THE LOGICAL FRAMEWORK

A MANAGER'S GUIDE TO A SCIENTIFIC APPROACH TO DESIGN & EVALUATION

PRACTICAL CONCEPTS
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SECTION ONE

BACKGROUND INFORMATION: GENESIS OF PCI'S PROJECT MANAGEMENT SYSTEM

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

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 PCI staff to analyze its project evaluation system. That analysis uncovered three basic problems that were seriously hindering not only meaningful evaluation of projects, but also their implementation.

1. Planning was too vague: Objectives were multiple and not clearly related to project activities. There was no clear picture 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 committed to the fact that projects must be justified in terms of their ultimate benefits ("impact") yet were reluctant to be considered responsible for impact; 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 for results.

3. Evaluation was an adversary process: With the absence of clear targets and frequent disagreements (even among project team members) 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* 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 of clearly stated, explicit and measureable 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 the key elements of project design and their relationships to each other in a way that facilitates project analysis;

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*/ 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 program/project management and are complementary with other management tools.

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 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 evidence. Evaluation becomes a tool to help the project manager, rather than a club that threatens him.

The Logical Framework was tested by AID in 1970 for evaluation of technical assistance projects. It was implemented in 30 AID country assistance programs in 1970 and 1971. In subsequent years the Logical Framework Approach was extended to AID's loan projects and its centrally-funded projects. Canada's foreign aid agency (CIDA) tested the Logical Framework Approach in 1974 and in 1975 decided to apply it worldwide.

The Logical Framework Approach is taught now in government and academic institutions in the U.S. and in developing countries.* New applications are being developed. A complete Project Management System (PMS) was developed in Pakistan adding to the Logical Framework the use of "performance networking" for monitoring and reporting systems. In Thailand, Oman and Guatemala, PMS is being tested for adoption within Ministries. In Costa Rica, the Ministry of Agriculture and Livestock is doing Program Budgeting using the Logical Framework Approach. The Inter-American Development Bank plans to include Logical Framework in its "project preparation and evaluation" courses to improve management of feasibility studies.

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*/ The Logical Framework is part of the graduate-level curriculum at three U.S. universities.

The Logical Framework Approach: Summary

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 evaluable project. Uncertainty within the project is made explicit. Results 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 (Figure 1-1). 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 concepts 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 managers. 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 a sense of what constitutes good management and intuition. It does not provide answers or make decisions; but it organizes information in such a way that the 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.

LOGICAL FRAMEWORK
FOR
SUMMARIZING PROJECT DESIGN

Est. Project Completion Date _____
Date of this Summary _____

Project Title: _____

	NARRATIV SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
DEVELOPMENT HYPOTHESES — If Purpose, Then Goal	Program Goal: The broader objective to which this project contributes:			
DEVELOPMENT HYPOTHESES — If Outputs, Then Purpose	Project Purpose:			
MANAGEABLE INTEREST — If Inputs, Then Outputs	Outputs:			
	Inputs: Activities and Types of Resources			

SECTION TWO

THE LOGICAL FRAMEWORK APPROACH

The conceptual heart of the Logical Framework Approach is described in the paragraphs that follow. This Approach assumes that development projects are instruments of change; that they were selected from among alternative instruments as the most potentially cost-effective approach to achieving a desired, beneficial result. Our approach accepts the uncertainty inherent in all development projects by explicitly identifying the nature of the uncertainty--the development hypotheses. On the basis of demonstrated application to hundreds of social and economic development projects, we believe that the concept is both tactically and strategically sound.

A. OVERVIEW OF THE LOGICAL FRAMEWORK APPROACH

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, completing rather than opposing each other. These points of view are:

- 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.

Given the fundamental character of the above concepts, and the essential simplicity of any tool that can simultaneously support such concepts, it is not surprising that there are many other points of view that can complement the Logical Framework. Most notable in this regard is contract law, for which the Logical Framework sharpens the "Meeting of the Minds" and orients deliverables to performance specifications.

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 or she failed.
- Purpose--the reason we are producing the outputs; the higher-level objective that causes us to invest in producing outputs e.g., 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 objectives, let us introduce basic scientific method:

> All human activities are uncertain. Therefore, we view our project as a set of interlocking 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 this 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).

Interlocking "logics" of the Logical Framework are explained further in the following paragraphs. Please remember it is not clear, nor does it matter, whether the Logical Framework is a "true innovation" in the sense that it is "different" from what has been done before. Better to view it, as does PCI, as a crystalization of best practices; a simple way to bring to bear a multiplicity of analytic and diagnostic perspectives that include but are not limited to the four mentioned above--managing for results, basic scientific method, systems analysis, and contract law.

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 to be undertaken that will in turn result in the second level of objectives that we call the Outputs. Outputs are the results that are directly accomplished by management of the inputs. For example, in an education project, we can produce trained teachers, a constructed and equipped school building and trained administrators. We do this by managing a specific set of inputs (e.g., training of teachers, construction of school building, etc.). Yet the outputs themselves are not valuable for their own sake and are not the justification for the project. What we are really interested in is an improvement in education. 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 have, therefore, 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 local industry 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, so we must identify all the purposes (projects) necessary to achieve the goal. The goal is usually associated with specific program or sector objectives.

Specification of outputs to achieve purpose and management to achieve purpose (hence produce these outputs) is normally the project manager's function. Specification of all purposes to achieve goal, and management to achieve goal (hence, "producing" purposes) is normally the program manager's function.

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 if one boards one's regular morning bus by 8 o'clock, then one will arrive at one's office on time. However, it is not possible to have 100 percent certainty that this will happen because many things could happen between boarding the bus and arriving at the office, such as the bus breaking down, or being involved in an accident.

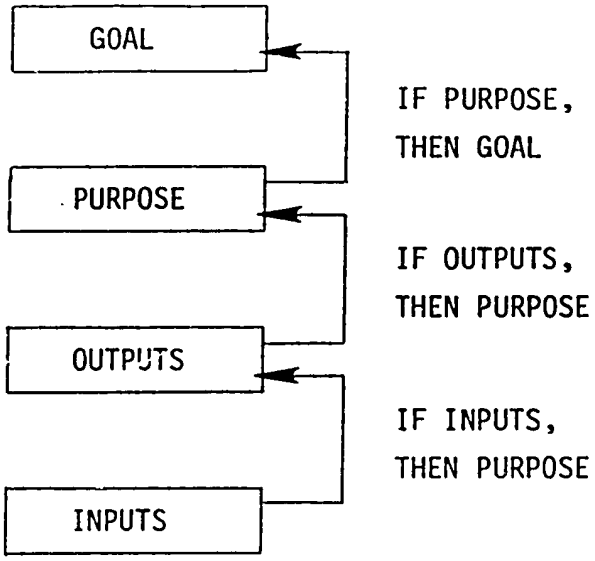
When we design a project using the Logical Framework, we make a series of predictions which we usually call hypotheses. These are:

1. IF the inputs are managed properly,
   THEN the outputs will be 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 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 including in our project design factors necessary for achieving success but beyond our control. We call these additional factors assumptions. 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 assumes 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 one 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 one 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. (See Figure II-1 for a set of linked hypotheses and assumptions for a Rice Production Project.)

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. In the previous example, we can control 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 affect that hypothesis.

