important feature of the project)

2. **Definition of problems/justification** (derived from the problem tree)

3. **Goals** or general objectives (derived from an analysis of objectives tree and alternative strategies)

4. **Specific objectives** (derived from analysis of the objectives tree and alternative strategies)

5. **Expected outputs** (identified from the lower levels of the objective tree). The expected outputs are the results wanted at the end of the project.

6. **Activities to be executed** under the project which will produce the expected outputs. (These are a logical extension of the expected outputs and must be carried out to achieve the expected goals)

7. **Expected duration** of the project (determined by time required to complete all project activities in their proper sequence).

8. **Estimated costs** (derived from an analysis of inputs required to implement activities).

9. **Implementing organization or agency** (determined through an evaluation of organization capability, source of funding, and local politics).

1.4.2 Advantages of the Project Format

Projects carefully prepared, within the framework of broader development plans, both advance and assess the larger development effort. The project format itself is an analytical tool. The advantage of casting proposed investment decisions in the project format lies in establishing the framework for analyzing information from a wide range of sources. Because no plan can be better than the data and assumptions about the future on which it is based, the reality of the analysis to a large degree depends on information from various sources and the considered judgements of various specialists in different areas. The project format facilitates gathering the information and laying it out so that many people can participate in providing information, defining the assumptions on which it is based, and evaluating how accurate it is.

The project format gives an idea of costs year by year so that those responsible for providing the necessary resources can do their own planning. Project analysis tells us something about the effects of a proposed investment on the participants in the project, whether they are farmers, small firms, government enterprises, or the society as a whole. Looking at the effects on individual participants, we can assess the possible incentives a proposed project has and judge if farmers and other may successfully be induced to participate.

Casting a proposed investment in project form enable a better judgement about the administrative and organizational problems that will be encountered. It enables a strengthening of administrative arrangements if these appear to be weak and tells something of the sensitivity of the return to the investment if managerial problems arise. Careful project planning should make it more likely that the project will be manageable and that the inherent managerial difficulties will be minimal. The project format gives both managers and planners better criteria for monitoring the progress of implementation.

The project format encourages conscious and systematic examination of alternatives. The effects of a proposed project on national income and other objectives can conveniently be compared with the effects of projects in other sectors, of other projects in the same sector, or - very important - of alternative formulations of virtually the same project. One alternative can be the effects of no project at all.

Another advantage of the project format is that it helps contain the data problem. In many developing countries, national data are unavailable or are, to a substantial degree, unreliable. By channelling much of the development effort into projects; the lack of reliable national data can be mitigated. Once the project area or clientele has been determined - once a conceptual boundary has been drawn - local information on which to base the analysis can be efficiently gathered, field trials can be undertaken, and a judgement can be made about social and cultural institutions that might influence the choice of project design and its place of implementation. Investment can then proceed with confidence.

1.4.3 Limitations of the Project Format

Although the project format has many advantages, the results of project analysis must be interpreted with caution. Obviously, the quality of project analysis depends on the quality of the data used and of the forecasts of costs and benefits made. Here the GIGO principle - "garbage in, garbage out" - works with a vengeance. Unrealistic assumptions about yields, acceptance by farmers, response to incentives by entrepreneurs, the trend of future prices and the relative effect of inflation upon them, market shares, or the quality of project management can make garbage out of the project analysis.

To begin with, projects will exist in a changing technical environment. For some project the possibility of technological obsolescence will affect judgements about the attractiveness of the investment. Fortunately, in agriculture this is not often a serious problem, although in other sectors it can be.

Because future circumstances will change, we must judge the risk and uncertainty surrounding a project, and here techniques of

project analysis offer only limited help. It is impossible to quantify completely the risks of a project. We can, however, note that different kinds of projects or different formulations of essentially the same project may involve different degrees of risk. These differences will affect the choice of project design. We can also test a project for sensitivity to changes in some specific element, see how likely it is that such changes will occur and whether the changes in benefits will alter our willingness to proceed. We could do such "sensitivity analysis" for example, by assuming that future yields will be less than our best estimate or that future prices will be lower than the level of our most likely projection, and then decide how probable such shortfalls will be and whether we will wish to continue with the project.

Project analysis is a species of what economists call "partial analysis". Normally we assume that the projects themselves are too small in relation to the whole economy to have a significant effect on prices. In many instances, however, a proposed project is relatively large in relation to a national or regional economy. In this event we must adjust our assumptions about future price levels to take account of the impact of the project itself. At best, such adjustments are approximate and may severely limit the usefulness of the measures of project worth.

Another limitation of the project format is an underlying conceptual problem about valuation based on the price system. The relative value of items in a price system depends on the relative weights that individuals participating in the system attach to the satisfaction they can obtain with their incomes. They choose among alternatives, and thus the prices of goods and services balance with the values attached to these goods and services by all who participate in the market. Such a system, however, reflects the distribution of income among its participants; in the end, values trace back to existing income distribution. Project analysis takes a premise that inequities of income distribution can be corrected by suitable policies implemented over a period of time. If such a premise is not accepted, then the whole basis of the valuation system in project analysis (and of the underlying price system upon which is rests) is called into question.

Although project analysis must consciously be placed in a broader political and social environment, in general the effects of a project on this environment can be assessed only subjectively. Often economists refer to "externalities" or side effects, such as skill creation and the development of managerial abilities, that are by-products of a project. Projects may also be undertaken to further many objectives - such as regional integration, job creation, or improving rural living conditions - beyond economic growth alone. The less subject to valuing these objectives are, the less formal are the project analysis techniques that can be used to compare them, although the project format can still be effectively used to encourage careful planning and efficiency.

Furthermore, projects are not the only development initiatives that governments may undertake. The development process calls for such measures as good price policies, carefully designed tariff policies, and participation in discussions to obtain wider market access, and not of these lends itself easily to being cast in project form.

Projects are planned and implemented in a political environment. This is as it must be, since it is the political process that enable societies to balance many, often conflicting, objectives. But questions inevitably arise about the political overtones of project analysis. Is the "national" interest the same as the "social" interest? In project planning and analysis how do we adequately incorporate such considerations as national integrity, nation building, or national defense? One objective may be to benefit disadvantaged groups or regions, but projects in which these objectives are important may not always be the most remunerative. Political leaders must respond to all sorts of pressures, and the way they weigh various tradeoffs may not lead to the same conclusions a project analyst would reach.

All this is to say that, even though the analytical methods we will discuss can be of great help in identifying which projects will increase national income most rapidly, they will not make the actual decision of project investment. That decision is one on which many, many factors other than quantitative or even purely economic considerations must be brought to bear.

CHAPTER II

2. PROJECT LIFE CYCLE

2.1 Introduction

Projects are like living organisms in the sense that they are born as ideas which must be nurtured with information and studies in order to become realities. During this maturing process a project goes through different stages, at each of which resources are needed and decisions have to be made.

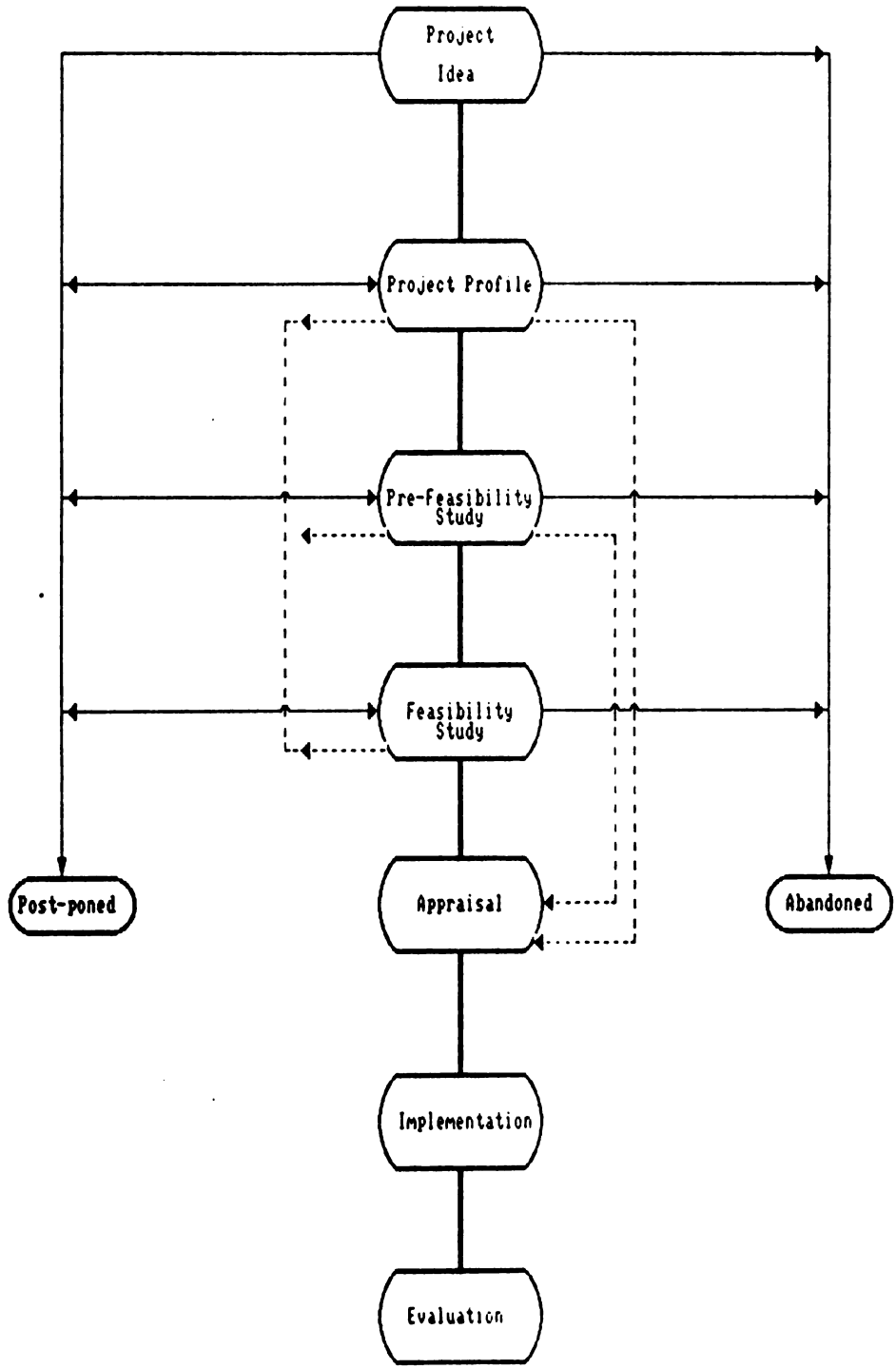
This process is required in order to reduce the uncertainty associated with undertaking a given project. When a project is born as an idea only very rough estimates can be made about the expected cost and the benefits it is supposed to generate. Therefore, before deciding on spending scarce resources in implementing a give project, this uncertainty must be reduced to acceptable levels.

However, the process of reducing uncertainty requires studies that also imply using scarce resources (like, for example, highly qualified manpower). Therefore, the cost of gaining additional certainty on a project must be carefully balanced against the benefits of that additional certainty.

The process through which the project goes from its inception as an idea to becoming a reality is known as the Project Life Cycle. The process is considered as a cycle because one stage normally leads to the next, and feedback to an earlier stage may often be necessary as the cycle moves ahead in time in changing economic and political conditions. The five (5) broad stages that make up this process and their relationships are depicted in Figure 1. They are:

1. Identification - Project idea
2. Preparation - Project Profile
   - Pre-feasibility study
   - Feasibility study
3. Appraisal
4. Implementation
5. Evaluation

Figure 2.1: The Project Life Cycle



The first, identification, covers the stage from a project idea to a broad proposal for financing. In the second, preparation, the proposals are elaboration and the items of investment described and costed to an agreed level of accuracy. In the third, appraisal, a decision on financing the project is made by the government and by the external agency concerned; this stage covers field appraisal and negotiations between government and financing agency. The fourth stage, implementation, includes construction of the works and execution of actions or measures proposed under the project and the monitoring of physical and economic results.

The final stage, evaluation, looks systematically at the elements of success and failure in the project life to determine how better to plan for the future.

2.2 Identification

2.2.1 Objective

The objective of identification is to confirm that the proposal concerns a priority sector of the national economy, and to assess, prima facie, whether the project idea is technically and economically viable and justifies devoting more resources to its formulation. Identification should also broadly define the scope of the project in terms of geographic area, and types of action proposed (main project components), give an order of magnitude of financial requirements and indicate, on a preliminary basis, the agencies which are likely to be in charge of implementation and operation.

2.2.2 Prerequisites for Identification

The resources required for identification are usually less important than for preparation in terms of studies, manpower and time involved. Nevertheless, even before committing resources to identification, it may be necessary to check, in broad terms, a number of prerequisites for identification work:

(i) That the project concerns a national priority sector; this relates to the need for the project. Government position should also be established in the form of an agreement either to a general identification in a specified sector, or to the identification of the specific project idea. In other words, it is not sufficient to have established the need for a project, one should establish government commitment a priori to support this type of project.

(ii) Awareness of a technological or institutional change, introduction of which will lead to an improvement in the existing situation; for the sake of brevity, this will be

called the "technical package" although it may not necessarily concern a new technological breakthrough. Unless there is a proposal which will lead to increased production or an improvement in the productive resource base, it is difficult to see how an investment project can be formulated.

2.2.3 Where do Project Ideas Originate

Considered from the aspect of the need for the project (see 2.2.2 (i) above), the following sources of project ideas can be listed:

(i) A government request; this obviously applies in the case of external financing of a project.

(ii) The national development plan; in particular, the agricultural sector of such a plan.

(iii) Economic reviews of agricultural sector surveys carried out by international agencies such as the World Bank, FAO, TECHNICAL, CDB, IICA, etc.

Project ideas from the above sources will usually arise from the following considerations:

(a) foreign trade balance (the need to reduce imports or increase exports for foreign exchange savings or earnings);

(b) domestic food supply (pressure or demand on food prices and shortages markets, as well as the need to improve nutritional levels);

(c) the need to provide raw material supplies for local industries; and last, but not least;

(d) the need to develop a depressed area or region in the country.

Related to the technical package described under 2.2.2 (ii) above, sources of project ideas are generally as follows:

(iv) Research and experimentation results in the country or in other countries under similar conditions.

(v) Government surveys and studies of a resource undertaken directly by the government services or using national or foreign consultants.

(vi) Other studies, in particular, resource surveys, or surveys financed with the assistance of multinational or bilateral financing agencies.

2.2.4 The Identification Process

The identification process consists of elaborating proposals, or analysing specific proposals already submitted, and establishing prima facie that these proposals are sound and appear to be the best alternative for achieving the project's objectives. A constant awareness of possible alternatives is probably the most important element in the approach to the identification process. the alternatives are considered and the selection made at identification:

The aspects under which the proposals have to be considered are the following:

(i) National Priority. For example, although increased production of banana may a national priority, this can be achieved in more than one manner. Therefore, while checking the national priority of the proposals, close consideration should be given to alternative possibilities, from the national policy viewpoint, for achieving the same end.

(ii) Technical Feasibility Prima facie it should be established that the works proposed are feasible. For example, in the case of an irrigation proposal, that a study has proved that a dam can be built at the location selected, that there will be sufficient water stored inside the dam to meet the proposed requirements, that there are adequate soils to irrigate and that these soils can produce the proposed crops. Again in this respect, the technical alternatives and their economic implications should always be kept in mind.

(iii) Economic feasibility which includes markets for the produce and incentives for the beneficiaries to participate in the project. Prima facie it should be established that the output from the proposed investment will find markets, that project will yield acceptable economic results for the nation as a whole and that the returns at farmer level are likely to provide sufficient incentives to the farmers to intensify production. Although detailed analysis may not be necessary at this stage, an order of magnitude of the level of economic return is required to justify proceeding with project preparation.

(iv) Definition of Scope and Size of the Project. Although the project proposal and type of development may be already fully justified, there has to be a rationale for selecting whole or part of the proposed area, and the specific mix of components, after consideration of possible alternatives.

(v) Identification of Issues. At this stage, it should be possible to identify the problems and issues related to some aspects of project preparation, although it is fully recognized that they cannot, and need not, be resolved at the identification stage itself. The judgement that is required is that a solution will be possible, but not to determine exactly what shape the solution will take. In fact, a number of alternative solutions are likely to emerge.

Issues and problems are likely to be related to the following aspects of a project:

(a) Organizational/managerial: as a number of public agencies are likely to be concerned, which agencies will be responsible for construction and operation of the project?

(b) Financial and budgetary aspects: will the project entity be able to finance its construction and operating costs, and how will it do so? How will cost recovery, if any, take place? Will the beneficiaries require credit to implement the project? These problems not likely to be definitively resolved at identification.

(c) Institutional aspects: problems relating to land tenure, price policy, taxation. It is very important when considering institutional aspects to be able to arrive at a judgement as to what is politically possible for a government.

(d) Marketing aspects: These cover both the distribution of inputs and the marketing of output. Present problems should be identified and possible solutions outlined.

(vi) Identification of Project Beneficiaries

(vii) Availability of Local Funds for Project Implementation and Subsequent Operation In most of the relatively poorer countries, this is likely to be a most important constraint. In general, the cost of domestic resources devoted to the investment project is expected to be financed internally by the government and the private

beneficiaries concerned. It is necessary at the identification stage to review the situation with regard to the availability of local funds and the projects impact on the projects impact on the government budget.

