Guidelines for the Design of Monitoring and Evaluation Systems for Agriculture and Rural Development Projects

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Preface

In preparing these Guidelines for the design of monitoring and evaluation systems it is necessary to define the purposes they are expected to serve and to identify the users for whom they are intended. The two main purposes are seen as, first, to ensure the efficient implementation of a particular project and secondly, to improve the planning of other similar projects. The users of the monitoring system are the hierarchy of project management as structured in the project design. The users of evaluation analysis range from the field level project management to the national planners.

For the successful achievement of project objectives the levels of authorities have to be vertically integrated and horizontally coordinated. The information required by each decision maker differs, making the task of designing an all-purpose monitoring and evaluation system difficult. At one level the systems can be viewed as project specific, servicing management and those intimately concerned with the particular project. But at another level the systems are used by those external to the project in assessing management performance and comparing performance across a set of projects.

In either case, the collection of data for setting up an information system can be organized individually within each project. The difference lies in the purpose for which the data is collected and the level of management served; it is a question of whether the information is about the project or for the project.

These Guidelines emphasize the latter. The aim is to improve the design of the systems to service project management and project planners rather than to provide the means for a central facility to assess performance in a comparative manner on a sector or national scale which requires different treatment to that adopted here.
Introduction

1.01 In recent years agriculture and rural development projects have grown in importance in the Bank lending program. These projects generally cover not only agricultural development but also nonfarming activities and community services with specific focus on the rural poor. Consequently, the environment in which these projects operate is complex, and in their planning, many assumptions have to be made, and options for intervention considered. A flexible approach during implementation becomes necessary in order to deal with reactions and developments that were not fully foreseen at the time of appraisal. Project-specific monitoring and evaluation systems can provide project management with regular and timely information for implementation decisions and for assessments of progress towards the achievement of project objectives. Such systems are, thus, of great importance in all but the simplest projects. Properly designed and executed monitoring and evaluation systems make important contributions to the attainment of project objectives and the design of subsequent projects of a similar nature.

1.02 The Bank has therefore encouraged the establishment of monitoring and evaluation units within projects. Most recent agriculture and rural development projects include such provisions. Reviews of literature and implementation experiences in Bank-supported projects, however, have revealed a number of weaknesses in the systems in use, ranging from concepts through design to data collection, analysis and reporting.

1.03 These Guidelines introduce significant issues of monitoring and evaluation to those engaged in appraisal, management and supervision of agriculture and rural development projects. The aim is to facilitate the preparation of effective, project-specific monitoring and evaluation systems, and to promote the use of the systems by project managers and supervision missions. Many of the technical issues are raised here but not elaborated; detailed discussions are
incorporated in the *Handbook* on Monitoring and Evaluation of Agriculture and Rural Development Projects which has been produced concurrently with these Guidelines.
Part I
Conceptual Framework

Basic Concepts for Monitoring and Evaluation Systems

1.04 Monitoring and evaluation are related but distinct functions which respond to distinct requirements. These differences can be explained by the following logical sequence of the objectives of a project:

(a) The immediate objective is to provide inputs that are necessary to achieve agricultural and/or rural development. For example, inputs may be provided as a physical facility, such as an irrigation system or a health clinic; advice which the beneficiaries are to be encouraged to adopt; or the supply of goods and services such as fertilizer, water supply, medicine, credit.

(b) It is expected that the use of these inputs will result in outputs by the project beneficiaries. These in many projects are crop or livestock production, but outputs may also be skill acquisition, larger school attendance, greater use of health facilities.

(c) These outputs will, in turn, generate effects amongst the target population, such as changes in income and expenditure patterns and improvement in social conditions e.g., literacy, health.

(d) Finally, these effects will have an impact on the social and economic life of the community. For example, as a result of improved income, services may develop in the area providing wider income and employment opportunities, or as a result of better health and education, the general quality of life may have improved.
Monitoring: A Management Tool

1.05 Monitoring is the provision of information for management to assess progress of implementation and take timely decisions to ensure that progress is maintained according to schedule. Monitoring assesses whether project inputs are being delivered, are being used as intended, and are having the initial effects as planned. Monitoring is therefore an internal project activity, an essential part of good management practice.

1.06 Evaluation assesses the overall effects, both intentional and unintentional, and their impact. It involves comparisons requiring information from outside the project either in time, area, or population. The scale of evaluation will vary with the type of project. An innovative project will require more attention to evaluation than, for example, the supply of a well proven package for a specific crop or farm activity.