Figure II-1:

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LOGICAL FRAMEWORK
FOR
SUMMARIZING PROJECT DESIGN

E.t. Project Completion Date _____
Date of this Summary _____

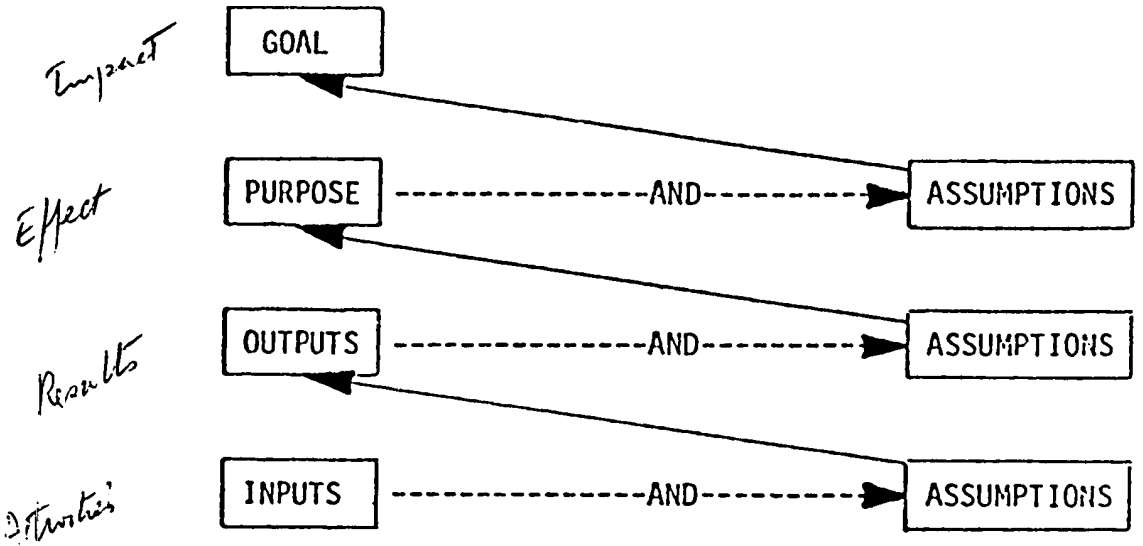
Project Title: _____

DEVELOPMENT HYPOTHESES

MANAGEABLE INTEREST

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program Goal: The broader objective to which this project contributes: Farm Income Increased	Measures of Goal Achievement:		Concerning long term value of program/project:
If Purpose, Then Goal 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.
If Outputs, Then Purpose Outputs: 1. Fertilizers and HYV seed 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.]
If Inputs, Then Outputs 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. Train staff.	Level of Effort/Expenditure for each activity		Affecting input-to-output link: 1. Farmers receptive to new methods. 2. Fertilizer prices remain stable.

A more complete statement of the hypotheses and the uncertainties inherent in them is shown in diagram form as follows:



Having once 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 example, we can get up earlier to avoid traffic delays or we could call the bus company and find out how often their buses break down. If the answer is 80% of the time, we might decide to rent a car!

The above is, of course, a simple 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 of our control--assumptions) that must be in place for us to achieve the next level objective.

Let us now follow this concept by 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 the 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.

The Logical Framework requires that at each "level" the activities or results planned plus assumptions at that "level" constitute sufficient conditions to achieve the next higher level.

Once we have identified as many critical assumptions as possible with information at hand, it is then time to look more closely at each assumption. Let us take one assumption from the rice production example in Figure II-1 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 crops 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 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 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 freeing resources for alternative projects. If each of the assumptions in the project design are handled in this manner during the design phase and the project improved accordingly, the project manager should have a realistic idea of what the probabilities are of project success and also be able to anticipate the kind of difficulties that might arise during the course of the project.

Assumptions are useful not only during the design stage of the project but also during the course of the project and its evaluation. 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, 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 their examination can provide insight as to why the project has or has not succeeded in achieving its objectives.

To develop useful assumption statements, we ask the question: "What could happen to make this assumption invalid?" 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 realize we are really making the underlying 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 June 28, 1982 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.

Clarifying assumptions allows 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 of 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. This 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 openly about the situation without fear that he alone will be criticized for the misjudgement. A good manager should feel free to 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. 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 ambiguious. 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, a Goal Statement such as "improved living conditions for villagers" is liable to have very different meaning for all the different people concerned about the project. 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. 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). 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. It is also due to the fact that the purpose is frequently extremely complex--involving such factors as organizational viability, net improvement in complex (e.g., human) systems, etc. For complex objectives, it is frequently true that no single indicator suffices: relevant indicators could be attributed to alternative events or our "functional specification" is multi-dimensional. Hence the rule for selection of EOPS is similar to that used by any good manager or applied scientist: if all EOPS conditions are met, then there would be no plausible alternative explanation (that is, no explanation other than the desired one--achievement/ purpose).

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. An example follows:

PURPOSE	EOPS
Rice Production increased.	1. 30,000 farmers with 7 rai or less increase rice yields by 50 percent between October 1979 and October 1981.
	2. Rice harvested by small farmers in 1981 is of equal quality (x percent cracked) to rice harvested by same farmers in 1979.

Notice, in the above rice product 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 rice production increased in Northeastern region. 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 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 best undertaken collaboratively. It calls for participation by all parties to the project: programming staff, top management, project management, specialized experts and technicians, and frequently evaluation experts. Notice too that once we have added indicators to our design we are better able to judge its adequacy.

Figure II-2 shows a Logical Framework for the Agricultural example for which indicators have been added, the purpose and goal have been clarified, and assumptions made more explicit. Compare this figure to that in Figure II-1 for an 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 objectives 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.

Useful rules to remember are:

1. The narrative summary must provide a clear aiming point for all involved in the project--something they can easily remember and which they believe to be important.

2. The objectively verifiable indicators add depth and understanding--establishing a "performance specification" such that even skeptics would agree that our intended result has been achieved (when indicators are objectively verified).

Four characteristics of good indicators are discussed below.

Figure II-2:

Adding Indicators Further Clarifies Project Design

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LOGICAL FRAMEWORK
FOR
SUMMARIZING PROJECT DESIGN

Est. Project Completion Date _____
Date of this Summary _____

Project Title: RICE PRODUCTION

DEVELOPMENT HYPOTHESES

MANAGEABLE INTEREST

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
If Purpose, Then Goal Program Goal: The broader objective to which this project contributes: Small farmer income increased in Northeastern Region.	Measures of Goal Achievement: 1. Average farmer income raised from 100 baht per year in 1976 to 130 baht/yr. in 1978. 2. Small farmer income raised from 70 to 110 baht in same period.		Concerning long term value of program/project: 1. Inflation doesn't exceed 12%/yr. 2. Sufficient "luxury" goods available for farmers to spend "Disposable" income. 3. Farmers protected from unscrupulous merchants.
If Outputs, Then Purpose Project Purpose: Small farmer rice production increased in Northeastern Region.	Conditions that will indicate purpose has been achieved: End of project status. 1. 30,000 farmers (owning 7 rai or less) increase rice yields by 50 % between October 1976 and October 1978. 2. Rice harvested by small farmers in 1978 is of better or equal quality (X% cracked) to rice harvested by same farmers in 1976. 3. 95% of farmers buy HYV seed for 1979 planting season.		Affecting purpose-to-goal link: 1. Price of rice does not fall below X baht/ton in 1977, and X baht/ton in 1978. 2. Market absorbs total increased production each harvest. 3. No spoilage or waste occurs in marketing/storage system.
If Inputs, Then Outputs Outputs: 1. Functioning fertilizer and high yield variety rice seed 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 12/78. b. X tons fertilizer and X tons seed distributed to target group by 12/78. c. 96% of all purchases paid for withing 2 months of purchase. 2a. 35,000 farmers trained by 12/78. b. 98% of those trained use new planting and cultivating techniques appropriately. 3a. 8m baht issued in credits to 25,000 small farmers by 1978, by 30 credit area offices b. Default rate does not exceed 2% of total loans. c. Credit terms acceptable to local farm leaders.		Affecting output-to-purpose link: 1. Extension agents correctly supervize farmer application of fertilizer. 2. 10 inches of rain falls between May and October each year. 3. Price of soya seed stays at 1976 levels so farmers will stay with rice project and not convert to soya.
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. Train staff.	Level of Effort/Expenditure for each Activity. 1a, 6 manmonths $15,000 baht 600,000 b, 12 manmonths $1, 800,000 baht 900,000 c. 36 manmonths $150,000 baht 1,200,000 2. 24 manmonths $100,000 baht 100,000 ,24 manmonths $200,000 3, 36 manmonths $150,000 TOTALS: $--------- BAHT ----		Affecting input-to-output 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. 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 II-2), 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 we mean the latter, this must be specified so that we can measure the important aspects of our project.

b. 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.

c. Indicators Must Be Targeted

Indicators must be targeted in terms of quantity, quality, and time (QQT). 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 II-2 to signal achievement of the purpose.

