MODULE 5: DESIGNING MONITORING AND EVALUATION SYSTEMS FOR NEPAD PROJECTS

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1.0 Introduction

Monitoring & Evaluation is a process of continued gathering of information and its analysis, in order to determine whether progress is being made towards pre-specified goals and objectives, and highlight whether there are any unintended (positive or negative) effects from a project and its activities. It is an integral part of the project cycle and of good management practice.

Monitoring and Evaluation are closely related concepts that are distinct but complementary. Monitoring is a continuous collection of data on specified indicators to facilitate decision making on whether an intervention (project, program or policy) is being implemented in line with the design i.e. its activity schedules and budget; while Evaluation is the periodic and systematic collection of data to assess the design, implementation and impact in terms of effectiveness, efficiency, distribution and sustainability of outcomes and impacts.

2.0 Purposes of Monitoring and Evaluation

Monitoring is carried out in order to track progress and performance as a basis for decision-making at various levels, in the process of an initiative or project.

Evaluation, a more is a systematic process to establish the extent to which an initiative or program has achieved its goals or objectives.

Monitoring and Evaluation systems provide managers and other stakeholders with regular information on progress relative to targets and this enables managers

- Accountability: demonstrating to donors, taxpayers, beneficiaries and implementing partners that expenditure, actions and results are as agreed or can reasonably be expected in the situation.
- Operational management/Implementation: provision of the information needed to co-ordinate the human, financial and physical resources committed to the project or programme, and to improve performance.
- Strategic management: provision of information to inform setting and adjustment of objectives and strategies.

- Capacity building: building the capacity, self-reliance and confidence of beneficiaries and implementing staff and partners to effectively initiate and implement development initiatives.
- Organizational learning and adaptive management.

3.0 Key benefits of Monitoring and Evaluation

While traditional Project management placed monitoring and evaluation as the last step in the project cycle, contemporary project management practices have highlighted Monitoring and evaluation as an important aspect which should be evident throughout the lifecycle of a project. This enables the tracking of progress towards achievement of the desired goals, and demonstrates that systems are in place to support organizational learning, continued program improvement, and adaptive management. Used effectively at all the stages of a project cycle, monitoring and evaluation can help to strengthen project design and implementation, and stimulate partnerships with project stakeholders.

3.1 Benefits at a sector level:

- Improve project and programme design through feedback provided from baseline, mid-term, terminal and ex-post evaluations
- Inform and influence sector and country assistance strategy through analysis of the outcomes and impact of interventions, and the strengths and weaknesses of their implementation, enabling governments and organizations to develop a knowledge base of the types of interventions that are successful (i.e. What works, what does not and why.
- Provide the evidence basis for building consensus between stakeholders

3.2 Benefits at the project level:

- Provide regular feedback on project performance and show any need for 'mid-course' corrections
- Identify problems early and propose solutions
- Monitor access to project services and outcomes by the target population;
- Evaluate achievement of project objectives
- Incorporate stakeholder views and promote participation, ownership and accountability

4.0 Key Components of a functional Monitoring and Evaluation System

- Clear linkage with the National Development Strategies
- Clear statements of measurable objectives for the project and its components.
- A structured set of indicators covering: inputs, process, outputs, outcomes, impact, and exogenous factors.
- Data collection mechanisms capable of monitoring progress over time, including baselines and a means to compare progress and achievements against targets.
- Availability of baselines and realistic results framework
- Clear mechanisms for reporting and use of M&E results in decision-making.
- Sustainable organizational arrangements for data collection, management, analysis, and reporting.

4.1 Factors contributing to failure of M&E Systems

Evaluations of existing M&E systems have associated the following factors with most failed most M&E systems:

- Poor system design in terms of collecting more data than is needed or can be processed
- Inadequate staffing of M&E both in terms of quantity and quality
- Missing or delayed baseline studies. Strictly these should be done before the start of project implementation, if they are to facilitate with and without project comparisons and evaluation.
- Delays in processing data, often as a result of inadequate processing facilities and staff shortages. Personal computers can process data easily and quickly but to make the most of these capabilities requires the correct software and capable staff.
- In adequate utilization of results

4.2 Key Steps in designing an effective Monitoring and Evaluation System

Setting up an M&E system often involves the following key which has to be considered during the planning stage and then fulfilled during start-up and implementation phases.