(viii) Information Gaps Finally, the identification process must point out gaps in information and, in particular, to what extent the filling of these gaps may modify some of the findings of the identification process. In other words, it is not enough to point out the need for a survey of the project area with regard to farm size and tenure. It is important to try and find out whether, on the basis of available information, it is expected to find a majority of smaller or larger farms in the area, in order to allow judgement on the implications of the results of the studies on the concept and scope of the project.

2.3 Preparation/Formulation

2.3.1 Objective

The objective of the preparation stage is to further elaborate, complement and confirm the proposals made at identification. The full description of the proposed works and measures will be needed to prove their technical feasibility and to allow detailed costing of investment items. Comprehensive proposals for organization and management will have to be elaborated and a complete economic evaluation carried out. Economic analysis at the level of the country and financial analysis at various levels, including that of the beneficiaries, will be required; the latter to confirm that there is sufficient incentive for the beneficiaries to implement the proposals and also to estimate the possibility and extent of cost recovery. The end product of the preparation process is a feasibility study on the basis of which a government or a financing agency can appraise the project.

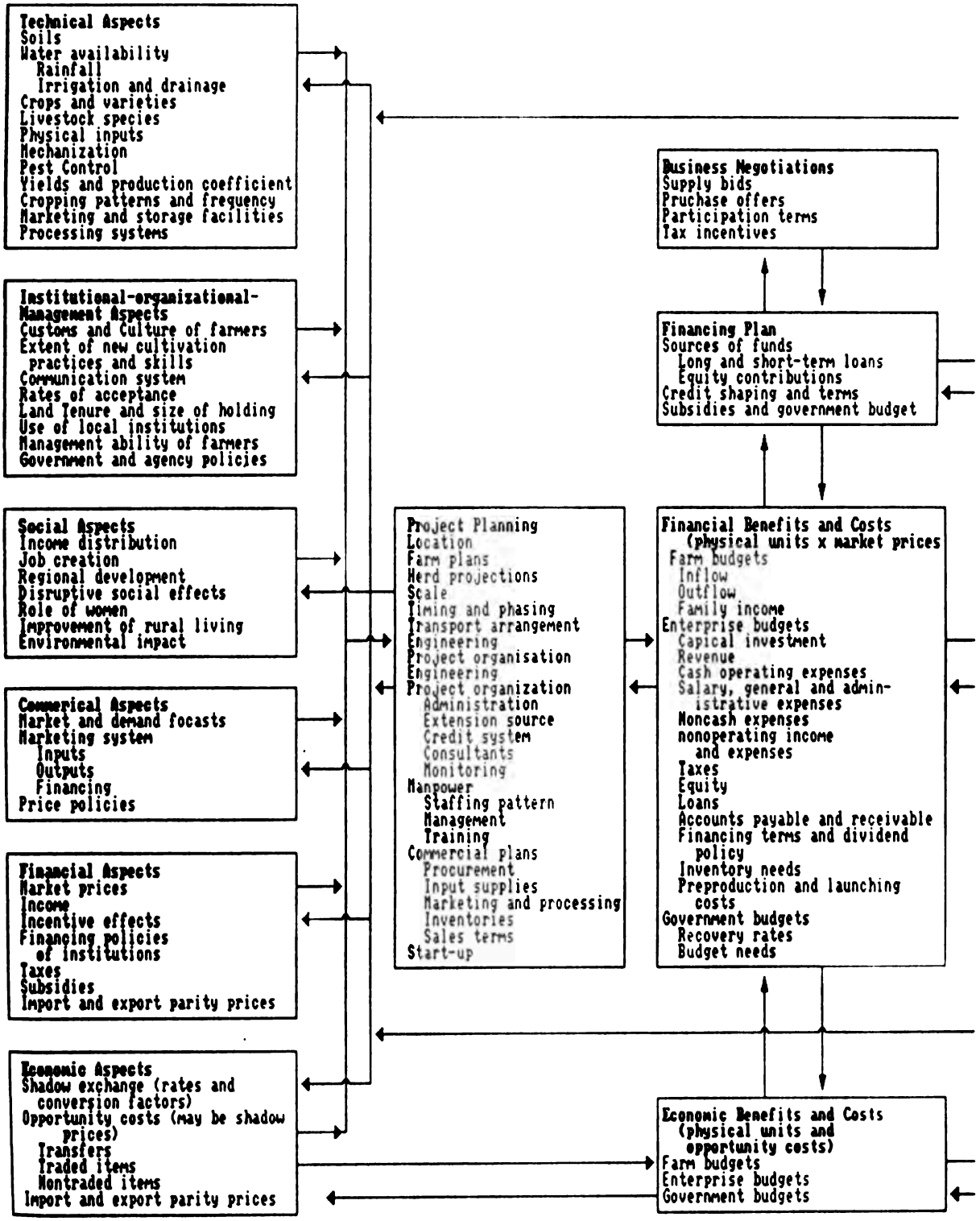
2.3.2 The Preparation/Formulation Process

The preparation stage has to refer again to the aspects mentioned under project identification (2.2.4 above), which are now treated in greater detail giving full justification and technical evidence for the proposals made. These aspects are:

(i) Technical
(ii) Institutional - organizational - managerial
(iii) Social
(iv) Commercial
(v) Financial; and
(vi) Economic

The usual first step in project preparation is to undertaken the preparation of a Project Profile that will provide enough information for deciding whether to begin more advanced planning. At this stage all available information regarding the project should be collected. The viability of all alternatives identified should be carefully checked and their cost estimated. An evaluation of market prices should be attempted. Those aspects which are going to require further study should be identified and the cost of such studies should be roughly estimated. Of course, it is possible that at this step it is realized that it is not worthwhile to proceed with the project or that it is better to postpone further work on it.

Figure 2.2: Formulation and Analysis of Agricultural Projects



SOURCE: Adapted from Franl L. Lamson-Scribner and robert B. Weber, "The Project Cycle and the Project Appraisal Process", training material of the Economic Development Institute (EDI), CN-419 (Washington, D.C.: World Bank, 1975), exhibit 5.

The basic objective of the Pre-feasibility stage is to evaluate the project alternatives and select the alternative that is more convenient for the country or the organization. Doing this requires the allocation of resources in order to obtain that necessary information. Basic aspect that should be covered at this stage are:

- The identification of administrative measures or minor investment that could improve the actual situation.

- In-depth market studies to obtain accurate estimations of demands, offer, marketing practices and prices. This data is fundamental for evaluating the economic viability of the project.

- Production technologies available.

- Outlining the organization required for running the projected facilities or operations.

Given that doing a prefeasibility study requires a high level of technical expertise as well as good knowledge of project evaluation techniques, these studies are usually done by, or with the participation of consultants. Most projects usually go from this stage to appraisal and implementation. Only major and technically complex projects require doing feasibility studies.

The objective of the Feasibility stage is to achieve a further reduction in the uncertainly associated with the decision of undertaking the project. In that sense it constitutes the last stage in the process of successive certainty gains at the expense of higher costs. At this stage the selected alternative should be carefully and comprehensively analyzed. Some areas which are usually covered in feasibility studies are:

- Determination of the optimum size of the project.

- Fine tuning of technical aspects and estimated costs.

- Defining the optimum schedule for implementing the project.

- Establishing the organization that is needed to run the project; and

- Studying all the financing aspect of the project.

Finally, a decision must be taken about the convenience of starting with the implementation stage, postponing the project or abandoning it.

In agriculture, preparing the detailed project plan may well cost 7 to 10 percent of the total project investment. Yet thorough preparation increases a project's efficiency and helps ensure its smooth implementation in the future so that the additional time and money required will probably be returned many times over by the increased return from the investment. Hastily prepared, superficially analysed projects will very likely fall behind schedule, have lower returns, and waste scarce resources.

2.3.3 Problems Usually Encountered in Project Preparation/ Formulation

By this stage, the project concept and scope have been established [3] The problems that are likely to arise will relate, firstly, to the level of technical detail acceptable for a feasibility study. On some aspects, broad agreement has been reached as, for example, the level and standard that are acceptable for a soil survey for an irrigation project. On others, standards are being built up as experience accumulates in the sector. For example, what level of studies is considered acceptable for a rural road? Whereas for a main road, engineering studies will have to be carried out before financing is approved, for a rural road the study requirements will tend to be more flexible depending on the capacity and experience of the national agency in charge of construction of this type of road, and on the difficulty of the terrain which the roads will have to cross.

In the agricultural field also, estimates of yield increases, for example, are based on research results, yields obtained by the more progressive farmers in the area and the technical support to be provided under the project. In such a case, in the final instance, a value judgement will have to be made which is liable to be questioned.

In the economic/financial field, problems may arise as to the extent of detail required on farm structure, farm tenure, employment, and non-farm income. Short of fully-fledged surveys, sample surveys will have to be used or outdated census statistics adjusted for recent developments. There again, standards cannot be the same for all cases. The detail required will depend on the homogeneity of the project area, on the type of development proposed, eg. irrigation or rainfed, on the availability of other information where official data are lacking, e.g. information from the credit agencies, from farm machinery supplies etc.

Finally, it is in elaborating proposals for organization and management of the project that the most difficult problems are likely to emerge. Introducing a new element, the project, into an

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[3] Nevertheless, they may have to be reformulated, as explained earlier, in view of changes in political or economic conditions or as a result of detailed studies carried out for the full preparation

existing structure is always complicated and the temptation is great to set up a new autonomous project entity with administrative and financial privileges backed by the leverage of the external financing obtained for the project. This arrangement may be successful with regard to a single project. However, if repeated for a number of projects, by creating competing agencies to fulfil the responsibilities of the existing public services and by removing the incentive to improve the latter, it is bound to have a negative influence on the public services structure as a whole. Considerable judgement will have to be exercised to reach a compromise which will ensure that the project can be successfully constructed and operated while using existing public agencies to the largest extent possible.

2.4 Appraisal

2.4.1 Objective

Appraisal is carried out by a team from the sponsoring external financing agency, or from the government when only domestic financing is concerned, for the purpose of deciding whether the proposed project is to be financed. The appraisal team will have to satisfy itself again that the project meets the criteria of:

(i) national priority;
(ii) technical feasibility;
(iii) organizational/managerial feasibility;
(iv) social feasibility
(v) commercial feasibility
(vi) economic viability
(vii) financial viability

Appraisal is a systematic check on preparation findings, which needs to carried out by a team from the financing agency or from the government itself to provide an independent judgement on the advisability of financing the project.

2.4.2 Pre-requisites for Appraisal

Prerequisite for appraisal by financing agency is a formal request by the government submitting the feasibility study. Where the feasibility study has been prepared by or with external assistance, it is important that the government officially endorses the proposals, or specifies which issues are still under consideration and, where it is not in agreement with specific proposals, what counter-proposals are being submitted.

This implies careful review of the feasibility study within the government before arrival of the appraisal team. The field appraisal of a project is made considerably easier if differences among government agencies on project proposals are discussed and

ironed out within the government before arrival of the appraisal team.

2.4.3 The Appraisal Process

When it is carried out by an external financing agency, the process includes:

(i) field appraisal

(ii) preparation of the appraisal report

(iii) negotiations and loan agreement, and

(iv) loan effectiveness

(i) Field Appraisal Field appraisal involves checking in the field and with the government the evidence for, and feasibility of, the project proposals. This phase appears to be a repetition of the field work under identification and preparation. The difference can be briefly summarized as follows: identification must find evidence in support of project proposals or indicate possibilities of providing such evidence; preparation analyses and submits full detail of the evidence; appraisal satisfies itself that the evidence is valid and sufficient.

It is not usual during appraisal to encounter problems concerned with technical parameters or basic technical standards as these are likely to have been discussed and agreed during identification and preparation. Aspects which require thorough attention during appraisal are likely to be the proposed organization and management of the project and the financial aspects, whether they refer to project funding, or to cost recovery from project beneficiaries.

(ii) Preparation of the Appraisal Report This phase involves review of the proposals within the financing agency. It is often a lengthy process, since it involves clearance at the technical and the policy levels. This is the stage where the proposals are finalized and solutions are proposed for all the main issues listed in the feasibility study.

With reference to these issues, it is likely that the financing agency will arrive at two short-lists:

(a) a list of assurances to be obtained from the government at negotiation:

(b) a list of conditions to be achieved before the loan becomes effective

(iii) Negotiations and Loan Agreement At this stage, the requested assurances are obtained from the government or alternative arrangements made. One such assurances may be that appointment of the Project Director will have to be approved by the financing agency; another is that contracts for amounts above a certain level will not be approved before consultation with the financing agency, and so on. Upon reaching a successful outcome with regard to all the issues on which assurances have been required, arrangements are made for approval by the highest authority in the financing agency before signature of the loan agreement, the latter being usually only a formal procedure.

(iv) Loan Effectiveness A number of conditions will have been agreed upon for the loan to become effective. These are points on which specific action is considered essential before any funds can be disbursed from the loan. The points will refer generally to institutional or financing aspects, e.g. provision of site for a specific component of the project; establishing a company; or presenting a revised system of accounts or revised conditions for procurement.

2.5 Implementation, Control and Monitoring

2.5.1 Objective

The implementation stage represents the culminating point of the whole process. At this stage, works will be constructed, the investments made and the resources finally committed. Because a point of no return is reached after the investments are made, i.e. any change in the course of action becomes very costly, this phase is very delicate, and has to be accompanied by constant control (or supervision) to ensure that implementation is taking place according to plan, by close monitoring to see that targets are reached and, by a final evaluation to assess whether the expected development results have been achieved.

2.5.2 Responsibilities

Implementation is the strict responsibility of the government which may be borrowing part of the required financing to implement the project. The financing agency supervises the application of the funds it has agreed to lend to ensure that they are utilized in accordance with the loan agreement and that the general development of the project is in accordance with the proposals as agreed at appraisal. However, the government is responsible for control of

the project being implemented in its territory and under its guarantee for the loan, bearing in mind that an important part of the required financing is often provided by the government itself. Monitoring and evaluation should also be carried out, jointly or independently, by the two parties, in order to adjust the course of action in accordance with actual developments and to utilize the experience gained in this project for future development work.

Monitoring consists of following up on a number of indicators, established beforehand, to ensure that these indicators are moving along the course expected from project implementation. Such indicators will concern utilization of inputs, crop yields, levels of income achieved, as well as utilization of economic and social facilities established through the project, such as the number of trainees who have completed their training etc.

Control and monitoring should ideally be made by a group of people independent from those who prepared and appraised the project or who are implementing it, in order to secure impartiality. This is difficult to achieve, at least as far as first-level controls are concerned, as these are usually carried out by the same group that implements the project; however, the benchmarks for control are usually physical and financial and lend themselves to auditing. For monitoring it is essential that an independent team be assigned.

2.5.3 Time Horizons

The time horizon for implementation, supervision and control is the so-called construction period or project implementation period, usually about five years. Monitoring will extend beyond the project period since completion of some works may extend beyond the project period, while attainment of expected yields, improved incomes, etc. will come only at full development which may be 10 to 15 years from the start of project implementation. For this reason, monitoring by the government is indispensable.

2.6 Evaluation

The final phase in the project cycle is evaluation. The analyst looks systematically at the elements of success and failure in the project experience to learn how better to plan for the future. Evaluation is not limited only to completed projects. It is a most important managerial tool in ongoing projects, and rather formalized evaluation may take place at several times in the life of a project. Evaluation may be undertaken when the project is in trouble, as the first step in a replanning effort. It may be appropriate when a major capital investment such as a dam is in place and operating, even though the full implementation of the plan to utilize the water and power is still under way. Careful evaluation should precede any effort to plan follow-up projects.

And, finally, evaluation should be undertaken when a project is terminated or is well into routine operation.

The extent to which the objectives of project are being realized provides the primary criterion for the evaluation. The objectives cannot be accepted uncritically, however; the inquiry should consider whether the objectives themselves were appropriate and suitable.

Inflation and cost over-runs may lead to a considerably different economic picture at project completion than was foreseen at preparation and appraisal. While these cost over-runs can probably be better estimated today, the extent of cost increases in the early 1970s caught most investors and financing agencies by surprise, making the results of the economic evaluation of projects very different, and sometimes marginal, as increases in output prices far from compensated for cost over-runs. In such a situation, financial disbursements are no indication of achievement of targets.

From the evaluation should come carefully considered recommendations about how to improve the appropriateness of each aspect of the project design so that plans for project implementation can be revised if the project is ongoing an so that future projects can be better planned if the project evaluated has been completed.

2.7 Conclusions

As presented, the project cycle may appear as an unnecessarily elaborate and lengthy process. While short cuts are being devised to shorten the project cycle, possibilities for doing so are limited. The solution is not to be found in slackening standards but rather in intensive training of government staff so that they can take over the preparation of investment projects for national and external financing as a regular function.

With national teams capable of adequate project preparation, the targets of national and external investment will become attainable without it being necessary to sacrifice standards. National and external financing would take the shape of financing a sector, e.g. irrigation, agricultural credit, delegating to the national agencies the task of preparing the specific projects which will form the construction blocks constituting the investment programme of such a sector.

CHAPTER III

3. A COMMODITY SYSTEMS ASSESSMENT METHODOLOGY FOR PROBLEM AND PROJECT IDENTIFICATION (CSAM)

3.1 Introduction

The Commodity Systems Assessment Methodology (CSAM) is a systematic and inter-disciplinary approach to the analysis of a whole commodity system. Thereby facilitating the identification and prioritization of problems throughout that system. This leads to the development of more realistic solutions to problems. The methodology brings many concepts, instruments and techniques together in one document and presents them as an integrated whole.