Step One	Identify Indicator Small farmers increase rice yields.
Step Two	Quantify 30,000 small farmers (owning 7 rai or less) increase rice yields by 50%.
Step Three	Set Quality 30,000 small farmers (owning 7 rai or less) increase rice yields by 50% while maintaining same quality existing in 1979 harvest.
Step Four	Specify Time Frame 30,000 small farmers (owning 7 rai or less) increase rice yields by 50% between October 1979 and October 1981 maintaining same quality existing in 1979 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 II-2, however, quality has been separate 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 rice 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 rice he will have to sell at what price (hence, our assumptions about rice prices) by 1981, and in turn, we can then derive how much rice he will have to produce. This process is used for deriving targets for all components of the project. Beginnning 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").

d. Indicators are Independent

Indicators that demonstrate the 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 weaknesses 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 frequently claimed that "school building constructed" and "teachers trained" (outputs) demonstrate improved quality of education in the school (purpose). Or "health center constructed", "medicines supplied", and the "medical staff hired", (outputs) demonstrate health care services provided by the health 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. Instead of struggling with something difficult and perhaps somewhat abstract, it seems logical to think: "Well, of course, we have improved health; just look at this fine building with full medical facilities and the first-class doctors and nurses we have working for us." We need to think carefully about what indicators would truly demonstrate "health care services provided": i.e., number, type and quality of actual health care provided to specified target audiences--such as number of children immunized, numbers of mothers that receive preventive health counseling, number of babies delivered successfully, 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 achievement 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 (in which case they are really outputs, not indicators) or if they actually describe the conditions that would exist if the purpose has been achieved.

Special Indicators

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. However, when the objective is a "viable industry established" it becomes much more difficult to measure project success. 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 predict later performance. In this case such an indicator might be a trend in the reduction of production costs per unit and/or a steady increase in orders.

Such indicators can also be used to measure results when preferred indicators are too costly to verify. If a preferred 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. Indirect indicators do not offer as much confidence in success as do direct indicators, but they represent an acceptable alternative. In using indirect 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 schoold could well reflect employer satisfaction with the quality of the graduate. However, it is possible that there is a shortage of people with these particular skills and the resulting demand is unrealistically forcing prices, even if the graduates were only mediocre.*

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*/ Eugene J. Webb, Donald T. Campbell, Richard D. Schwartz, and Lee Sechrest, Unobstrusive Measures: Nonreactive Research in the Social Sciences.

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 rice 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 (rice 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 baskets collected.

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 should be identified. An example follows:

Objectively Verifiable Indicator	Means of Verification
2,000 new single family dwellings purchased by low income, farmer tenement residents by June 1980.	Sales records from land office, number of sales and sales dates. Data on purchaser's income level from tax records. Data on purchaser's former 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, this means of verification must be made explicit in the project design. See Figure II-3 for further examples of means of verification.

Establishing means of verification can be a complex and demanding task. We recommend that the project manager select verification techniques that make sense to him and his colleagues. For those requiring more rigor in verification, we recommend reference to such related documents as "Manager's Guide to Data Collection", 1979.

6. Manageable Interest

There is an invisible dividing line between Outputs and Purpose which makes a distinction between the levels of uncertainty within the project. Below the line--i.e., producing outputs--has a degree of certainty obtained from all our earlier experiences which gives us a "can do" feeling. A manager can accept responsibility for producing outputs because he can be reasonably certain that given certain resources he can undertake appropriate activities to transform those resources into the desired outputs. Above the line--i.e., achieving purpose--is where we have much less experience and correspondingly less certainty that we "can do" it; we therefore expect and "hope" we will achieve the purpose. We do our best to define all the conditions necessary and sufficient to achieve that purpose but there is still enough uncertainty that we cannot confidently state that it is something we "can do".

By the term "manageable interest" therefore, we refer to that complex of activities and resources that the manager controls in producing outputs for a given purpose. In effect, the competent manager accepts the responsibility and accountability for producing those outputs. He does not accept responsibility for achieving purpose: that is the responsibility of top management. However, he does accept responsibility for doing all that he can to monitor the progress of the project in relation to the achievement of that purpose and doing all that he can reasonably do to influence achievement of purpose.

Specifying what we "can do"--the "manageable interest"--and "hope" to achieve--accomplishment of purpose--facilitates clarification of the manager's job and allows for a constructive, open dialogue between levels of management. This in turn allows all concerned to focus on what the project is intended to accomplish, how it can be accomplished, what factors are outside the control of the project, who is responsible for what, and when different levels of management should be involved. This creates a task-oriented atmosphere in which opportunities, progress and problems that may impede that progress can be discussed constructively.

Because the manager knows he is not being held accountable for unrealistic objectives, he can relax and devote his energies to getting his job done. He does not need to worry that he will be blamed for factors outside his control. 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 in sufficient quantity or quality 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 a project manager does not pass on his recommendations to his superiors, then decisions will be made without the insight of the person in the field.

Communication between the project manager and his superiors must be two-way communication. The project manager should know, and be an active participant wherever feasible in establishing why the project is being undertaken. The Logical Framework aids in this communication by specifying the higher level objectives: Goal and Purpose. 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. Let's look at an example: the goal is "income of small farmers increased", and the purpose is "small farmers' rice production increased". 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 then have an early opportunity to examine the situation and either add resources or terminate the project in favor of an alternative with higher probability of success.

a. Error in Logic

An occasional error is made in developing an output to purpose hypothesis. This occurs when no distinction is made between the synergistic result is expected when all the outputs have been produced (e.g., purpose), and a simple summary or restatement of the outputs themselves. If we simply restate the outputs then we have no hypothesis--we have 100% probability that "if Outputs, then Outputs." What we are looking for is a purpose statement that reflects the results of the hypothesis "if Outputs AND certain other important factors outside our control, then Purpose." In such a statement we never have 100% probability that "if Outputs, then Purpose." There are always intervening variables (and the assumptions we make about them) that will affect our ability to achieve the desired purpose.

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 planted by farmers. 3. Pesticides used by farmers. 4. Fungicides used by farmers. 5. Multiple cropping system used by farmers.	

b. 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 II-3, Input-Output Level, Input Indicator column).

The Logical Framework can be used as a communication tool, not only between the 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 the many factors that are outside his control. For example, if his project purpose is "rice production increased 50%" and his outputs are (1) irrigation canals constructed and (2) high yield seeds 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 distributers 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. Finally, he should share with them the project assumptions, for this allows them to see their role in helping the project manager to accomplish his task.

