



LOGICAL APPROACH TO PROJECT MANAGEMENT IN PAHO

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FOREWORD

This document has been developed with the aim of improving project management in PAHO. The term "Logical Approach" applies equally to the project design, project implementation and project evaluation phases of project management.

There can be little doubt that the demand for social services is increasing relative to the resources available for solving social problems. For example, while the number of poor persons is increasing, public expenditures for societal problems are decreasing. The lesson for public officials, both national and international, should be clear. We must learn to do more with less. If we are to impact social problems we must increase the efficiency and effectiveness of our projects.

Critical to increasing project effectiveness is the ability to direct projects in such a way that the desired impact is achieved in the selected problem area. Projects exist only to produce an impact. This has implications for project design and execution. Adequate project design also sets the correct tone for the ex-post evaluation of the project. Evaluation cannot consist in simply reporting or listing what was done; comparisons must be made between what was achieved and what was originally planned and the impact achieved by the project must be assessed.

The PAHO technical cooperation program consists of a series of projects directed at improving the health of the population of its Member Countries. These projects are funded from both internal and external sources and must meet the needs of both sources. The need to improve PAHO's capabilities in project

management has become increasingly evident as the instruments of the Planning, Programming, Monitoring and Evaluation System (AMPES) are used to manage its technical cooperation program. It is believed that paying careful attention to project design, implementation and evaluation will increase the efficiency and effectiveness of the PAHO technical cooperation program and in turn increase its impact on health problems at the national level. An additional benefit to using the logical approach to project management is that it provides an opportunity for improving health authorities management capabilities.

It is essential that PAHO managers engage in a concerted effort to establish an evaluation culture within the organization. Evaluation must undergird each phase of the project management cycle. This paper suggests that PAHO managers should engage in evaluative procedures during project planning and implementation and at the end of the projects activities. The terms ex-ante evaluation, monitoring and ex-post evaluation are used to underscore the critical need for managers to incorporate evaluation in their on-going managerial activities during each phase of the project management.

While almost everyone in any field of endeavor agrees that evaluation must be carried out to complete a project; perhaps evaluation is even more critical with projects in the social sector. This is related to two myths which, in spite of ample evidence to the contrary, seem to pervade the thinking of too many social project managers. The first myth is that if small amounts of money will "do some good" then large amounts will accomplish even more. The second myth is that, even if the original

objectives of the project were not accomplished then certainly some good must have been achieved because at least the activities were carried out. The latter view is belied by the frequency with which unintended, counter-productive effects result from social projects. If positive effects are to be achieved, evaluation must become a part of the managerial culture of any organization engaged in providing services in the social sector.

PAHO has extended the basic approach used in the Logical Framework to incorporate the entire scope of project management. Thus segments on project implementation and evaluation are emphasized as well as project design.

PAHO has developed a core of expertise within its own staff to assist in the presentation of a logical approach for project management to PAHO staff and, in some cases, to national health authorities as well. The courses have been very well received, apparently addressing a widely felt need.

Perhaps the need for improving PAHO's project management capability is best illustrated through this list of problems frequently encountered in project management:

- Project design is carried out with little participation from the operating levels.
- Objectives are poorly defined, often abstract and seldom measurable.
- Evaluation criteria are not clearly established.
- The projects are not clearly related to national goals and plans.
- The executing units are not clearly identified.
- Budgets are not properly estimated and do not relate to planned activities.
- Alternative solutions are not given due consideration.
- Planned activities do not respond to the objectives for the project.
- The capability of counterparts is not accurately assessed.
- Policies and strategies of donor agencies are not well known.
- Programming and execution procedures have too little flexibility.

- Project external environment is either not clearly understood or not taken into account.

This document is based on a review of a number of sources (see the attached bibliography) and is intended to be used as background for courses and workshops on project management given within PAHO and as a tool to aid PAHO project managers in the development of sound projects. Contributions from the Nordic agencies, GTZ and Team Technologies Inc. are specifically acknowledged in the development of the logical approach principles and their application to project management in PAHO. In addition, the contributions of Drs. Ernesto Cohen, Armando Lopes Scavino; Felipe Recalde and Mr. Roger Dixon are gratefully acknowledged and have increased the relevancy and usefulness of the approach described in this document.

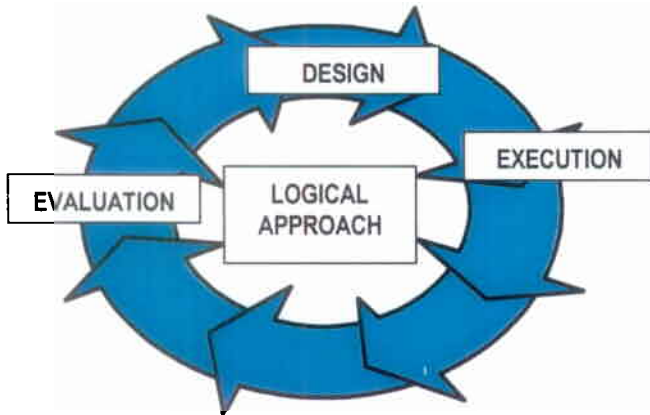
INTRODUCTION

The process for project management described in this document is particularly relevant to PAHO at this time because: 1) most of PAHO's technical resources are now grouped into "projects" and 2) externally funded (extra budgetary) projects constitute a growing percentage of the resources managed by PAHO in its technical cooperation program. Application of the approach discussed in this document should improve PAHO's ability to demonstrate its responsiveness to the mandates of the Governing Bodies and to meet the reporting requirements of the institutions providing the resources included in the extra budgetary projects. In short, application of the Logical Approach to Project Management should improve the efficiency and effectiveness of the delivery of PAHO's technical cooperation with a corresponding increase in the impact on health problems in the Member Countries.

A project is defined as a purposeful undertaking which is organized to achieve specific objectives that are established to solve a problem or satisfy a need. A project, by definition, is goal-directed, time-limited and produces specific results through the use of defined resources. Figure 1 shows the project cycle, moving from an existing situation through the phases of design, implementation and

evaluation to a more desirable situation after the problem is solved or at least reduced. This, in turn, creates a new situation which could give rise to additional projects depending on the priority given to the problems defined within the new situation.