CSAM was developed by the Inter-American Institute for Cooperation on Agriculture (IICA) in collaboration with Asean Food Handling Bureau (AFHB) and the Post-harvest Institute for Perishables (PIP). A manual was written to provide professionals in the agricultural sector with proven methodological tools which can be utilized in identifying and solving problems throughout a commodity system. This systematic approach, from planning to product distribution, helps to ensure that all factors affecting a given commodity are considered in development programmes/projects, whether related to pre-production, production, harvest, post-harvest, or marketing.

Whether utilized for a rapid appraisal or an in-depth case study, this Commodity Systems Assessment Methodology will produce for the user the following products:

(i) A description of the commodity system, identifying the principal components of the system and the major participants and their roles;

(ii) Identification of priority problems within each component of the Commodity System and their causal relationships;

(iii) Identification of possible solutions to the problems and their order of priority; and

(iv) An adequate data base to identify project ideas and prepare project profiles.

3.2 Priority Components for Problem Analysis

In order to overcome problems, their causes must first be identified. An economist dwelling upon costs and prices is likely to overlook problems of a technical or social nature. Likewise, the technologist and sociologist may fail to recognize important economic factors. A clear identification of problems requires looking in the right places and asking the right questions. If all

the relevant disciplinary areas are investigated, then the important problems can probably be identified and ranked in some causal order.

As long ago as the mid-eighteenth century, the philosopher Rene Decartes, in his Discourse on Method (Decartes, 1975), pointed out that reality can only be understood by breaking it down into smaller and smaller parts. He suggested the need to divide each of the difficulties under examination into as many parts as possible.

Although the relative importance of the different components of a food system may vary with the crop, country and other factors, a large number are common for most commodities. In Figure 3.1, twenty-six components are identified. In some cases they are of an institutional nature and focus on participants such as ministries of agriculture, farmers and intermediaries, and the roles each play in the commodity system. In other instances, the components are of a functional nature, such as harvest, storage and transport, concentrating on processes or activities which take place at a particular point in a food system. In still other cases, the component may simply indicate a need to provide statistical or descriptive information which is considered important for the decision-making processes, e.g. statistics on production/marketing of the crop or crop environmental requirements.

The twenty-six components in Figure 3.1 are presented in a circle format. The center part of the circle is divided in half, identifying those components which fall into the preharvest versus the postharvest stages. Each half-circle is further sub-divided to indicate whether the components deal with:

a. pre-production (planning, policies and institutions)

b. production

c. postharvest handling

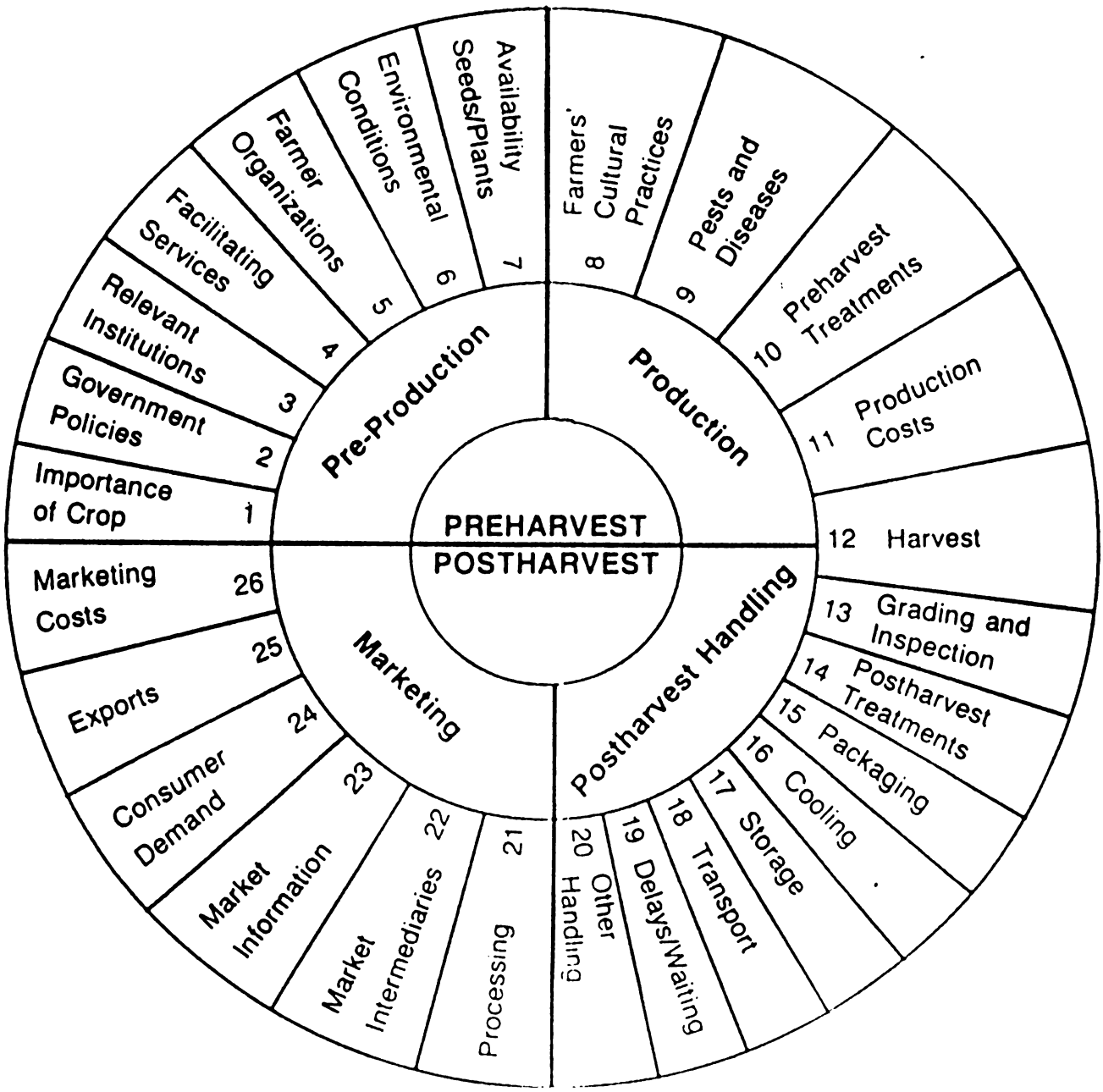
d. transformation, marketing and distribution

Each one of the twenty-six components is potentially important because the decisions or actions occurring at that point may affect production, productivity, quality or cost of the product at that or some later point in the food system.

However, not all of the twenty-six components are relevant for each commodity system. In some cases a commodity being produced in a particular geographical area may have a very short marketing channel and may bypass steps such as selection, packaging or storage. For example, industrial tomatoes may go directly from the farmer's field to the processing plant.

Components which may not be applicable to many crops include those such as preharvest treatments (component 10), delays (component 19), other operations (component 20), agro-processing (component 21), and exports (component 25). The other components should be relevant for nearly all commodity systems. On the other hand, it is expected that researchers of a specific commodity in a particular country may identify more than 26 relevant components. The 26 components included here are indicative, but not all encompassing.

Figure 3.1: Principal components for a commodity systems assessment



An analysis of each relevant component for a particular commodity system will permit a good understanding of what takes place at each point in the food system and how production, productivity, product, quality, or cost may be affected.

3.3 Identifying Solutions to Problems

The objective of this section is to present some instruments which will facilitate the identification and organization of problems and their causes, and the design of solutions.

3.3.1 Problem Analysis

Problems occur at all points in any commodity system and come in all sizes. Small problems occurring on the farm - e.g. poor pruning and improper harvesting - may become very large problems in the marketplace when the produce cannot be sold due to poor quality. Someone who observes a farmer in the marketplace unable to sell his produce might conclude that the problem is in the market. In fact, the inability to market a product is usually an indicator of problem(s) in the commodity system. Unless we know the root problem and its causes, we cannot design effective solutions.

Any analysis of problems affecting commodity system must necessarily look for causes in each component of the respective commodity system

Problem analysis has been defined (Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ), 1983) as a set of techniques to:

- analyze the existing situation surrounding a given problem condition,
- identify the major problems and the core problem of a situation, and
- visualize the cause-effect relationships in a Problem Tree diagram.

The starting point in problem analysis, therefore, should be identification of as many of the related problems as possible and their respective causes.

As should be apparent from any analysis of a commodity system, the problems vary in accordance with the type of participant. Farmers, for example, may have problems related to land, labor, information, financial resources, cultural practices, management, markets, and many more. The farmers' problems are likely to cover the full range, from planning all the way through the system to marketing.

Problems experienced by intermediaries and traders begin at the farm gate, although in many cases the causes of the problems are linked with preharvest factors. The types of problems affecting intermediaries are more likely to relate to operating capital, communications with supplier, regularity in supplies, quality of produce, infrastructure, packaging materials, and transportation.

Public sector institutions may have internal constraints by local politics, staffing problems, deficient resources, contradictory sectoral policies, poor leadership, and many more. Farmers' groups and other private sector organizations may not be achieving their objectives due to poor organization and management, or problems related to staff, working capital, infrastructure, equipment and others.

The more in-depth the commodity system analysis carried out, the greater the number of problems and causes identified. The purpose of the detailed description of a commodity system is to provide an information base for problem identification. If each member of the Interdisciplinary Team is experienced and knowledgeable in his/her particular area, and if the description of the commodity system is carried out in detail, then conditions will be set for a problem brainstorming session.

3.3.2 Brainstorming for Problems

Brainstorming for problems in a commodity system can be facilitated if the participants are brought together in a comfortable and informal setting with a discussion leader and rapporteur. While the group leader stimulates discussion, the rapporteur lists all the problems and causes of problems suggested by the participants. At this stage the problems are listed as they arise, in no particular order.

Brainstorming sessions should be carried out with all members of the Interdisciplinary Team after each has had ample opportunity to review the available information on the commodity system. The group leader must ensure that the problems presented are existing ones, not potential or anticipated ones or personal opinions.

During the brainstorming session, members of the Interdisciplinary Team will suggest problems and causes of problems negatively affecting a particular commodity system. During this process, one suggestion will lead to another, creating a cross-fertilization of ideas. Once the respective team members have exhausted their supply of ideas, the recorder will produce a listing of all the problems. This list should be distributed to each participant for review and modification and a final list should be prepared.

3.3.3 Problem Checklist

Once the brainstorming session is completed, the Interdisciplinary Team may choose to review the checklist of Potential Problems presented in Annex 1. Since this is a rather long list, it could take several hours or days to analyze point by point. To avoid inappropriate use of scarce time, the checklist should be reviewed quickly by each team member, to jog the memory, with the purpose of identifying important problems or causes of problems that may have been overlooked in the brainstorming session.

The checklist may also be used as a format to summarize problems as shown in the example in Table 3.1 or to serve as a guide in organizing the problems from the brainstorming exercise by particular components of the commodity system. By grouping the problems according to their respective points in the commodity system, the team puts them in a perspective which contributes to understanding of cause and effect relationships.

The priority problems identified in Table 3.1. were as follows: First, an interdisciplinary team of fruit production and marketing specialists carried out a brainstorming session to identify the problems affecting the production and marketing of paw paw (papaya) in Barbados. A very long list of problems was obtained which was then reordered following the guideline checklist in Annex 1. The same team of specialists then reviewed the complete list of problems to identify those of highest priority. These were then listed as presented in Table 3.1. The point in the system where the problem occurs and the nature of that problem are presented in the first column on the right. In the latter case, details should be included showing how the problem affects quality, quantity, price or availability of product. The details have been simplified in Table 3.1. due to space constraints.

Table 3.1.: Priority problems in the production of paw paw (papaya) in Barbados*

POINT IN THE COMMODITY SYSTEM WHERE PROBLEM OCCURS	INDICATE PRIORITY PROBLEMS (X)	SUMMARIZE PROBLEMS IMPACTING QUALITY, QUANTITY, PRICE OR AVAILABILITY OF COMMODITY
AGRICULTURAL POLICY:		
- credit	x	no loan portfolios for fruit
- planning	x	bias towards non-food crops, e.g. cotton
INSTITUTIONAL ASPECTS		
- staff (MOA and BMC)	x	too few to provide necessary services
ENVIRONMENT		
- soil	x	heavy soils in project area
PRE-PRODUCTION:		
- irrigating systems	x	not available at production site
- packaging houses	x	none available
- planting material	x	susceptible to bunchy top disease
CROP CHARACTERISTICS:		
- uniformity of size	x	fruits cover wide range of sizes
PRODUCTION		
- farm inputs	x	proper type unavailable
- technical know-how	x	proper techniques unknown
- water	x	poor distribution of rainfall
- labour	x	expensive, scarce, low yields
HARVEST	x	tool inadequate, techniques unknown
POSTHARVEST HANDLING		
- on-farm handling	x	lack of proper knowledge of handling/packing
- packing shed	x	facilities not available
PROCESSING		
- insufficient supply	x	low domestic supply
- infrastructure	x	no facilities for canning/freezing
MARKETS/MARKETING		
- demand	x	market potential unknown
- supply	x	price too high
- air transport	x	very expensive
CONSUMPTION		
- local	x	competition with imports of temperate fruit
- external	x	lack of information or markets

*Note: The data for this table was prepared by going through the problem checklist in Annex 1. Only the priority problems checked with an "X" are summarized here.

3.3.4 Problem Tree Diagram

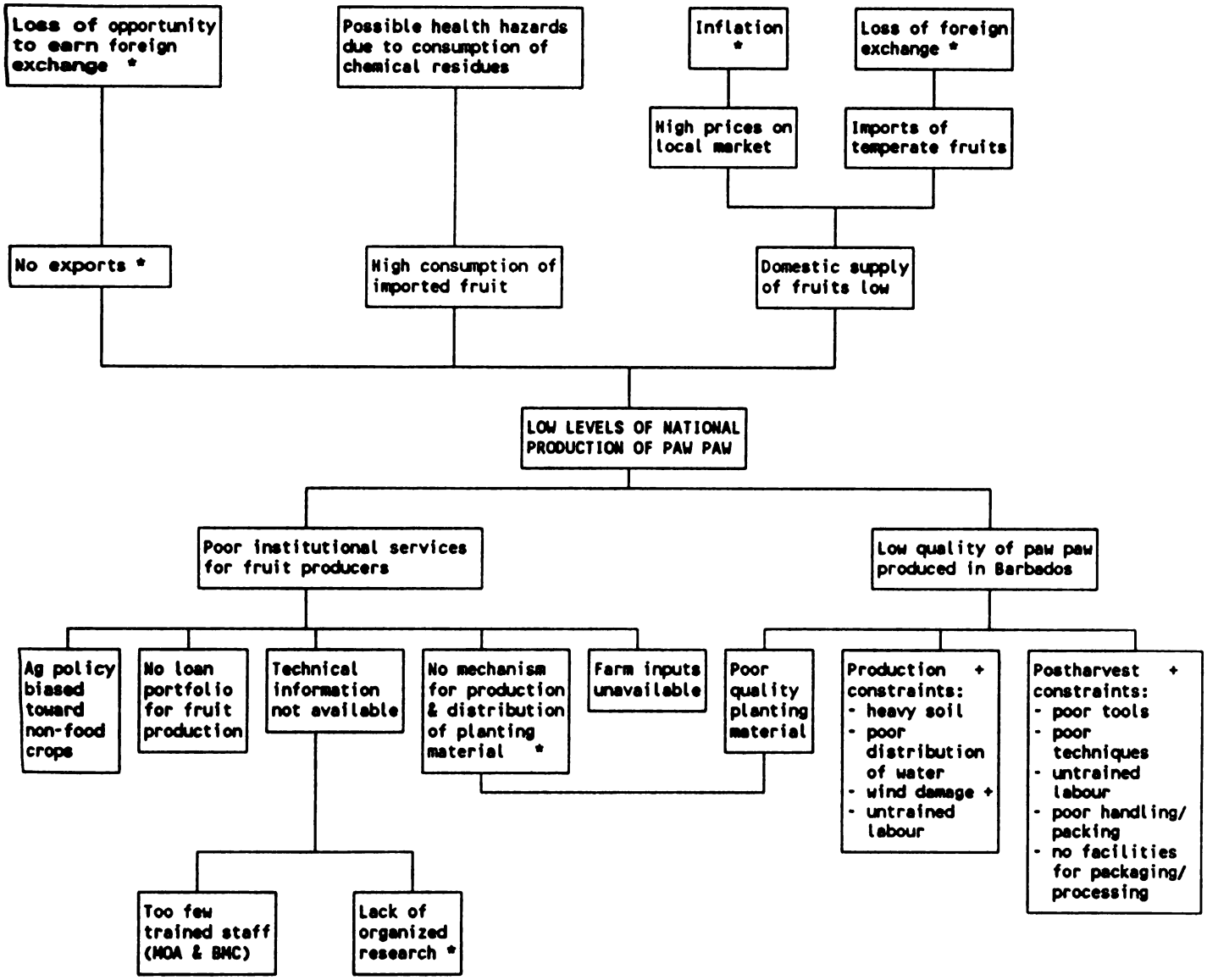
A problem tree diagram is simply a way of visualizing the cause and effect relationships regarding a particular problem situation. In such a diagram the causes are presented at lower levels and the effects at upper levels. The core problem connects the two. Thus the analogy with a tree: the trunk represents the core problem, the roots are the causes, and the branches represent the effects. The more specific the causes, the more likely they are to lie at the lower levels of the tree diagram; however, the location of a problem on a tree diagram does not necessarily indicate its level of importance.