(1) Assess the existing readiness and capacity for monitoring and evaluation

- Review current capacity within the organization and its partners which will be responsible for project implementation, covering: technical skills, managerial skills, existence and quality of data systems, available technology and existing budgetary provision.
- Identify any barriers to M&E of the project such as a lack of political will, expertise or experience.
- What other organizations such as universities, private consultants or government agencies have the capacity to provide technical assistance and/or training?

(2) Establish the purpose and scope

- Why is M&E needed and how comprehensive should the system be?
- What are national requirements with regard to M&E?
- In particular, what should be the scope and degree of rigour of the evaluation of final project impact? Should the M&E process be participatory?
- In designing and implementing M&E systems it is important to recognize the potential benefits of stakeholder participation.

(3) Identify and agree with main stakeholders the outcomes and development objective(s)

- Setting a development goal and the project purpose or expected outcomes is essential in building a M&E system. In project design the specification of outputs, activities and inputs follows from this, and the expectation that achievement of outcomes will contribute to the higher level development goal(s) provides the justification for the project.
- In M&E design, indicators, baselines and targets are similarly derived from the setting of goals and outcomes.

(4) Select key indicators

- Indicators are the qualitative or quantitative variables that measure project performance and achievements.
- Indicators should be developed for all levels of project logic (see below), i.e. indicators are needed to monitor progress with respect to inputs, activities, outputs, outcomes and impact, to feedback on areas of success and where improvement is required.

Each indicator initially selected for inclusion in the M&E programme needs to be carefully scrutinized and tested before acceptance. The following table presents criteria for selecting indicators:

Criteria	Description
Relevant	Indicators must be representative of the most important aspects of implementation and of the outcomes and impacts intended.
Clear	Indicators must be unambiguous and clearly defined in the project's context, and in a manner understood and agreed by all stakeholders. Any adjectives used to describe the qualities of an indicator need to be precisely defined. For example: – what is meant by '**improved service delivery**?' – an indicator may be '**the area of degraded land**' but what criteria will be used to classify such land? – for households what is included in '**farm income'** and what in '**non-farm income**?'
Specific	Indicators should measure specific changes, and be specific to a timeframe, location and target or other stakeholder group.
Measurable	There must be practical ways to measure the indicator, either in quantitative or qualitative terms, that are within the capability of the monitoring organization. It must be possible to collect, process and analyze data in time and within budget.
Consistent	The values of the indicators should be reliable and comparable over time when collected using the same methods. This is more likely when indicators are measured in a standardized way and with sound sampling procedures.
Sensitive	Indicators should be sensitive to the expected changes. It is especially important that *leading* indicators are capable of revealing short-term movements. Indicators that require a long time series of values are practically useless for implementation decisions.
Attributable	Based on an established or probable relationship expected to cause the intended change. In moving from inputs and outputs to outcomes and impacts attribution must typically rely less on direct observation of cause and effect and more on statistical evidence of change and its probable cause.

Levels of Indicators

Input indicators are quantified and time-bound statements of the resources financed by the project, and are usually monitored by routine accounting and management records. They are mainly used by managers closest to implementation, and are consulted frequently (daily or weekly). They are often left out of discussions of project monitoring, though they are part of essential management information. An accounting system is needed to track expenditures and provide data on costs for analysis of the cost effectiveness and efficiency of project processes and the production of outputs.

Process indicators monitor the activities completed during implementation, and are often specified as milestones or completion of sub-contracted tasks, as set out in time-scaled work schedules. One of the best process indicators is often to closely monitor the project's procurement processes. Every output depends on the procurement of goods, works or services and the process has well defined steps that can be used to monitor progress by each package of activities

Output indicators monitor the production of goods and delivery of services by the project. They are often evaluated and reported with the use of performance measures based on cost or operational ratios. For example: kilometers of all weather highway completed by a given date; percentage of farmers attending a crop demonstration site before fertilizer top-dressing; number of teachers trained in textbook use; cost per kilometer of road construction; crop yield per hectare; ratio of textbooks to pupils; time taken to process a credit application; number of demonstrations managed per extension worker; steps in the process of establishing water-users' associations.