Figure 1. The Project Cycle



Project Management

The process of project management is best viewed as a continuum which consists of three highly inter-related phases: project design, project implementation and project evaluation. Throughout the life of the project, managers are consistently making key decisions regarding the direction, control and communication necessary for project success. The Logical Approach guides the project manager in successfully completing all three phases. Evaluation should permeate the process of project management from the conception to the completion of the project cycle.

The project design phase includes an ex-ante evaluation because a series of decisions must be taken as to whether to stop, postpone or continue a project design. That is to say before resources are invested there should be a definitive idea as to what the project is intended to accomplish and whether it is worth doing. This project idea or first approximation should define the problem to be solved or the deficit to be reduced; the target population; how the project will be carried out; what happens if nothing is done; what would happen with various levels of resources; the relation between the

gains to be achieved and the costs of these gains; and, increasingly, there is a demand that all projects with a development focus be gender sensitive. The selection of a viable plan also depends on the target population and the resources available for the project. The end-product of the design phase is a project document which guides the project implementation and provides a comparison for project evaluation.

Project implementation involves: 1) the management and control of all resources (human, financial and physical) to ensure that the results of the project are delivered in a timely and cost-effective manner and 2) monitoring to ensure that the results produced are those which have the greatest impact on the central problem as identified in the design phase. In short, the aim of project implementation is to achieve the project purpose.

The Logical Approach also guides the implementation team since the activities which must be carried out to achieve the results have already been identified in the design phase. Based on these activities, the project implementation team can develop work plans which could include work breakdown structures, responsibility charts, budgets and systems for monitoring and controlling the project. Project implementation is dynamic because it occurs in an atmosphere of uncertainty influenced by external factors over which the project manager often has no control. Such conditions necessitate the development of control mechanisms to monitor cost, time and performance and effect timely changes.

The implementation phase ends with the completion of the project activities.

It is necessary to distinguish between evaluation and monitoring. Although each has different functions, they are related and form parts of a continuum. Monitoring is a continuous or periodic surveillance of the work in progress which contributes to problem solving during project implementation. The functions of monitoring are: to track or detect changes in planned activities; to determine how the actual delivery rate compares with the expected results; and to ensure that progress is being made toward the achievement of the project purpose.

Project evaluation (ex-post evaluation) on the other hand, is the process used to measure, as systematically and objectively as possible, the extent to which the work completed satisfies the original objectives and reveal the reasons for significant deviations. The results of evaluations are a mixture of learning, guidance and control based on what has been achieved through the project's activities. There are two major problems encountered in measuring results. The first is related to the difficulty in establishing cause and effect between activities and results. The second evolves when the project purpose and expected results are set out without indicators and with such imprecision that it is extremely difficult to determine whether they have been realized. Careful adherence to the Logical Approach will help project managers avoid these problems since it is based on establishing cause and effect relationships and requires that indicators and the means for their verification be established.

The Logical Approach Matrix

The Logical Approach for Project Management provides a clear and comprehensive method for the design of complex projects and assists in implementation and evaluation. It facilitates analysis and planning in project design, facilitates directing, controlling and communicating during project implementation and provides an adequate base of comparison for project evaluation. The Logical Approach uses a matrix (shown in Figure 2) which features vertical components to explain the reasons for the project and horizontal components to demonstrate what is going to be produced, how success can be measured and the assumptions which affect the project.

Figure 2. The Project Matrix

| Objectives | Indicators | Means of Verification | Assumptions |
|------------------|--------------------|-----------------------|-------------|
| Goal | | | |
| Purpose | | | |
| Expected Results | | | |
| Activities | Resources (budget) | | |

Using the matrix as a guide, the major objectives of a project are identified. These objectives are classified as the project goal, purpose, and expected results; to achieve these it is necessary to specify activities and their associated resources as well as indicators, means of verification and assumptions. Correct application of these eight concepts and their relationships to the three phases of the project cycle is a critical element for project success. As will be shown below, because of the method used to develop the hierarchy of objectives, activities are designated as objectives and resources are designated as indicators for ease of presentation.

The hierarchy of objectives constitutes the vertical logic of the project and must meet the requirements of internal consistency. The vertical logic is verified by determining the cause and effect relationship of one level of the hierarchy with the next level. The horizontal logic of the project incorporates the indicators, their means of verification and the associated assumptions. Combining all these together, the project team is able to state: a) if we complete the activities and the assumptions hold true, then we will achieve the expected results for the project; b) in addition to achieving these expected results, several other things must happen if the project is to achieve its purpose, including assumptions which are beyond our direct control; and c) if the purpose is achieved and the associated assumptions hold true, then the project will make a meaningful contribution to the goal.

In describing the project in this manner, the managerial responsibility of the project manager has been established; i.e., the project manager is specifically responsible for achieving the expected results. The project purpose depends on factors outside the limits of the project; hence, the project manager cannot be held responsible for achieving that purpose. Nonetheless, the project manager has a moral responsibility to monitor the external environment of the project and report to top management any changes in the assumptions which may affect the successful implementation of the project. Moral responsibility includes the commitment of the project manager to the purpose and goal of the project.

Conceptual Bases for the Logical Approach

The Logical Approach assumes that a project is an instrument of change selected from among alternatives as the most cost-effective way of accomplishing a desired result. The Logical Approach attempts to integrate a number of management perspectives as outlined below:

- **Results-Based Management.** Project managers are held accountable for results. Projects must contain a set of objectives and success is measured by the degree to which the objectives have been met.
- **Scientific Method.** Projects are essentially experiments undertaken in a world of uncertainty. When a project is being implemented a series of hypotheses are being tested. Therefore, project management should be seen as a process for learning what produces results.
- **Systems Approach.** Projects are not carried out in a vacuum but in relation to an external environment of political and social realities, organizations, institutions or other projects. Therefore, a project design is not complete until we have defined the larger system of which it is a part. The systems approach includes: seeing the parts of a problem in relation to one another; developing the ability to ask the right questions; seeing differing points of view as complementary rather than conflicting; and identifying alternatives and assessing them in terms of practical decision criteria.
- **Contractual Agreements.** Projects are essentially contracts involving two or more persons or institutions. Every contract has the same basic features: a meeting of the minds about the major reason for undertaking the project (purpose); a set of deliverables (results); a time frame; the resources required to produce the results; and the circumstances that constitute 'force majeure' (assumptions).
- **Participatory Management.** The Logical Approach intentionally and specifically supports a team approach. Generally speaking, projects designed by teams are

far more likely to be successful than those designed by individuals. Stakeholders¹ should also participate to the maximum extent feasible in the project design, implementation and evaluation phases of project management. Participation in the design phase improves the project design and increases the commitment by the stakeholders to assist in the implementation phase thereby increasing the probability of successfully achieving the expected results.