Figure II-3:

Adding Means of Verification Strengthens Design & Evaluation of Project

PCI 72-6

LOGICAL FRAMEWORK
FOR
SUMMARIZING PROJECT DESIGN

Est. Project Completion Date _____
Date of this Summary _____

Project Title: RICE PRODUCTION

DEVELOPMENT HYPOTHESES

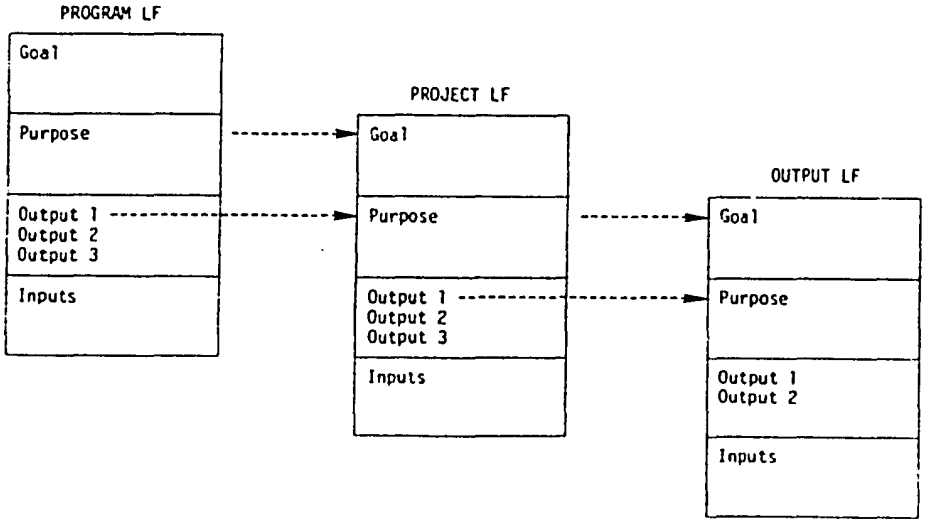
MANAGEABLE INTEREST

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program Goal: The broader objective to which this project contributes: Small farmer income increased in Northeastern Region.	Measures of Goal Achievement: 1. Average farmer income raised from 100 baht per year in 1976 to 130 baht/yr. in 1978. 2. Small farmer income raised from 70 to 110 baht in same period.	1a. Sales & Market price figures b. Tax figures c. Ag. extension agent reports 2a. As for 1 above.	Concerning long term value of program/project: 1. Inflation doesn't exceed 12%/yr. 2. Sufficient "luxury" goods available for farmers to spend "Disposable" income. 3. Farmers protected from unscrupulous merchants.
Project Purpose: Small farmer rice production increased in Northeastern Region.	Conditions that will indicate purpose has been achieved: End of project status. 1. 30,000 farmers (owning 7 rai or less) increase rice yields by 50 % between October 1976 and October 1978. 2. Rice harvested by small farmers in 1978 is of better or equal quality (X% cracked) to rice harvested by same farmers in 1976. 3. 95% of farmers buy HYV seed for 1979 planting season.	1a. Harvest Records: Dept. of Ag., extension agents surveys b. 1976 DOA records. 2a. Reveiw & Analysis by DOA experts. 3a. Credit system records. b. Survey of farmers for program satisfaction.	Affecting purpose-to-goal link: 1. Price of rice does not fall below X baht/ton in 1977, and X baht/ton in 1978. 2. Market absorbs total increased production each harvest. 3. No spoilage or waste occurs in marketing/storage system.
Outputs: 1. Functioning fertilizer and high yield variety rice seed 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 12/78. b. X tons fertilizer and X tons seed distributed to target group by 12/78. c. 96% of all purchases paid for withing 2 months of purchase. 2a. 35,000 farmers trained by 12/78. b. 98% of those trained use new planting and cultivating techniques appropriately. 3a. 8m baht issued in credits to 25,000 small farmers by 1978, by 30 credit area offices b. Default rate does not exceed 2% of total loans. c. Credit terms acceptable to local farm leaders.	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 reports	Affecting output-to-purpose link: 1. Extension agents correctly supervize farmer application of fertilizer. 2. 10 inches of rain falls between May and October each year. 3. Price of soya seed stays at 1976 levels so farmers will stay with rice project and not convert to soya.
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. Train staff.	Level of Effort/Expenditure for each Activity. 1a. 6 manmonths $15,000 baht 600,000 b. 12 manmonths $1, 800,000 baht 900,000 c. 36 manmonths $150,000 baht 1,200,000 2. 24 manmonths $100,000 baht 100,000 24 manmonths $200,000 3. 36 manmonths $150,000 TOTALS: $--------- BAHT -------	1a. Project manager records b. Subcontractor records and reports. c. Project manager reports.	Affecting input-to-output 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.

B. BUILDING THE PROJECT DESIGN

Rarely should a project be designed by one person in isolation. Designing a project requires both management and technical skills. 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(s) that 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, and also in Figure II-4.



