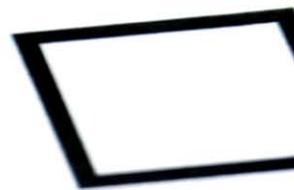


**Excellent**



**Good**



**Average**



**Poor**

# WMO Monitoring and Evaluation Guide

April 2012



**World  
Meteorological  
Organization**

Weather · Climate · Water

WMO-No. 1088



# WMO Monitoring and Evaluation Guide

WMO-No. 1088



**World  
Meteorological  
Organization**  
Weather • Climate • Water

April 2012

WMO-No. 1088

© **World Meteorological Organization, 2012**

The right of publication in print, electronic and any other form and in any language is reserved by WMO. Short extracts from WMO publications may be reproduced without authorization, provided that the complete source is clearly indicated. Editorial correspondence and requests to publish, reproduce or translate this publication in part or in whole should be addressed to:

Chair, Publications Board  
World Meteorological Organization (WMO)  
7 bis, avenue de la Paix  
P.O. Box 2300  
CH-1211 Geneva 2, Switzerland

Tel.: +41 (0) 22 730 84 03  
Fax: +41 (0) 22 730 80 40  
E-mail: [publications@wmo.int](mailto:publications@wmo.int)

ISBN 978-92-63-11088-6

#### NOTE

The designations employed in WMO publications and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of WMO concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Opinions expressed in WMO publications are those of the authors and do not necessarily reflect those of WMO. The mention of specific companies or products does not imply that they are endorsed or recommended by WMO in preference to others of a similar nature which are not mentioned or advertised.

This publication has been issued without formal editing.

