



## NOTE 3: Establishing a Monitoring System

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*What gets measured gets done.*

— Tom Peters

A good evaluation is impossible without a good monitoring system. Moreover, designing a good monitoring system will likely enhance the overall quality of our project design and facilitate project management. This note summarizes the key steps for building a monitoring system that should be followed in any project, whether or not an evaluation will take place. As we will see, at minimum, each project should have the following monitoring tools in place:

- A results chain
- A logical framework
- A process to collect and analyze information and apply findings

## Why Do We Need a Monitoring System?

Monitoring provides internal and external information on a continuous basis to inform program managers about planned and actual developments. When irregularities or inefficiencies are detected, they can be corrected in a timely manner. Monitoring involves collecting and analyzing data to verify that resources are used as intended, that activities are implemented according to plan, that the expected products and services are delivered, and that intended beneficiaries are reached ([Savedoff, Levine, and Birdsall 2006](#)). Effective monitoring needs to be part of any project, regardless whether the project will be evaluated.

Monitoring also provides the foundation for evaluating an intervention. In fact, a good evaluation is hard to conduct without proper information about actual implementation. If no reliable information about the progress and quality of implementation is available, then any evaluation will run the risk of misinterpreting the reasons for success or failure of the project.

The challenges in monitoring an intervention are to

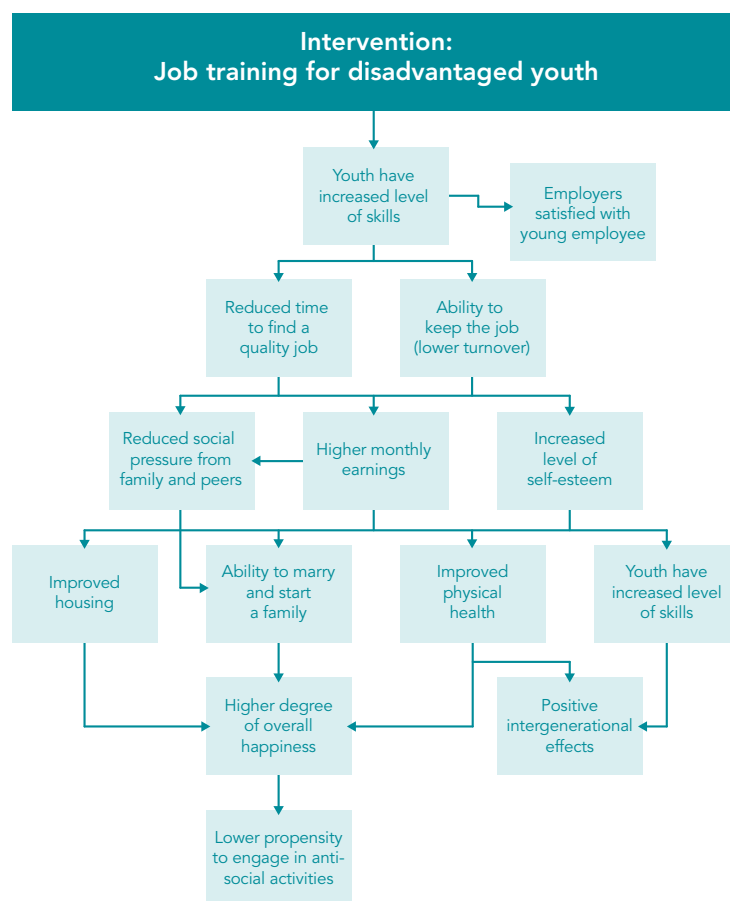
- define the *logic of the intervention*, which includes setting goals beyond the project development objective on all levels of implementation and results.
- identify *key indicators*, *data collection mechanisms*, and *assumptions* that can be used to monitor progress against these goals.
- establish a *monitoring and reporting system* to track progress toward achieving established targets and to inform program managers and other stakeholders.

## Defining the Logic of the Intervention

### The Link Between Project Design and Project Theory

Encapsulated in any program design is a theory of change. As discussed in [note 2](#), usually there is an expectation that a project will help improve the living conditions of our target group by addressing a specific set of barriers and constraints these young people face. That is, we have a set of assumptions about how and why particular project activities will foster positive change. Why do we believe that training youth will result in better labor market outcomes? Why do we believe that supporting youth enterprises will reduce poverty? To confirm the relevance of our intervention, the theory behind it has to be clear (see figure 3.1).

**FIGURE 3.1** Basic intervention theory of a youth livelihood project



Practitioners should articulate a theory of change for every intervention. Ideally, it is developed at the beginning of the project design phase, when all relevant stakeholders can be brought together to agree on a common vision for the project, its concrete objectives, and the steps necessary to achieving those objectives (Gertler et al. 2011). According to Taylor-Powell (2005), using a theory of change helps both the project manager and the evaluator by