As has been stressed earlier, the key to problem solution is proper problem identification. The tree diagram facilitates the organization of problems into a logical sequence which will lead to logical conclusions and the identification of cost-effective solutions.

Figure 3.2 presents the information from Table 3.1 in a problem tree format. In the case of the core problem is stated as "low level of national production of paw paw". The causes of this core problem, as indicated in Figure 3.2, are due to: "poor institutional services for fruit farmers", on one hand, and "low quality of paw paw", on the other. The causes of each of these respectiye problems are identified at lower levels of the problem tree. Problems which were not identified in Table 3.1, but resulted from discussion during the preparation of the problem tree, are indicated with an asterisk(*).

Three effects from the core problem have been identified in Figure 3.2. These are: (1) non-exports of papaya which leads to the loss of opportunity to earn foreign exchange; (2) high levels of consumption of imported fruit which can result in health hazards if produce with chemical residues is imported; (3) low domestic supply of papaya resulting in high domestic prices, inflation, and imports of temperate fruits, resulting in losses of foreign exchange. Of these effects, low supply of domestic fruits, high prices on the local market and imports of temperate fruits were identified in Table 3.1. The other effects, indicated with an asterisk, were identified during discussion between team members in the preparation of the problem tree.

Figure 3.2: Problem tree showing cause and effect relationships in the production and marketing of paw paw (papaya in Barbados, 1988



* Problems not in Table 3.1 which were identified during preparation of the problem tree

\+ For lack of space, the problems are listed vertically; they should be in separate boxes similar to the other problems shown on this level

The problem analysis can be concluded when the Interdisciplinary Team decides that the essential information has been included in the causal network and shows that cause-effect relationships which characterize the problem situation being analyzed.

3.3.5 Objectives Analysis

The objectives analysis is the process whereby the problems are converted into objectives or goals towards which activities can be directed. It also includes an analysis of the objectives to determine whether they are practical and can be achieved.

In carrying out the objectives analysis there are five basic steps:

1. All the negative statements shown on the problem tree are restated as positive statements.

2. All the "objectives" are reviewed to assure that they are desirable and realistically achievable in an acceptable time frame.

3. Those objectives which do not meet the conditions mentioned in (2) are modified: those which are undesirable or cannot be achieved are deleted.

4. The "means-end" relationships thus derived should be thoroughly examined to assure validity, logic and completeness of the diagram. Modifications should be made as necessary.

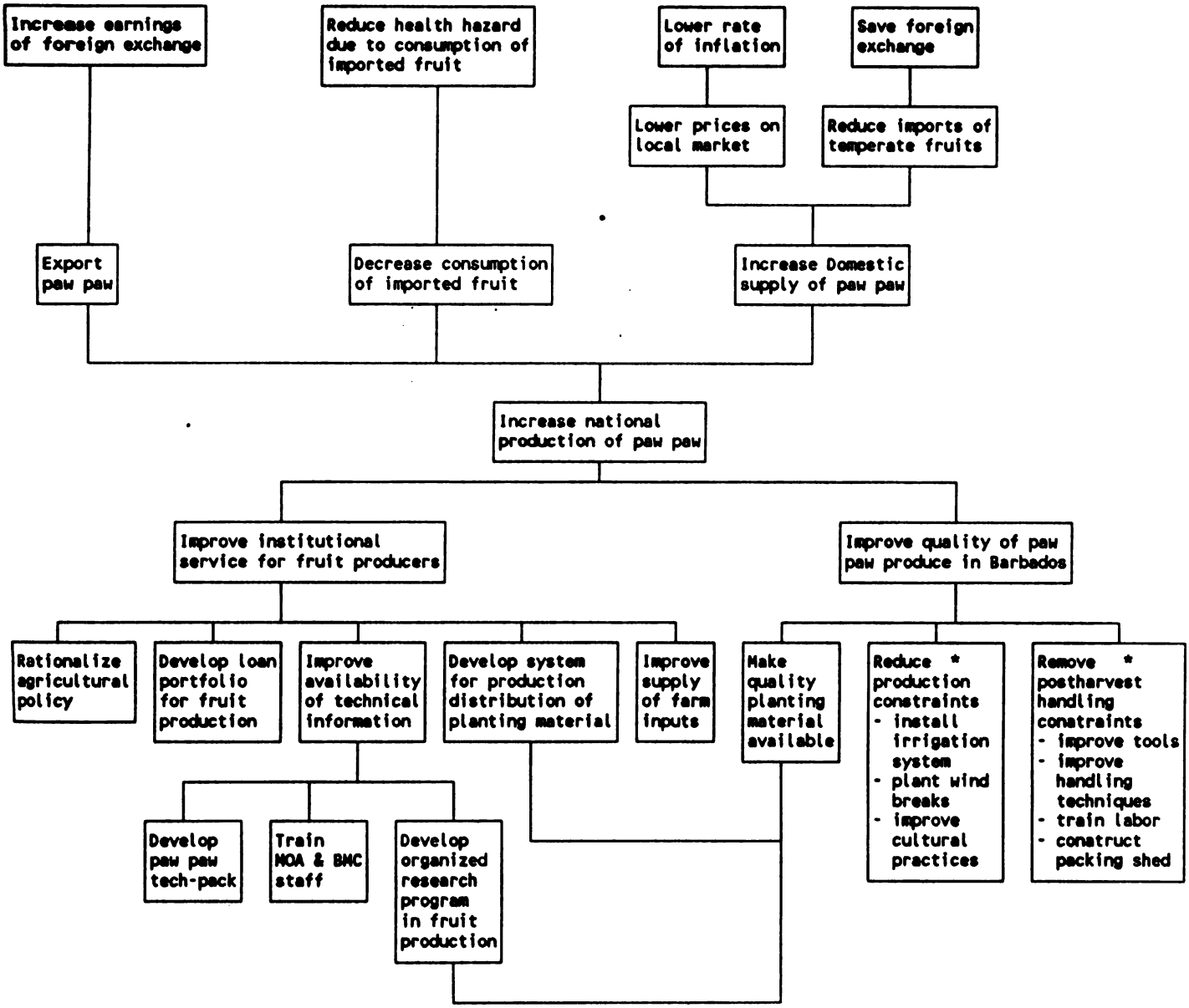
When the problem cannot easily be converted into positive statements (objectives) it may indicate an unclear statement of the problem. In that case the problem should be reconsidered and rewritten.

In the final analysis of each objective, the question should be asked whether the achievement of the lower level objectives is sufficient to achieve the next highest objective? In other words, has the cause-effect relationship been transformed into a means-end relationship?

As an illustration, when the above guidelines were applied to the problem tree presented in Figure 3.2, the objective tree shown in Figure 3.3 was the result. Three decisions were made during the formation of the objectives tree (Figure 3.3).

1. There is no objective for improving the production problems of "heavy soil". This cannot easily be overcome in the short run, so it was not included.

Figure 3.3: Objectives tree for the production and marketing of paw paw (papaya) in Barbados, 1988 (derived from Figure 3.1: Problem tree)



* For lack of space, the following problems are listed vertically, They Should be shown in boxes like the other objectives at this level

2. There is no objective for establishing a processing industry for papaya. The private sector has no interest in this goal at this time, so it was not included.

3. A technological package must be developed and published in the form of a tech-pack for the training of farmers: therefore, this objective was added.

By starting at the bottom of the objective tree and working upwards, it can be seen that the achievement of the lower level objectives will lead to the achievement of the objective at the next highest level. Each objective seems to be realistic and attainable within the actual circumstance of the local culture and environment. This we can conclude that the objectives contained in this tree diagram are viable and can give direction to development projects.

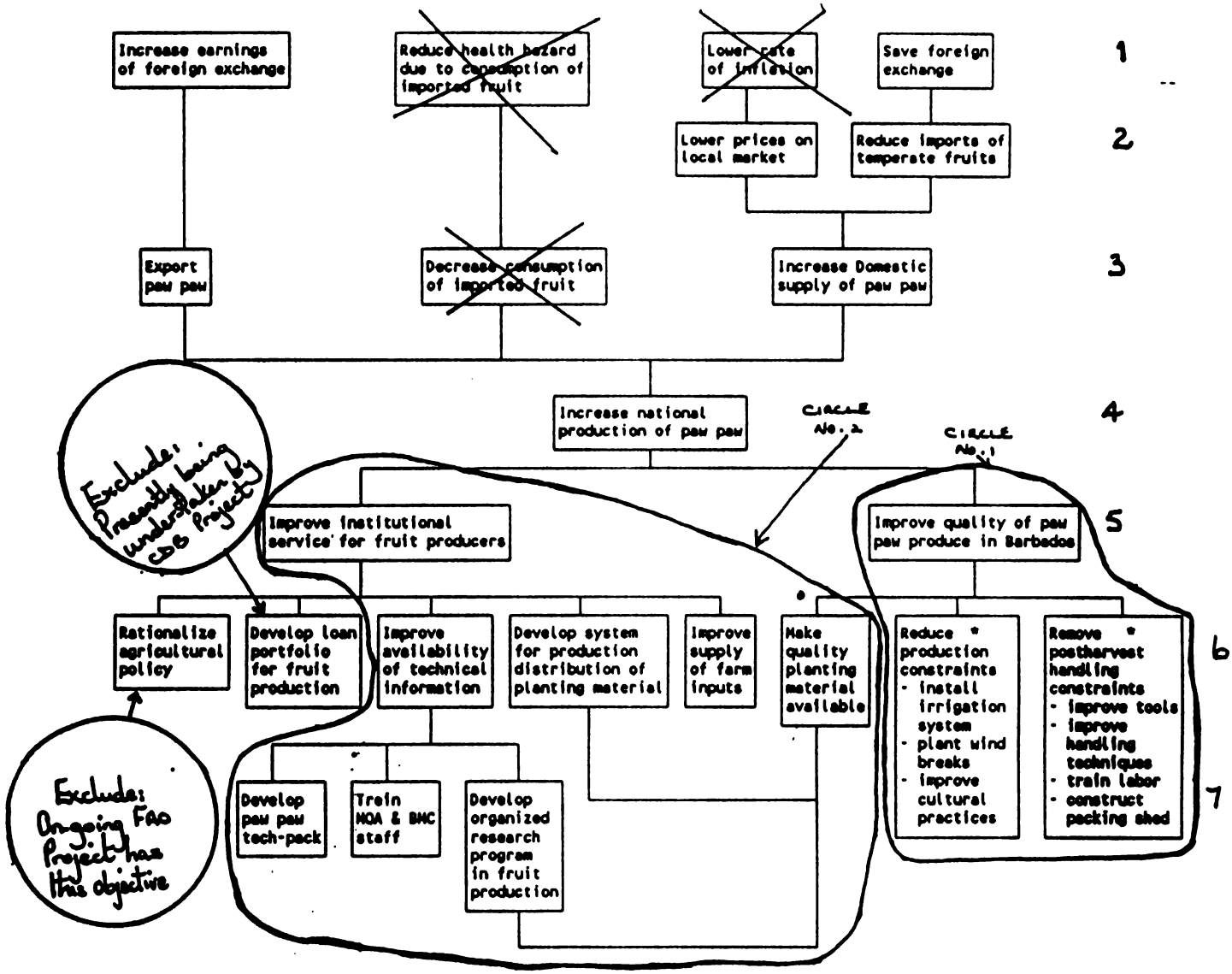
3.3.6 Analysis of Strategy Alternatives and Project Identification

Continuing with the Barbados papaya example Figure 3.4 shows some worksheet notations which can help in an analysis of the situation. Each of the rows of objectives has been assigned a number from one (top row) to 7 (bottom row) in the right-hand margin. The objectives in the top rows are quite general whereas those in the bottom rows are more specific. If the problem tree has been developed to its full extent, the bottom-most rows would be even more specific. As the objectives become more specific, they might better be called expected results or outputs. For example in row 7, expected results can include: a papaya tech-pack, trained staff, an organized research program, an irrigation system, wind breaks, improved cultural practices, improved tools, improved postharvest handling, trained laborers, and a packing shed. From row 6, an expected result might be an improved system for production and distribution of planting material.

3.3.7 Participant Analysis

When persons, groups, institutions, and organizations see that they have something to gain from a project, they are much more likely to play an active role in working toward the success of the project. Problems do not exist in isolation but are closely linked with people, groups, institutions, and organizations, and usually more than one person or group. This leads to a further complication in that a problem affecting one person or group in a negative way may be beneficial to others. Therefore, any attempt to remove a particular constraint may come up against resistance. As examples:

Figure 3.4: Identification of alternative strategies and projects, based on the objective tree (Figure 3.3)



* For lack of space, the following problems are listed vertically. They Should be shown in boxes like the other objectives at the 6th and 7th levels.

- Import laws disadvantageous to farmers may have been lobbied into place by traders. Since traders (importers, wholesalers, exporters) normally have more political and economic clout than do farmers, the laws are difficult to change.

- The organization of a marketing cooperative may put some intermediaries out of business. These might then use their economic strength and political influence to weaken the cooperative.

- A government marketing board may be suffering great losses in both dollars and produce while benefitting employees with jobs, and consumers through low prices. Any attempt to improve operational efficiency by reducing staff will be met with strong resistance.

- Two or more institutions may be duplicating research or training efforts, but professional pride and competition may keep them apart.

Parallel to the process of describing systems and identifying problems, the Interdisciplinary Team should analyze the diverse participants and their characteristics, e.g. status, interest, resources, motives, attitudes, strengths, weaknesses, and their potential support or opposition to actions that remove constraints. Important questions are: Which are the target groups? Which will play a supportive role? Which will benefit from the actions (potential supporters)? Which will be affected negatively (potential opponents)? An attempt should also be made to identify how the persons or groups will be affected.

In the execution of the Participant Analysis, the Interdisciplinary Team should collect the necessary information to fill in Form 3.1. The steps involved in this process are indicated below:

1. List all types of participants (persons, intermediaries, groups, companies, organizations, institutions, projects and others) identified in the analysis of the commodity system. These are all potential target, support, or opposition groups.

2. Review the list to determine whether each represents a homogeneous unit or whether the group can be further subdivided - e.g., government institutions can be divided into the Ministry of Agriculture, Planning Unit, and Marketing Board. Intermediaries may be categorized as wholesalers, retailers, and exporters.

Form 3.1: **Expected impact of efforts to modify a commodity system**

PARTICIPANTS IN COMMODITY SYSTEM*	HOW AFFECTED:	
	Positive Effects	Negative Effects
Target groups: - - - -		
Support groups - - - -		
Other groups affected - - - -		
Ongoing projects affected - - - -		

3. Characterize and analyze each participant, considering his/her social characteristics, organizational structure, status, interest, motives, attitudes, strengths, weaknesses, shortcomings, and potential role to be played.

4. Identify possible positive and negative consequences of introducing changes into the commodity system and the potential impact upon the diverse participants.

5. Fill in Form 3.1 indicating whether participants are target, support or opposition groups, or whether they belong to some other group affected by changes in the system. Describe how they are affected, emphasizing the economic or social impact.

6. In the case of ongoing projects, identify those which complement, duplicate or compete with the proposed projects.

7. Develop strategies for dealing with the more important persons, groups and/or ongoing projects.

Projects benefitting large numbers of participants are more likely to receive support during the implementation phase. Projects having a negative impact upon some participants with strong economic and/or political clout are more likely to run into delays during the implementation phase.

Based on the results of the participant analysis, the Interdisciplinary Team, in coordination with planners, should attempt to reach a general consensus as to whose interests and views are to be given priority when carrying out problem analysis and project design.

3.3.8 Summary of Project Identification

In synthesis, the analysis of Figures 3.1 to 3.3 has resulted in the following:

- A causal relationship has been identified between problems on the farm, postharvest handling, public sector institutions and the country's balance or payments situation.

- It therefore stands to reason that resolution of the problems at the lower levels on the problem tree could produce a positive impact on the overall economy of the country.

- The objectives tree facilitated the identification of objectives and desired results which should in turn lead to the formulation of projects to overcome the identified problems.

- By identifying participants, ongoing actions, and means-end relationships, conditions are set to identify priority project areas.

Given this information, a strategy for developing the papaya industry in Barbados can be summarized as follows:

> Execute a series of actions through both public and private sectors to remove the on-farm production and postharvest handling constraints and thus significantly increase the availability of good quality papaya for the domestic and exports markets. Efforts should concentrate on improving the institutional services for fruit producers in general, including improved planting material for papaya, and improving infrastructure and human resources in selected production zones. An ongoing research and information network will be established within the Ministry of Agriculture.

3.4 Project Documents

While there are many definitions for development projects, the important thing is to understand a project's characteristics. The more salient characteristics of a development project are the following:

1. Projects have a physical dimension which establishes limits to their available resources.

2. Projects have a temporal dimension. Since they begin and end at specific times, they can be differentiated from ongoing institutional activities.

3. Projects conform to a well defined unit (group of actions) which can be evaluated to determine its success.

4. Projects have clearly defined objectives which tend to be innovative, rather than perpetuating an existing situation.

Hence, a project is a set of interrelated activities aimed at a common goal/objective and implemented during a given period of time with a predetermined quantity of resources (goals + resources + activities + time).