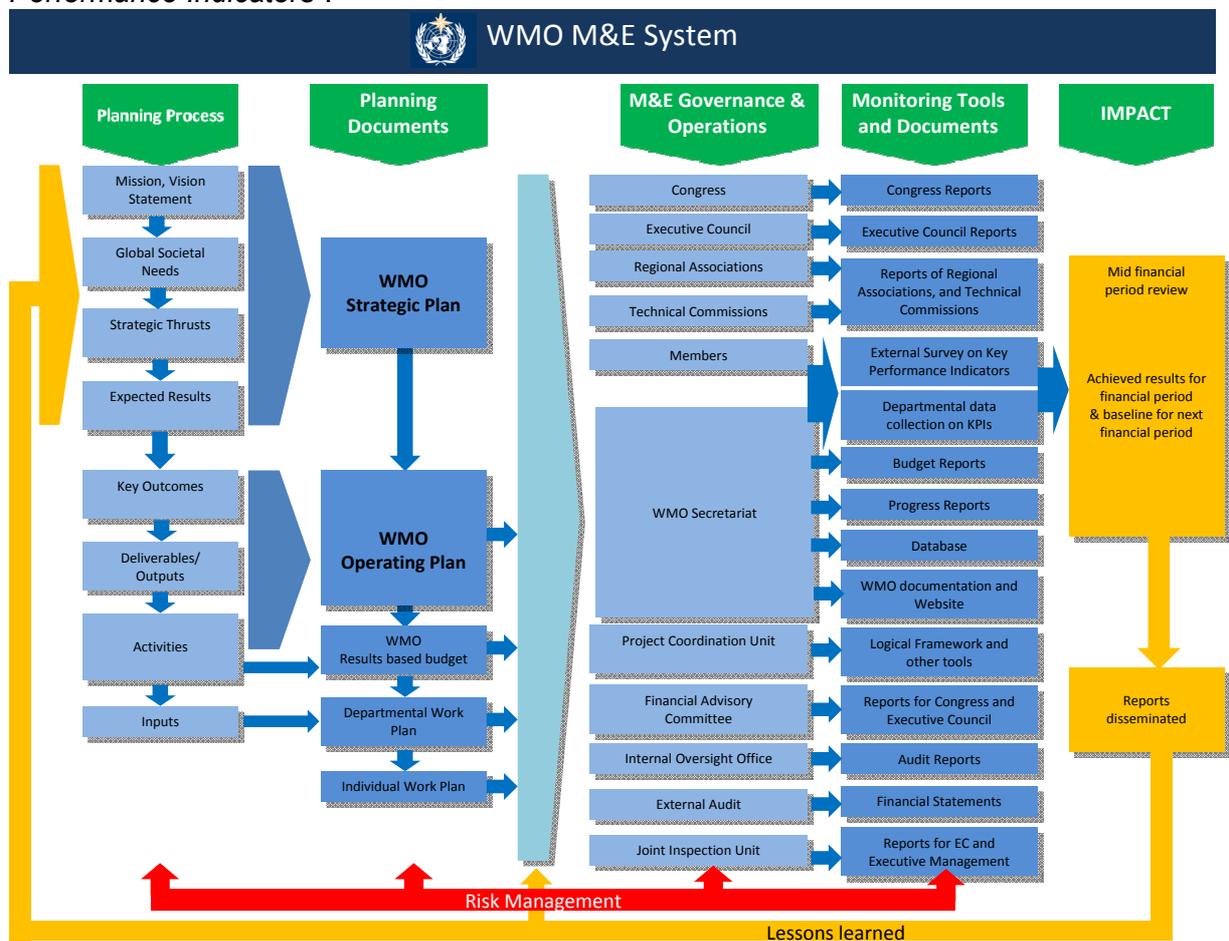
## Table of contents

1.	Introduction	1
2.	Terminology	3
3.	Monitoring process	5
4.	Evaluation process	6
5.	Baseline and impact measurement	7
6.	Indicators	8
7.	Project monitoring using the logical framework	10
8.	Data collection	11
9.	M&E Information	14

# 1. Introduction

This publication presents a guide for implementing the WMO Monitoring and Evaluation (M&E) System presented in a separate publication. It is developed on the basis of the request of the Sixteenth World Meteorological Congress (May/June 2011) to the Executive Council and the Secretary-General to continue with further development and implementation of the M&E System, in particular with regard to the need for the M&E System to be precisely defined and correctly applied. It is intended for use by the constituent bodies and the Secretariat. It should be applied in close reference to the publication on WMO M&E System.

The World Meteorological Organization (WMO) Monitoring and Evaluation (M&E) Manual sets out the details and provides guidance on the monitoring system to establish the progress in achieving results defined in the WMO Strategic Plan. The system is documented in a separate document “WMO Monitoring and Evaluation System” as are the “WMO Key Performance Indicators”.



A fully functioning M&E system provides a continuous flow of information that is useful, both internally and externally, to measure the progress being made towards the achievement of expected results, which reflect the desired outcomes to be achieved by WMO as a whole (that is, WMO Members, WMO constituent bodies, WMO joint Programmes and the Secretariat). The associated key performance indicators (KPIs) are the agreed measurements that will enable WMO, as an organization, to assess the achievement of the expected results.

Internally, within the WMO Secretariat, M&E information is a crucial management tool towards achieving results and meeting specific targets. Information on progress, problems and performance are all central to organizational success. Information is also important for

---

organizational learning, improvement and to build stronger external relations, as well as to identifying other worthwhile activities to allocate scarce resources.

M&E provides critical information and empowers policymakers to make better, more informed decisions. At the same time, providing such information may ensure consistent focus on efforts to achieve the objectives of an organization.

---

## 2. Terminology

A number of terms need to be understood and recognized which are detailed below.

### **Activity**

Is an action, or a group of actions, implemented to generate products or services. The implementation of one or more activities leads to the production of a deliverable/output. Activities stipulated in the WMO Operating Plan are based on the contributions of the technical commissions, regional associations and the Secretariat. Additional activities that contribute to the achievement of expected results are related to the WMO joint Programmes and partners.

### **Baseline**

A set of quantitative and qualitative data gathered early in the life of a programme for the purpose of establishing a benchmark against which to measure change.

### **Deliverable/Output**

A lower level, expected result (Secretariat specific) that is arrived at through an accumulation of activities, i.e., is a tangible outcome. Deliverables contribute to the achievement of a key outcome or programme area. The term “deliverable” and “output” are interchangeable at WMO.

### **Inputs**

Inputs are the financial, human, and material resources from the Members, TCs, RAs, the WMO Secretariat, and WMO joint Programmes and partners, used to implement the Strategic Plan to achieve the expected results.