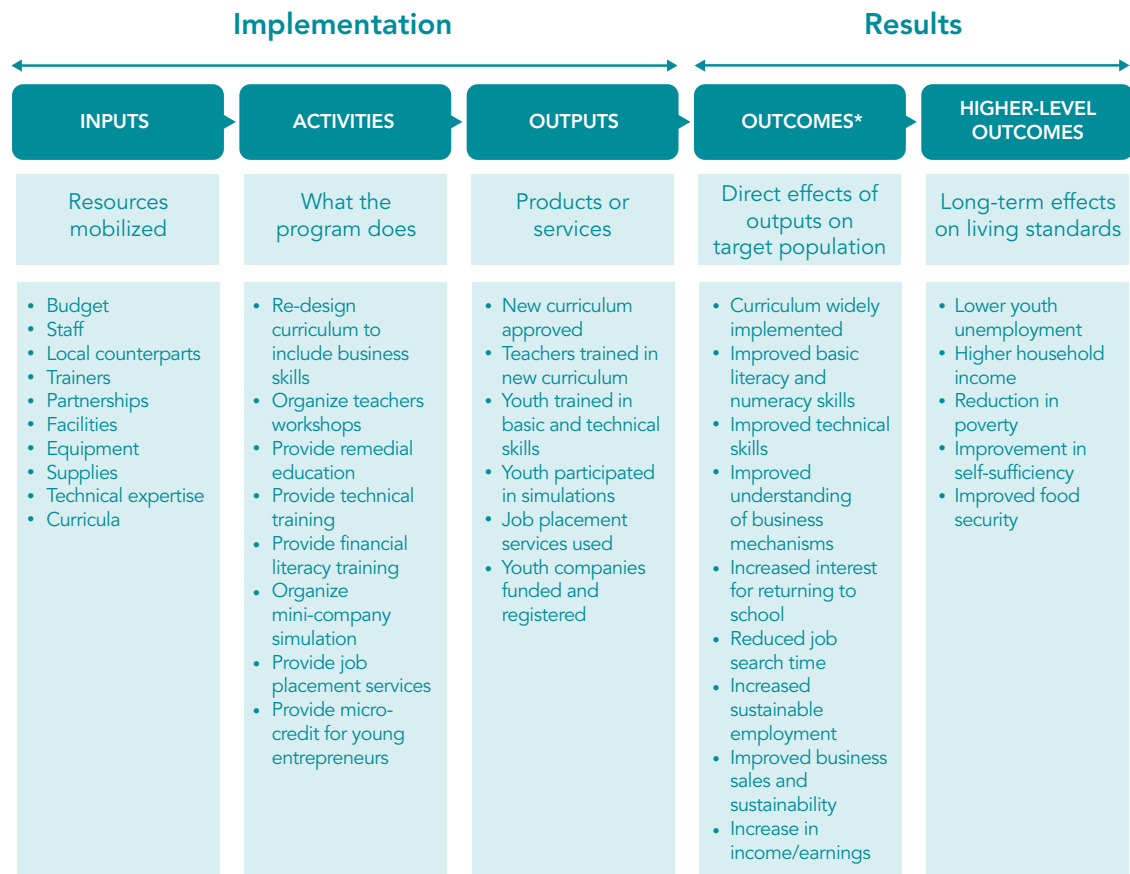
- increasing understanding about the program and providing a common language.
- helping to differentiate “what we do” from “what we want to achieve.”
- improving planning and management.
- identifying important variables to measure.
- providing a foundation for in-depth evaluations.

### Turning the Theory Into a Results Chain

In practice, a theory of change can be applied in a variety of way. Common applications include logic models, logical frameworks, outcome models, or results chains. The idea is always the same: to provide stakeholders with “a logical, plausible outline” of how the planned intervention can lead to the desired results (Gertler et al. 2011, p. 24; see figure 3.2). As a result, they present a sequence of events that connects the elements under direct responsibility of the project (resources used, activities implemented, and

products and services provided) with the expected outcomes and higher-level objectives of the program.

**FIGURE 3.2** Components of a results chain and examples



\* Level of Project Development Objective

#### [ Definition ]

A **results chain** is a sequence of resources, activities, and services provided that are expected to influence the direct and long-term effects on our target population.

Our planned implementation process includes the following categories a program manager is directly responsible for:

- **Inputs**—the resources available to the project, including budget, staff, partners, and equipment.
- **Activities**—the actions, processes, techniques, tools, events, and technologies of the program. Describe these activities with an action verb (*provide, facilitate, deliver, organize, etc.*).
- **Outputs**—the products and services provided that are directly under the control of the implementing organization. They indicate if a program was delivered as intended. Outputs are typically expressed as completed actions (*trained, participated, used, funded, etc.*).

Our intended results describe all of the program's desired effects under the following categories:

- **Outcomes**—the short- to medium-term effects (usually within several months and up to two years) on the beneficiary population resulting from the project outputs. These may include changes in attitudes, knowledge, and skills, which can often be relatively immediate effects, as well as changes in behaviors, status, and the like, which may take more time. The key outcomes targeted should be those defined in the project development objective. Outcomes are typically expressed at an individual level and indicate an observable change (*increased, improved, reduced, etc.*).
- **Higher-level outcomes**—the long-term project goals usually relating to overall living standards. They can be influenced by a variety of factors and are typically not under the full control of the program. This level of the results chain is also often labeled “impacts.” We prefer the phrase “higher-level outcomes” to avoid confusion about the specific meaning of “impact” in the context of impact evaluation (see [note 5](#)).

#### [ Tip ]

Though not absolutely necessary, it is often a good idea to also include your institutional objectives and underlying activities in the results chain.