1.07 The objectives of a monitoring system are to determine whether:

(i) the project is being implemented according to the agreed plan and procedures; and

(ii) the initial response by the intended beneficiaries is in accordance with expectations.

1.08 A monitoring system, therefore, should address the issues of physical and financial progress of a project as well as the issues of inputs reaching the intended beneficiaries and their utilization of the inputs. The essence of monitoring the implementation of various components is the comparison of achievements against targets, these are generally specified in the appraisal reports, but there are occasions when a project manager is required to disaggregate the overall targets to be achieved into shorter time segments. In this situation, monitoring contributes to operational planning, whereby the programming and budgeting for one period can be based on the actual experiences of the preceding one.

1.09 It is important to define the major milestones and critical events in the implementation process in order to provide a basis against which accomplishments can be measured. A monitoring system must have the capacity to identify not only the deviations from targets but also the causes of these deviations so as to assist the
management to take decisions for remedial actions. For monitoring to be effective the targets must of course be set realistically; otherwise detected shortfalls may reflect not implementation deficiencies but inappropriate projections. Overambitious data collection is often the result of trying to measure achievements with unwarranted precision against hypothetical, even unrealistic targets.

1.10 Much of the data for monitoring financial and physical progress of project activities, input supplies, and provision of services will be available from routine project records and staff reports. The contribution of a monitoring system is to summarize these data succinctly and quickly to assist management decisions. Duplication of effort should be avoided, and no data should be collected by a monitoring unit without first investigating whether the information required is already available, whether from project records, or from sources external to the project. The existence of a monitoring unit does not relieve other project staff of the responsibility for maintaining appropriate records and regular reporting.

1.11 Monitoring the use of the inputs by recipients requires the collection of data, including an assessment of the reactions of the recipients both to the inputs and to the factors affecting their pattern of behavior. There is a tendency to collect too much rather than too little data, resulting in reports that are too long and submitted too late to allow appropriate and timely action to be taken. Adoption rates provide an objective measure of recipient reaction. Satisfactory adoption rates, and, more important, repeat adoption rates, give management a strong inference that the project is succeeding; conversely, the refusal to adopt and dropouts are causes of concern to project management.

1.12 Objective measurements of agricultural output are frequently included as a monitoring indicator, but it is rarely possible to establish the statistical significance of a yield trend within the limited time-frame of a project. Given that the function of management in the early years of implementation is to deliver the agreed package and to encourage its use, the measurement of output consequences is more properly a function of evaluation. With the more innovative
For objective assessment it may need estimates of production in order to understand variable adoption responses. If objective measurements are crucial, timeliness of reporting must remain sacrosanct. The scale of the measurement survey must be reviewed if the survey is too large in terms of data collection, other aspects of the monitoring system will suffer.

1.2. For an effective process assists in the operation of the monitoring system in the following ways:

1.2.1. It ensures the timeliness of management of the implementation targets; collation, dissemination of information within the project; collection of beneficiary-oriented data; data series as an aid to future examination and preparation of reports of the achievement.

1.3. In other words, the priority task of an evaluation system must be the provision of information that can lead to effective decision making. The system should be set up early in the project cycle. While the project must be on timeliness and

1.4. The Assessment of Results

1.4.1. The evaluation system is to determine if the project objectives set in terms of project outcomes, effects and impact are/or will be achieved.

1.4.2. In other words, the outputs endeavors to assess the changes that are occurring as a result of the utilization of the inputs by the beneficiaries. If the changes that are considerable, they may be observed even during the implementation of a project. In other cases the effects, like those deriving out of the provision of services as an input, may not be quick to observe and the results of such effects on the quality of life of the community will, in course of time, become obvious. As a result, the evaluation system must be perceived as the development of a series of stages that should commence at the project's inception and continue beyond the implementation period. An

1.4.3. As monitoring, requires the

1.4.4. conclusions can be

1.4.5. in a manner shown.
1.17 An evaluation system seeks to determine both on quantifying changes that occur and on the contribution of a project in achieving the changes. Project inputs are, however, only one possible source inducing changes amongst beneficiaries, who are inevitably subjected also to exogenous events beyond the control of a project, which are unobservable in their timing, direction and magnitude. The establishment of causality, therefore, between project inputs and the effects and impact poses the most difficult problem in evaluation.