### **Expected result (ER)**

An expected result is a top level statement that predicts a high level outcome (change in Members’ or societal conditions) to be achieved in the long-term by WMO as a whole (the Secretariat, technical commissions, regional associations and Members).

### **Evaluation**

Evaluation is an intermittent process that aims to provide an objective assessment of an ongoing or completed intervention. It is likely to include an assessment of its design, implementation and results in order to determine its relevance, fulfilment of objectives, efficiency and effectiveness, as well as its overall impact and sustainability. Evaluation addresses the strategic questions, ‘What?’(impact and sustainability) and ‘Why?’ (relevancy). Here, the analysis is getting deeper and seeks actual cause–results relationships and eventual implications of the observed situations. It seeks the ‘big picture’ conclusions and, for WMO, means completion of the eight expected results.

### **Global Societal Needs (GSN)**

The Global Societal Needs (GSNs) represent the shared societal needs identified by Members of WMO to be addressed, within the mission of WMO, through a set of strategic directions represented by strategic thrusts. They form the basis for the strategic direction of WMO in a financial period.

### **Impact**

In its broadest sense impact is the positive and negative, primary and secondary long-term effect associated with the accomplished deliverables/outputs or outcomes.

---

**Key Outcome (KO)**

Key outcomes are the likely or achieved short-term and medium-term effects of accomplished deliverables/outputs related to programme areas that define the parameters for the unique contribution by WMO in the progress to achieve expected results. There are several outcomes for each expected result. For each outcome, there are a set of KPIs to measure the achievement of the outcome.

**Key Performance Indicator (KPI)**

A quantitative or qualitative metric used to measure the achievement of, or the progress made towards achieving, an expected result. A key performance indicator is specific, measurable, achievable, reliable and time-bound.

**Monitoring**

Monitoring is a continuous, internal process that uses a systematic data collection, collation and analysis process on specified results-based indicators (measures). It provides management and key WMO stakeholders with an indication of management progress toward achieving agreed outcomes, as well as the efficient use of allocated funds. Regular monitoring enables identifying actual or potential problems as early as possible in order to facilitate timely adjustments in implementation. Monitoring, in a results-based context, is also concerned with assessing the status of performance; that is, whether results have been achieved.

Monitoring is focused on daily management issues. The typical questions are: "How many?" "When?" "How?" "For how much?" By monitoring, we try to assess whether activities are implemented effectively and efficiently. Monitoring is expected to generate useful information and identify where bottlenecks may be. How are we doing towards our expected results? Are we being efficient in terms of resources and budget? Monitoring refers to a predefined programme's strategic framework that guides implementation. It is expected to generate timely information on operational efficiency and effectiveness.

**WMO result-based budget (RBB)**

The WMO results-based budget identifies resources derived from assessed contributions of Members as well as from voluntary contributions, to implement programme activities and projects in the WMO Operating Plan. It is approved once every four years by Congress.

**Strategic Thrusts (ST)**

Strategic thrusts are broad indications of strategic directions to address the global societal needs (GSN) to achieve expected results.

**Target**

The desired level of performance (milestones) to be achieved during a financial period, i.e. (performance=baseline + x, where 'x' is the change experienced).

**WMO Operating Plan**

The WMO Operating Plan provides details on key outcomes, deliverables and programme activities and projects contributing to the achievement of expected results, which are used to guide resource estimates and allocations in the results-based budget.

**WMO Strategic Plan**

The WMO Strategic Plan indicates the unique strategic contribution of WMO to the attainment of the global societal needs. It is composed of the following elements: global societal needs, strategic thrusts, a series of expected results and strategic priorities.

---

### 3. Monitoring process

The first step in the monitoring process is to define the results that need to be measured and the metrics for measuring them. The results to be measured and performance indicators to measure them are defined in the WMO Strategic Plan and Operating Plan. Those responsible for collection will select methods and tools for data gathering (What, Where, When, Who, Why?) and methods for checking data, recording, collating and analysis (What, Where, When, Who, Why?). The information collected is then analysed and results communicated.