The indicators for inputs, activities and outputs, and the systems used for data collection, recording and reporting are sometimes collectively referred to as the project physical and financial monitoring system, or management information system (MIS). The core of an M&E system and an essential part of good management practice, it can also be referred to as 'implementation monitoring'.

Outcome indicators are specific to a project's purpose and the logical chain of cause and effect that underlies its design. Often achievement of outcomes will depend at least in part on the actions of beneficiaries in responding to project outputs, and indicators will depend on data collected from

beneficiaries, e.g. change in crop yields or cropping pattern, and investment by farmers in land management improvements. It will usually be important for project management to try to gain early indications of project performance in achieving outcomes through the use of leading indicators of outcomes. These may often be obtained by surveying beneficiaries' perceptions of project outputs and services, e.g. perceptions of improved reliability of irrigation supply, proportion of farmers who have tried a new variety of seed and intend to use it again; percentage of women satisfied with the maternity health care they receive. Such leading indicators have the twin advantages of consultation with primary stakeholders and advance warning of poor project performance.

Impact indicators usually refer to medium or long-term developmental change to which the project is expected to contribute. Dealing with the effects of project outcomes on beneficiaries, measures of change often involve statistics concerning economic or social welfare, collected either from existing regional or sectoral statistics or through relatively demanding surveys of beneficiaries. For example: (health) incidence of low birth weight, percentage of women who are moderately or severely anemic; (education) continuation rates from primary to secondary education by sex, proportion of girls completing secondary education; (forestry) percentage increase in household income through sales of wood and non-wood products.

Exogenous indicators are those that cover factors outside the control of the project but which might affect its outcome, including risks (parameters identified during project design that might compromise project benefits) and the performance of the sector in which the project operates. Use of logical framework analysis for project design will guide the identification of exogenous indicators to match the key assumptions made about necessary external conditions at each level of the logical hierarchy. This need to monitor both the project and its wider environment calls for additional data collection capacity and places an additional burden on a project's M&E programme. This may be best met through use of existing data sources or assignment of the responsibility to another agency. Pragmatic judgment is required in the careful selection of indicators.

(5) Developing and Evaluation Frame work

- The evaluation framework sets out the methods to be used to address the question of whether change observed through monitoring indicators can be attributed to the project interventions.

- The depth and rigour of impact evaluation required for a specific project given available resources needs to be carefully considered.
- A range of approaches are available, but all require careful planning in conjunction with the selection of indicators if data omissions and weaknesses are to be avoided, and valid and reliable results produced. Evaluation designs are broadly categorized into Experimental, Quasi-Experimental and Non-Experimental designed.

(6) Setting baselines and planning for results

- The baseline is the first measurement of an indicator, which sets the pre-project condition against which change can be tracked and evaluated.
- Baseline data must be gathered for the key indicators and this may require implementation of a baseline survey unless existing data sources are adequate.
- Subsequent data gathering and repeat surveys for the implementation period of the project and beyond should then be planned.
- Data collection may be continuous or periodic depending on the nature and purpose of an indicator. A wide range of data collection methods are applicable.
- Ideally there should be sufficient capacity and resources to allow *ad hoc* special studies or investigations to be carried out to address specific problems or issues revealed by the on-going evaluation of monitoring data. These will be one-off, focused investigations of the issue at hand.

(7) Setting targets and developing a results framework

- A target is a specification of the quantity, quality, timing and location to be realized for a key indicator by a given date. Starting from the baseline level for an indicator the desired improvement is defined taking account of planned resource provision and activities, to arrive at a performance target for that indicator.

- Targets should also be kept under review and revised flexibly as necessary to take account of changing resource availability or other factors beyond the control of project management, but not to disguise poor project performance.

- It is important to be realistic, taking account of what is feasible and being sensitive to the political issues associated with targets that are publicly announced. As outcomes are typically longer term it is usually necessary to establish targets as short-term objectives on the path to achievement of an outcome.

- For project management, targets for leading indicators are particularly useful. Interim targets over shorter time periods for which inputs can be better known or estimated, and set with reference to desired outcomes and impact, are also important for process-orientated interventions.