In summary, the utilization of the Logical Approach in project management strengthens the three main phases of the project, i.e., design, implementation and evaluation and therefore leads to better results and greater impact.

PROJECT DESIGN PHASE

The Logical Approach helps project designers and stakeholders set proper objectives and identify and define indicators of success, key activities, the assumptions critical to the success of the project, means of verifying project accomplishments and the resources required for implementation. Persons and institutions having a legitimate interest in the impact which the project may have, should be included in the project design team to the greatest extent possible. In PAHO's case, these stakeholders may include the PAHO personnel assigned to the project, Ministries of Health, Agriculture and/or Education, social security institutions, private organizations, universities, NGOs, funding agencies and the population served. There must be a specific and deliberate effort to involve women or women's groups as important holders of legitimate interest.

A. Analytical Stage: Preparing the Background for the Project Proposals

The analytical stage comprises an analysis of the current situation; an analysis of problems and their causes and effects; the selection of a central problem; the identification of groups relevant to the project (stakeholders); identification of the objectives; analysis of the costs for achieving the project purpose and the development of a first approximation as to how the project is to be designed. These steps

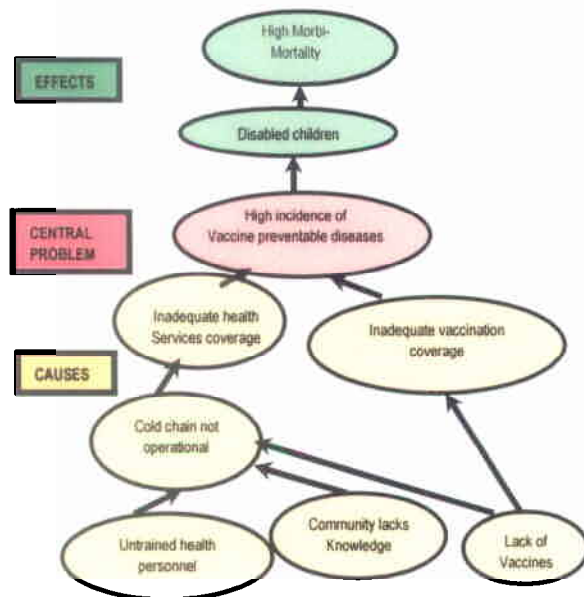
should lead to a sound project design. The analytical stage must be seen as an iterative process in which the results of a given step may force the project design team to adjust the project proposal until it provides the best possible solutions.

1. Problem Identification

The analysis of the situation helps to determine the problems to be solved and identify their causes and effects. The selection of the appropriate central problem is crucial to the analytical and planning stages; therefore, it is important to ensure the participation of stakeholders in the problem analysis. The selection of the central problem should be based on a consensus rather than on a majority vote.

Once the central problem has been determined, its causes and effects are analyzed and a "problem tree" is developed, as shown in Figure 3. The problem analysis is concluded when a causal network has been established explaining the main cause-effect relationships characterizing the central problem.

Figure 3. Problem Tree



2. Identification and Analysis of Stakeholders

A fundamental requirement of all projects is that the objectives reflect the needs of key stakeholders and not merely the internal needs of sponsoring or executing institutions. For most project proposals there are numerous groups which have some interest in the project results. They will be affected to a greater or lesser degree, either positively or negatively, by what is being considered and will react according to their own interests and political leverage. The probabilities of designing a successful project are enhanced when the most important stakeholders are identified and taken into account.

In most cases, social projects are designed and implemented within institutions that, due to their very nature, define the fundamental parameters for the scope of those projects. The population for which they are intended is, by definition, the group which would be most affected. The result is a network of interactions among institutions, social groups, and individual actors linked to the proposed project, all of which can influence its development and ultimately determine its viability.

The meaning of the concept of viability must be specified. In principle, two dimensions pertinent to the analysis of the stakeholders for social projects can be defined: technical and political viability.

Technical viability. Projects are inflicted with a double source of uncertainty arising from operating with hypotheses that, in turn, are conditioned by external assumptions. For that reason, technical viability in the area of social projects is not an easily solved dilemma. Assuring the delivery of products from the project (goods or services intended to satisfy a deficit or need) by no means guarantees that the desired impact will be achieved. A fundamental objective pursued by the application of the Logical Approach is precisely to make the design reflect the transformation of results into impact in the most realistic way possible.

Political Viability is expressed in the decision of the stakeholders to either allocate the resources, or give the support needed for the project. To inject greater realism and pragmatism into the project design phase, the institutions and

social groups directly affected by the project are identified and analyzed. Ultimately the success of a project is determined by the extent to which its design reflects the interests and needs of the relevant institutions, groups and actors affected by it.

The aforesaid can be summarized in the following way. Given a relevant problem encased within existing institutional priorities, technical viability is a necessary condition and political viability is a sufficient condition for the project to be approved in the ex-ante evaluation.

Decision-makers and beneficiaries of the project are the two major categories of stakeholders that must be considered in the design of the project. Decision-makers are the sponsoring or executing institutions, whose interests and objectives must be taken into account. The beneficiaries constitute the target population. The structure of their needs, the demands they make, and the circumstances that govern their present existence must be contemplated. The participation of beneficiaries in social programs and projects, in both their design and implementation, is particularly important.

In undertaking an analysis of stakeholders, variables such as those shown below could be considered. The first variable is the degree of participation in or active influence on the project; in other words, the power of the stakeholders and their interest in exercising that power. For this first variable the assignment of numbers is as follows:

- 1 = Low
- 2 = Moderately Low
- 3 = Medium
- 4 = Moderately High
- 5 = High.

The second variable is the magnitude of the effect of the project on the stakeholders or the value of the project to the stakeholder. The value of the project to any stakeholder highly influences whether or not the power of the stakeholder will be exercised. Of course, power can be exercised in favor of or against the project. To measure the value of the project to a stakeholder the following scheme may be used:

For positive values:

- 0 = Indifferent
- 1 = Low
- 2 = Medium
- 3 = High.