Every six months, progress against deliverables/outputs that contribute to the achievement of the key outcomes associated with expected results are monitored to ensure timeliness, quality and cost efficiency. The system is based on planned, costed activities having been set for each deliverable/output. Monitoring of these deliverables is carried out within departments and the data is used by the Strategic Planning Office to compile a progress report. The system allows comprehensive progress reports to be produced and progress to be shown against deliverables/outputs and the associated key outcomes and expected results.

Less frequent monitoring of performance indicators (that is, the KPTs and the KPIs) ensures that programme implementation is on target towards achieving results to determine whether:

- A deliverable/output has been achieved as a result of the set of activities implemented.
- Key outcomes and expected results have been achieved as a result of a set of deliverables.

Institutional monitoring at WMO is concerned with the internal monitoring of financial, physical and organizational issues. Financial monitoring tracks inputs and costs by activity within predefined categories of expenditure. Physical monitoring tracks the distribution and delivery of project activities and outputs or interventions.

Organizational monitoring tracks sustainability, institutional development and capacity building in the project. Results monitoring tracks effects and progress towards completion of the expected results.

These monitoring activities vary in terms of where the data is collected from (that is, the source), the frequency of collection and the methods used for gathering and analysing the data.

Inputs are assessed by monitoring financial information. Monitoring input data helps keep the WMO management informed of the degree of financial efficiency with which the Organization is operating. Inputs include physical and human resources (the means) and financial resources (the costs). These data are managed according to specific expenditure categories and are reported in regular financial reports.

Physical monitoring is carried out to assess progress in the delivery of outputs associated with implemented activities with regard to the effects on the target groups and timeliness. The sources of information for physical monitoring include various WMO records. Information is sought that not only informs on the achieved targets but also to explain the progress. Only by knowing why something is happening or why it is not happening, do we have a basis for deciding what corrective action is needed.

---

## 4. Evaluation process

The WMO M&E system comprises two types of evaluation:

- Self-evaluations (to be conducted by the WMO constituent bodies and the Secretariat).
- Independent evaluations (to be undertaken by expert groups from the technical commissions, particular groups of the regional associations, or individual external or internal evaluation/technical experts, or by internal and external oversight).

Both self-evaluations and independent evaluations will be conducted periodically. In case concerns arise during implementation of the WMO Operating Plan, a more in-depth review of programme implementation to support decision-making would be warranted. An evaluation could be triggered when:

- There is a divergence between planned and actual performance.
- The links between implementation (activities and outputs/deliverables) and expected results is unclear.
- Making resource allocation decisions.
- There is conflicting evidence of results.
- There is a need to validate results information or provide an impartial assessment of programme performance (independent evaluation).

At the beginning of each financial period the WMO constituent bodies and the Secretariat departments will establish their respective evaluation approach as part of their contribution to the WMO Operating Plan. They will include a description of self-evaluations to be conducted on a biennial basis. Self-evaluations should address issues of relevance, effectiveness, efficiency and sustainability of the achievement of deliverables and expected results. In particular, they should look into:

- The achievement of deliverables and expected results compared to baselines.
- Unintended outcomes.
- The satisfaction of Members.
- External factors that have affected implementation.
- Challenges encountered during implementation.
- Corrective actions taken and eventual adjustment of strategies.
- What worked well and why.
- Lessons learned.

Independent evaluations will be carried out upon request by the EC and Congress, possibly based on recommendations by the Secretary-General and the WMO constituent bodies. Such evaluations could cover, for example, a project, programme, specific work areas of the technical commissions, or work programmes in particular regions.

To produce objective and exact information, evaluation uses more scrupulous research methodologies, such as representative surveys and comprehensive quantitative analyses. Reviews of WMO outputs, outcomes and impact are conducted on the back of well-recognized trends in the surrounding environment.

The achievement of expected results is the ultimate benchmark for organizational performance. Therefore, the responsibility for the assessment process of whether an expected result has been achieved will ultimately reside with the EC and Congress.

---

## 5. Baseline and impact measurement

### Establishing Baseline

The baselines for the KPIs for the period 2012-2015 are established from the results of the survey of the impacts of achieved results on Members conducted in February 2012.