(8) Plan monitoring, data analysis, communication, and reporting: Monitoring and Evaluation Plan

Implementation monitoring tracking the inputs, activities and outputs in annual or multiyear work plans, and 'results monitoring' tracking achievement of outcomes and impact, are both needed. The demands for information at each level of management need to be established, responsibilities allocated, and plans made for:

- what data to be collected and when;
- how data are collected and analyzed;
- who collects and analyses data;
- who reports information,
- when ?

(9) Plan the form and timing of critical reflection and interim evaluations

Analysis, reporting and dissemination should where possible be in sync with key national planning and reflection events to increase demand of information.

(10) Facilitating the necessary conditions and capacities to sustain the System

- It is necessary to plan the organizational structure for M&E including whether an M&E unit specific to the project is needed.
- Appropriate organizational structures for M&E should be discussed with partners and other stakeholders.
- Each partner's responsibilities and information requirements should be considered.

- Planning should cover: staffing levels and types, responsibilities and internal linkages, incentives and training needs, relationships with partners and stakeholders, horizontal and vertical lines of communication and authority, physical resource needs and budget.
- Monitoring and ongoing evaluation should normally be the responsibility of the project managers. Impact evaluation may often require the expertise and capacity of external specialists.

5.0 Potential Approaches and Tools for NEPAD Projects Monitoring and Evaluation

- The Most Significant Change Technique: A participatory monitoring and evaluation approach involving stakeholders in the identification of key changes/Stories/successes relating to the outcomes and impacts of a program.
- Earned Value Analysis: EVA is a measure of the cost of project work performed up to the project 'status date. It tracks the value that is earned by the project as activities and project elements get completed. The approach differs from the usual budget vs. costs model in that it emphasizes on the quantification of actual work completed, based on the Work Break down structure and the relevant activities.
- The Systematic Screening and Assessment Method: SSA is used in the identification and tracking of most promising innovations developed by real-world practitioners in relation to the objectives of the program to select innovations that will offer great value if evaluated further to determine their feasibility.
- Expert Panel Reviews: This involves use of experts to provide expert judgement on the performance of the program
- PESTO Analysis: Stands for Political, Economic, Social, Technological and Organization. It is used to track contextual factors in the environment of the program to determine their effects on the program implementation and help in explaining impacts.
- Formal Surveys
    - A typical formal survey involves taking a range of measurements or observations from a relatively large sample. Surveys are commonly used at the start and end of a project, to gather baseline information and compare outcomes to targets. A survey can also be carried out as part of a mid-term review, to monitor progress and adapt project implementation as needed.

- A standardized form may be used for recording physical measurements or estimates based on observation, whilst for socio-economic data the survey instrument will usually be a structured questionnaire used to record the data provided by selected respondents who are individually interviewed.
- Such socio-economic surveys are often an important part of 'results monitoring' as they can achieve focused, valid and reliable data collection on topics such as the composition of the target population, attitudes towards the project, and perceptions of change in key variables such as production, incomes, vulnerability, or empowerment. However, it will also often be important to supplement the quantitative results of such surveys with in-depth qualitative information that can be used to help explain the changes that have been recorded and to establish the causes of these changes.
- Formal surveys can have the disadvantages that they are highly extractive (rather than participatory), costly, time consuming to implement and process, and with a tendency to collect too much data.

- Semi Structured Interviews

This data collection technique is commonly used in informal surveys and typically involves a relatively small and non-random sample. It is used to gain information from an individual or a small group, using a series of broad questions to guide the conversations, but allowing for new questions to arise as a result of the discussion. Such interviews can be used to develop in-depth understanding of context, processes and issues, assess unintended impacts, and gather opinions about the relevance and quality of project services. Qualitative interviewing of this type can provide understanding of the perspectives, attitudes, and behaviour patterns of the target population. It is thus often appropriate for gathering initial data for leading indicators of project outcomes and impact. It can also be used to generate hypotheses and propositions that are then tested on a wider population using a structured survey. Also, it is flexible enough to allow the interviewer to pursue unanticipated lines of inquiry and to probe into issues in depth. Finally, there is a greater likelihood of getting input from senior officials or other key informants who may hold sensitive information with this method.