For negative values:

- 0 = Indifferent
- 1 = Low
- 2 = Medium
- 3 = High.

Multiplying the power times the value yields the magnitude of the effect that the stakeholder can exercise for or against the project. Even though the values obtained are quantitative, it should be remembered that these values are not the result of a rigorous measurement, but an estimate that contains a margin of uncertainty.

The information can be organized as indicated in the matrix shown in the Figure below.

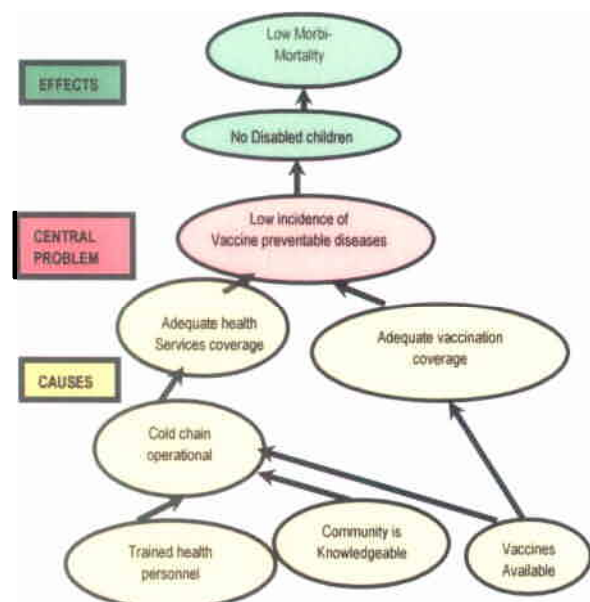
Figure 4. Stakeholders Analysis

| Stakeholders | Description | Expectations from the Project | Power (P) (1 to 5) | Value (V) (-3 to +3) | Effect (P x V) (-15 to +15) |
|--------------|-------------|-------------------------------|-----------------------|-------------------------|--------------------------------|
| A | | | | | |
| B | | | | | |
| C | | | | | |
| D | | | | | |
| E | | | | | |
| F | | | | | |
| G | | | | | |

3. Objectives Identification

The purpose of this step is to translate the problem tree shown in figure 3 into an objectives tree which in turn is translated into a hierarchy of objectives which can be addressed by the creation of a project or projects. The problem tree is transformed into an objectives tree by rewording the central problem and its causes and effects as positive objectives (see Figure 5).

Figure 5. Objectives Tree Develop a First Approximation



The objectives tree is the basis for the selection of the project approach since it permits the identification of the related cause-effect branches in the objectives tree which could become projects. This will often necessitate the re-arrangement of the boxes in the objectives tree to obtain branches of project elements which logically belong together. Those objectives which are obviously not desirable or are unachievable are eliminated. The implications for the stakeholders are discussed to ensure that their interests are protected. To select the most viable approximation, various options are considered in relation to certain criteria such as total cost, resources required, benefits to priority groups, the probability of achieving objectives and the risks involved. Based on an assessment of the feasibility of the different options, agreement is reached on the options most likely to achieve a successful result.

In the private sector, estimated profits serve as a guideline for selecting alternatives. Costs and benefits are calculated for each alternatives and the alternative which shows the biggest monetary return is usually selected. In the area of public health, economic costs are not always the most appropriate standard and other measures must be found to take into account the

social costs and benefits of the various alternatives. Because of the difficulty of identifying all important outcomes of health programs in money terms, other instruments are often used which attempt to measure the effectiveness of the various alternatives in non-monetary terms.

Cost-Effectiveness Analysis (CEA) may be used to help the project team assess and compare the costs and effectiveness of alternative ways of achieving the expected results. It is a formal process for determining the most effective use of limited resources in cases where benefits are difficult to measure. Effectiveness is a measure of the extent to which the expected results of the project have been achieved.

A CEA consists in organizing information in such a manner that the costs of alternatives and their relative effectiveness in meeting a given objective can be systematically compared. There are three steps to be followed:

- an analysis of the costs of each alternative
- an analysis of the effectiveness of each alternative
- an analysis of the relationship between the costs and effectiveness of each alternative, usually expressed as a ratio.

The cost effectiveness ratio is calculated by dividing the cost of an alternative (in monetary terms) by the effectiveness of an alternative usually expressed in non-monetary terms. For example the cost of the project may be expressed in terms of the number of lives saved. In the World Bank Report "Investing in Health" the non-monetary indicator for ill-health was the Global Burden of Disease or the total healthy life years lost to premature mortality and to disability. The disability-adjusted life-years in which the loss is measured permits comparisons between sexes, age groups, diseases and risk factors.

To estimate health program costs, classification of its components is necessary. Generally costs are of two broad categories, capital costs which represent buildings, equipment, vehicles and training and recurrent costs which are the costs required to "operate" the program on an ongoing basis. It is of course

crucial for the cost-effectiveness analysis that all the costs related directly to carrying-out the alternatives be counted and accurately reflected. The accurate calculation of costs is fundamental in that it represents one of the key elements in the subsequent analysis.

In some cases it may be possible to use a cost-benefit approach to analyze alternatives. As defined by economists, Cost-Benefits Analysis (CBA) compares the value of resources used to produce something (costs) with the value of the outputs (benefits). When this type of analysis is not practical it may be more useful to use CEA. The most important thing is that steps are taken to compare costs to potential benefits before the final decision is taken to invest resources.

Planning Stage: Preparing the Project Proposals

As we have seen in the analytical stage of project design, the Logical Approach systematically identifies stakeholders, problems, objectives and alternatives. Once an alternative has been selected, its objectives tree provides the basis for establishing a "hierarchy of objectives" for the project.

1. Hierarchy of Objectives

The hierarchy of objectives is based on the objectives tree developed in the analytical stage. There is no theoretical limit to the number of levels in the hierarchy, only a practical one. Most project teams find it difficult to manage more than four levels effectively. The hierarchy of objectives is described below.

The goal is the highest objective to which the project will contribute. Very often several projects will contribute to a common goal.