They will ascertain the base level for each KPI and the associated key outcome and expected result. Other similar surveys will be conducted in the middle (2013) and end (2015) of a financial period to measure progress in achieving expected results.

The data gathered at the end of a financial period shall be compared to the situation at the beginning of the financial period to establish the progress in achieving results. The data at the end of a financial period shall also serve as the baseline for the following financial period.

The main tool for gathering data on impacts is the questionnaire on 'Impacts of Achieved Results on Members' that is completed by Members twice in a financial period (in the middle and at the end).

Types of data collected are qualitative and quantitative. The quantitative data derived from formal questionnaire surveys measures differences in variables that can be counted. Qualitative data is descriptive and measures beneficiary perceptions and attitudes.

It is common to use both types of surveys. Qualitative baselines add depth to quantitative baselines, which in turn add statistical rigour to support the results of qualitative baselines.

### Impact assessment

An impact assessment will be carried out in the middle and at the end of a financial period to assess the achievement of the eight expected results and any other unintended impacts, both negative and positive.

The assessment will measure all KPIs. NMHSs, as key stakeholders, will be involved in the assessment. The assessment will determine what impacts have occurred, their direct and indirect causes, and their importance in relation to targets and quantification of impact.

The results will form part of the process to prepare the next strategic plan, post-2015, and define steps to be taken to eliminate or reduce any significant adverse impacts or to compensate for them.

Impact assessment findings will be disseminated amongst stakeholders in a way that contributes to learning (that is, by the WMO Website, workshops, meetings and circulation of reports) and obtain stakeholder agreement to the reports and agree on follow-up actions.

---

## 6. Indicators

### Why have indicators?

- Indicators are a way of simplifying detailed and complex information.
- Indicators inform and guide our decisions and actions.
- Indicators can be effective operational and communications tools.
- Indicators can promote the development of collaborative learning and problem-solving and stimulate change.
- Indicators help to define development as well as to measure.

### What indicators are required?

There is a popular management saying that 'you manage what you measure' and another that says 'you count what counts'. These show how influential indicators can be in guiding decision-making and action. For this reason, we need to ensure that we are measuring what we value the most.

Input indicators measure the quantity (and sometimes the quality) of the resources provided for WMO activities.

Output indicators measure the quantity (and sometimes the quality) of the goods or services created or provided through the use of inputs.

Outcome and impact indicators measure the quantity and quality of the results achieved through the provision of goods and services.

Relevance indicators measure trends in the wider policy problems that WMO is expected to influence. Often these indicators can be very difficult to attribute.

Risk indicators measure the status of the exogenous factors identified as critical; that is, the assumptions that are made about conditions external to the project.

Efficacy indicators show how well the results at one level of implementation have been translated into results at the next level; the efficiency of inputs, effectiveness of outputs, and sustainability of impact. They measure WMO efficacy in achieving its objectives, rather than its results.

Efficiency indicators usually represent the ratio of inputs needed per unit of output produced.

Accountability indicators (which are the central focus of much of the work of the Internal Oversight Office) can be considered a subset of efficiency indicators. They measure the extent to which resources are available for, and appropriately applied to, the activities for which they were targeted.

Effectiveness indicators usually represent the ratio of outputs (or the resources used to produce the outputs) per unit of outcome or impact, or the degree to which outputs affect outcomes and impacts.

Sustainability indicators represent the persistence of benefits over time, particularly after any funding ends.

---

A good indicator is:

- **S**pecific, in terms of quantity, quality and time (QQT).
- **M**easurable objectively, verifiable at acceptable cost.
- **A**vailable from existing sources or with reasonable extra effort.
- **R**elevant to project objectives and sensitive to change.
- **T**imely, to ensure usefulness to managers.

### **WMO key performance indicators**

For every 'key outcome associated with an expected result', a set of KPIs has been defined in the WMO Operating Plan. They are the measurements that will enable WMO, as an organization, to assess the achievement of the expected results. Achieving expected results will be a complex process involving coordinated efforts of the WMO components (Members, technical commissions, regional associations and the Secretariat), and partners, such as IOC/UNESCO, UNEP, UNDP and international funding institutions.