- Key Informant Interviews

- Key informants can be an important source of information for project M&E. Interviews may be face-to-face or by telephone, and questioning is generally semi-structured and open-ended but can make use of structured close-ended questionnaires.
- Key informants will be a small and purposively selected sample, chosen because of their particular knowledge and position. The selection of informants should adequately represent possibly diverse viewpoints and concerns, and should be sensitive to gender or other sources of bias. Triangulation of information from different sources is important as a means for validation of information commonly held to be true. Village chiefs, teachers, local officials, and higher-level officials are examples of key informants relevant to rural projects. However, some informants may have agendas that are hidden and views of less powerful groups may be neglected.

- Focus group interviews

  Discussion with selected groups that are familiar with pertinent issues is another technique that can be used to explore issues and processes, and to clarify details and gather opinions, before designing a formal and structured survey. Focus groups are particularly useful for assessing opinions of change and the causes of change, and the quality of project services, and for identifying areas that need improvement. They can also help to identify hierarchical influences within the community if the group is heterogeneous. The main limitations of this method are that it can be expensive and time consuming, and care must be taken in seeking to generalize the findings for the project population or area as a whole.

- Community meetings

  Community meetings take the form of public meetings with a larger group. When used for the purpose of gathering project M&E information they should be based on an interview guide or checklist and facilitated by an interdisciplinary team rather than a single interviewer. Attendance at the meeting should be representative of the population of interest. Meetings should be held at a time of the day and place which is convenient for the community and does not clash with work or other social commitments. One of the most difficult tasks for facilitators is to restrain elite members of the community from dominating the meeting and monopolizing the discussion. Facilitators

should encourage different people to participate, and opinions on certain subtopics should be verified by polling the attendees when this is possible.

- Rapid Rural Appraisal

  RRA can be described as a systematic but semi-structured research activity carried out by a multidisciplinary team over a relatively short period of time. It can involve a range of informal data collection techniques such as semi-structured interviews; transect walks, mapping, and wealth and matrix ranking. It can be used as part of the project M&E system, either at appraisal to gather baseline information and help improve project design, or over the course of the project to assess and evaluate progress. However, data collected is prone to bias in interpretation and is not statistically representative.

Participatory Rural Appraisal

PRA uses a similar array of data collection methods to RRA but places greater emphasis on the participation of local people in identifying the issues to be investigated and in the collection and analysis of data.

Case study

- In the context of project M&E a case study documents the sequence of events over time related to a person, household, location, or organization, and facilitates in-depth understanding of the processes and human and other factors behind observed changes. The need for a case study can arise, for example, from a more general formal survey in which a particular issue emerges as needing more in-depth investigation.
- The M&E specialist should specify the purpose and information needs of the case study, and then decide how individuals, households, or organizations will be selected for the study, and how data will be obtained. The case study findings can draw on a variety of evidence from documents, interviews, and direct observations. Questionnaires or checklists may be used to guide the information collection. Discussions and observations are typically repeated over time to assess processes of change and achieve an up-to-date picture as conditions change. Good case studies are difficult to do and can require high level and specialized research skills. They are also time-

consuming and findings are subject to the limitation that they may not be generalizable for the whole population or project area.

Direct observation

- This method involves structured observation of an activity, behavior, relationship, phenomenon, network, or process in the field. It can be used to understand the context in which M&E data is collected, and help explain M&E results. Phenomena and processes can be studied in their natural setting and a holistic understanding gained. For example, regular observation of farmer meetings could reveal how priorities are set and decisions made, whilst observation in the field could show how labour is utilised.
    - Such activity should be well planned by project management and M&E staff, who should agree a clear conceptual framework, as well as guidelines for what needs to be observed and the information required. It is then necessary to choose and train the appropriate group of observers who may be community members, project staff or knowledgeable outsiders. Information can be recorded in logs or diaries, discussed with stakeholders and used for M&E analysis.
    - In general direct observation should always be used in conjunction with other M&E methods as the quality and usefulness of data is highly dependent on the observer's observational skills and findings can be open to interpretation.

Written documents analysis and review of programme records

- This method involves reviewing project documents and records such as administrative databases, training materials, correspondence and routine progress reports. It can be very useful in identifying issues to investigate further and provide evidence of action, change, and impact, to support respondents' perceptions.
- An M&E specialist should prioritize those project records that are most likely to provide useful information in relation to key indicators and to the phases of implementation and results monitoring. The quality of data stored in the project records needs to be assessed, and as far as possible its format and storage managed to facilitate review and analysis in a cost-effective and efficient manner.