## Constructing a Results Chain

### *Define the Level of Observation*

Both in terms of the implementation and results, we may want to look at more than individual youths. In fact, we may also be interested in outputs or outcomes at the household level, the group or facility level (schools, vocational training centers), or the village/community level.

### *Consider the Diversity of Possible Outcomes*

Youth livelihood interventions can affect a multitude of outcomes, including, but far beyond, outcomes that directly relate to economic opportunities and the labor market. Depending on the intervention, it may be useful to target and measure a range of outcomes if these fit the project logic and objectives. Common outcome categories include the following:

- **Psychosocial development**—measures of a young person's mind, emotions, and maturity level. Outcomes can relate to self-esteem, identity, trust, isolation, or psychological wellbeing.
- **Skills**—levels of basic knowledge in literacy and numeracy; technical competencies in a specific trade (artisan, mechanics, accounting, customer services); life skills (communication, teamwork, critical thinking, self management); and entrepreneurial skills (creativity, business skills).
- **Employment and labor market**—beneficiaries' use of time (between school, wage employment, self-employment, unemployment, casual labor); job characteristics (type of employer or business, number of hours worked, earnings); and business characteristics (profits, number of employees, business survival, loan repayment rate).
- **Use of financial services**—beneficiaries' access to financial services and behaviors related to banking, saving money, debt management, budgeting, and overall financial well-being.



- **Risky behaviors**—attitudes and behaviors relating to alcohol, tobacco and drug use, reproductive health (e.g., unprotected sex, HIV/AIDS), crime and violence.
- **Family formation**—attitudes and behaviors concerning age of marriage and the desired and actual number of children.
- **Citizenship**—young people’s preferences and actions with respect to voting in local or national elections, engaging in the community (such as through club membership or volunteering), and assuming leadership roles.
- **Investments in human capital**—changes in educational status (has returned to school or would like to return to school), amount of money spent on education or health (for herself or others), and intergenerational contributions (e.g., immunization and growth monitoring for own children).
- **Other**—additional outcomes may relate to consumption and nutrition patterns, asset creation, mobility and migration, as well as household and community relations.

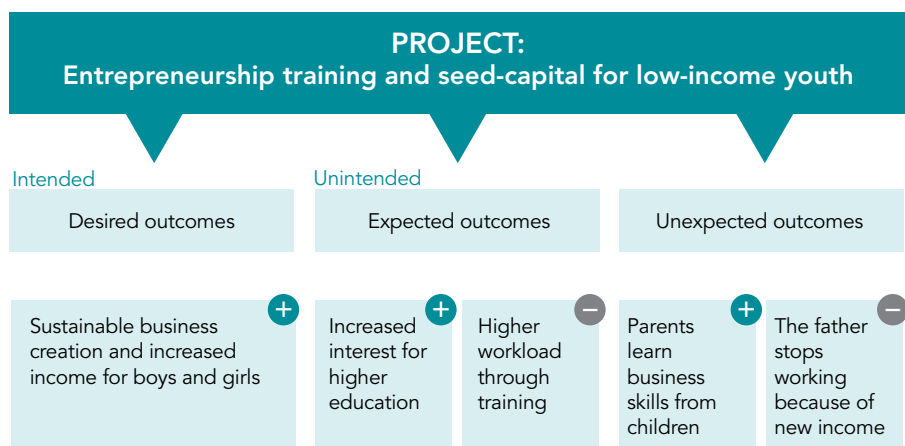
In the early 2000s, the Population Council and Save the Children implemented the Ishraq Program in rural Upper Egypt, establishing girl-friendly spaces to impart life skills, build social networks, and foster leadership and self-confidence. As it turned out, program benefits went beyond the targeted out-of-school adolescent girls and extended to the parents of participants. Girls conveyed information from their classes to their mothers, including health information. Additionally, observing their daughters’ participation in public life had a strong impact on mothers’ perceptions of their own place in the public sphere. Thanks to their daughters’ involvement in Ishraq, mothers realized that they, too, had a right to access public services.

Source: Brady, Salem, and Zibani (2007).

#### Take Unintended Outcomes Into Account

Our project objective reflects the major desired outcome of the intervention. Yet, development projects are complex and our intervention may have *unintended effects*. Some of these unintended effects may be expected, while others are unexpected and surprising. Both expected and unexpected outcomes may be positive or negative (see figure 3.3). It is important to include these potential outcomes (see major categories above) in the results chain and to label them accordingly in order to realistically capture the full logic of the intervention and provide the basis to track all mechanism at work.

FIGURE 3.3 Intended versus unintended outcomes



Source: Adapted from Hempel (2006).

For example, there may be spillover effects from our intervention because participants transfer knowledge to family or community members who, in turn, may also benefit indirectly. We certainly would like to capture this effect. On the other hand, there may be negative effects that are not expected: In an entrepreneurship project, for example, some youth may find themselves trapped in debt because their business did

not survive. In other cases, where youth are generating higher incomes thanks to our intervention, family members may stop working or may use the additional income to increase unhealthy behaviors such as alcohol and tobacco consumption. Again, we want to know whether these effects are actually at play. Doing research about similar projects can often help identify the range of potential positive and negative outcomes.

#### *Avoid Redundant Activities or Outputs*

When developing our results chain, we may identify activities that have little to do with our main project objective. In the interest of a well-defined and efficient project, such activities and outputs that are not crucial should be dropped.