The effectiveness of performance measurement at WMO depends, inter alia, on the quality of performance metrics contained in the WMO Strategic and Operating Plans.

Indicators must overcome a number of measurement challenges, including the challenge of attribution/contribution, the qualitative nature of some expected results and the time frame needed to achieve results. Good indicators are the cornerstones for measuring performance and, therefore, it is desirable that they fulfil the above SMART or similar criteria.

Indicators are signs or manifestations that make something known. In monitoring and evaluation, indicators are used to measure evidence by which we can assess the level of achievement of results.

For every KPI, data is collected from Members and analysed. A questionnaire is sent to Members for completion and the resulting answers are then analysed to ascertain each Member's progress against each KPI.

This data is analysed and compiled by the WMO Strategic Planning Office. In addition, for many KPIs, the departments within the WMO Secretariat collect and analyse the data. Each KPI outlines what data is collected and by whom.

## 7. Project monitoring using the logical framework

An excellent M&E tool for project management is the logical framework. A logical framework (or log frame) is now widely used by multilateral and bilateral aid agencies and non-governmental organizations. It provides the basis for the development of a monitoring system during implementation, as well as a framework for the evaluation of a specific project.

The log frame consists of a table, or matrix, which has four columns and, in its most basic form, four rows. The rows represent the levels of the project objectives, including the means required to achieve them (the vertical logic). The columns indicate how the achievement of these objectives can be verified (the horizontal logic).

Impact	Indicators	Means of verification	Assumptions
Outcome	Indicators	Means of verification	Assumptions
Outputs	Indicators	Means of verification	Assumptions
Activities	Inputs required		Assumptions

The log frame should have a tight and clear hierarchy of objectives presented in a simple, summarized and comparable form.

The narrative summary of the intervention logic tells us what the project is seeking to achieve, but it does not give a clear picture of how the project will achieve its objectives.

The role of objectively verifiable indicators (OVIs) is to describe the objectives and how they will be achieved in operationally measurable terms. The OVIs are quantitative or qualitative criteria for success, which enable us to measure or assess the achievement of project objectives.

The project alone cannot achieve all of the objectives identified in the objective tree. Those objectives not included, and other external factors, will affect the project's implementation and long-term sustainability, but lie outside its control. These conditions, which must be met if the project is to succeed, are included in the fourth column of the log frame under the heading "assumptions".

The probability and significance of these conditions being met should be estimated as part of assessing the risks associated with the project. Some will be critical to project success and others of marginal importance.

A project's logical framework has proved itself to be a useful tool and is increasingly becoming a requirement of major donors. Many projects now report their achievements annually against the log frame format.

## 8. Data collection

Successful implementation of M&E requires that data is collected, collated, analysed, and communicated to stakeholders. There are two main categories of data sources: routine and non-routine. Routine data is collected as part of regular monitoring by Departments, as well as by implementing partners.

Non-routine data is collected periodically. As non-routine data collection is typically conducted on a much larger scale than routine data gathering, it is also open to error. WMO relies on partnerships with Members and its Secretariat to collect all data.

Reliability of data is achieved by triangulation. This means using a few different types of qualitative and quantitative data collection methods in order to see if the findings from each concur. Triangulation provides a more complete analysis, often strengthening credibility and a participant's commitment to results.

Quantitative data measures 'how much, how many and how often' something occurs. If indicators, however, say '*Member satisfaction with constituent body documentation*', then qualitative data is required. Qualitative data provides rich descriptions of 'how and why' something happened or did not.

Due to the different characteristics of quantitative and qualitative data, different data gathering methods and techniques need to be employed. Typically, quantitative data is gathered by using formal surveys of (often large) groups of individuals to provide the total numbers required for these types of indicators.

This is often done by using personal interviews of stakeholders, an interviewer and questionnaires. On the other hand, when indicators ask 'how and why' types of questions, focus group discussions (FGDs), the most significant change (MSC) story, and other more in-depth and descriptive data collection methods and techniques should be employed.

A number of tools that can be used by the WMO Secretariat and the NMHSs to collect data are presented below.