If we accept this definition of a project, then we can prepare a project document by:

1. Defining its goals, objectives and expected outputs;

2. Describing the project's principal activities;

3. Indicating the resource requirements, and

4. Establishing a time frame of the beginning and ending of the project.

Anyone capable of analyzing a commodity system and identifying priority problems and needs is also capable of identifying a project idea and expressing it in the form of a project document.

The key to project identification and formulation is knowing what the priority problems are. Since the priority problems have been neatly organized in the problem tree (Figure 3.2), converted to objectives in the objective tree (Figure 3.3) and analyzed in alternative strategy analysis (Figure 3.4), the writing of a project document is a straightforward task. That is, the commodity system analysis has identified all the basic information necessary to prepare one, or several, project document.

While different people and organizations use different outlines for project document, basically they all contain the same type of information to greater or lesser degrees. Based on our definition of a project given above, the following minimum information should be included in a project profile.

1. **Title** (reflects the most important feature of the project)

2. **Definition of problems/justification** (derived from the problem tree)

3. **Goals** or general objectives (derived from an analysis of objectives tree and alternative strategies)

4. **Specific objectives** (derived from analysis of the objectives tree and alternative strategies)

5. **Expected outputs** (identified from the lower levels of the objective tree). The expected outputs are the results wanted at the end of the project.

6. **Activities to be executed** under the project which will produce the expected outputs. (These are a logical extension of the expected outputs and must be carried out to achieve the expected outputs).

7. **Expected duration** of the project (determined by time required to complete all project activities in their proper sequence).

8. **Estimate of costs** (derived from an analysis of inputs required to implement activities).

9. **Implementing organization or agency** (determined through an evaluation of organizational capability, source of funding, and local politics.

CHAPTER IV

4. LOGICAL FRAMEWORK

4.1 Background Information

"If you don't know where you are going,
Any road will get you there."

The above quote is the key to the problem of management and the key to the way to solve it. Peter Drucker once said that management is the setting of objectives. This much is certain--if you have no objectives, then the relative value of any course of action cannot be compared to alternative courses of action. All courses of action, all roads, are the same--you're consuming resources, you're moving, but where are you going?

In 1969, to "discover where they were going," the U.S. Agency for International Development commissioned an analysis of its project evaluation system. That analysis uncovered three basic problems which were seriously hindering not only meaningful evaluation of projects, but also their implementation.

1. Planning was too vague: Objectives were not stated clearly and there were no indications of what the project would look like if it were successful. Thus, evaluators could not compare--in an objective manner--what was planned with what actually happened.

2. The management responsibility was unclear: Project managers were reluctant to be considered responsible for development impact. The impact expected was ambiguously stated; there were too many important factors outside their control. They found it difficult to articulate what they should be responsible for, and ended up not accepting any responsibility.

3. Evaluation was an adversary process: With the absence of clear targets, and with frequent disagreements among project team members and between the host country and donor agency (cies), as to just what the project was about, evaluators ended up using their own judgement as to what they thought were "good things" and "bad things". The subsequent evaluation results would then frequently become a basis for further argument about what was good or bad, rather than resulting in constructive actions for project improvement.

The Logical Framework Approach[4] to project design and evaluation was specifically developed in response to the above problems. It encourages collaboration from the outset and helps avoid adversary relationships in both project formulation and evaluation by:

1. Fostering a clearly stated, explicit, and measurable description of what will happen if the project is successful,

2. Clarifying what a project manager should be responsible for accomplishing and why,

3. Displaying key elements of project design and their relationships to each other in a way that facilitates project analysis,

4. Changing the focus of evaluation from "who is to blame?" to "what is the most realistic plan for this project for the future based on the best up-to-date evidence available now?" This approach makes the project manager a primary user of evaluation results. The Logical Framework requires clear objectives and then bases evaluation on <u>evidence</u>. Evaluation becomes a tool to help the project manager, rather than a club that threatens him.

The Logical Framework Approach is a set of dynamic, related concepts, which foster a way of thinking to develop a well-designed, realistic, and valuable project. Uncertainty within the project is made explicit. Results of the process of using the Log Frame concepts can be displayed in a 4 x 4 matrix, providing a one-page, concise summary of major project elements and their relationships to each other. The concepts can help us think through a project in an orderly, logical fashion and communicate clearly about the project to others. The matrix adds a graphic, multidimensional view of the project which, in itself, is a powerful aid to clearer communications.

4.2 The Logical Framework Approach to Program Design and Evaluation

The Logical Framework is a way of organizing information and activities so that a number of different points of view can be brought to bear simultaneously and in complement, rather than in opposition. These points of view are:

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[4] Principal architects of the Logical Framework Approach were Leon J. Rosenberg and Lawrence D. Posner, of PCI (Practical Concepts Incorporated). The concepts draw heavily from science and experience gained from the management of complex space age programs such as the early satellite launchings, and the development of the Polaris submarine. Most importantly, the concepts help one apply basic scientific methods (including hypothesis formulation and testing) to project/program management and are complementary with other management tools.

* Program Management--which dictates that we manage for--and hold management accountable for--results.

* Basic Scientific Method--which dictates that nothing is certain, and all human activity can be viewed as the testing of hypotheses.

* Systems Analysis--which dictates that no system is defined until we have defined the larger system of which it is a part.

To simplify programs we first recognize that there are three basic levels of responsibility:

* Inputs: the resources we consume and activities we undertake.

* Outputs: the things we, as good managers, are committed to produce. These must be stated as results. If we fail to produce those results, then the burden of proof is on the manager to "show cause" as to why he failed.

* Purpose: the reason we are producing the outputs. The higher-level objective that causes us to invest in producing outputs. If our outputs are products, then our purpose may be profit. If our outputs are social services, then our purpose might be improvement in the quality of life of a target population.

Having clarified the basic management hierarchy of objective, let us introduce basic scientific method:

> All human activities are uncertain. Therefore, we view our project as a set of interlocked hypotheses: if inputs, then outputs; if outputs, then purpose.

Note that what varies between levels is the probability of success. It is within the ability of a responsible manager to ensure that inputs result in outputs; we hold him accountable. As noted earlier, he must show cause if he fails. On the other hand, the hypothesis--if outputs, then purpose--is problematic. There is enough uncertainty in this hypothesis that the project manager is held accountable to the reasonable man rule--he must do what a reasonable man would do to realize the purpose, but he is not held accountable for that result.

Now, let us add the third viewpoint important to the Logical Framework--a viewpoint too often neglected in both conventional management and operations research approaches: the System Analysis requirement that we have not specified a system until we have specified the relationship our system bears to some larger system.

To do this, we add to our three-level management hierarchy a fourth, superior level, called "Goal". We define "Goal" as follows:

The higher-level objective immediately above project purpose. That is, the "then" statement for which the project purpose, plus purpose-level assumptions, must provide a plausible "if".

Goal thus relates our project aspirations to aspirations of those for whom our activities have no intrinsic interest. If our purposes are Agency-Level purposes, then our goal transcends the Agency and relates our program to truly national objectives--objectives that may be common to multiple agencies.

Given the many uncertainties in the connection between purpose and goal, we also view this final element of our project/program logic as a testable hypothesis (if purpose, then goal).

To increase our insight into and understanding of the project, we identify and make explicit our assumptions concerning those factors necessary for success but beyond our ability to control at each level of the project hierarchy. We further explicitly define the conditions which will demonstrate successful achievement at each level (indicators) and how we will verify their occurrence (means of verification).

4.3 The Logical Framework Approach to Project Design and Evaluation

The Logical Framework approach is a set of interlocking concepts which must be used together in a dynamic fashion to develop a well-designed, objectively-described and valuable project. Uncertainty within the project is made explicit. Result of the process of using the Logical Framework concepts can be displayed in a 4 x 4 Matrix, providing a one-page, concise summary of major project elements and their relationships to each other (see Figure 4.1). It must be remembered that use of the Logical Framework Approach allows a step-by-step conceptualization of important project elements; it is not just a form to be completed. Good use of the concept facilitates clearer communication among all parties to the project design.

The Logical Framework approach should be thought of as an important management tool available to planners and management. It is not difficult to use. It does not require a degree in mathematics or the use of computers. It relies on the user's experience with development projects as well as his sense of what constitutes good management and his intuition. It does not provide answers or make decisions; but it organizes information in such a way that the

FIGURE 4.1: THE LOGICAL FRAMEWORK

LOCICAL FRAMEWORK FOR SUMMARIZING PROJECT DESIGN

Est. Project Completion Date _____

Date of this summary _____

PROJECT TITLE: Banana Production - OECS

	NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
If purpose then goal	Programme Goal: The broader objective to which this project contributes.	Measures of goal achievements		Concerning long term value of programme /project:
If outputs then purpose	Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status		Affecting purpose-to-goal link:
If inputs then ouputs	Output:	Magnitude of outputs necessary and sufficient to achieve purpose.		Affecting output-to-purpose link:
	Inputs: Activities and types of resources:	Levels of efforts/expenditure for each activity		Affecting input to-output link:

DEVELOPMENT HYPOTHESES

MANAGEABLE INTEREST

important questions can be asked, project weaknesses can be identified, and decision makers can make decisions based on their increased insight and knowledge. The concepts need not be restricted to project use only--they can be applied in a variety of situations, including, but not limited to, program design, curriculum development, clarifying career objectives, etc.

4.3.1 Hierarchy of Project Objectives

The Logical Framework breaks a project down into four separate and distinct levels of objectives. At the lowest level are the Project Inputs. These are the activities and resources managed by the project that will in turn produce the second level of objectives that we call the Outputs. These outputs are the things that are directly accomplished by management of the inputs. For example, in an agricultural education project, we can produce trained Extension Officers, a constructed and equipped Training Centre and trained administrators. We do this by managing a specific set of inputs (e.g., training of Extension Officers, construction of training centre). Yet, the outputs themselves are not valuable for their own sake and the justification for the project. What we are really interested in is an improvement in education of extension officers. This then, represents a higher level objective that we call the Purpose. The purpose is what we expect to result from having achieved the outputs. The outputs are a set of interrelated objectives that, combined, are aimed at achieving the project purpose. Within the project itself we therefore, have three levels: Inputs, Outputs, and Purpose.

The fourth level in the Logical Framework is a higher order objective called the Goal. The project is one of the necessary conditions for achieving this goal, but will not be sufficient by itself to achieve the goal. Using the same example of an education project, the specific project purpose is improved education and the goal is manpower needs for agricultural sector are met. In order to achieve this goal, other projects also may have to be undertaken, such as one to motivate those with the required skills to work in the region in which their skills are needed. Just as we must identify all the outputs necessary to achieve the purpose, we must identify all the purposes (projects) necessary to achieve the goal. The goal is usually associated with specific program or sector objectives.

4.3.2 Linked Hypotheses

It is important to note that the relationship between the levels of objectives is not random or accidental; there is a definite causal relationship. When we identify our purpose, for example, and then define the outputs we will need to achieve that purpose, we are in effect saying: "If we can produce these outputs, then we should achieve this purpose." In other words, we select these outputs because we believe they can cause the purpose to happen. We are therefore making a hypothesis that if outputs, then purpose.

An hypothesis is defined as a predictive statement about a causal relationship that involves uncertainty. A simple example of this is the prediction that <u>if</u> one boards his regular morning bus by 8 o'clock, <u>then</u> he will arrive at his office on time. However, there is not 100 percent certainty that he will get to his office on time because many things <u>could</u> happen between boarding the bus and arriving at the office, such as the bus breaking down, or being involved in an accident.

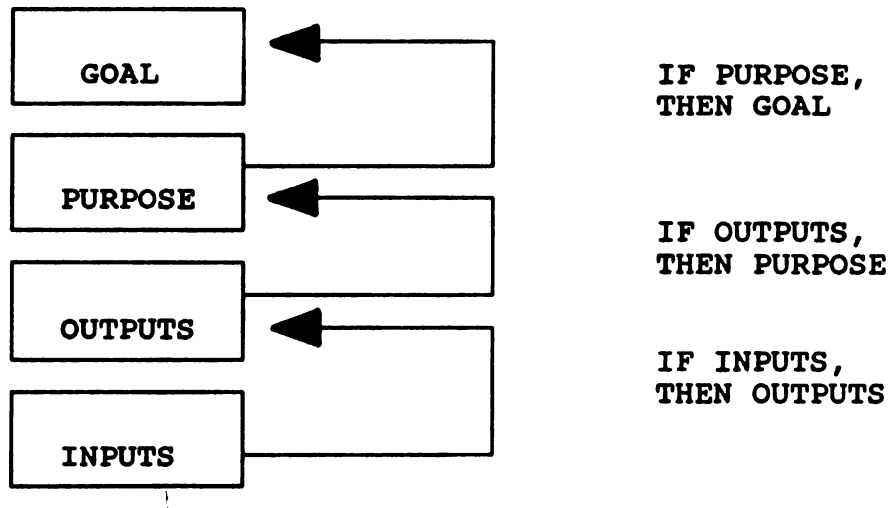
When we design a project using the Logical Framework, we make a series of predictions which we usually call hypotheses. These are:

1. IF the inputs are managed properly,
   THEN the outputs will produced.

2. IF the outputs are produced,
   THEN the purpose will be achieved.

3. IF the purpose is achieved,
   THEN this will contribute to achievement of the goal.

This can be viewed graphically as follows:



The hypotheses as shown here, are of course, over-simplified. Each time we make such hypotheses we have to accept that there will be a degree of uncertainty. The amount of uncertainty increases as we reach higher up the project hierarchy of objectives. It therefore becomes very important to clarify the nature of uncertainty so that we can select a design that has the highest probability of success. This is done by additionally including in our project design statements describing factors necessary for achieving success but beyond our control. For example, when one predicts that one will get to the office on time by boarding one's regular bus at 8 o'clock, one must also assume that the bus will be in good mechanical condition, and that there will be no accidents.

Because we recognize the existence of uncertainty, we need to describe the full dimensions of the hypothesis we are making.

Instead of saying:

IF one gets the bus on time, THEN he will arrive at the office on time.

We must say:

IF one gets the bus on time, AND (1) IF the bus doesn't break down,

AND (2) IF there are no traffic delays.

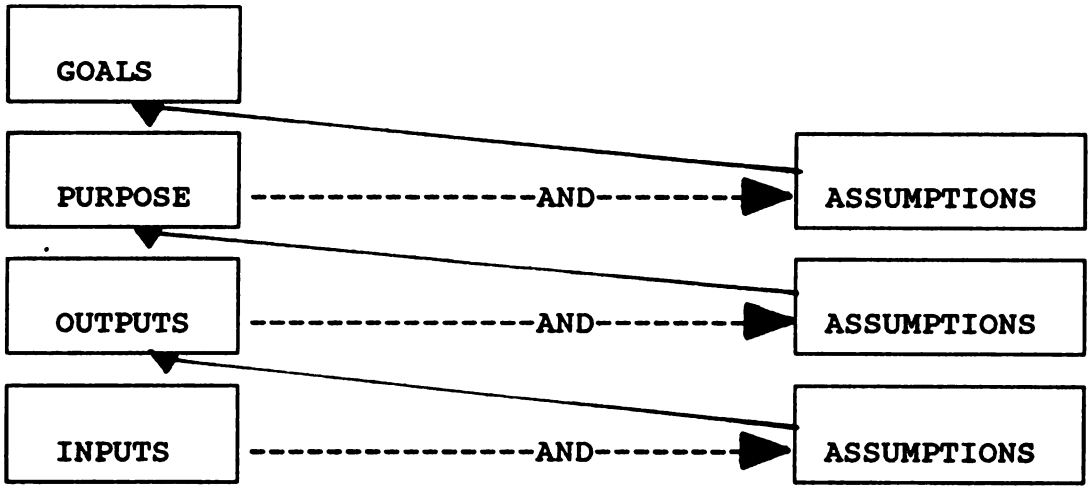
THEN he will arrive at the office on time.

We have then described the nature of the uncertainty affecting our hypothesis, and have expressed it in the form of assumptions.

4.3.3 Assumptions

Assumptions reflect our recognition that there are factors beyond our control that are necessary for successful achievement of objectives at all levels of the project. We can control, as in the previous example, getting up on time, having breakfast, and getting to the bus-stop for ourselves. We cannot control the traffic or ensure that the bus company keeps its buses in good running order. So, by identifying our assumptions, we have expanded our original hypothesis statement to include the specific nature of the more important uncertainties that could effect that hypothesis.

A more complete statement of the expanded hypothesis is shown in diagram form as follows:



The reason this is important is that, once we have identified the assumptions, we can then try to deal with them in such a way as to increase our probability of success and consequently our confidence in our project design. In the case of the bus, we can get up earlier to avoid traffic delays; we could call the bus company and find out how often their buses do break down. If the answer is 80% of the time, we might decide to rent a car!

The above is, of course, a trivial example. But the question of assumptions can be the critical factor in a development project. The important point is that we must define, at any one level, all the necessary and sufficient conditions (both within our control--the central hypothesis--and outside our control--assumptions) that must be in place for us to achieve the next level objective.

Let us now follow this concept through looking at a more complex development project. In the case of development projects we are talking about important development objectives and scarce resources, so it is worthwhile to make the effort to assess whether our predictions in the project design are good predictions. Before we begin the project, we want to have confidence that we can achieve our objectives. We must therefore assess carefully what it is we are assuming about those factors outside our control that could be detrimental to achieving our objectives. We then record these assumptions as they are first identified in the Logical Framework in the assumption column at the same level as the "IF" portion of hypothesis is recorded. For example:

NARRATIVE SUMMARY			ASSUMPTIONS
Goal			
Purpose Important Contract signed			
Outputs 1. Arrive at office on time	----------and	----▶	1. Client agrees to final version of contract.
Inputs 1a. Get up in time to catch bus.	----------and	----▶	1. Bus in good condition. 2. No traffic delays.