The purpose describes what will be changed as a result of implementing the project; i.e., that which is hoped to be achieved when the project is concluded successfully within the established time frame. It denotes the impact or set of conditions which should prevail at the end of the project. The project purpose establishes the performance measurement indicators for the project. In technical cooperation projects the

purpose for each project should describe the impact the project will have on national health processes and changes in national capacities. It is very strongly recommended that a project have only one purpose. The reason for this is practical. Experience demonstrates that it is more effective to focus project activities on a single purpose. Multiple purposes diffuse project activities and weaken the project design. Generally, where more than one purpose emerges, it is recommended that additional projects be developed. It should be kept in mind that project design teams which consistently recommend multiple purpose projects are probably not vigorous enough in their analysis of the situation.

Expected Results are the products and/or services (outputs) for which the project manager can be held directly accountable and for which resources are given. The expected results contribute toward achieving the project purpose and producing the desired impact. The results are the products and/or services that the project should produce. Results are to be described as concretely as possible. The project purpose must be supported by at least one result, although it is likely that there will be more than one. Care must be taken to ensure that all results necessary for the achievement of the purpose are described. Example: If the purpose is the strengthening of the capacity of the Department of Statistics in the Ministry of Health, among the results may be twenty trained statisticians and a system for the collection and analysis of certain demographic data in place by 2005.

Activities are the main actions that the project team must implement with the assigned resources to accomplish the results. It is recommended that three to seven activities be described for each of the expected results, just enough to indicate how each one will be accomplished and provide the basis for the tasks which are developed for the operational work plans. The project manager is also held responsible for the efficient and effective use of resources to carry out the activities and their associated tasks.

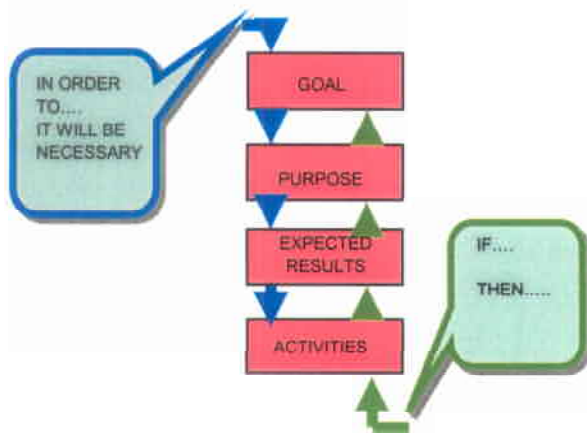
The activities included in the project should produce or contribute to a specific result. If the activity is not geared to producing one of the

expected results it should not be listed. Only those activities which are to be undertaken by the project should be listed, with care being taken not to list activities which are part of the broader on-going activities of country institutions or other programs to which the project is related.

A common problem in project design is over-specification of project activities and resources combined with an under-definition of results. The activities should include the basic actions of the project management team such as scheduling of periodic meetings, monitoring events and evaluations. Some project design teams emphasize these management tasks by adding an expected result called, "project management system installed and operational". Routine administrative tasks should not be included.

For the Logical Approach the hierarchy of objectives includes a project goal, a project purpose, results expected from the project and project activities. At this point in the project design stage the hierarchy of objectives is a set of hypotheses linked together by a cause and effect relationship. The project designers reason that if the specified activities are carried out then certain results will be produced. They further reason that if these results are produced then the project purpose will be achieved and if the purpose is achieved then progress will be made toward the goal. (See Figure 6).

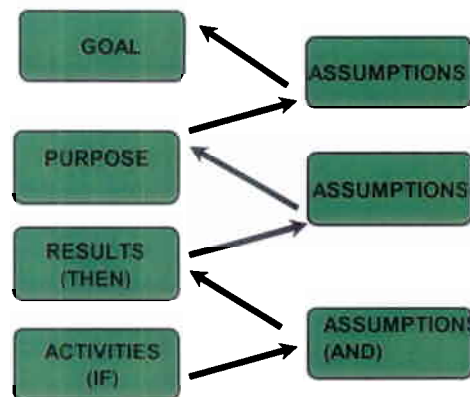
Figure 6. The logic of a project: a set of linked hypothesis



The better the cause and effect linkages, the better the project design. Each project developed using the Logical Approach should have the "if/then" or cause and effect logic embedded in it.

The cause and effect relationships between levels in the hierarchy of objectives (the activities to results, results to purpose and the purpose to goal relationships) describe the necessary conditions for a successful project. However, it does not define the sufficient conditions at each level for accomplishing the next higher level. The sufficient conditions between the levels in the hierarchy of objectives are described in the assumptions. The objectives (necessary conditions) plus the assumptions (sufficient conditions) give a clear idea of the project's probability of success. (See Figure 7).

Figure 7: Necessary and Sufficient Conditions



In addition, successful evaluation of the project is highly dependent on the selection of indicators and the means for objectively verifying the indicators. The development of a hierarchy of objectives, assumptions and verifiable indicators constitute the major steps in the project planning stage.

2. Indicators

Indicators tell us how to recognize the successful accomplishment of objectives. They are not the conditions necessary to achieve those results. There is no cause and effect

relationship. Instead, they define in measurable detail the performance levels required by the objectives in the hierarchy.

The need to establish indicators is a key element in the Logical Approach method. Although quantitative indicators may be preferred, since their measurement is more objective, qualitative indicators may also be used. Indicators should be specific and stated in terms of quantity, quality and time (QQT) (and sometimes place and cost). When selecting indicators the most important characteristics are; validity, reliability, sensitivity and specificity.

Validity means that the indicator actually measures what it purports to measure.

Reliability is the extent to which repeated trials or applications yield the same results.

Sensitivity means that the indicator will be responsive to changes.

Specificity means that the indicator measures only those changes dealing with the situation or phenomenon concerned, and are attributable to the project.

It is important that the indicator show evidence that it can be objectively verified regardless of whether it is quantitative or qualitative. The concepts of indicators and means of verification are included in the Logical Approach to stimulate project teams to measure what is important and not what can be measured easily.

Goal level indicators include performance measures for higher level objectives to which this project and several others are directed. For this reason, the goal level indicators are beyond the scope of the project.

Purpose level indicators very often define the change in behavior of project beneficiaries or the change in the way institutions function as a result of the project. As a consequence, defining indicators at the purpose level can be difficult.

Expected results level indicators establish the terms of reference for the project since the project manager is directly responsible for producing the expected results.

Activity level indicators are usually the resources programmed for the project; taken together they yield a performance budget since costs can be related directly to activities. The resource requirements defined in these indicators are used for analyzing cost/effectiveness.