5.1 How to use Earned Value Analysis for monitoring

EVA is a measure of the cost of project work performed up to the project 'status date. It tracks the value that is earned by the project as activities and project elements get completed.

When conducted effectively, the EVA approach offers the following key benefits:

- Provides a uniform unit of measure for reporting project progress
- Consistency in analyzing project performance which often constitutes diverse in put elements
- It provides the basis for cost performance analysis enabling project managers to institute controls to minimize cost overruns and ensure efficiency in project implementation.

Basic EVA Concepts:

BCWS: the budgeted cost of work Scheduled

ACWP: the actual Cost of Work performed i.e. actual cost charged against the activities completed

Steps in Using the EVA Approach

Step 1: Establish a work break down structure (WBS)

This refers to the division of the project into manageable project elements, with clear assignment of responsibility. Each project elements constitutes a package of logically arranged and costed activities.

Step 2: Identifying the activities: This refers to determining the actual activities constituting each project element contained in the WBS.

Step 3: Costs Allocation: This refers to allocating the costs to be expended by for each project. It includes making a decision on the appropriate units to be used i.e. labour resources or monetary units. This step requires a degree of detail and is crucial to an effective EVA methodology.

Step 4: Scheduling the Costs of activities: This involves logically arranging the activities to come up with a Project Activity schedule and the spread the resources of the over the entire duration of the project.

Step 5: Scheduled Costs Analysis

This involves plotting, tabulating to enable analysis of resource allocation to determine if the maximum requirement of the resources are available. It includes review of cash flows to determine if the financial plan supports the schedule.

Step 6: Updating the Schedule

This includes updating the schedule with the appropriate selected options, including started, completed or with remaining duration as reported, including "percentage completed" .This step is prone to subjectivity for efforts that are not easily measured. To avoid this subjectivity, clear earning rules must be established and consistently applied. One of these is to use the mile stone approach, where each milestone is discrete and its achievement is easily recognizable.

Step 7: Entering the actual Costs

This involves the periodic entering of actual costs from time sheets, and invoices. Regardless of the entry method, it is important to ensure that costs are allocated to relevant cost codes and therefore activities.

Step 8: Calculating Earned Value

The earned value is the Percent Completed times its budget. Other important parameters that can be derived include:

- Schedule Variance(SV): the earned value minus the planned budget for completed work (BCWP-BCWS)
- Cost Variance: the earned value minus the actual cost (BCWP-ACWP)

5.2 Using the Most Significant Change (MSC) to Evaluate outcomes and impacts of Development programs

The Most Significant Change Technique is a form of participatory monitoring and evaluation approach involving stakeholders (project participants) in the identification of key changes/Stories/successes relating to the outcomes and impacts of a program. The approach is based on analysis of stories told by project participants in relation to what they perceive as most important change events in relation to a particular issue or program.

The MSC approach can be implemented throughout the program cycle and provides information to monitor programs. The approach is suitable for program monitoring where the focus is on learning and program improvement as well as evaluate program performance in the context of complex and diverse program outcomes which is often the case in most process oriented projects.

5.2.1 Key Steps in facilitating a Most Significant Change Approach

Step 1: Identifying the domains of change

These are broad themes selected for exploration. During baseline they may relate to key development issues that need to be explored further to facilitate project identification and formulation, during implementation these may relate intermediate outcomes, while at the end of the program these may relate program impacts.

Step 2: Deciding on the appropriate frequency in relation to the scope of the MSC process and the issues being explored.

Step 3: Deciding on the list of participants. The project stakeholder analysis is a useful tool in determining who has to be involved to ensure a fruitful MSC process.

Step 4: Asking Questions and Collecting the Stories

This includes facilitation achieved by creating a conducive environment for discussion often accomplished through asking broad, open ended questions. As the participants open up, the stories are then recorded through culturally appropriate instruments for further analysis.

Step 5: Selecting the most significant stories

This involves filtering of the stories through program organization personnel to determine those that are important using established criteria which is also recorded to enable further analysis and validation.

Step 6: Verification

This involves field visits to verify the sites described by the events and further triangulate with eye witness accounts where possible.

Step 7: Quantification and secondary analysis

This involves aggregating of the events to establish magnitude and determine coverage of project impacts and outcomes.