Once we have identified as many critical assumptions as possible with the information at hand, it is then time to look more closely at each assumption. Let us take one assumption from the banana production example in Figure 4.2 and see how it is used in the project design. Adequate rainfall is necessary for the project purpose to be achieved. This is not difficult to understand, but the project planners and managers will need more guidance if they are to assess the validity of this assumption. The first question to be answered is how much rainfall is adequate? We must find out how much rainfall the crop will need. It will not be enough to know how many inches of rain are required. We must also know when it should fall. If we find that the rains must begin in May and last through October, with a monthly average of 12 inches, the next step is to find out if it is reasonable to expect this level and pattern of rainfall. If careful analysis of climatic history in the region shows that for eight years of the last 20 years, rainfall was less than eight inches for the months of June and July, our assumption of adequate rainfall would not be valid.

We could continue with the project "as is" and accept the lower probability of success, but generally when the probability of success drops substantially due to an invalid assumption, we should take some steps to rectify the situation. We must first ask if there is something the project itself can do to effect the necessary change. In the above example, perhaps an irrigation system developed by the project would bring a sufficient supply of water to the crops. The project planners should study this to

FIGURE 4.2:

LOGICAL FRAMEWORK FOR SUMMARIZING PROJECT DESIGN

Est. Project Completion Date _____
Date of this summary _____

PROJECT TITLE: Banana Production - OECS

	NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
DEVELOPMENT HYPOTHESES: if purpose then goal	Programme Goal: The broader objective to which this project contributes. Farm Income Increased	Measures of goal achievements		Concerning long term value of programme /project:
DEVELOPMENT HYPOTHESES: if outputs then purpose	Project Purpose: Production Increased	Conditions that will indicate purpose has been achieved: End of project status		Affecting purpose-to-goal link: 1. Prices remain stable. 2. Transport facilities adequate 3. Storage facilities exist
DEVELOPMENT HYPOTHESES: if outputs then purpose	Output: 1. Fertilizers and HYV seed stock distribution system in place 2. Farmers trained 3. Credit system in place	Magnitude of outputs necessary and sufficient to achieve purpose.		Affecting output-to-purpose link: 1. Fertilizer used where needed. 2. Rainfall supply adequate (Improved Assumption: 2. 10 inches of rain will fall between May and October each year)
MANAGEABLE INTEREST: if inputs then inputs	Inputs: Activities and types of resources: 1a. Design distribution system b. Construct storage facilities c. Training staff 2a. Recruit farmers b. Develop training facilities and materials c. Conduct training 3a. Hire credit specialist b. Develop system procedures c. Training staff	Level of effort/expenditure for each activity		Affecting input to-output link: 1. Farmers receptive to new methods 2. Fertilizer prices remain stable

determine what would be required to develop the irrigation system and whether the project would have the necessary resources. If the project cannot expand, perhaps another project could take on this task. If there are no means to rectify the problem, then two other possibilities arise: (1) the objectives of the project could be modified (the expected level of productivity in the above example could be reduced) OR (2) the project could be abandoned as unworkable, thereby saving resources. If each of the assumptions in the project design are handled in this manner during the design phase and the project improved accordingly, then once the project begins, the project manager should have a clear idea of the probability that his project will be successful and also what difficulties might arise during the course of the project.

Assumptions are useful not only during the design stage of the project but also during the evaluation of the project. Once the project begins, the project manager should monitor the assumptions regularly to assess their continuing validity. If he finds that an assumption proves to be invalid during the course of the project, he must take action to rectify the situation. A good project manager monitors assumptions regularly so that corrective action can be taken in a timely manner. Assumptions are also important during an evaluation because they can provide guidance as to why the project has or has not succeeded in achieving its objectives.

To develop better assumption statements, we ask the question: "What could happen to make this assumption valid?" For example, if we have a very general assumption such as "equipment available on time", we would ask: "What could happen to delay the availability of equipment?" The response might be that there is a likelihood that a dock strike will occur and thus, we would have to make the assumption that the dock strike would not occur. We can then follow this with a further question: "What could happen to make the dock strike occur?" Suppose we find that the government is scheduled to sign a contract with the dock workers' union two weeks before the project equipment is due to arrive at the port, and there is a possibility that the government will not accept the union's demands. Project staff could check with the union and with the appropriate government officials to determine the probability that the contract will be signed on time. If the probability appears high, instead of the original assumption ("equipment available on time"), the following assumption would be made: "Government and dock workers' union sign labor contract by December 30, 1991 in time for delivery of equipment." The project manager will know then to keep an eye on negotiations between the government and the dock workers, and, if it looks like the contract may not be signed, he can replan the project accordingly.

The assumptions allow for better communication between the project manager and his superiors. By carefully analyzing the uncertainties in a project before the project begins, it is made clear to a project manager's superiors what factors are outside of his control and yet might affect the project. When the superiors approve the project, they accept the assumptions as being outside the project manager's control. They have shared in the judgement

with the project manager that the project has a high probability of success given the clearly stated and validated assumptions. The shared judgement frees the project manager from individual accountability for the total project design. If an assumption then proves to be invalid, thus causing a problem, the project manager can communicate such problems to his superiors readily, without fear that he will be unfairly blamed for poor management. If the manager hides problems, especially those caused by failed assumptions, he cuts off the possibility of corrective action by his superiors. The project manager and his superiors should work together to identify problems and find the proper solutions. While assumptions are outside the control of the project manager, they are not necessarily outside the control of the project manager's superiors. More will be said about the role of the project manager in a later section.

4.3.4 Objectively Verifiable Indicators

It is not sufficient to define the general intent of a project in terms of the linked hypotheses and relevant assumptions for each project level. The statements of Goal, Purpose, Outputs and Inputs, frequently are subject to misunderstanding or open to different interpretations by those involved with the project. Goal and Purpose level statements, in particular, tend to be ambiguous. It frequently happens that a project purpose is interpreted to mean as many different things as there are people involved in the project. For example, an objective such as "improved living conditions for villagers" is liable to have very different meanings for different people. If we could visualize exactly how we will be able to recognize success at each project level, we would be able to sharpen our focus of the project objectives and have confidence that all those concerned with the project share the same picture of it. Objectively Verifiable Indicators are the means for establishing what conditions will signal successful achievement of the project objectives.

Indicators are defined as those conditions that are so strictly associated with certain other conditions that presence of or variation in the former indicates the presence of or variation in the latter. Indicators demonstrate results. They are not conditions necessary to achieve those results. For example, an increase in the temperature reading of a thermometer would indicate that we have successfully heated water to a desired level. The increase in the temperature reading, however, is not necessary to achieve heated water--for that we need the right kind of heating element.

Thus we can use indicators to clarify exactly what we mean by our narrative statement of objectives at each of the project levels (note there is a variation for input level indicators--where we are simply concerned with indicators of consumption of project resources). As the project purpose is of major concern, the set of indicators at that level has been given a special name: End of Project Status (EOPS).

The Logical Framework therefore encourages the project designer to define clearly and explicitly what will indicate that the project can be considered a success. Included directly in the project design is the set of conditions that will signal successful achievement of the project purpose. This set of conditions we call END OF PROJECT STATUS (EOPS). An example follows:

PURPOSE	EOPS
Production Increased	1. 1000 farmers with 5 acres or less increase banana yields by 50 percent between October 1991 and October 1993.
	2. Banana harvested by small farmers in 1993 is of equal quality (X percent rejected) to banana harvested by same farmers in 1991.

The EOPS represents the indicators of success at the purpose level of the Logical Framework. Indicators are needed also at the other levels of the Logical Framework and we call the indicators for all of the four levels OBJECTIVELY VERIFIABLE INDICATORS (OVIs). It is just at the purpose level that we have a special additional name for the indicators (EOPS); this is due to the importance of the purpose--it is the main thrust of the project and the focus for programming and project dialogue.

Notice, in the above example, how the indicators add depth and dimension to the purpose statement. The purpose "production increased" is vague. If we only succeed in raising production 2% for one farmer we could be considered successful--we have increased production! Without the indicators, we have no way of knowing the specific intent of the original design. Also, the way the purpose is written, it is not clear that we are aiming at small farmer production. When we specify exactly what we visualize will be in place because we have achieved our purpose, we actually clarify the purpose. It should be rewritten as follows: Small farmer banana production increased in OECS countries. When we clarify the purpose statement we must again examine our indicators. Frequently they need further refinement. This refinement process is essential for good application of the concepts. We should not be reluctant to change the Logical Framework during the design-- we should in fact expect to have to change it as use of the concepts constantly raises important questions and forces us to continually refine our design until we have high confidence in its validity. It is much better if we make our mistakes on paper. The process of using the concepts is a collaborative one. It calls for participation by all parties to the project: programming staff, top management, project management, specialized experts and technicians, and frequently evaluation experts in addition. Notice too that once we have added

indicators to our design we are better able to judge its adequacy.

Figure 4.3 shows a Logical Framework for the Agricultural example which has had indicators added to it, its purpose and goal have been further clarified and its assumptions made more explicit. Compare this figure to that in Figure 4.2 for illustration of how the concepts are used to build and improve the design.

Often a number of indicators will be necessary to measure success. The number of indicators that are necessary is that minimum number which gives us confidence that their existence will in fact demonstrate achievement of our project activities, and, in addition, give the project manager a clear target to aim at achieving. It is only when the objectives are clearly targeted that the project manager can judge whether or not the conditions at one level in the project design are sufficient to achieve the next higher level objective.

FIGURE 4.3: ADDING INDICATORS FURTHER CLARIFIES PROJECT DESIGN

LOGICAL FRAMEWORK FOR SUMMARIZING PROJECT DESIGN

PROJECT TITLE: Banana Production - OECS

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Programme Goal: The broader objective to which this project contributes. Small farmer income increased in OECS countries	Measures of goal achievements: Average farmer income raised from $3000 per year in 1991 to $4000 in 1993. Small farmer income raised from $2500 to $3500 in same period		Concerning long term value of programme /project: 1. Inflation does not exceed 12%/yr. 2. Sufficient "luxury" goods available for farmers to spend "disposable" income. 3. Farmers protected from unscrupulous merchants (middlemen).
Project Purpose: Small farmer banana production increased in OECS countries	Conditions that will indicate purpose has been achieved: End of project status 1. 1000 farmers (owning 5 acres or less) increased banana yields by 50% between 1991 and October 1993. 2. Banana harvested by small farmers in 1991. 3. 95% of farmers by NTV suckers for 1994 planting season.		Affecting purpose-to-goal link: 1. Price of banana does not fall below X $/ton in 1992 and Y $/ton in 1993 2. Market absorbs total increased production each harvest 3. Limited spoilage or waste occurs in marketing/storage system.
Output: 1. Functioning fertilizer and high yield variety banana distribution system in place. 2. Farmers trained. 3. Functioning credit system in place.	Magnitude of outputs necessary and sufficient to achieve purpose 1a. 10 distribution centers constructed by 12/93 b. X tons fertilizer and Y thousands planting materials distributed to target group. c. 96% of all purchases paid for within 2 months of purchase. 2a. 1500 farmers trained by 12/93 b. 98% of those trained use new planting and cultivating techniques appropriately. 3a. $1m issued in credits to small farmers by 1993 by 30 credit area officers. b. Default rate does not exceed 2% of total loans. c. Credit terms acceptable to local farm leaders.		Affecting output-to-purpose link: 1. Extension agents correctly supervise farmer application of fertilizer. 2. 10 inches of rain falls between May and October each year. 3. Price of vegetables stays at 1991 levels so farmers will stay with banana project and not convert to vegetables.
Inputs: Activities and types of resources 1a. Design distribution system b. Construct storage facilities c. Training staff 2a. Recruit farmers b. Develop training facilities and materials c. Conduct training 3a. Hire credit specialist b. Develop system procedure c. Train staff	Level of Effort/Expenditure for each activity. 1a. 6 manmonths $ 15,000 b. 12 manmonths $1,000,000 c. 16 manmonths $ 150,000 2. 24 manmonths $ 100,000 24 manmonths $ 200,000 3. 36 manmonths $ 150,000		Affecting input to out-put link: 1. Farmers willing to accept new cultivation methods. 2. Fertilizer prices do not exceed $ per ton. 3. Can recruit locally 150 agricultural extension agents.

(a) Characteristics of good indicators

i. Indicators Measure What is Important

The indicators must measure what is important in the objective. For example, in our statement of goal "Small farmer income increased." (Figure 4.3), it will be easier to measure farmer income, but we are interested in small farmer income; thus, our indicators must reflect our interest in small farmers. And we are talking about income--but do we mean income in general or do we mean real income? If the latter, we must specify that so we measure the important aspects of our project.

ii. Indicators Must Be Plausible

The indicators we select must be so closely related to what we are trying to measure that we are confident our project was an important factor in the observable results. For example, to state that the presence of farmers making large profits demonstrates that a functional credit system has been established is not plausible. Farmers making large profits could demonstrate a number of other factors at work--successful crop production, unusually high demand and short supply of a specific crop, high levels of activity in black market products, etc. To demonstrate that we have a functioning credit system, we must look for indicators more closely related with what it means to have a functioning credit system--i.e., numbers of loans actually issued to small farmers; effective default rates; speed and efficiency with which loans are processed and administered, etc.

iii. Indicators Must be Targeted

Indicators must be targeted in terms of quantity, quality, and time. If any of these three are missing we cannot be entirely objective about whether we have been successful or not. There is a simple, step-by-step process for targeting an indicator which is described below using one of the indicators selected in Figure 3 to signal successful achievement of the purpose.

Step One	Identify Indicator Small farmers increase banana yields.
Step Two	Quantify 1,000 small farmers (owning 5 acres or less) increase banana yields by 50%.
Step Three	Set Quality 1,000 small farmers (owning 5 acres or less) increase banana yields by 50% while maintaining same quality existing in 1990.

Step Four	Specify Time Frame 1,000 small farmers (owning 5 acres or less) increase banana yields by 50% between October 1990 and October 1993 while maintaining same quality existing in 1990 harvest.

Not every indicator can include all three factors (QQT). In the step-by-step process shown here, QQT have all been included, but the resulting indicator is somewhat awkward. In Figure 4.3, however, quality has been separated and put in a separate indicator. The best method is that which simplifies. The question of quality is extremely important, but is frequently overlooked. In this example, the concern is clear--if we produce more banana at the expense of quality, we will have failed. In setting targets we must ask: "How much is enough to achieve next level objectives, what quality should it be, and by when do we need it?"

In order to answer these questions, of course, we must know the targets at higher levels. In our example, we know what farmer income currently is; we know how much basic necessities (food, seed, clothing) cost him now and can estimate what they will cost him three years from now. We therefore can estimate how much income he will have to earn in order to have a real income that sufficiently increases to make the project worth his time and effort. From this, we can derive how much banana he will have to sell at what price (hence, our assumptions about banana prices) by 1993, and in turn, we can then derive how much banana he will have to produce. This process is used for deriving targets for all components of the project. Beginning at the highest level to determine what we need-all the way down to calculating how much it will cost us to finance the project. Then, given that we rarely get what we need (!) we have to look at the available resources and work our way back up the project testing whether we can in fact accomplish the desired levels of results, and whether, once achieved, they would prove to be worth the cost ("cost effective").

A project costing 10 million dollars for only 300 farmers would not be as effective as a 10 million dollar project affecting 30,000 farmers to the same degree. On the other hand, if the 300 farmers were developing some experimental crop which was essential to the country's survival (a far-fetched case, but possible), then 10 million dollars might be considered a small investment. Cost-effectiveness attaches no value to the results.

iv. Indicators are Independent

The indicators that demonstrate an achievement of an objective at one specific level cannot be used to demonstrate achievement at the next higher level. Although this appears to be one of the simplest concepts of Logical Framework methodology, it is also one of the most common weakness in Logical Framework designs. There is a common tendency to demonstrate achievement of a result by measuring the means used to achieve the result. It is a common error to use "school building constructed" and "teachers trained" (outputs) as

indicators of the improved quality of education in the school (purpose). Or "farmers training center constructed", "training materials supplied", and the "training staff hired", (outputs) as indicators of improved educational services provided by the Farmer Training Center (purpose). This is because it is easier to think of success in terms of the tangible deliverables of the project--we can see buildings and people. Purpose level objectives are much harder to define, and so, instead of struggling with something difficult and perhaps somewhat abstract, at first glance it seems logical to think: "Well, of course, we have improved Farmer Training; just look at this fine building with full training facilities and the first-class trainers and extension officers we have working for us". We need to think carefully about what indicators would truly demonstrate farmer training services provided: i.e., type and quality of actual agricultural services provided to specified target audiences--such as number of Extension Officers trained, number of farmers that eventually benefitted from training at the centre, etc.

We have thus made a prediction that producing the outputs will achieve the purpose, but the prediction includes uncertainty. Therefore, we cannot say that production of outputs automatically achieves purpose; nor can we use production of outputs as proof of purpose achievement. We must measure purpose-level achieve- ment independently of output-level achievement. One way to check this independence is to determine if the set of indicators we have identified at the purpose level (EOPS) represents the means to achieve the project purpose, or if these indicators actually measure immediate direct results of purpose achievement as they should. If the indicators represent the <u>means</u>, then they belong at the <u>output level</u>.