Budgets reflect the financial resources available to the project. Management assigns resources towards the accomplishment of specific objectives; once assigned, these resources must be used towards their accomplishment.

3. Means of Verification

The means of verification describe the sources of information which will demonstrate what has been accomplished. If the objective is "Increase infant survival by n% in 2005", the project design team must consider how to obtain the information to demonstrate what has happened. If it is decided that a survey is needed, then it might be necessary to add a new activity. If the activity costs money, resources will have to be added to the budget. The rule is: the indicators chosen for measuring objectives must be verifiable by some means. If they are not, another indicator must be found. Experience has shown that flexible and inexpensive means of verifying project status on a regular basis is an essential feature of the project implementation and evaluation phases. They are critical to the project because they provide the basis for establishing monitoring and evaluation systems and procedures.

Projects are intended to transform a piece of reality by modifying an undesirable existing situation. Social projects generally strive to satisfy a deficiency, present or future, thus covering an unsatisfied need in population groups that are considered to be priorities within current policies. To induce this transformation, the project makes a proposal. In other words a hypothesis or a set of hypotheses is formulated which constitutes the vertical logic of the project and which must meet the requirements of

internal consistency. When the hypotheses are combined with an analysis of the assumptions, they form the horizontal logic of the project.

4. Assumptions

Assumptions are statements about the uncertainty that exists between each of the levels in the hierarchy of objectives. They represent external conditions that must exist if the project is to succeed, but which are not directly controlled by the project manager. The assumptions may describe conditions, such as: "no labor strikes during initiation phase of project", "timely release of financial resources," or "families will adopt new practices to preserve their health". They may describe what must be done in other project: e.g., "World Bank's irrigation project remains on schedule". The assumptions establish the conditions that must exist in order to achieve the next level of the hierarchy of objectives. The less the uncertainty that certain assumptions will hold true, the higher the probability of success. Experienced project managers agree that not addressing assumptions almost always causes a project to be off track.

For example, in an immunization campaign we assume that sufficient vaccines will be available. Without these vaccines the expected coverage will not be accomplished. To determine the probability of an assumption holding true, it is necessary to examine the most recent patterns of vaccine availability. If, during the campaign, a minimum of 500,000 doses are needed to achieve the proposed coverage of the target population and this amount has only been obtained in three of the last ten years, then there is a low probability (30%) of this assumption holding true for the project.

Analysis of the assumptions by the project team may reveal assumptions which are important to the project and at the same time relatively inexpensive. To increase the probability of success, it may be worthwhile to include the assumption as an activity within the project provided that funds can be found to cover the cost. Obviously, not all assumptions are susceptible to this treatment, but when it is possible to include the assumption as an activity within the project then the probability of success and managerial control are simultaneously increased.

PROJECT IMPLEMENTATION PHASE

Implementation is the heart of project management. It is the phase which transforms resources into the expected results. Project implementation is dynamic because it occurs in an atmosphere of uncertainty and is influenced by external factors over which project managers have little or no control. Project implementation involves the control and monitoring of all the resources (human, financial and physical) to ensure that the results of the project are delivered in a timely and cost-effective manner and that the results produced are those which were identified in the analytical and planning stages. The main functions of project implementation are: perform the planned activities and tasks; monitor progress against plans; make necessary adjustments, and keep top management informed. The prerequisites for successful project implementation are clear statements of the project objectives, indicators (QQT), means of verification, assumptions and costs.

A. Common Factors for Successful Implementation

Successful projects depend as much on good design as on effective implementation. The analytical and planning stages outlined in the Logical Approach attempt to reduce difficulties which may arise during implementation by making project managers more sensitive to the needs of the stakeholders, providing an objective means of verifying success and ensuring the availability of the resources necessary to achieve the project results.

Traditionally, implementation is the most critical problem in project management. Many experienced managers believe that the project management practices which produce the greatest results revolve around direction, control and communication. Through effective use of these practices, the project manager can demonstrate to the most important stakeholders that their interests are being met, resolve conflicts, make timely decisions, coordinate the project team efforts and keep top management informed about the progress being made toward the project purpose.

Directing or providing leadership is critical to the success of the project implementation phase. One of the prime responsibilities of management is to provide a work environment which encourages and maintains a high level of performance. Much has been written in management literature about the people oriented versus the task oriented manager. The consensus seems to favor the results oriented manager who takes into account the needs of the people working in the organization and balances these needs with the organizational need for task completion. Directing also involves effective delegation: i.e., giving people responsibility for tasks and following-up to assure that work is on schedule, but at the same time giving people the necessary authority and resources. Directing also involves recognizing and rewarding achievement and providing opportunities for employee growth and development. Work plans must be developed to guide the project team toward the accomplishment of the project objectives and to ensure the availability of sufficient resources to complete the work.

Controlling is basically a systems function which compares progress with plans to ensure that the project purpose is being achieved. Monitoring is a significant aspect of the control function. Monitoring may be a continuous or a periodic surveillance of the work in progress during project implementation. The functions of monitoring are to detect changes in planned activities, determine how the delivery rate compares with the expected results and provide information to make decisions to improve project performance. Controlling also involves monitoring of the rate of expenditure to ensure efficiency in the use of resources. Control is exercised to ensure adherence to schedules, deadlines and assess productivity. Controlling provides the feedback necessary to make adjustments as the external environment to the project changes. The major function of control is to assess productivity and provide information for decision-making to improve project implementation.

Communicating involves informing upper management, project staff, sponsors and the stakeholders as to the project's progress and changes in the environment which could have an effect on project performance. Communicating

information on progress and problems may be done formally through official reports as required by PAHO or by sponsors or through informal methods of communication such as intelligence reports and discussions. Finally, the project manager is responsible for communicating technical information to the technical community interested in the knowledge which is generated by the project. The clear definition of the concepts of the Logical Approach (i.e., goal, purpose, results, activities, resources, indicators, means of verification and assumptions) enhances communication at all levels.

B. Monitoring Progress

Monitoring the progress made during project implementation is one of the main responsibilities of the project manager. This entails not only the execution of the tasks as programmed in operational work plans and the timely delivery of resources (human, financial and physical) but also the monitoring of external factors or assumptions that may affect the project. The monitoring function also includes responsibility for amending the design of the project based on the particular circumstances that occur during its implementation. One of the basic elements of the logical approach for project management is that project management is an iterative process not only during the design phase but also during the implementation phase.