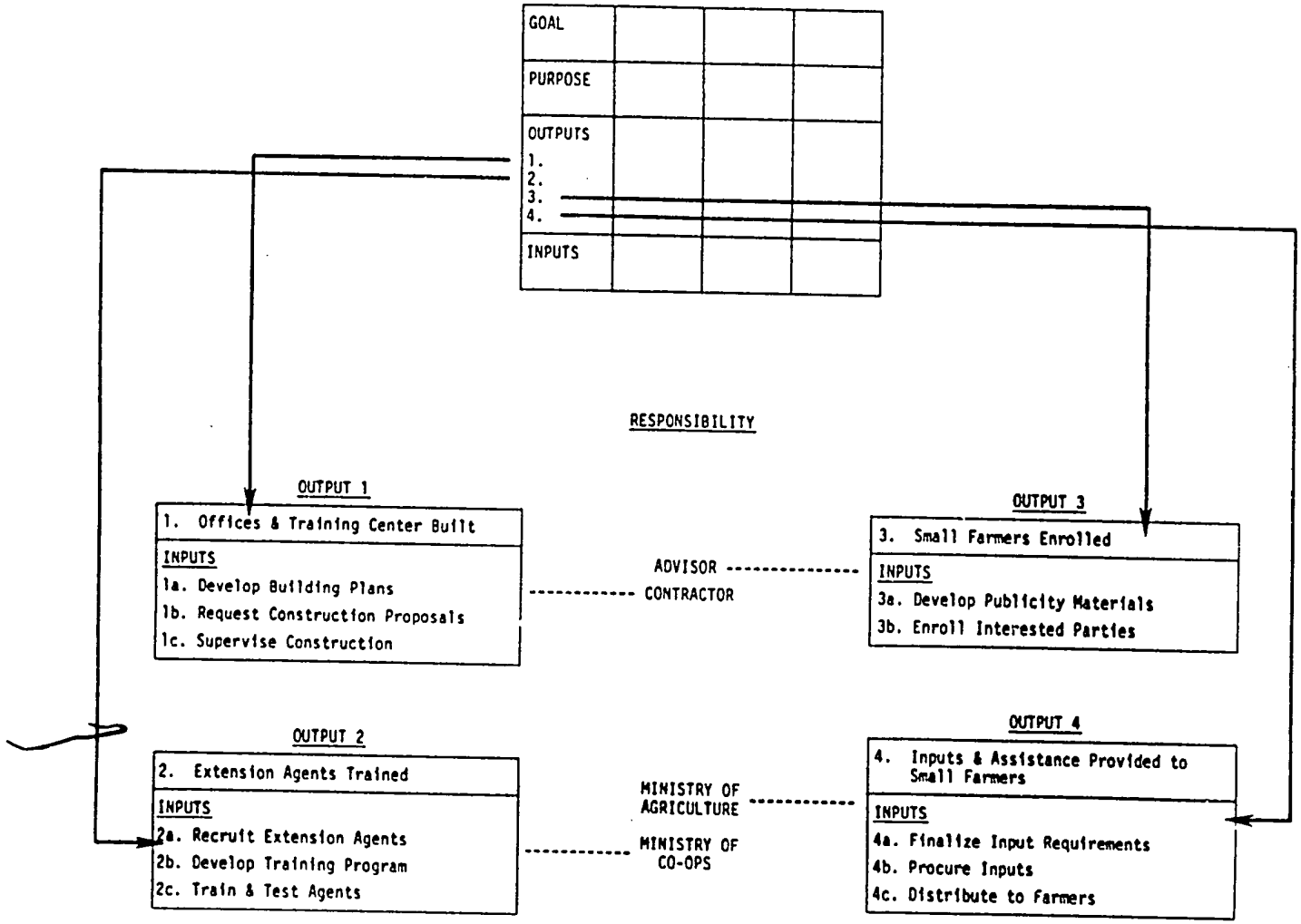


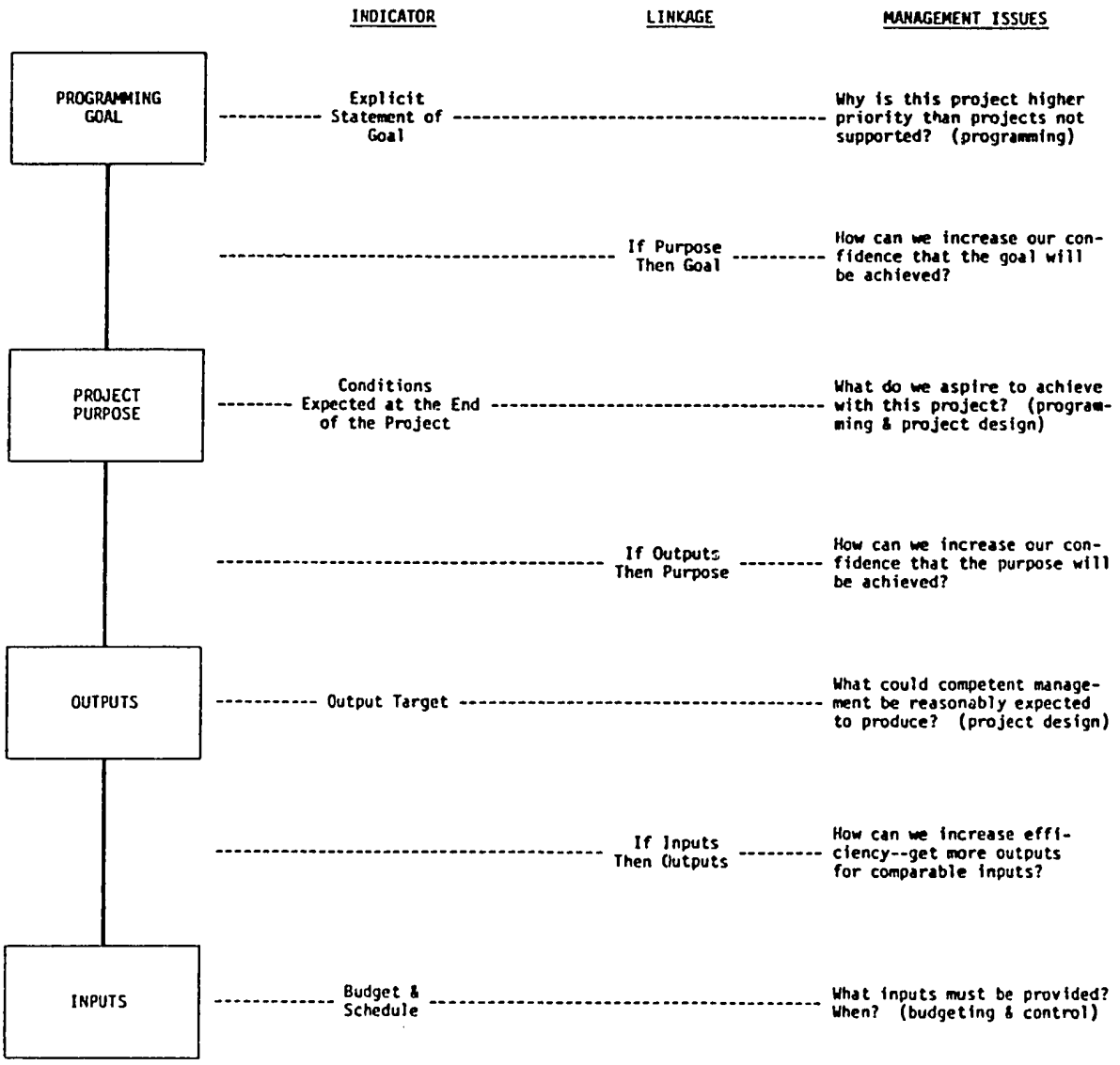
Figure 4: THE LOGICAL FRAMEWORK ESTABLISHES THE BASIS FOR DEFINING & DELEGATING PROJECT RESPONSIBILITIES.

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 (EOPS). 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. Once 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 fairly complete and the indicators at the output and 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 down to the inputs. Figure II-5 provides a sketch of the top-down design and the management issues raised at each level.

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.

FIGURE II-5

THE LOGICAL FRAMEWORK OF A TECHNICAL ASSISTANCE PROJECT



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 being made about the output-to-purpose hypothesis 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 re-examines 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* 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 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 anticipate decisions that will be dependent on evaluation results. If important 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 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 goal of the project, higher-level management should be included in the dialogue to ensure that the resulting goal-level clarification meets their programming objectives.

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 doing 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 fully collected prior to the commencement of other project activities. If collection of baseline data is not a pre-project activity, it should 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 the 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 is very low that the assumption is valid, 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 dermining 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 of 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. 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. However, it should be weighed against the possible cost to the project if the information is not obtained. In the long run it may prove more costly to go ahead without key 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 manager 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..

C. THE LOGICAL FRAMEWORK AND EVALUATION

The discipline of using the Logical Framework in the design process facilitates the production of an evaluable design--objectives are clearly stated, the development hypotheses have been explicitly stated and indicators of success at each level of the project hierarchy have been established. Most importantly, these indicators express what the designers are willing to call success; thus the evaluation task is simply to collect the data for those key indicators and "evaluate" the project against its own pre-set standards of success.

Calling in the evaluators during the design phase to ascertain if in fact the data can be collected, at a reasonable cost, helps clarify the project design still further. It can also reduce costs of evaluation through incorporation of some data collection into routine project operations.

For further detailed discussion on the Logical Framework and Evaluation, please see the companion document entitled:
Manager's Guide to Evaluation.