(b) <u>Special Indicators</u>

Good indicators are not always available. A good indicator is a direct measure of achievement. For example, increased crop productivity can be measured by the change in crop yield per hectare on fields in the area in which the project is operating. Evaluators can measure success of this project at termination. However, when the objective is a "viable industry established" it becomes much more difficult to measure project success at termination. The industry may have been developed in such a fashion that it will become viable three years after the project terminates. In order to have some confidence of success at termination, it is necessary to find an indicator that can be assessed now that will <u>predict</u> later performance. This might be a trend in the reduction of production costs per unit and/or a steady increase in orders. When predicting later performance such as in the example above, we call the indirect indicator a "leading indicator".

Indirect indicators can also be used to measure results when direct indicators are too costly to verify. If a direct indicator requires an expensive survey for verification and if this is not

within the project budget, indirect or proxy indicators must be found. If the project wants to test the quality of education in a vocational school, but cannot afford to examine the graduates, the evaluators may check how many of the graduates are being employed at what salary. The indirect indicators do not offer as much confidence in success as do direct indicators, but they represent an acceptable alternative when direct indicators are not possible. In using direct indicators, care should be taken to assess what other variables could explain the change in our chosen indirect indicator. In the example above, salaries of graduates from a vocational school could well reflect employer satisfaction with the quality of the graduate. However, it is possible that there might be a shortage of people with these particular skills and the resulting demand unrealistically force up prices, even if the graduates were only mediocre.

4.3.5 Means of Verification

As a still further step in the Logical Framework Approach to clarifying objectives, we must ask the question "How will we be able to measure our indicators?" The indicators prove achievement of objectives--but, if we cannot find data about how much bananas farmers have harvested, then we cannot prove that yields increased, and therefore we cannot show production increases in general. And if we cannot measure success (or failure), we should question the reasonableness of executing the project. Usually, however, we can substitute an alternative indicator which correlates closely with the preferred indicator (bananas marketed, for example). In many cases, if we think about it carefully, we can frequently find appropriate data by using different means of verification. If farmers do not report harvest, or there are no weighing facilities, we can do a survey and count numbers of bunches harvested.

The value of an indicator is limited by the means available to verify the indicator. As in the example above, if an extensive survey is needed for obtaining the necessary data to verify an indicator, and if the project does not have the money to pay for the survey, then another indicator must be found. The verification of some indicators may require just a quick review of project or government records whereas other indicators require sophisticated data collection and analysis for verification.

If verification is going to cost the project time and money, then the means of verification must be identified during the design stage of a project and the necessary manpower and money included in the project inputs. If these are not planned early in the project, they may not be available when they are needed. Sources of evidence on all important elements of an indicator are needed. An example follows:

Objectively Verifiable Indicators	Means of Verification
1,000 new single family dwelling purchased by low income, farmer tenement residents by June 1992.	Sales records from land office, number of sales and sale dates Data on purchaser's income level from tax records. Data on purchaser's farmer residence from land office.

In the above example, each important element in the indicator has a means of verification. The means of verification must be carefully examined to ascertain the completeness and reliability of the data. Often project managers will count on government records, only to learn later that (1) the records are out of date or (2) the data were poorly collected so that the records are not reliable. The quality of available records must be assessed. In the above example, it was found that the first two means of verification were available and reliable, but it was discovered that the land office did not keep records on purchasers' former residences. This means of verification had to be discarded and another means found. A possible alternative would be to visit the new owners to ask about their former residence. One could also build an information system into the project so that the necessary data could be collected in the course of regular project operations. Such a system can provide timely, relevant information that can be used by decision-makers throughout the course of the project. Whatever means the project uses to obtain the information necessary to verify indicators of achievement must be made explicit in the project design. See Figure 4.4 for further examples of means of verification (Figure 4.4 column 3).

FIGURE 4.4: ADDING MEANS OF VERIFICATION STRENGTHENS DESIGN & EVALUATION OF PROJECT

LOGICAL FRAMEWORK FOR SUMMARIZING
PROJECT DESIGN

PROJECT TITLE: Banana Production - OECS

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Programme Goal: The broader objective to which this project contributes. Small farmer income increased in OECS countries	Measures of goal achievements: Average farmer income raised from $3000 per year in 1991 to $4000 in 1993. Small farmer income raised from $2500 to $3500 in same period	1a. Sales & market price figures b. Tax figures c. Ag. extension agent reports 2a. Sales & market price figures	Concerning long term value of programme /project: 1. Inflation does not exceed 12%/yr. 2. Sufficient "luxury" goods available for farmers to spend "disposable" income. 3. Farmers protected from unscrupulous merchants (middlemen).
Project Purpose: Small farmer banana production increased in OECS countries	Conditions that will indicate purpose has been achieved: End of project status 1. 1000 farmers (owning 5 acres or less) increased banana yields by 50% between 1991 and October 1993. 2. Banana harvested by small farmers in 1991. 3. 95% of farmers by HTV suckers for 1994 planting season.	1a. Harvest Records: Dept or Ag. extension agents surveys b. 1991 COA records 2a. Review & analysis by COA experts 3a. Credit system records b. Survey of farmers for programme satisfaction	Affecting purpose-to-goal link: 1. Price of banana does not fall below X $/ton in 1992 and Y $/ton in 1993 2. Market absorbs total increased production each harvest 3. Limited spoilage or waste occurs in marketing/storage system.
Output: 1. Functioning fertilizer and high yield variety banana distribution system in place. 2. Farmers trained. 3. Functioning credit system in place.	Magnitude of outputs necessary and sufficient to achieve purpose 1a. 10 distribution centers constructed by 12/93 b. X tons fertilizer and Y thousands planting materials distributed to target group. c. 96% of all purchases paid for within 2 months of purchase. 2a. 1500 farmers trained by 12/93 b. 98% of those trained use new planting and cultivating techniques appropriately. 3a. $1m issued in credits to small farmers by 1993 by 30 credit area officers. b. Default rate does not exceed 2% of total loans. c. Credit terms acceptable to local farm leaders.	1a. Project records b. Project records, extension agent survey c. Project A/C records 2a. Project records b. Extension agent reports c. Spot check survey by project manager 3a. Credit systems records b. Ag. extension agent report	Affecting output-to-purpose link: 1. Extension agents correctly supervise farmer application of fertilizer. 2. 10 inches of rain falls between May and October each year. 3. Price of vegetables stays at 1991 levels so farmers will stay with banana project and not convert to vegetables.
Inputs: Activities and types of resources 1a. Design distribution system b. Construct storage facilities c. Training staff 2a. Recruit farmers b. Develop training facilities and materials c. Conduct training 3a. Hire credit specialist b. Develop system procedure c. Train staff	Level of Effort/Expenditure for each activity. 1a. 6 manmonths $ 15,000 b. 12 manmonths $1,000,000 c. 16 manmonths $ 150,000 2. 24 manmonths $ 100,000 24 manmonths $ 200,000 3. 36 manmonths $ 150,000	1a. Project manager records b. Sub-contractor records and reports c. Project manager reports	Affecting input to out-put link: 1. Farmers willing to accept new cultivation methods. 2. Fertilizer prices do not exceed $ per ton. 3. Can recruit locally 150 agricultural extension agents.

4.3.6 Manageable Interest

The "manageable interest" refers to the tasks (outputs) that a competent manager should be willing to accept responsibility for producing if he is given the resources agreed upon at the start of the project. In a well-designed project, each task is necessary for accomplishing higher objectives (purpose and goal) that motivate the project. Achieving the higher objectives does not automatically follow from achieving the tasks because there are important factors outside the project that are necessary too. The hypothesis of a development project is that the project purpose will be accomplished if the project outputs are produced and the outside factors conform to the "important assumptions" we make about them. The project manager should be considered "responsible" for achieving the project "outputs". They are within his "manageable interest". The judgment that development impact (purpose and goal) will follow is "beyond the manageable interest". The project manager and higher levels of management share the responsibility for the judgement that development impact will result. The project manager is responsible to keep informed about the progress of the project and to inform higher level management about changes that cast doubt on the hypothesis implicit in the project.

In discussing the origins of the Logical Framework concepts, you will recall the major problems that were encountered for evaluating development projects: ambiguous objectives, unclear management responsibilities, and the perspective that evaluation was a threat to project teams and project managers. The concept of "manageable interest" helps particularly with the second problem-clarifying what the manager should feel responsible for and why. In the process the manager's objectives are clarified, and evaluation becomes an opportunity for the manager to call attention to problems and the need for replanning. This approach fosters a constructive attitude - the sharing of information about objectives and evaluation of progress in an atmosphere that is candid and aimed at improving the project.

How does the concept of "manageable interest" help achieve all this? Quite simply, by making that very important distinction between what we can accomplish (the outputs), and the important results we expect to achieve (purpose), the project manager is accountable for producing outputs with agreed inputs; he is relieved of the anxiety and worry of being responsible for the development impact. He is not "responsible" for factors outside the project. Because the manager is not being held accountable for unrealistic objectives, he can relax and devote his energies to getting his job done, and not worry about whether or not he will be blamed for other problems. However, he is not absolved from his responsibility to use his best judgement in the project design, to use all means at his disposal to favorably influence factors that are outside his control, and to communicate with superiors when he sees that (1) the outputs may not be produced on time or (2) the outputs will be produced as targeted but they are not having the predicted effect on purpose-level achievement.

The project manager should take whatever corrective action is available to him where appropriate and should recommend corrective actions to his superiors when their help is needed. It is the project manager who is in close contact with his field staff and is therefore in a better position to see what measures could be undertaken to correct the situation. If the project manager does not pass on his recommendations to his superiors, then decisions will be made without the insight of the man in the field.

Communication between the project manager and his superiors must be two-way communication. The project manager must be informed by his superiors as to the reason why the project is being undertaken. The Logical Framework aids in this communication by specifying the program-level objective: the goal. The project manager should understand how his project will contribute to purpose and goal-level achievement.

If the project manager sees that his project will not have the expected impact at higher levels, he must communicate this to his superiors. Often this is difficult for a project manager to do, for it could mean that his project will be discontinued. For example, if the goal is "income of small farmers increased", and the purpose is "small farmers rice production increased", and the project manager sees that, although the small farmers are increasing their rice production, their income is not increasing because of a recent substantial drop in the price of rice, he should communicate this information to his superiors. They might then decide to terminate the project because they are interested in small farmer income, and if rice production is not a means to achieve this, then they must look for other means.

We use the term "manageable interest" to mean that part of a project that is within the control of the project manager. We would therefore say that the purpose of a project is outside the manageable interest of the project manager. This concept helps us to determine, when we are designing a project, what we should use for the objectives at the various levels in the Logical Framework. The project designers should know when it is reasonable to expect a project manager to be able to produce and, by definition, these would become outputs, or deliverables.

We should not however, let the outputs define the purpose needed. We must first clarify the significant change required--the reason for the project and then determine what set of outputs are necessary to effect that change.

Error in Logic

An occasional error is made in developing an output to purpose hypothesis. No distinction is made between the result of all the outputs being achieved and a simple summary of all outputs achieved. Remember that there is a prediction made that the purpose will result from the outputs being achieved and that there is uncertainty in that prediction. If the purpose were the

sum of the outputs, then we would have 100% certainty that purpose would be achieved i.e., we have no hypothesis.

BAD PRACTICE	GOOD PRACTICE
Purpose is sum of outputs. Purpose: Modern farming methods used by farmers.	Purpose is result of outputs. Purpose: Agricultural production of farmers increased. Outputs: 1. Fertilizer used by farmers. 2. HYV seed stock planted by farmers. 3. Pesticides used by farmers. 4. Fungicides used by farmers. 5. Multiple cropping system used by farmers.

Delegation of Responsibility for Outputs

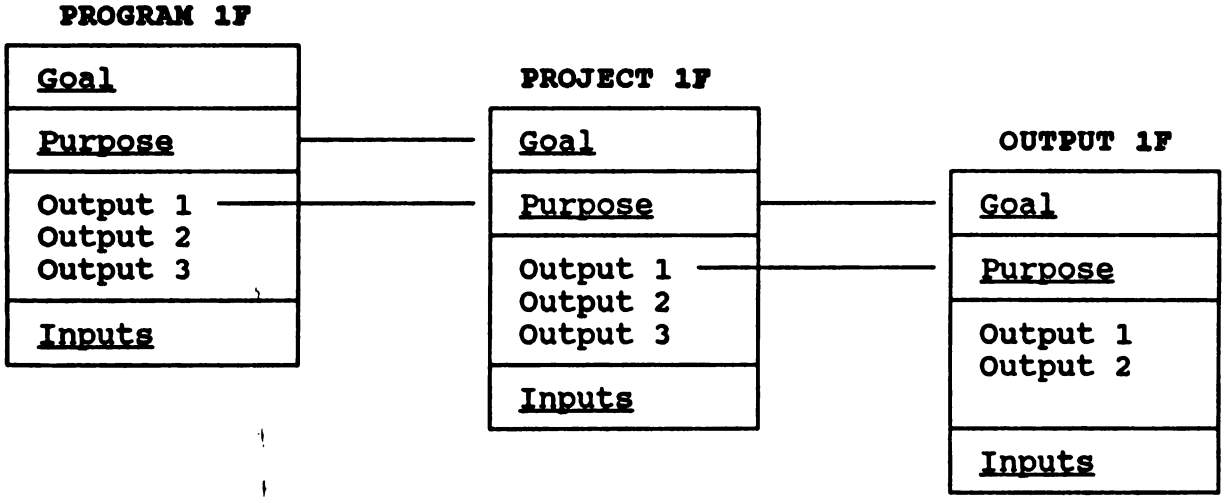
Responsibility for producing each of the outputs can be delegated by the project manager to others, be they contractors or subordinates. The outputs can be broken down in the Logical Framework by listing the separate major activities that are required to produce each output. This is especially useful when the project manager delegates authority to several contractors or subordinates for one output or when outputs must be subdivided for proper resource allocation. The inputs on the Logical Framework should show the major activities for each of the outputs. The indicators at the input level should show the manpower, money, and equipment necessary for each of the activities. (See Figure 4.4 Input-Output Level; Input Indicator column).

The Logical Framework can be used as a communications tool, not only between project manager and superior as described above, but also between the project manager and others on whom he must rely for cooperation in achieving his objectives. It is especially useful when the project manager must deal with many factors that are outside his control. For example, if his project purpose is "banana production increased 50% and his outputs are (1) irrigation canals constructed and (2) high yield planting materials distributed, and the project is assuming that there will be sufficient fertilizer on the market at a reasonable price and that the credit institutions will make loans to the farmers, he may need to influence the fertilizer producers and distributors and the credit institutions without having direct authority over them. He can do this by sharing his objectives with them. With the Logical Framework he can explain what the project purpose is, what the outputs are that he must produce, and what the assumptions are that are critical to project success. He should also share with them the goal of the project so that they can see they are contributing to a significant and important undertaking. The key element is the assumptions, for this allows them to see their role in helping the project manager to accomplish his task.

4.3.7 Building the Project Design

A project should not be designed by any one person in isolation. Designing a project requires both management and technical skills, and people with the specific skills needed should be included as members of the design team. Where one starts when developing a Logical Framework for a project depends upon the amount of decision-making that has already taken place regarding project details. Ideally, the Logical Framework should be used before the project is even identified. In such a case, the Logical Framework would be a design tool for program/sector planning. Once higher (program/sector) management has identified a program or sector goal, they would then identify the project that together, would be needed to achieve the goal.

If program-level managers were using their own Logical Frameworks to design programs, the reason for the program would be recorded on their Logical Framework as a purpose, and each of the projects needed to achieve the purpose would be an output. Each output (or project) would then be assigned to a project manager and that output would become the purpose on the project manager's Logical Framework. His goal would of course be the purpose of the Logical Framework of the program manager. This same approach could be used to delegate responsibility for managing individual outputs. This can be seen graphically below:



When a project is assigned to a design team (which should include the project manager, if possible) in this fashion, the goal and purpose of the project Logical Framework are already identified. The design team may first want to further clarify the purpose by developing indicators for end-of-project-status. Once the scope of the project purpose is understood, the next step is to develop the project outputs. The design team must ask themselves what should be produced in order to achieve the purpose. When the outputs are identified the next step is to identify the activities and resources required to produce the outputs. At this point the first stage of Logical Framework development has been completed. The Logical Framework should have the goal, purpose, outputs, and

inputs identified. The EOPS should be partially complete and the indicators at the input level (resources) should be roughly identified. Invariably many assumptions are identified during this initial stage of project design and they should be noted in their rough form so that they are not forgotten. This first stage is a top-down design, beginning at the goal and working done to the inputs.

The second stage of project design starts at the bottom and works back up to the goal. During this stage the design team must ask if they have identified all the necessary and sufficient conditions at one level to be confident of achieving the next higher level of objectives. A review of each set of the activities together with their resources is made to determine whether it is necessary to produce a specific output. The assumptions must be further clarified and then the team must determine whether all of the factors (both within and outside the manageable interest) necessary to produce the outputs have been identified. At this stage, the experts and project technicians should be called in as necessary to advise the design team and/or project manager.

The team then moves to the output level and examines each output to see if it is necessary to achieve the project purpose. Indicators must be developed for each output. The assumptions for the output-to-purpose prediction are further clarified, and then the judgement must be made as to whether all of the factors necessary and sufficient to achieve the purpose have been identified.