### Identifying Key Indicators, Data Collection Tools, and Assumptions

Once we have a results chain, how do we know whether what has been planned is actually happening? One of the biggest challenges in developing a monitoring system is choosing what kind of information best reflects whether we are reaching our objectives. We now try to identify appropriate indicators, data collection tools, and assumptions for each level of objectives, from inputs to higher-level outcomes. A logical framework provides a useful matrix to capture all these elements (see table 3.1).

#### Step 1: Identifying Indicators

Indicators answer the question “How will I know?” Indicators are

- key aspects of (or proxies for) the element that we want to measure, even though they may not necessarily be fully representative.
- tangible signs that something has been done or that something has been achieved; they are the means we select as markers of our success ([Shapiro 2003](#)).

Indicators are a crucial element of a monitoring system because they drive all subsequent data collection, analysis, and reporting. Without a clear set of indicators, monitoring or evaluation activities lose their capacity to compare a program’s actual progress with what was projected and agreed upon ([Gosparini et al. 2004](#)).

#### [ Tip ]

If tracking unintended outcomes risks overwhelming the results framework, project teams may choose to focus monitoring on the intended outcomes and use evaluations to capture the extent of unintended outcomes.



**TABLE 3.1** Example of a logical framework for a school-based entrepreneurship program

	Step 1		Step 2		Step 3	
	Objectives	Indicators and Targets	Information Source	Frequency	Responsible Party	Assumption
<b>Higher-Level outcomes</b>	<ul style="list-style-type: none"> <li>Lower youth unemployment</li> <li>Higher household income</li> </ul>	<ul style="list-style-type: none"> <li>Local unemployment rate (%)</li> <li>Household income (\$)</li> </ul>	<ul style="list-style-type: none"> <li>Employment statistics (ministry, city level)</li> <li>Household survey</li> </ul>	<ul style="list-style-type: none"> <li>Yearly</li> </ul>	<ul style="list-style-type: none"> <li>Program team</li> </ul>	<ul style="list-style-type: none"> <li>New skills are demanded and rewarded by labor market</li> </ul>
<b>Outcomes</b>	<ul style="list-style-type: none"> <li>Curriculum widely implemented</li> <li>Better understanding of business</li> <li>Improved soft skills</li> <li>Improved employability</li> <li>Increased interest for higher education</li> </ul>	<p><u>Within six months of completing the program:</u></p> <ul style="list-style-type: none"> <li>500 schools use new curriculum</li> <li>50% more correct answers on business knowledge post-test</li> <li>70% students satisfied with new curriculum</li> <li>Teacher and parent perceptions of soft skills improve by 30%</li> <li>Time spent searching for a job falls 50%, and employer satisfaction increases 30%</li> <li>5% increase in university enrollment</li> </ul>	<ul style="list-style-type: none"> <li>Interview with official education authority</li> <li>School test results</li> <li>Focus group with teachers and parents</li> <li>Employer survey</li> <li>Regional school enrollment statistics</li> </ul>	<ul style="list-style-type: none"> <li>Bi-yearly</li> </ul>	<ul style="list-style-type: none"> <li>Program team (interviews, data collection)</li> <li>consultant (survey, focus group)</li> </ul>	<ul style="list-style-type: none"> <li>Curriculum accepted by local school authorities</li> <li>Quality of teaching</li> <li>Youth can attend school regularly</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>New curriculum approved</li> <li>Teachers trained</li> <li>Youth trained in business skills</li> </ul>	<p><u>By the end of the program:</u></p> <ul style="list-style-type: none"> <li>New curriculum approved by ministry</li> <li>500 teachers trained</li> <li>10,000 youth completed the training</li> </ul>	<ul style="list-style-type: none"> <li>Program data</li> </ul>	<ul style="list-style-type: none"> <li>Bi-monthly</li> </ul>	<ul style="list-style-type: none"> <li>Program team</li> </ul>	<ul style="list-style-type: none"> <li>Teachers willing to be trained</li> <li>youth can attend training</li> </ul>
<b>Activities</b>	...	...	...	...	...	...

Note: In the interest of practicality we have omitted the activities and inputs categories, which would usually be included in the logical framework.

### Selecting Indicators for All Levels of the Results Chain

Even when our focus is on the results of the intervention, it is important to track implementation indicators so we can determine whether the project has reached its intended beneficiaries and whether it has been carried out as intended. Without these indicators all along the results chain, an evaluation will identify only whether the predicted outcomes were achieved, but it will not be able to make a connection between the level of success and the quality of program execution. Table 3.2 illustrates examples of such indicators along the results chain.