APPENDIX A

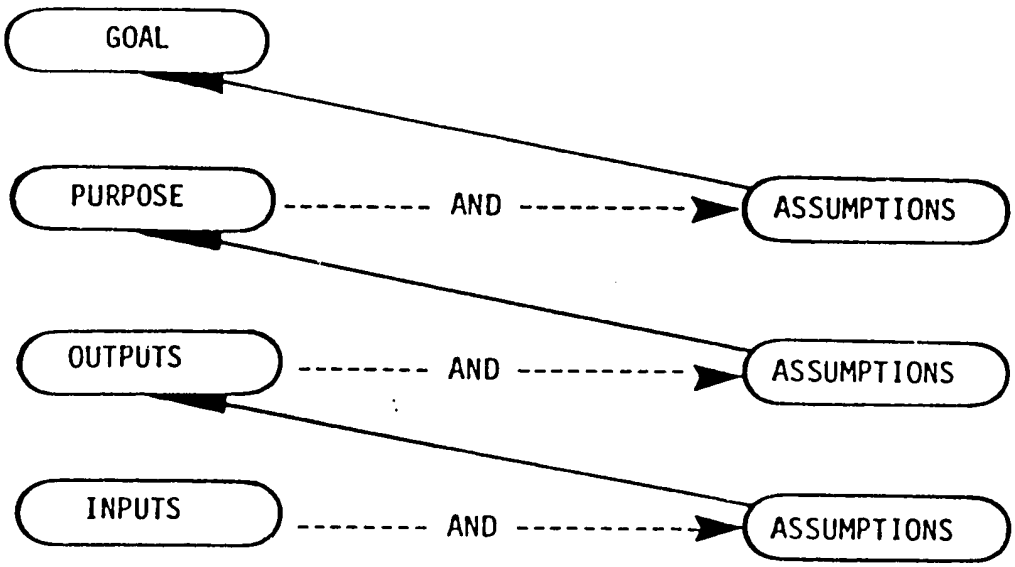
THE LOGICAL FRAMEWORK AND CAUSE AND EFFECT HYPOTHESES IN AN ECONOMIC OR SOCIAL DEVELOPMENT SETTING

Science attempts to establish causality of the following type:

A_1 and A_2 cause B; B causes C.

If such causality is established, then the experimenter knows that providing A_1 and A_2 should result in C. ($[A_1 , A_2]$ B, B C, therefore $[A_1 , A_2]$ C). The Logical Framework approach to project design is based on this scientific approach.

For purposes of this article, we may associate the "A" with Outputs, "B" with Purpose and "C" with Goal. The project planner's challenge is to develop a Vertical Logic containing factors (cause) at each level of the LogFrame which are both necessary and sufficient to bring about achievement (effect) at the next higher level. See Figure 1 below.



Part A: Project Success (Purpose Level Attainment)

When evaluation findings show purpose level results attained, it is the evaluator's job to examine the causal linkage (Vertical Logic) between output and purpose levels, as well as to identify the unintended factors not stated in the LogFrame which may have influenced purpose attainment. He explores the possible occurrence of any unanticipated factors because he knows that the project planner's insight into development mechanisms is not usually sufficient to predict the full set of causal linkages in the Vertical Logic of the LogFrame. Therefore, it is likely that evaluation findings will show the existence of other factors (both implicit hypotheses and assumptions) which helped to bring about purpose level results.

This is why we say that the design of successful social and economic projects is difficult and complex. Figure 2 illustrates this point. The area enclosed by the dotted line and containing $(A_1 + A_2)$ B_1 C_1 represents a given project as orginally conceived by the project planner. A_{3-9} represent unanticipated factors which the evaluation showed to have contributed to the achievement of B_1. Another way of putting it: $(A_1+A_2$ B_1 C_1 represents the project at the time of conception. (A_1-A_9) B_1 C_1 represents what really happened to cause purpose attainment.

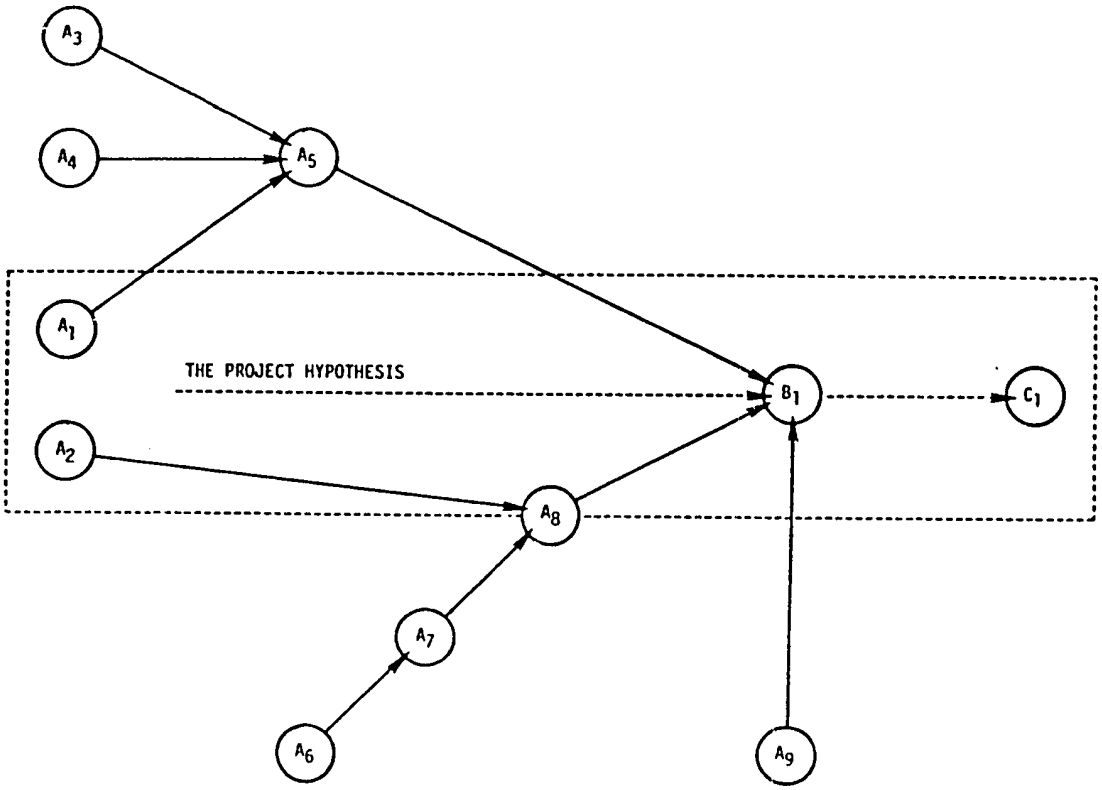


Figure 2: Cause & Effect Relationships in an Economic & Social Development Setting

- The Project Hypothesis is a limited view of the world.
- Additional unintended Outputs (A3-9) were needed to bring about Purpose achievement. These (A3-9) should be Assumptions or Outputs in a "perfect" Logframe.
- The project Hypothesis imposes order and need not fully comprehend causality.

In the same respect, the same phenomena may occur to affect the purpose to goal linkage. That is to say, that additional projects or assumptions, in addition to those which the project planner identified in the assumption column at the purpose level, occurred and influenced goal attainment.

In the abstract example of Figure 3, we assume that some set of events, A_1 through A_9, is necessary and sufficient to cause B_1 and B_4. B_1 is a necessary and sufficient cause of B_2 and B_3, which together with B_4 are necessary and sufficient causes of C_1.