### Surveys

The terms 'survey' and 'questionnaire' are often used interchangeably. Surveys refer to large scale data collection using a standard data collection form, while questionnaires are the forms that are used to collect survey data. Surveys are conducted periodically, rather than regularly because of the time and costs associated with them, for instance for baseline studies, mid-term reviews, and end-term performance evaluation. Surveys are a tool that can be used in multiple methods of data collection. In monitoring and evaluation, these include in-depth personal interviewing, as well as telephone, e-mail, Website-based or postal survey methods.

### Questionnaires

Writing good survey or interview questions is not an easy task. The golden rule of thumb for writing them is to be able to identify those questions that are vital or essential to the research, those that are good to know and those that are not particularly necessary in relation to the objectives of the data collection that is required. Start by identifying the specific purpose of the data gathering, then develop a number of possible questions. The second two types of questions should be discarded, leaving only those that are necessary to address the study objectives. The next step is to refine the remaining questions to ensure that they are to the point and well constructed. This will help to encourage a higher response and completion rate. When the questions are completed, they should be pre-tested with a small group of

---

respondents from within the targeted population. This will help to identify those questions that need to be revised or re-ordered before the survey is ready for actual use.

### **Sampling**

Sampling refers to the selection of a subset of individuals from within a population of interest, such as beneficiaries or partners, that are likely to have knowledge and opinions about topics of interest to the survey team. Sampling is used in studies because it is too time-consuming and costly to survey an entire population. Further, target group membership often changes, making it difficult to identify who is in a population at any given point in time. Also, with statistical analysis, it is not necessary to survey everyone in any given population.

The first step in creating a sample frame is to define the population within the target area. Secondly, identify the sample frame. This requires refining the identified population group, so that it is possible to specifically identify those that will be surveyed from the total selected population group. Lastly, specify a sampling method. This means choosing a method to identify who will be in the sample frame.

### **Interviews**

Primary or field data collection often involves stakeholder interviews. These may be direct, person to person, or indirect, by telephone, e-mail or postal surveys. In most cases, these interviews all involve a survey or questionnaire form of prepared questions that address issues related to the expected outputs and outcomes. In data collection personal interviews are used to gather in-depth and descriptive data about the qualitative indicators, or to design a quantitative survey.

### **Most significant change stories**

Most significant change (MSC) is a participatory, monitoring technique based on stories rather than indicators. MSC stories are about important or significant changes. They give a rich picture of the impact of the work of WMO and NMHSs and provide the basis for dialogue regarding key objectives and the values of development programmes. MSC can be understood by the metaphor of a newspaper, which picks out the most interesting or significant story from the wide range of events and background details that it could draw on. MSC can be used to add a qualitative element to a quantitative report.

Examples can include how a WMO activity has directly impacted an individual in a Member country. For instance, as a result of improved cyclone forecasting, a specific individual in Bangladesh was able to save his family's lives by moving out of the area. The result could be captured with an image and a narrative using the words of the individual.

MSC encourages field-based participants to identify and explain the main changes associated with an intervention. This is done by asking them very open-ended questions, not aligned to KPIs, to encourage them to express themselves freely. Participants are also asked to try to explain why they consider the change as important to them or other stakeholders. MSC techniques can identify unexpected impacts, as an addition to other, more formal, evaluation methods and techniques

### **Focus groups**

Focus group discussions (FGD) are a qualitative data gathering tool used to gather in-depth data about the thoughts, attitudes and experiences of a target group on a specific topic. A facilitator guides the discussion process, based on the objectives of the exercise.

### **Document review**

A document review is an assessment of literature relevant to the monitoring and evaluation exercise. A document review provides information to support monitoring and evaluation data gathering activities.

**Thematic studies**

Thematic studies are in-depth studies of specific issues. This might be to investigate a specific trend or issue that arises, or it could be to study a key outcome where measured progress is poor. These in-depth studies can be carried out internally or by commissioning specific studies to appointed external consultants. They should be specific and involve in-depth research and survey work.

**Case studies**

From an M&E perspective, case studies allow for an in-depth understanding of the factors behind general or summarized data that may be collected through other means. A case study is the detailed and intensive study of a single example of something, using whatever methods are seen as appropriate. The general objective is to develop as full an understanding of the case as possible. We may be interested in just one case or we may have other cases in mind.