1.18 The most scientific method of establishing causality is the experimental method developed by the natural sciences, which requires that there be two groups, one of which receives the project inputs and the other, the control group, which does not. For the inferences about cause and effect to hold, the two groups should have identical composition at the outset. But as this is usually impractical, approximations to this, such as the use of matching variables, and other quasi-experimental methods are sometimes tried. Causality can also be inferred by detailed study of a few purposefully chosen communities or population microcosms whose differential behavior may be explained on the basis of perceptions gained through lengthy interviews or observations. Such cases further may provide significant insights but require great skill in their execution; furthermore, inferences cannot be made about the wider population within calculable margins of error.

1.19 Sample survey, that allow such inferential possibilities, if maintained over time, provide the basis for time series analysis that may enable the rate of change to be established and some causality analysis to be undertaken. However, seasonal effects and exogenous influences may produce cyclical and random movements that are greater in their short-term contribution than the trend that the method is attempting to determine. In such circumstances, the time-series has to be maintained over a very long before the cyclical and random effects can be isolated. The expectation of such sources of weaker but a constant, from time are considered in more detail in the Handbook that supplements these comment.
1.20 Consideration, therefore, needs to be given to the need for a central evaluation facility that can conduct the evaluation for several projects within the country. The advantages of such a centralized unit are:

(a) providing professional skills required to interpret data produced by an evaluation system which may not be feasible or economical for each project to obtain individually;

(b) enabling data collection to commence before a project is initiated and to continue beyond its completion; and

(c) collecting data external to the project population in order to achieve some rudimentary form of comparisons.

1.21 Although the design and analytical functions for evaluation may be centralized, the data collection resources within a project will be used to provide much of the required data. When the same unit is collecting data both for eventual evaluation and for current monitoring, the latter must not suffer due to the greater demands of the former.

1.22 Monitoring data may reveal such significant departures in the delivery of inputs, or the use of these inputs from those targeted, that the assumptions and premises on which the project was based may need to be reassessed, even during the implementation period. Studies into such phenomena may be termed ongoing evaluation. Occasionally, even when no serious problems have been encountered in implementation, an on-going evaluation may be undertaken to yield insights and confirmation on matters that are relevant for the design of similar projects.

1.23 Although there is a distinction between monitoring and evaluation, a close interrelationship between them exists. The effectiveness of a project in attaining its effects and impact is conditional upon a project being managed efficiently; a monitoring system is an important management tool for this purpose. Evaluation will have to draw on data generated by the monitoring system for identification and explanation of trends in the effects and impact of a project.

1.24 Practical programs for project-specific evaluation include: detailed case studies to probe in-depth phenomena affecting project
performance with a view to drawing "plausible" conclusions on relationships; time-series analysis, if an early baseline survey was commissioned (together with follow-up enquiries); choice of indicators that can be accurately measured with available data collection methods; maintenance of consistency in survey methodology and quality of data collection and analysis; and an integrated view of the monitoring and evaluation systems to ensure that conclusions are substantiated by the observed evidence taken as a whole.
Part II

Design of Project-Specific Monitoring and Evaluation Systems

2.01 The design of monitoring and evaluation systems is project-specific. As already discussed, the essence of a monitoring system is to provide management with user-oriented information on the provision of project inputs and use of such inputs by the beneficiaries. Any monitoring system must concentrate on these functions. The scope of an evaluation system on the other hand, can be limited or extended depending on the extent to which such a system seeks to assess results in terms of expected outputs, effects, and impact of a project. Keeping these parameters of the purposes of monitoring and evaluation systems in view, the following issues should be considered when designing these systems.

Review of Project Objectives and Selection of Indicators.

2.02 The design of project-specific monitoring and evaluation systems begins with an examination of the methods of implementation of the various project activities, followed by a review of the ways in which these activities will lead to the achievement of the hierarchy of objectives—inputs, outputs, effects, and impact. The review should enable identification of minimum data needs for both monitoring and evaluation as an iterative process and decisions to be made on indicators to be used as direct or proxy measurements of the variables in respect of outputs, effects, and impact. The Handbook discusses indicators which could be used in various conditions.

Identification of Monitoring and Evaluation Information Users.

2.03 Monitoring and evaluation systems are by their very functions user-oriented. For the monitoring aspect, the users will be the hierarchy of project management as structured in the project design. The type of information transmittal will be geared to the needs of each level of project management. The users of evaluation analysis
range from project management through the responsible directorate/ministry, to the national planners. Identification of users of both monitoring and evaluation information is therefore an essential step in the design of such systems.