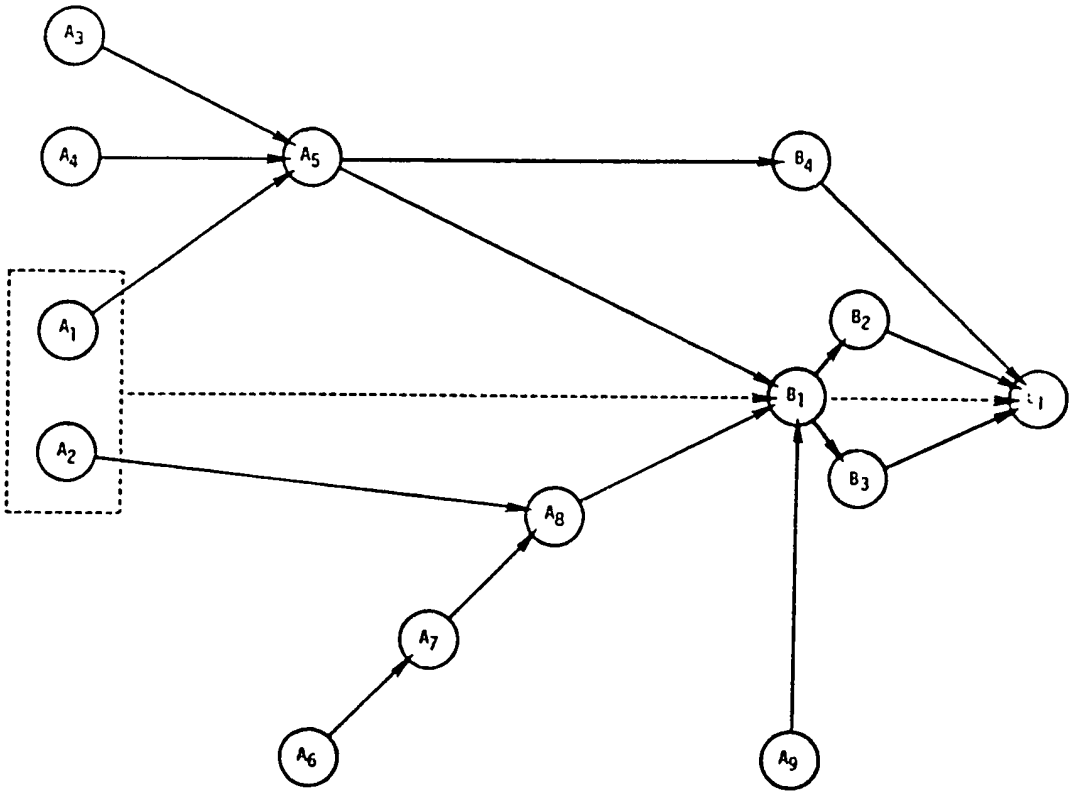


Figure 3: Cause & Effect Relationships in an Economic or Social Development Situation

- Additional projects or Assumptions (B2-4) influenced Goal achievement.
- A cluster of projects with a common Goal is called a "program".

APPENDIX B

THE RELATIONSHIP BETWEEN THE LOGICAL FRAMEWORK AND CONTRACTS

A contract is a legally enforceable agreement. The essence of a good contract then is its ability to be understood by a member of the judiciary. And a judge may be assumed to be a lay person in terms of the technical aspects of the contract, although knowledgeable in requirements and implications of law. It follows then, that for judicial review, the contract should strive to make the technical issues as clear as possible--understandable not just to the project teams but to lay individuals as well.

(Very few contracts are in fact brought before the judiciary for determination. Nonetheless, it is this ultimate test--against judicial criteria--that sets the pattern for contract administration.)

We will now show how the Logical Framework helps clarify contract elements. To do this, let us consider a contract as consisting of the following elements:

1. A meeting of the minds;
2. Specific deliverables;
3. Consideration;
4. Force majure.

The relationship of each of these to Logical Framework terms is briefly outlined in the following.

1. Meeting of the Minds

The meeting of the minds, or intent, of a contract establishes for judicial review "why" the contract was entered into. Knowing why the two parties entered into a contract, their long-term objectives, one can analyze the activities of the parties of the contract to see if they were consistent with that meeting of the minds. Actions consistent with the meeting of the minds are consistent with the contract. Those inconsistent with the meeting of the minds may consistitute breach of contract or non-performance.

The meeting of the minds concept from contracts maps exactly onto the Logical Framework purpose and goal. The reason we produce outputs is in the hope that they will result in realizing our purpose. Thus, by implication, the contractor is expected to obey the "reasonable-man rule"--do all things that any reasonable man would do (given the resources available) to modify or add to the list of outputs as necessary to realize purpose.

The goal is, of course, the reason why we have defined the purpose as the important project focus. It further facilitates the "meeting of the minds" by clarifying for the parties* to the "contract" their long-term objectives. Just as the sponsor has a reasonable right to expect that the contractor will do all things that a reasonable man would do in an attempt to achieve purpose, so the contractor expects that the developing country** and sponsor will attempt reasonable actions necessary to realize goal. The contractor implicitly accepts a reporting responsibility to identify situations where achievement of purpose will not meet goal-level intent.

*/ In the development context, the "parties" to the contract are essentially the developing country, the sponsor (AID, World Bank, etc.) and the contractor (university, private firm, etc.)

**/ The developing country is usually the ultimate "client" of the contractor.

2. Deliverables or Line Items Under the Contract

The deliverables or line items under the contract are essentially the outputs. These are the things the contractor has agreed to produce, given that his input-level assumptions are valid.

It is particularly important to note that the deliverables under a contract should be results, not activities (or inputs). Further, objectively verifiable indicators must be provided for each output with qualitative, quantitative, and time targets.

3. Consideration

The essence of a contract, particularly in terms of its equity provisions, is consideration. What do contractor and contractee each promise to provide to the other?

The minimum guarantee is, of course, the inputs. On the one hand, the contractor agrees to provide technical personnel, commodities, and undertake activities, etc. On the other hand, the sponsor agrees to pay the contractor certain fees, may provide on-site support, etc.

4. Provisions for Force Majeure

The Logical Framework clarifies force majeure by identifying those factors that would require re-analysis of the ability to perform, and by setting forth levels at which those factors become important.

The essence here is the assumptions. At the input level, the contractor identifies the assumptions that he must make in order to guarantee his ability to produce his outputs. If the contractor needs to assume that the host government will provide ten vehicles and drivers, in order for him to produce his project outputs, but in fact only five are provided, then we expect a corresponding reduction in the quantity or quality of outputs produced.