**Observations**

Observations systematically select, watch and record behaviour and characteristics of living beings, situations, objects or phenomena. Observations are often used when other data gathering tools, such as interview methods, are unlikely to elicit needed information accurately or reliably, either because the respondents don't know or may be reluctant to speak.

**Analysing data collected**

To enhance organizational decision-making and learning, M&E needs to gather raw data, enter it into a database, then analyse it and provide the information that is useful to WMO management. This transformation process is called data analysis. Data analysis need not be complicated, nor involve sophisticated, statistical analysis packages.

Broadly, there are two main types of analysis: quantitative and qualitative. The former provides counts of the numbers, percentages, frequencies, means and medians, and rating measures to answer the 'how many?' type of questions. The latter provides a descriptive analysis to answer 'why and how' questions.

Many WMO indicators are expressed in quantitative form. This will mean that M&E will need to quantify the progress of change associated with that indicator, against that established in the baseline study.

'Garbage in, garbage out' is a common saying relevant to all types of monitoring and evaluation. To avoid such a situation, data controls should be carried out routinely to avoid human and system errors and biases.

System, or hard data, errors relate to power, computer and other associated technical errors. To ensure that these problems are limited, monitoring and evaluation files should be regularly backed-up. Data control procedures should also include routine checks of data storage, retrieval and processing procedures.

Data quality can also be contaminated by human error or biases during the data gathering, collation, entry, analysis and reporting processes.

---

## 9. M&E Information

A fully functioning M&E system provides a continuous flow of information that is useful both internally and externally. Internally, M&E information can be used as a crucial management tool towards achieving results, meeting specific targets and initiating improvements. Information on progress, problems and performance are all central to the success of WMO. Such information is also important for learning within WMO and to build stronger external relations, as well as to identify other worthwhile activities to allocate to scarce resources.

Likewise, information from an M&E system is important to those outside of WMO; for those wanting to see demonstrable impacts from interventions and to those wanting to see good use of their funds. In other words, M&E systematically addresses questions related to performance management, progress, and transparency and accountability.

M&E information and data should be valid, verifiable, transparent and widely available to key internal and external stakeholders, including the general public. In WMO, the Website and publications are a major means to achieve this.

M&E systems provide important feedback about the progress, as well as the success or failure of programme activities and projects, and policies throughout their respective cycles. These systems constitute a powerful, continuous management tool that decision-makers can use to improve performance, and demonstrate accountability and transparency with respect to results. The use of M&E findings promotes knowledge and learning in WMO.

Communication is a vital part of M&E that links the findings with the users. It is important that the true interpretation and meaning of M&E findings are communicated in response to the specific purpose of why the M&E was initiated in the first place. The object of M&E is not simply to transmit information, but also to stimulate action.

### **WMO reporting**

To facilitate the reporting of monitoring information, an 'implementation monitoring report template' (IMRT) has been developed by the Secretariat for use by the WMO constituent bodies and the Secretariat departments.

Self-evaluations by WMO constituent bodies and the Secretariat need to coincide with the preparation of input into the WMO Monitoring and Performance Evaluation Report at mid-term (second year), and at the end of each financial period (fourth year).

A summary of the results of independent evaluations will be prepared by the Secretariat and included in the biennial WMO Performance Monitoring and Evaluation Reports.

Performance Monitoring and Evaluation Reports are compiled by the Secretariat, at mid-term and at the end of each financial period, from information contained in the IMRTs, independent evaluation and self-evaluation, and presented to the sessions of EC WG/SOP, the Audit Committee, the Executive Council and Congress.

The WMO constituent bodies and the Secretariat will promote the use of information generated by monitoring and evaluation on a continuous basis to enhance performance of respective programmes and to support effective coordination between programmes.



For more information, please contact:

**World Meteorological Organization**

7 bis, avenue de la Paix – P.O. Box 2300 – CH 1211 Geneva 2 – Switzerland

**Communications and Public Affairs Office**

Tel.: +41 (0) 22 730 83 14 – Fax: +41 (0) 22 730 80 27

E-mail: [cpa@wmo.int](mailto:cpa@wmo.int)

[www.wmo.int](http://www.wmo.int)