**TABLE 3.2** Examples of indicators

Category	Sample Target	Example of Indicators
<b>Input</b>	Two trainers and facility within budget of US\$10,000	<ul style="list-style-type: none"> <li>Two trainers skilled, equipped and deployed</li> <li>Cost of program in U.S. dollars within desired budget</li> </ul>
<b>Activity</b>	Provide life skills training for youth (20 hours)	<ul style="list-style-type: none"> <li>Number of training hours delivered</li> <li>Number of youth participating by age, gender, level of education</li> <li>Date by which training was provided</li> </ul>
<b>Outputs</b>	100 youth participated in training	<ul style="list-style-type: none"> <li>Number of youth who finished the training (by age, gender, level of education)</li> </ul>
<b>Outcomes</b>	Increased knowledge of effective communication	By the end of the program: <ul style="list-style-type: none"> <li>Number and percentage of youth able to express ideas clearly measured against a predetermined test score card</li> <li>Number and percentage of youth with improved verbal and nonverbal communication skills measured against a predetermined test score card</li> <li>Number and percentage of youth who report feeling comfortable approaching employers</li> </ul>
<b>Higher-Level Outcomes</b>	Increased household income	<ul style="list-style-type: none"> <li>By 2015, average monthly household income increased by 20% compared to baseline</li> </ul>

Defining good *outcome indicators* requires particular attention. As discussed above, the outcomes of youth livelihood interventions can be very diverse and are not limited to labor market outcomes. We therefore need to choose indicators (psychosocial development, skills, employment, etc.) among all appropriate domains. The precise domains to be measured depend of course on the goal and focus of the intervention and learning objectives to be addressed. For example, for a life-skills intervention, it may be useful to measure skills, labor market outcomes, and risky behaviors. A job placement support project, instead, may be entirely focused on labor market outcomes.

#### [ Online Resource ]

Selected outcome and output indicators

<http://www.iyfn.org/gpye-m&e-resource1>

### Specifying Indicators

**Bring in other stakeholders.** Choosing indicators without the proper involvement of primary internal and external stakeholders can lead to a lack of ownership on their part (Kusek and Rist 2004). Collaborate with local partners and stakeholders in the community to arrive at a mutually agreed set of goals, objectives, and performance indicators for the program.

**Choose the right number of indicators.** Since indicators are only proxies, it is common to define several indicators for each element in the results chain, especially regarding outcomes or higher-level outcomes. However, choosing too many indicators will unnecessarily complicate our monitoring system and increase the burden for data collection, analysis, and reporting. It is important to identify the one to three key indicators that best reflect each element in the results chain.

**Respect quality standards.** Even though there are no absolute principles about what makes a good indicator, the commonly cited SMART characteristics can be useful (Gertler et al. 2011, p. 27). SMART indicators are

- Specific, to measure the information required as closely as possible,
- Measurable, to ensure that the information can be readily obtained,
- Attributable, to ensure that each measure is linked to the project's effort,
- Realistic, to ensure that the data can be obtained in a timely fashion, with reasonable frequency, and at reasonable cost, and
- Targeted to the objective population.

Our selection of indicators will be in part determined by our ability to collect data on them. If an indicator cannot be measured or the information is not available, then it cannot serve its purpose to reflect progress of our objectives. If we are not able to collect data for an indicator we chose, we have to replace it.

**Establish a baseline.** The baseline tells us the value of an indicator at the beginning of, or, ideally, just prior to, the implementation period. Knowing the baseline value of our indicators allows us to define realistic targets and track future progress against the initial situation. For example, if we want to monitor participants' incomes over time, data from our program registration forms may tell us that the average monthly income of participants at the time they enter the program is \$100. This is our baseline value that can serve as a comparison for how incomes will develop during and after our intervention.

**[ Tip ]**

It is usually a good idea to pilot indicators during the early phases of an intervention before establishing them as integral part of the monitoring system. This will highlight how well they work and whether they are capturing all the information the project manager and other stakeholders are interested in.

**Define targets.** If indicators are not specified in terms of time frame, quantity, and quality, we cannot be completely sure about being on track and reaching our objectives (Cooley 1989). For example, if the desired outcome is increased household income, our indicator may be monthly earnings in U.S. dollars. Then, the target may be set at a 30 percent increase (quantity) from formal sector employment (quality) within three years (time frame). Each indicator should have no more than one target per specified period. If setting firm numerical targets is too arbitrary, then targets can also be expressed as a range.

**Ensure consistency.** Although it is not always possible, in order to ensure consistent monitoring over time, we should make an effort to retain the indicators that were agreed upon before the start of the project. That said, it is not uncommon to add new indicators and drop old ones as we modify the program design or streamline the monitoring system. However, it is essential to remember the original objectives of the project. Monitoring and evaluation must be truthful. If we find that our project will not achieve its original goal but will instead achieve some other goal (which may be of even greater value), we must acknowledge that in our reporting. Indicators accepted at the beginning of the intervention should not be changed unless objective criteria exist to justify the change.

Table 3.3 provides examples of indicators for youth livelihood interventions at all levels of the results chain. Sometimes it is possible to use pre-defined indicators. However, it is important to consider their relevance to the specific project. Some may need to be adapted to fit or supplemented with others that are more locally relevant.