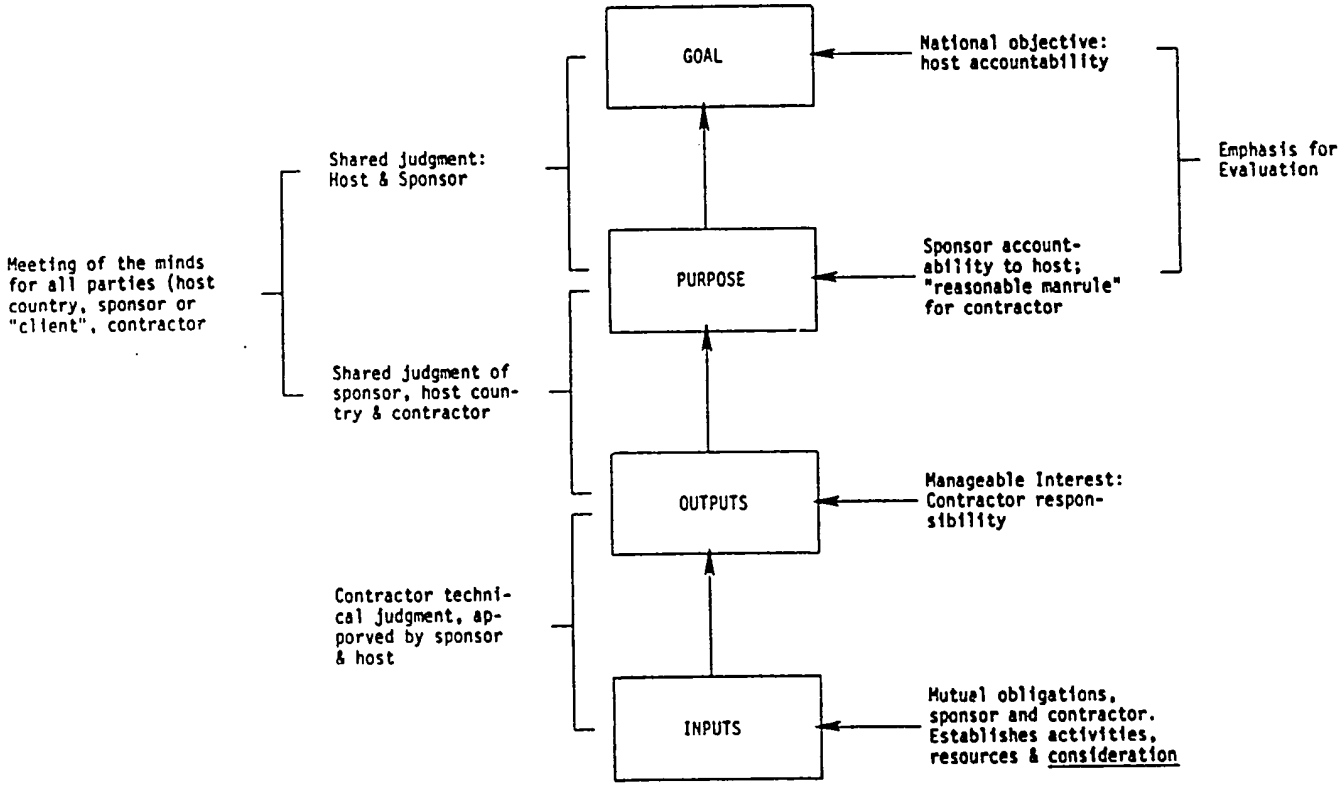


Figure 1: The Logframe helps clarify the responsibilities of contractor, sponsor and host: The contractor is responsible for producing outputs and for making sound technical judgments regarding the [if output then purpose] hypothesis; sponsor and host accountability focusses on purpose and goal.

APPENDIX C

USE OF THE LOGICAL FRAMEWORK APPROACH TO INTEGRATE ANALYSIS OF TECHNICAL FEASIBILITY, COMMERCIAL FEASIBILITY, AND SOCIO-ECONOMIC FEASIBILITY

by Dr. Lawrence D. Posner

"Project Preparation and analysis" typically is taught and practiced as a series of discrete analyses as different aspects of the project. The Logical Framework Approach integrates these aspects by clarifying their relationships to one another as parts of a single analysis.

This approach should facilitate the teaching of project analysis and the management of feasibility studies by trained analysts. It also simplifies the reviewing process by lending institutions. A single page can summarize the essence of a project for managers who cannot wade through the copious reports on every project.

The Logical Framework Approach: The Managerial Point of View

The Logical Framework Approach emphasizes a managerial point of view. The analysis focuses attention on (1) the results of the completed project when it has succeeded, and (2) the strategy for achieving it. There is a logic implicit in every project--the Logical Framework Approach makes it explicit and communicates it clearly to other interested parties to be sure it is realistic and they are prepared to do what is expected of them.

KEY CONCEPTS

A. Hierarchy of Objectives

It is useful to think of a project in terms of a hierarchy of objectives. The results at each level of the hierarchy are means to accomplish the results at the next higher level. The project is intended to resolve a problem, often a part of a broader program with a "goal". The project design states explicitly what solution is expected as a direct result of the project (the project "purpose"), and objective measures of having achieved it ("End of Project Status"). To achieve the "purpose", it is necessary to complete specific tasks ("produce outputs") which in turn require specific "activities". In a well designed project, the results at every level of the hierarchy are "necessary" for achieving the results at the next higher level. However, there may be factors outside the project that are also necessary to achieve the results at the next higher level. "Important assumptions" about factors outside the project should be made explicit in the project design process. In a well designed project, the results at each level of the hierarchy together with the important "assumptions" about outside factors should be sufficient to achieve the expected results at the next higher level. "Objectively verifiable indicators" are essential at all levels of the hierarchy.

An Example: An Agriculture Cooperative--the Results Expected from the Project Organized as a Hierarchy

The results are displayed in a four level hierarchy in Figure 1. The broad problem is the low income and lack of employment in a rural area of Costa Rica. The "goal" is creation of employment and income in the Sardinal District. This project will create a successful grapegrowers cooperative. The outputs required are:

1. Cooperative to provide inputs and market the produce is established
2. A nursery for grape vines is established
3. Vineyards on the land of the coop members are established
4. Farmers and extension agents are trained in grape production methods
5. Analysis performance to adjust plans conducted periodically.

The "activities" required for each output can be estimated together with the cost and manpower required for the activity.

Objectively Verifiable Indicators of Effectiveness

Objective measures of results are needed at each level of the hierarchy. In an actual project specific targets will be included at all levels.

Analysis of Feasibility--Efficiency

"Feasibility Analysis" is measuring the expected results per unit of input; that is comparing the efficiency of use of money and other resources with alternative investments.

"Technical feasibility" requires analysis of the "output level" results compared to the inputs. How many pounds of grapes will the vines yield in this area? Is the technology proven? How fast can the nursery be developed? Is irrigation needed? "Engineering efficiency" is relevant.

"Commercial feasibility" requires analysis of the "purpose level" results compared to the inputs. Will cooperative members earn more by growing grapes instead of corn? Will demand be adequate when grape production increases? Can a cooperative increase profitability substantially through purchasing of inputs, selling grapes, processing grapes, or other functions? What kind of financing is necessary for the grapegrowers to be successful? For analysis of commercial feasibility, the costs and the coop members are central to the analysis. Is the economic return to

the farmers sufficient to motivate him to participate? Is it really beneficial to him considering alternative uses of his money, land, and labor?

A subsidy may be justified when a project produces important benefits that are not recognized by the farmers. An "efficient subsidy" will be designed to make the project "commercially feasible" with a minimum subsidy. The size and type of subsidy needed by different projects will vary--assistance for coop organizations, agricultural extension agents, low interest loans, or even a grant to develop the grape nursery.

Socio-economic feasibility requires analysis of the goal level results compared to the inputs. If the project generates employment in a rural area with high unemployment, the employment generated is a benefit at the goal level even though these expenditures will be treated as "costs" in the analysis of "commercial feasibility" from the viewpoint of the cooperative members. Using labor intensive methods will increase the socio-economic feasibility both in the preparation of the nursery and vineyards ("expenditure effects") and later in the operations of the nurseries and the cooperative ("project effects").

If a "labor intensive technology" is more expensive than a "capital intensive technology", then further analysis is necessary to judge if additional subsidy is "necessary" for commercial feasibility and if the socio-economic benefits are sufficient to justify the additional subsidy.

The relevant costs for socio-economic feasibility include all the subsidies in addition to the costs paid by the cooperative members. The main focus of the analysis is the rational use of these subsidies to get maximum socio-economic impact from the limited resources for subsidizing cooperative organization, extension work, rural infrastructure, and crop production credits including costs from outside the project. "Social benefit/cost analysis" will use the results at goal level and the broad concepts of costs.

SUMMARY

The Logical Framework Approach integrates the various types of analysis required for project analysis. The LFA provides a useful "process" to organize the work in feasibility studies. For each type of analysis, it is clear what kind of information is needed--to measure the effectiveness and efficiency of the project technically, commercially, and socio- economically.

A Bonus--A Sound Management Plan Plus a Process for Implementation and Evaluation

In addition to integrating the traditional components of project analysis, the Logical Framework Approach adds a sound management plan. Managers complain that traditional project preparation is abstract and leaves very little of value to the managers responsible for project implementation. The Logical Framework "process" is a managerial process of defining a realistic objective and the means to accomplishing it. The result should be a realistic plan at the beginning of the project. The plan is compatible with traditional management systems for budgeting, scheduling, networking, reporting and evaluations. There are innovative, practical variations on these traditional management techniques that are specifically designed to be used with the Logical Framework. These Project Management Systems include the Logical Framework Approach to evaluation, performance networking, performance reporting systems, budgeting by programs* and resource management systems.*

*/ In development.