**Determination of the Sources of Data and Information.**

2.04 Some of the information required for measuring project progress, inputs, outputs, and even effects may already be included in existing data collection systems such as administrative and service records, credit applications, marketing records, accounting and auditing reports, and household survey files. This possibility must be fully explored and when available, the data incorporated into the monitoring and evaluation systems. This will avoid unnecessary duplication of data generation efforts.

**Special Studies.**

2.05 In order to avoid overloading the survey capability it may be more practical to use the case study methodology to examine some aspects of project outputs, effects, and impact. These may be studies on farm management, including labor utilization, local participation, role of women, and community level reaction. There may also be occasions when special studies could contribute to the analysis and interpretation of results from sample surveys.

**Methodology and Frequency of Indicator Measurements.**

2.06 In designing monitoring and evaluation systems it is necessary to determine the appropriate methodology for measuring each indicator and the frequency of such measurements. Much of the data for monitoring of physical and financial progress can be retrieved from management records and administrative reporting systems. Other indicators will be obtained through rapid assessment, case studies, and sample surveys. It is necessary to determine which of these means is the most efficient for each of the indicators. Alternative methods for gathering information on project outputs, effects, and impact are elaborated in the Handbook.

**Data Processing.**

2.07 Information collected from various sources has to be organized and collated; data
collected from surveys have to be processed and analyzed for use by decision makers. The processing arrangements will depend on the volume of data to be handled. The speed, the flexibility, the ability to handle large volumes of data and the depth of analysis possible, are some of the obvious advantages of electronic data processing. However, this approach requires highly trained staff and is expensive in terms of equipment and operational costs. For small-scale surveys and collation of information from existing sources, manual editing and tabulations with the use of electronic calculators may be sufficient.

Data Analysis.

2.08 For the monitoring of physical and financial progress in project implementation, data analysis would not normally extend beyond a direct comparison of achievements and targets set for specified periods. A well designed pro-forma can greatly facilitate the process and present the results in a readily comprehensible format. The evaluation of effects and impact on the beneficiaries will involve more elaborate analysis requiring an understanding of, and some assumptions about, the relationships between a specific intervention through project activities and the results they induce.

Reporting.

2.09 The efficiency of data collection and analysis by monitoring and evaluation systems are measured by the timeliness with which the information is communicated to the users, in a format they can understand. The reporting of the information may range from regular updating of simple graphs of progress, through regular succinct summaries of achievements or problems, to detailed analytical scrutiny of the overall development effort. Skill in interpreting data and communicating the implications to the user is a necessary requirement of the person in charge of monitoring and evaluation systems. This should be provided for, together with an indication of the type, format, and periodicity of the reporting to each of the users.

Requirements of Staff and Logistic Support.

2.10 The volume of data to be collected and analyzed will depend on the scope of work determined under para. 2.05 to 2.09; the staff
necessary to collect and analyze these data and the logistic support they will need must be determined.

Training.

2.11 Skill levels of staff required for analyzing monitoring and evaluation data as well as for supervising field data collection are limited in most developing countries. It is, therefore, necessary to identify training requirements of national staff for effective operation of monitoring and evaluation systems. The long-term solution to this deficiency lies in assisting member countries to build up the necessary capabilities at the ministry or national levels.

Organization of Monitoring and Evaluation Systems.

2.12 An organization chart showing the different activities to be performed under these systems and staff responsible for them will facilitate efficient management and operation of these systems. When a central/regional evaluation unit is envisaged (see para. 1.20), a separate chart would be required indicating the nature of the interrelationship between the project-specific monitoring and evaluation unit and the central evaluation unit.

Cost Estimates.

2.13 The cost of monitoring and evaluation, with annual budgets, should be described in a format similar to that used for other components, distinguishing between such subcomponents as:
- personnel salaries,
- per diem for travel,
- capital and operating cost of equipment,
- vehicle purchase, operation and maintenance,
- office supplies,
- report reproduction,
- training expenses and fellowship costs, and
- other specified costs.
Part III

Presentation of Monitoring and Evaluation Systems for Appraisal

3.01 Proposals for project-specific monitoring and evaluation should constitute an integral part of project preparation and appraisal as with other project components. Detailed description of the systems proposed should be included as an annex to the Staff Appraisal Report. The presentation should deal with the issues outlined in Part II. Critical technical and organizational aspects should be addressed. Possible implementation problems should be identified. A timetable of main events should also be included.

3.02 In the project organization and management section of the appraisal report, it will be useful to specify the approach adopted for monitoring and evaluation in the light of project objectives. In particular, the limit of the objectives of the monitoring and evaluation should be clearly set out.