**Outcome to be measured:** Improved employability of youth aged 18–24

*Bad indicator:* Youth will find jobs more easily than they could before the intervention

*Good indicator:* Number and percentage of youth aged 18–24 who have at least two job offers that pay above minimum wage in their field of training within three months of completing the program (compared to zero job offers before)

**TABLE 3.3** Examples of indicators for youth livelihood projects

Type of Project	Input	Activities	Outputs	Outcomes	Higher-Level Outcomes
<b>Training and skills development</b>	<ul style="list-style-type: none"> <li>Budget allocation and expenditure (in U.S. dollars)</li> <li>Amount and share of matching funds raised</li> <li>Number of program staff by level</li> <li>Number of local facilitators under contract</li> <li>Number of local organizations who provide in-kind contributions</li> </ul>	<ul style="list-style-type: none"> <li>Number of workshops offered</li> <li>Number of training hours</li> <li>Number of youth screened/enrolled</li> <li>Number of employers offering internships</li> <li>Number of internships available</li> </ul>	<ul style="list-style-type: none"> <li>Number and percentage of youth who attend at least 80% of the training</li> <li>Number of certificates awarded</li> <li>Number of youth placed in internships</li> <li>Average length of internships completed (in weeks)</li> </ul>	<ul style="list-style-type: none"> <li>Number and percentage of youth who are satisfied with the program</li> <li>Number and percentage of youth reporting an improved ability to think critically and solve problems</li> <li>Number and percentage of youth receiving follow-up jobs offers after internship</li> <li>Percentage of local employers providing job opportunities for young people</li> </ul>	<ul style="list-style-type: none"> <li>Household income (in U.S. dollars)</li> <li>Local youth unemployment rate (%)</li> <li>Levels of individual/household food consumption (including fruit and vegetables)</li> <li>Number and percentage of youth who report that their house/apartment has basic infrastructure (running water, electricity, etc.)</li> <li>Number and percentage of youth who report reduced levels of conflict in the previous year</li> </ul>
<b>Subsidized employment (e.g., public works and public service programs)</b>	Same as above	<ul style="list-style-type: none"> <li>Number of workfare projects by type and location</li> <li>Number of municipalities providing public work/services</li> </ul>	<ul style="list-style-type: none"> <li>Number of beneficiaries employed in each activity</li> <li>Number of temporary jobs created (by type and sector)</li> </ul>	<ul style="list-style-type: none"> <li>Number and percentage of youth who transitioned to formal employment within X months</li> <li>Days and hours worked per week (by type of activity)</li> <li>Average hourly/daily/monthly wage</li> </ul>	Same as above

**TABLE 3.3 (CONT'D)** Examples of indicators for youth livelihood projects

Type of Project	Input	Activities	Outputs	Outcomes	Higher-Level Outcomes
<b>Employment services</b> (e.g., job placement support)	Same as above	<ul style="list-style-type: none"> <li>Number of career counseling services created (in labor offices, in schools, etc.)</li> <li>Number of job counseling session offered</li> <li>Number of career and job fairs organized</li> </ul>	<ul style="list-style-type: none"> <li>Number of youth participating in job placement services</li> <li>Number and percentage of youth matched with employers</li> <li>Number of companies and youth participating in local career/job fair</li> </ul>	<ul style="list-style-type: none"> <li>Number of job interviews per beneficiary</li> <li>Number and percentage of youth who are employed X months after the intervention</li> <li>Number and percentage of youth who retain employment for at least X months</li> </ul>	Same as above
<b>Youth enterprise and entrepreneurship</b>	Same as above	<ul style="list-style-type: none"> <li>Number of business plan competitions organized</li> <li>Number of hours of support services provided</li> <li>Average number of hours of mentoring provided per week/month</li> </ul>	<ul style="list-style-type: none"> <li>Number of youth submitting complete business plan</li> <li>Number of youth enterprises supported annually</li> <li>Number and percentage of youth talking to their mentor at least once every two weeks</li> </ul>	<ul style="list-style-type: none"> <li>Number and percentage of youth who started a new business</li> <li>Number and percentage of businesses registered</li> <li>Total sales last week/month</li> <li>Number of jobs created</li> <li>Percentage of profits reinvested</li> </ul>	Same as above
<b>Youth-inclusive financial services</b>	Same as above	<ul style="list-style-type: none"> <li>Number of workshops organized for participating financial institutions</li> <li>Micro-loan scheme for young entrepreneurs launched</li> <li>Youth-targeted savings account created</li> </ul>	<ul style="list-style-type: none"> <li>Number of staff trained in partner financial institutions</li> <li>Number of business loans issued to young people (by type of enterprise)</li> <li>Average loan size</li> <li>Number of youth saving accounts opened</li> </ul>	<ul style="list-style-type: none"> <li>Annual repayment rate</li> <li>Amount of current savings (1) in bank account, (2) with savings group, (3) in all other locations</li> <li>Number and percentage of youth who put aside savings as soon as money comes in</li> <li>Number and percentage of youth who report greater satisfaction with financial situation</li> </ul>	Same as above

## Step 2: Data Collection

The selection of indicators to be used for our monitoring system depends not only on the project structure and objectives, but also on the availability of data and on the time and skills requested for their collection. Data refers to information of all types, not just quantifiable information.

### Select a Data Collection Method

There are two broad methods of data collection: quantitative and qualitative.

**Quantitative methods** aim to provide an objectively measurable picture of a situation in some strictly predetermined ways. They provide information about the population of interest in closed-form and quantitative dimensions, including demographic, socioeconomic, or other characteristics. They are usually based on standardized structured instruments that facilitate aggregation and comparative analysis. Common examples include tests, surveys, and censuses. Conducting quantitative methods requires skills in statistics.

**Qualitative methods** aim to provide an understanding of how and why people think and behave the way they do. Qualitative methods seek to understand events from stakeholder perspectives, to analyze how different groups of people interpret their experiences and construct reality. Common examples of qualitative methods include unstructured or semi-structured interviews, focus groups, and direct observation of participants. Conducting qualitative methods requires training in anthropology or sociology, as well as training in the administration of specific evaluation tools. Qualitative methods tend to be quicker to implement than quantitative methods, and are often less expensive.