It is during monitoring that the value of establishing clear activities, expected results and indicators is most keenly felt. In fact, if they do not exist, monitoring may be meaningless since there is no baseline against which progress can be measured.

C. The Project Manager

The Project Manager is responsible for implementing the project in collaboration with the project team. The project manager has responsibility for coordinating the activities of the project to ensure that the results of the project are delivered in a timely manner and within the proposed budget. The project manager must be sufficiently empowered to motivate the project team and seek clarification on and /or adjustments to the project objectives.

In general, a plan of work guides the project implementation phase providing a check list by which the progress towards the accomplishment of the expected results is compared to the planned actions. The key activities and tasks are identified and projected over a time frame for completion. The more detailed work breakdown structure is developed from these elements.

The project manager is held accountable for achieving the project results. They are within the control and authority delegated to the project manager, but the purpose and goal fall outside of the scope of the project. The institution or the Member Country is responsible for producing the project purpose and goals. In the Logical Approach the purpose is outside the direct responsibility of the project team even though it is the reason why the project is being implemented. The principle is that the project manager can be held responsible for producing the expected results, but not for what people or institutions will do with those results. For example, if a project is designed to provide local health workers with new skills, additional supplies and improved facilities then the purpose would describe what the health workers will do differently once the project is completed; i.e., provide better health services to the community.

The project may well be able to produce these expected results: trained local health workers; an increase in the availability of supplies; and expanded health center services. However, the project managers cannot be held accountable for the specific changes in health worker behavior that should come about from these results.

The project manager is not responsible for the assumptions. When important assumptions fail or change, the original project contract can be annulled or renegotiated. The project team agrees to monitor changes in the assumptions; therefore it is valuable to make the assumptions as specific as possible. High-performance project teams spend a great deal of time trying to influence the probability of their project assumptions holding true. It is in the interest of all stakeholders that the assumptions are carefully monitored during implementation and their status reported frequently so that supervisory officials can act in a timely fashion to influence assumptions and change external conditions or to change the project hierarchy of

objectives to correspond to the current situation.

The project manager has six major areas of responsibility:

1. the efficient and effective production of the expected results;
2. the constant monitoring of project activities and resources;
3. monitoring assumptions at all levels of the project environment;
4. report to upper management any problems that may threaten the purpose; the key to this responsibility lies in opening up a candid, objective dialogue with upper management. The project manager is closest to the day-to-day operations and will often be the first to learn about problems that may adversely affect the project. The project manager should recognize deviations from the plan that are important enough to require informing upper management.
5. provide alternative solutions;
6. development of a good project team which is technically competent and sensitive to the needs of the stakeholders. The project manager will provide overall guidance and foster communication between the stakeholders. The team members must be aware of their respective roles, the mechanism for assessment of their performance, the decision making and responsibility chain of command.

The project manager's role should be defined so clearly that it could be put in a contract explaining what is to be produced, how much, of what quality and by when. There are a variety of management tools and scheduling methods that are available to managers to assist them in implementing projects. The project manager also uses influence, persuasion and coordination to convert resources into results.

PROJECT EVALUATION PHASE

The basis for project evaluation is a critical analysis of the design and implementation stages stressing efficiency, effectiveness and comparisons of plans versus actual performance. Evaluation provides information about performance so that corrective action can be taken to modify current projects and guide the

design of new ones. The process of carrying out an evaluation can be just as important as the results obtained, since involvement in the evaluation process produces a better understanding of the project under review and can bring about a more constructive approach to carrying out the project's activities. The evaluation is intended to determine the extent to which the objectives were actually achieved; where efforts were wasted and where they were fruitful; and the causes of success or failure. The evaluation helps to identify what should be done and what should be avoided in the future. While evaluation can identify problem areas which need to be addressed, it can also provide lessons from well-run projects which can be used throughout the organization to improve performance.

The effectiveness of project evaluation is very much dependent upon the quality and rigor of the project design. Using the Logical Approach in the design process facilitates the development of an evaluable project. When objectives are clearly stated, assumptions have been made explicit and indicators of success have been established at each level of the project, the evaluation will have a clear base-line against which progress can be measured. The indicators express what the project designers are willing to call success. The evaluation task is to collect the data for the indicators and measure the project results against them. The project design should have anticipated external factors (assumptions) which might affect the project performance. If progress was unsatisfactory during implementation; it is the task of the evaluators to identify factors which hampered the project and determine which factors were outside the control of the project.

The evaluation should determine whether the project was a success because of the planned impact of activities and resources or because of unplanned results. A project could be deemed a relative success even if all objectives are not reached, as long as the unplanned results are positive; on the other hand a project can be a failure if the objectives are reached, but the unplanned results negatively overshadow the benefits.

Obviously, evaluating project results is easier where the evaluation focuses on specific interventions which had a known effect.

Measuring results may be impeded by the difficulty of determining causality; therefore, evaluation often depends on the ability of the evaluators to establish whether the project produced more of a result than would have occurred in its absence. Often, the best that can be done is a value judgment by competent technical people as to the portion of the results which are attributable to the activities associated with the project.

CONCLUSION

This document presents an approach to project management which begins with a systematic identification of problems to be solved and concludes with an evaluation of the results achieved in relation to the original problem. The approach is called "logical" because it identifies the causes and effects surrounding the problems and uses these as the basis for establishing projects.

The Logical Approach emphasizes and demonstrates how to:

- analyze problems;
- identify and analyze stakeholders;
- identify alternatives;
- set proper objectives;
- define indicators for measuring success;
- establish project results and the activities necessary for their accomplishment
- define the assumptions which are critical to the project
- establish the means of verifying project accomplishments;
- define the resources required for the project;
- define the responsibilities of the project manager in the implementation phase;
- establish procedures for evaluating what was actually delivered by the project.

We believe that the systematic application of the Logical Approach to PAHO projects will improve the delivery of technical cooperation to the Member Countries.

While it is critical that this systematic application to project management become “second nature” to PAHO managers; it is equally important that these principles be passed on to national health authorities. Acceptance and application by national health authorities will not only facilitate the programming and delivery of PAHO’s technical cooperation but will also lead to a more efficient and effective use of national resources. These two are complementary, because in the final analysis, our aim is to ensure that all resources are optimally applied for the benefit of the health of the people of the Americas.