The team then moves to the purpose level and reexamines the purpose to determine whether it is necessary to achieve the goal. All of the EOPS indicators must be fully identified and targeted. The assumptions for the output-to-purpose prediction are further clarified. The other projects that will also be contributing to goal achievement must be included in the assumptions. The design team[5] must determine whether all of the factors necessary to achieve the purpose have been identified. AT the goal level the indicators must be fully identified and targeted. This completes the first cycle of the Logical Framework design.

To further refine the project design, two activities are required and they can be undertaken simultaneously. One of these is to develop the evaluation plan. For this, the first step is to identify the means of verification for each of the indicators. If the means of verification require additional project resources and activities, then both have to be included as project inputs on the Logical Framework. The project manager must think ahead of the decisions that must be made following evaluations. If important

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[5] The parties involved in the design process can be drawn from different department levels and areas of expertise, depending on the project. If a project manager has not been officially assigned, at least one member of the design team should be charged with bringing the project management viewpoint to the design effort. In addition, when refining the purpose and goals of the project, higher level management should be included in the dialogue to ensure the resulting gaol level clarification does meet their programming objectives.

decisions must be made at specific points during the course of the project, then interim evaluations may be required and interim targets must be developed for the indicators.

The kinds of decisions required must be identified, so that the information necessary to make these decisions will be available at the proper time. A simulated evaluation can be helpful in identifying the kinds of decisions and the kind of information required. It may be found that additional indicators and additional assumptions have to be included in the project design to provide a base for measurement in the future.

The evaluation will be oriented to identifying change that has occurred as a result of having the project. In order to measure change it is imperative to know what the conditions were prior to the project. For every indicator that is to measure change, the project manager must have full data on the initial conditions. If the data are not already in hand, they must be collected prior to the commencement of other project activities. If collection of baseline data is not a preproject activity, it must be included in the project design as a project activity. If this in turn is not possible, then the implications of starting the project without sufficient baseline data must be assessed and alternatives considered--such as not doing the project, or collecting "trend" data so we can at least see change over time, even if we cannot see the initial status.

The second activity required to refine the project design relates directly to the assumptions. Each assumption must be fully clarified and its probability assessed. If the project manager finds the probability that the assumption is valid very low, then he must take some kind of action to increase the probability of project success. The types of action available to him are discussed in the section on assumptions.

There is no set formula for determining the probability of an assumption or for assessing the combined probabilities of all of the project assumptions. In general, if any one assumption has a low probability, that should be enough to signal danger to the project manager. If a number of assumptions are seen to be somewhat less than high probability, then their combined probability would have to be considered low and this would also be a danger signal to the project manager.

Assessing the probability of an assumption is an activity that is somewhat subjective in nature. An assumption is a prediction of a future event or condition and is based on the judgement of the project manager and his advisers using the best information available. This information is often provided by a feasibility study. If the project manager finds that he cannot assess the probability of his assumptions because he is lacking needed information, he may undertake further study to obtain the information. (Information has a cost, when weighed against the risk of lack of information).

The project manager ideally should be involved in the planning of a project. Often a planner will design a project and then pass the completed design on to a project manager. When this occurs, the project manger does not have the opportunity to share in the judgement of the design, yet he must be responsible for project implementation. In such a case, he should examine the design and alert top management immediately to any unrealistic aspects in the design and major problems he foresees.

ANNEX 1

Checklist of potential problems in a commodity system

Commodity: _____ Indicate whether the analysis is being undertaken on a: ( )national; ( )regional; or ( )local basis.

NATURE OF PROBLEM	IF PROBLEM AREA INDICATE WITH (X)	DESCRIBE HOW PROBLEM AFFECTS QUANTITY, QUALITY, PRICE, OR AVAILABILITY OF PRODUCT
Pre-Production Considerations		
Agricultural Sector Policies:		
- institutional organization	( )	
- salaries, urban or rural	( )	
- taxes:import or export	( )	
- price policies	( )	
- credit policies	( )	
- land reform policies	( )	
- natural resource management	( )	
- irrigation policies	( )	
- production and distribution of planting material	( )	
- farm input supply	( )	
- technology	( )	
- farmer organization	( )	
- marketing policies	( )	
- agro-processing policies	( )	
- import policies	( )	
- export policies	( )	
- incentives:	( )	
. tax	( )	
. financial	( )	
. other _____	( )	
Public Sector Institutions (identify institutions):		
- political instability	( )	
- leadership	( )	
- deficient planning	( )	
- management skills	( )	
- insufficient staff	( )	
- poor quality staff	( )	
- staff motivation	( )	

NATURE OF PROBLEM	IF PROBLEM AREA INDICATE WITH (X)	DESCRIBE HOW PROBLEM AFFECTS QUANTITY, QUALITY, PRICE, OR AVAILABILITY OF PRODUCT
- deficient equipment	( )	
- lack of operating capital	( )	
- weak services:		
. information	( )	
. credit	( )	
. research	( )	
. extension	( )	
. training	( )	
. technical assistance	( )	
. product standards	( )	
. coordination	( )	
. others_____	( )	
Private Sector Organizations (farmers, intermediaries, exporters, others):		
- legal structure	( )	
- public sector control	( )	
- leadership	( )	
- unclear role & functions	( )	
- small active membership	( )	
- low level member commitment	( )	
- members widely scattered	( )	
- communication	( )	
- lack of resources	( )	
- management skills	( )	
- insufficient staff	( )	
- staff skills	( )	
- staff motivation	( )	
- job description or terms of reference	( )	
- poor planning	( )	
- decision-making	( )	
- poor follow-through	( )	
- monitoring of staff	( )	
- financial management	( )	
- communication	( )	
- marketing policy	( )	
- pricing policy	( )	

NATURE OF PROBLEM	IF PROBLEM AREA INDICATE WITH (X)	DESCRIBE HOW PROBLEM AFFECTS QUANTITY, QUALITY, PRICE, OR AVAILABILITY OF PRODUCT
- airports	( )	
- sea ports	( )	
- tractors or other equipment	( )	
- others_____	( )	
Planting Material:		
- deficient infrastructure	( )	
- lack of proper equipment	( )	
- lack of technical know-how	( )	
- unavailability to farmers	( )	
- poor quality plants	( )	
- others_____	( )	
Problem Characteristics Inherent to Crop:		
- seasonality	( )	
- height of plant/tree	( )	
- other growth characteristics	( )	
- susceptible to pests/diseases	( )	
- short shelflife of product	( )	
- poor storage capabilities	( )	
- color	( )	
- flavor	( )	
- size	( )	
- shape	( )	
- quantity of fruit set	( )	
- others_____	( )	
Production Related Problem Areas:		
- climatic constraints	( )	
- soil constraints	( )	
- land constraints	( )	
- water related deficiencies:		
. too little water	( )	
. too much water	( )	
. inadequate irrigation systems	( )	
. poor water management	( )	

NATURE OF PROBLEM	IF PROBLEM AREA INDICATE WITH (X)	DESCRIBE HOW PROBLEM AFFECTS QUANTITY, QUALITY, PRICE, OR AVAILABILITY OF PRODUCT
- filing system	( )	
- office space	( )	
- inadequate equipment	( )	
- inadequate materials	( )	
- information deficiencies:		
. supply of produce	( )	
. markets	( )	
. prices	( )	
. farm input supply	( )	
. credit alternatives	( )	
. production packages	( )	
. proper postharvest handling of produce	( )	
. communication with members	( )	
- others _____	( )	
Ecological Conditions which Negatively Affect the Commodity:		
- latitude/sunlight	( )	
- altitude	( )	
- soil	( )	
- rainfall	( )	
- wind	( )	
- temperature	( )	
- relative humidity	( )	
- other _____	( )	
Infrastructure/Equipment Limitations:		
- roads non-existent	( )	
- roads in poor condition	( )	
- irrigation systems	( )	
- storage facilities	( )	
- marketplaces	( )	
- packing houses	( )	
- packing equipment	( )	
- packaging materials	( )	

NATURE OF PROBLEM	IF PROBLEM AREA INDICATE WITH (X)	DESCRIBE HOW PROBLEM AFFECTS QUANTITY, QUALITY, PRICE, OR AVAILABILITY OF PRODUCT
- seeds/planting material:		
. unavailable	( )	
. poor quality	( )	
. expensive	( )	
- credit:		
. unavailable	( )	
. difficult to access	( )	
- farm inputs:		
. unavailable	( )	
. poor quality	( )	
. high costs	( )	
- lack of technical know-how with respect to:		
. farm management	( )	
. integrated pest management	( )	
. crop establishment	( )	
. crop maintenance	( )	
. pruning	( )	
. training	( )	
. spraying	( )	
. weeding	( )	
. fertilization	( )	
. pollination process	( )	
. water management	( )	
. large scale cultivation	( )	
. other _____	( )	
- labor:		
. unavailable	( )	
. inefficient	( )	
. high cost	( )	
- actual farming system:		
. limits yields	( )	
. affects crop quality	( )	

ANNEX 1 - *Problem Checklist*

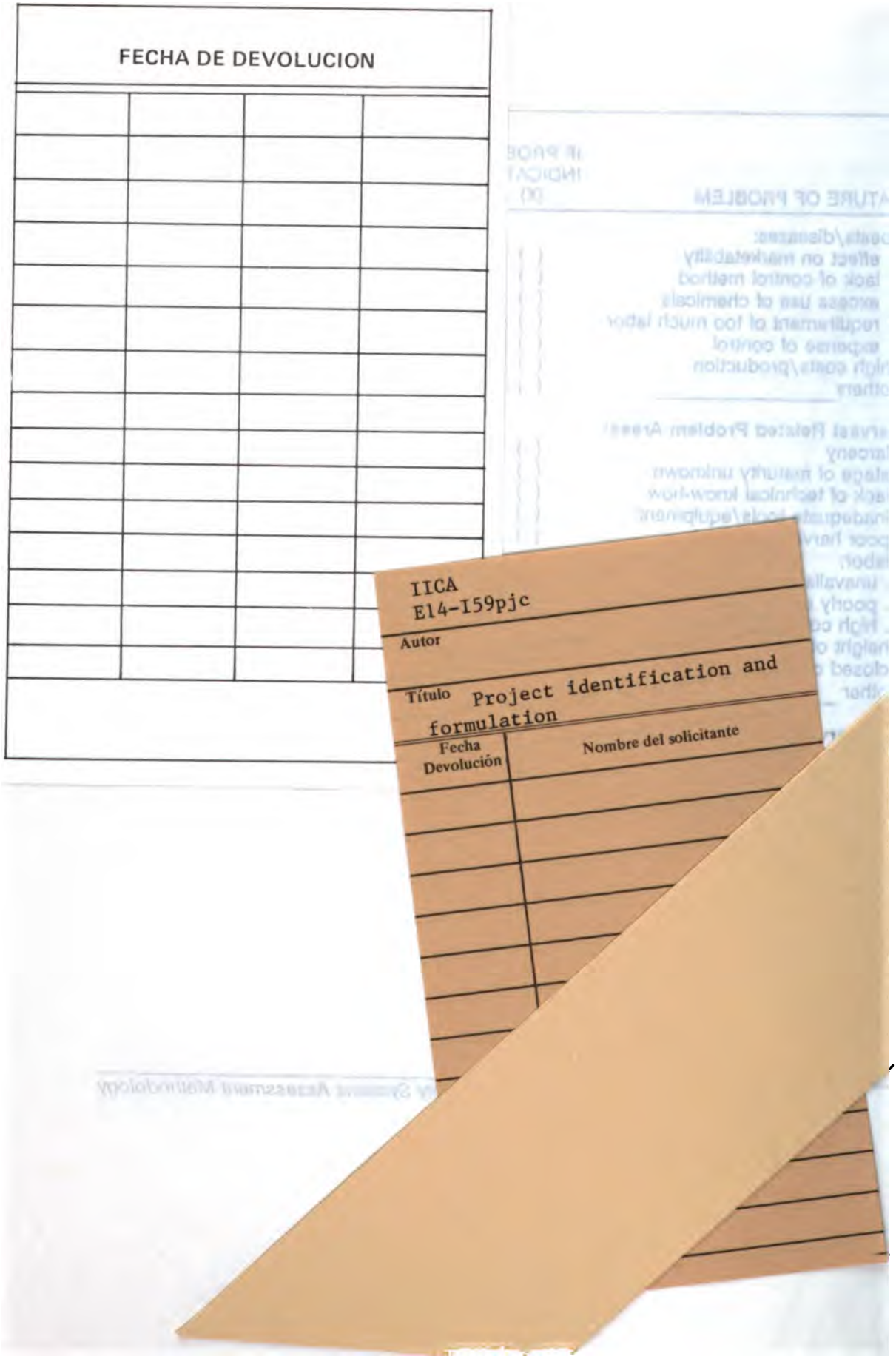
NATURE OF PROBLEM	IF PROBLEM AREA INDICATE WITH (X)	DESCRIBE HOW PROBLEM AFFECTS QUANTITY, QUALITY, PRICE, OR AVAILABILITY OF PRODUCT
- technical assistance	( )	
- means of verification unavailable in importing country	( )	
- difficult collection of payments	( )	
- delays with documentation	( )	
- port facilities poor	( )	
- other _____	( )	
Pricing and Consumer Demand Problems:		
- imports sold at lower price than domestic supply	( )	
- irregular supplies to meet consumer demand	( )	
- high costs to consumers	( )	
- consumers lack familiarity with product	( )	
- product poorly presented	( )	
- characteristics of consumer demand unknown	( )	
- other _____	( )	

NOTE: There are approximately 250 potential problems listed here which can impact upon the quantity of product produced or its quality, price or availability. Due to the participants' lack of experience it may be difficult for them to understand how some of the potential problems listed above may impact the product. A useful classroom exercise is to dedicate approximately two hours going through the list as a group effort. Participants and instructors alike can make suggestions as to how a certain "potential problem" may impact the product. This is a good way to stimulate group discussion and to transfer experiences between the different participants.

NATURE OF PROBLEM	IF PROBLEM AREA INDICATE WITH (X)	DESCRIBE HOW PROBLEM AFFECTS QUANTITY, QUALITY, PRICE, OR AVAILABILITY OF PRODUCT
Markets and Marketing Problems:		
- markets:		
. lack of market development or promotion	( )	
. small and/or specialized market niche	( )	
. limited to particular time of year	( )	
. quarantine restrictions	( )	
. other restrictions or trade barriers	( )	
. taxes, duties, etc.	( )	
. strong competition	( )	
. controlled by interest groups	( )	
. local/regional politics	( )	
. difficulty in obtaining payment	( )	
. other _____	( )	
- product:		
. lack of product development	( )	
. quality poor	( )	
. volumes small	( )	
. prices too high	( )	
. lack continuous supply	( )	
. collection system	( )	
. lack of quality control	( )	
. other _____	( )	
- transportation:		
. unavailable	( )	
. irregular	( )	
. limited space	( )	
. freight costs too high	( )	
. insurance expensive	( )	
. other _____	( )	
- information:		
. supply statistics	( )	
. market intelligence	( )	
. poor analysis	( )	
. other _____	( )	

NATURE OF PROBLEM	IF PROBLEM AREA INDICATE WITH (X)	DESCRIBE HOW PROBLEM AFFECTS QUANTITY, QUALITY, PRICE, OR AVAILABILITY OF PRODUCT
- cleaning	( )	
- sizing	( )	
- grading	( )	
- precooling	( )	
- packaging:		
. unavailable	( )	
. insufficient strength	( )	
. high cost	( )	
. poor packing facilities	( )	
. quality/weight controls	( )	
. improper labeling	( )	
- quality control	( )	
- wrong temperature	( )	
- wrong humidity	( )	
- lack of technical know-how	( )	
- high costs of handling	( )	
- lack of infrastructure	( )	
- other _____	( )	
Agro-Processing Limitations:		
- raw material:		
. small volumes available	( )	
. lack of continuous supply	( )	
. poor quality	( )	
. high costs	( )	
- imported inputs(jars,etc)	( )	
- lack of facilities	( )	
- deficient or outdated equipment	( )	
- poor product development	( )	
- high production costs	( )	
- low quality output	( )	
- lack of technical assistance	( )	
- lack of operating capital	( )	
- lack of market development	( )	
- other _____	( )	

NATURE OF PROBLEM	IF PROBLEM AREA INDICATE WITH (X)	DESCRIBE HOW PROBLEM AFFECTS QUANTITY, QUALITY, PRICE, OR AVAILABILITY OF PRODUCT
- pests/diseases:		
. effect on marketability	( )	
. lack of control method	( )	
. excess use of chemicals	( )	
. requirement of too much labor	( )	
. expense of control	( )	
- high costs/production	( )	
- others_____	( )	
Harvest Related Problem Areas:		
- larceny	( )	
- stage of maturity unknown	( )	
- lack of technical know-how	( )	
- inadequate tools/equipment	( )	
- poor harvesting practices	( )	
- labor:		
. unavailable	( )	
. poorly skilled	( )	
. high costs	( )	
- height of trees	( )	
- closed canopy	( )	
- other _____	( )	
Postharvest Handling Problems:		
- rough on-farm handling	( )	
- poor field containers	( )	
- poor in-field sanitation	( )	
- scarce labor	( )	
- poorly trained labor	( )	
- lack of shade	( )	
- improper stacking	( )	
- rough loading/unloading	( )	
- on-farm transport	( )	
- delays at ports	( )	
- poor roads	( )	
- chemical treatments	( )	
- washing	( )	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