The rules governing statistics are transparent and comparatively easy to follow, requiring little independent judgment from the analyst. As a result, quantitative methods usually achieve higher standards of reliability and validity compared with qualitative methods. In contrast, the interpretation of qualitative data is a matter of judgment. As a result, qualitative methods are more difficult to generalize. Given the advantages and limitations of both categories, a mixture of qualitative and quantitative methods (mixed-methods approach) is often recommended to gain a comprehensive view of the program's implementation and effectiveness. Table 3.4 provides an overview of common data collection techniques.

With the rapid development and expansion of information and communication technologies, there is an increasing array of technology-based solutions that can be used to facilitate data collection. This includes the use of mobile phones and other mobile devices to implement surveys, Web-based tools, mapping instruments, and other multimedia solutions.

*In Pakistan, the Mennonite Economic Development Associates monitors its rural economic development projects with an SMS reporting system. Women microentrepreneurs and small enterprise owners submit daily or weekly sales reports via their personal mobile phone.*

### [ Online Resource ]

Overview of ICT-based data collection tools

<http://www.iyfnet.org/gpye-m&e-resource2>



**TABLE 3.4** Overview of data collection methods

Method	Description	Use	Advantages	Limitations
<b>Administrative and Management Records</b>	Documents that provide information on project management processes	To examine the effectiveness of project management or strategy implementation	<ul style="list-style-type: none"> <li>Provides information on process that is difficult to obtain through other means</li> </ul>	<ul style="list-style-type: none"> <li>Program specific, not generalizable</li> <li>Dependent on reliable management records systems</li> </ul>
<b>Field Visits (combination of observation and interviews)</b>	In-depth examination of a specific site or location	To monitor and understand context	<ul style="list-style-type: none"> <li>High level of detail</li> <li>Access to observational data</li> </ul>	<ul style="list-style-type: none"> <li>Program specific, not generalizable</li> <li>Highly dependent on access to appropriate field sites</li> </ul>
<b>Key Informant Interviews</b>	In-depth data collection method with highly informed individuals	To obtain specific and highly detailed information on a specific issue or set of issues	<ul style="list-style-type: none"> <li>High level of detail</li> <li>Can address unanticipated topics</li> <li>Has flexibility to explore issues in depth</li> <li>Can capture a range of stakeholder perspectives</li> </ul>	<ul style="list-style-type: none"> <li>Program specific, not generalizable</li> <li>Quality is highly variable based on interviewer skills and interviewee comfort</li> </ul>
<b>Focus Groups</b>	In-depth data collection method with informed members of a specific subpopulation (e.g., women, youth, elderly, workers)	To obtain specific and highly detailed information on stakeholder perspectives on a specific issue or set of issues	<ul style="list-style-type: none"> <li>Same as for key informant interviews</li> <li>Allows for interaction with and among participants</li> </ul>	<ul style="list-style-type: none"> <li>Program specific, not generalizable</li> <li>Quality highly dependent on group dynamic (e.g., participants can be influenced by moderator or dominant group members)</li> <li>Interpretation challenges</li> <li>Time-consuming analysis</li> </ul>
<b>Direct Observation</b>	Method to collect data through direct observation (e.g., classroom observation), information is recorded in a log or diary	To obtain naturalistic data	<ul style="list-style-type: none"> <li>High level of detail from a neutral observer</li> <li>Provides information on actual behavior rather than self-reported behavior</li> </ul>	<ul style="list-style-type: none"> <li>Not generalizable</li> <li>High potential for observer bias</li> <li>Interpretation and coding challenges</li> </ul>

Method	Description	Use	Advantages	Limitations
<b>Review of Official Records</b>	Official documents that provide background information or historical data on certain phenomena	To examine underlying processes or historical trends/data for certain phenomena	<ul style="list-style-type: none"> <li>Provides information that may be difficult to obtain through other means</li> <li>Inexpensive</li> </ul>	<ul style="list-style-type: none"> <li>Possible access restrictions</li> <li>Must verify validity and reliability of data</li> <li>Data may not be exactly what is needed</li> </ul>
<b>Mini-Surveys</b>	Brief questionnaire/survey that collects limited data set	To obtain quantitative data on a limited number of people or issues	<ul style="list-style-type: none"> <li>Faster and less expensive than household surveys</li> </ul>	<ul style="list-style-type: none"> <li>Limited scope and therefore usually not representative</li> </ul>
<b>Household Surveys</b>	An extensive set of survey questions whose answers can be coded consistently	To obtain information on a large number of respondents regarding their socioeconomic status, demographic data, consumption patterns, etc.	<ul style="list-style-type: none"> <li>Provides in-depth information on population of interest</li> <li>More generalizable than mini-surveys</li> <li>May be designed to collect data of specific interest</li> </ul>	<ul style="list-style-type: none"> <li>Expensive</li> <li>Requires special expertise to ensure validity</li> <li>Difficult to persuade people to respond to long questionnaire</li> </ul>
<b>Panel Surveys</b>	A longitudinal study in which variables are measured on the same units over time	Same as for household surveys, with particular interest in measuring changes over time	<ul style="list-style-type: none"> <li>Same as for household surveys</li> <li>Can capture dynamics over a period of time</li> </ul>	<ul style="list-style-type: none"> <li>Same as for household surveys</li> <li>May have problems with participant retention over time</li> </ul>
<b>Census</b>	Survey for an entire population	To obtain a complete data set on a specific population	<ul style="list-style-type: none"> <li>Generalizable</li> <li>Typically available from official sources</li> </ul>	<ul style="list-style-type: none"> <li>Expensive</li> <li>Time consuming</li> <li>Infrequent or dated</li> </ul>

Sources: Adapted from Baker (2000); Creswell (2008).