GLOSSARY OF TERMS

The main concepts relating to managing projects in PAHO are defined below to provide a consistent framework for the discussion presented in this paper.

Activities. Activities consist of substantive actions to be carried out within the project to produce the expected results. Usually there will be more than one activity necessary to produce each result. Only those activities which are necessary to achieve the results should be listed. Tasks and routine administrative activities should not be included.

Assumptions. Assumptions address those conditions outside the immediate control of the project which can significantly influence the project results. A project is always a limited contribution to a higher level objective and depends on "outside" factors or assumptions for its success. These assumptions will have to be shown in order to assess the risks which may interfere with the achievement of the planned results. An assessment of assumptions and the associated risks is crucial at all levels of the hierarchy of objectives, i.e. the goal, purpose, result and activity.

Budget and financing. The budget for a project consists of the resources assigned to the activities, categorized by element. For financing agencies it will be necessary to develop a project budget covering the period of the project's duration, specifying any annual recurrent cost implications for the host country beyond the duration of the project.

Cost-Benefit Analysis. The use of appraisal reports and feasibility studies to aid in selecting from among the alternatives.

Effectiveness. Effectiveness measures the degree of attainment for the expected results; i.e., it is the expression of the extent to which the activities resulted in resolving the problems defined in the problem analysis. The results and indicators must have been clearly stated at the

beginning so that it is possible to compare actual performance with planned performance.

Efficiency. Efficiency expresses the relationship between results and resources. The assessment of efficiency focuses on the process of delivery and the resources used to achieve the results.

Evaluation. A systematic and independent examination of a project to determine its efficiency, effectiveness, impact, sustainability and the relevance of its objectives. The various evaluation stages in the project cycle include: ex-ante, during the design phase; monitoring during implementation; and ex-post after the project is completed.

Expected Results. (See Results.)

Financial reporting and auditing. Includes the accounting, financial reporting and auditing procedures to be applied, including frequency, institutions involved, responsibility and feed-back mechanisms.

Goal. The goal represents the objective at the next higher level above the purpose to which the project is intended to contribute. The goal is defined in the national priorities for technical cooperation and normally focuses on the long-term. By definition, the project alone cannot achieve the goal. Achieving the goal will require additional, related projects or other efforts and may depend on external conditions such as government policies or capital investment. There should be only one goal toward which a project contributes. (In some project development schemes the goal is also referred to as the development objective.)

Hierarchy of Objectives. Once an alternative has been selected, the objectives tree for the selected alternative provides the basis for establishing a "hierarchy of objectives" for the project. For the Logical Approach the hierarchy of objectives includes a project goal, a project

purpose, results expected from the project and project activities

Impact. The changes produced as a result of the project. The changes may be positive or negative, direct or indirect, or intended or unintended.

Indicators. Indicators define the performance standards which will be used to measure the impact or changes brought about by the project. They must contain quantity, quality and/or time (QQT). When selecting indicators the most important characteristics are; validity, reliability, sensitivity and specificity. Validity means that the indicator actually measures what it is purported to measure. Reliability is the extent to which repeated trials or applications yield the same results. Sensitivity means that the indicator will be responsive to changes. Specificity means that the indicator measures only those changes dealing with the situation or phenomenon concerned.

Means of Verification. The value of an indicator is limited by the means available to verify the indicator. The means of verification are the data sources where one can find the evidence to verify the status of the indicators at the various levels of the objectives hierarchy.

Objectives Analysis. The problem tree is transformed into a hierarchy of objectives to facilitate the develop of projects which in turn are directed toward the solution of the problems identified in the problem analysis.

Problem Analysis. Identifying the central problem and translating it and associated problems into a problem tree and establishing their causes and effects.

Project. A purposeful undertaking which is organized to achieve specific objectives which have been established in order to solve a problem or satisfy a need. A project is goal directed, time limited and produces specific results through the use of defined organizational resources.

Project implementation plan. The project implementation plan is the framework within which the project will be implemented. The plan will indicate a time frame for project resources

and activities; it will show the sequence of activities and it will indicate timing for the transfer of funds. The detailed plans for implementation will make up the annual plans of action.

Purpose. The purpose states what the project itself is expected to achieve. It describes the outcome of the project and establishes performance measurement indicators for the project. It must in turn contribute to the achievement of the goal. The purpose states the situation that is expected to prevail at the end of the project. Embedded in its formulation are time, place, quantity and beneficiaries. A properly defined purpose is the key to the project document. The definition of the other elements of the objectives hierarchy (results, activities, resources) flow from the purpose. Poor formulation of the purpose is the single greatest cause of poor project design. Poor project design is directly linked to project failure. Experience has shown that more than one purpose tends to make the project unmanageable.

Resources. Resources are the raw material of the project and include funding, equipment, supplies, personnel, fellowships. They flow from the higher levels of the project hierarchy in that they are determined from an analysis of the activities to be carried out by the project.

Results. The results are the products and/or services (outputs) that the project itself should produce which in turn lead to the achievement of the project purpose and help produce the desired impact. Results are to be described as concretely as possible and in verifiable terms.

Stakeholders. Stakeholders are defined as persons or institutions having a legitimate interest in the results of the project.

Tasks. Specific actions, included in the work plans, which are performed within the project to transform resources into results.

BIBLIOGRAPHY

"A Trainers Guide to the Logical Framework," Team Technologies, Inc.

"Cost Analysis in Primary Health Care: A training Manual for Programme Managers," WHO/UNICEF/Aga Khan Foundation. Reference WHO/SMS/NHP, 90.5.

"Cost-Effectiveness Analysis," Jack Reynolds and K. Celeste Gaspari. PRICOR Monograph Series, Paper 2, 1985.

"El Marco Lógico: Una Guía de Gerentes para Diseñar y Evaluar Proyectos en Forma Científica," Management Systems International (MSI).

"Guidelines for Project Preparation," DANIDA.

"Joint Evaluation of PAHO/WHO Technical Cooperation at the Country Level," Pan American Health Organization (PAHO).

"Manual del Método del Marco Lógico (MML) para la Preparación de Proyectos," DANIDA en cooperación con Management for Development Foundation.

"Project Framework," Overseas Development Administration (ODA).

"UNFPA Guidelines on Monitoring and Evaluation of UNFPA-Supported Projects and Programmes", United Nations Fund for Population Activities (UNFPA).

"ZOPP: An Introduction to the Method," Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).