### [ Tip ]

Use quantitative methods when

- numerical or generalizable data are required to convince decision makers.
- you need statistically representative information about the target population, their situation, behaviors, and attitudes.

Use qualitative methods when

- “how and why” questions need to be understood; that is, when quantitative data need to be explained by motivation and attitudes affecting behaviors.
- participatory approaches are favored.

### [ Tip ]

The timing of data collection should be planned against local realities so that collection does not impose a burden on an individual or a family. Data should not be collected when youth are taking school exams, for example, or when young people’s labor is needed during particular agricultural seasons.

Data collection mechanisms are more or less suited for different levels of the results chain. Input and process indicators will rely primarily on management and project records that illustrate the use of resources and the implementation of activities. Direct observation and field visits can provide data for output indicators, for instance, the number of small businesses created. Measuring outcomes often requires a combination of formal surveys that provide reliable quantitative information as well as qualitative methods such as key informant interviews or focus groups to understand the underlying mechanisms of whether and how certain effects were achieved. Finally, since higher-level outcomes usually relate to broader changes outside the full control of the project, official statistics can be useful when they are available for small geographic areas (such as municipalities) and can be disaggregated by sociodemographic characteristics.

### *Define the Frequency and Timing of Data Collection*

The interval of monitoring activities will depend on the monitoring purposes. As a rule, the higher the level of the results chain, the less frequent we will need to collect data, but the more difficult it usually becomes to obtain accurate information.

To illustrate the optimal frequency of data collection, let’s imagine a job-training program that lasts for three months. To run the training effectively and efficiently, we need information about how many resources we are using (in terms of budget, staff time, materials, etc.) and how our activities are implemented (the number of hours of training offered every week, the number of participants, and so on). This information about our inputs and activities may need to be collected fairly frequently, let’s say every two weeks.

Assessing our output (the number and the composition of beneficiaries that are actually being trained) would probably be done periodically, say, every month, although this information will rely on attendance data that may have been collected on a daily level.

Whether the training had any effect on outcomes (youth’s knowledge and ability to find employment) will only become clear after the training is over. Short-term effects, such as an increase in knowledge, may be measured at the end of the training, while effects that take longer to manifest—such as whether jobs were secured—would be measured three to six months after the intervention.

Finally, higher-level outcomes such as increases in household income and positive spillover effects are usually unlikely to materialize in less than a year (depending on the local labor market) and would therefore be measured only in long intervals.

### *Define Who is Responsible for Collecting the Data*

It is important to clearly define data collection responsibilities. Failing to define responsibilities will likely result in failing to collect the data. In practice, different types of monitoring will fall under the responsibility of different actors, both in the field and at headquarters. The following people are likely to collect data:

- Program managers
- Local project team members or M&E officers
- Local implementing partners (e.g., teachers, training providers, loan officers)
- Beneficiaries
- Other local stakeholders (including parents and community members)
- Volunteer enumerators (e.g., university students)

- External consultants
- Survey firms

While defining the responsibilities for collecting the data, clarify what happens to the information once collected. Integrate data collection plans with procedures for storing, aggregating, and analyzing the data to guarantee that those who need the information have timely access to it (see *Monitoring and Reporting System*, below).

To learn more about participatory monitoring and evaluation, consult *Sabo Flores (2008)*, *Powers and Tiffany (2006)*, and *Gawler (2005)*.

### Step 3: Articulating Risks and Assumptions

What are the key factors that could diminish the potential effects of our project, and what steps can be taken to mitigate them? In any project there are factors that we cannot control that will affect the success of our intervention. These could include such factors as weather, political stability, the local security situation, and support from local stakeholders. A good understanding of these factors is essential for project design, and also for M&E.

#### Identify Assumptions During the Design Phase

We can identify assumptions by thinking of the factors critical to reaching our objectives on each level of the results chain and what could affect these factors (see table 3.5). Sometimes, a first set of assumptions may already have been formulated in the *risk* section of our project proposal (*Development Marketplace 2008*).

#### [ Tip ]

Be mindful of conflicts of interest when assigning responsibilities for collecting and reporting information. For example, teachers or training providers may have an incentive to cheat with respect to recording outputs (such as the number of hours of training conducted) or outcomes (such as the number of youth who improved their test scores or found a job). To ensure data reliability, we recommend (1) using neutral observers to ensure independent monitoring, and (2) verifying the accuracy of information provided, at least sporadically, through unannounced site visits or other means.

For an example how photo monitoring improved teacher attendance and reduced the need for monitoring visits in India, see <http://www.povertyactionlab.org/evaluation/encouraging-teacher-attendance-through-monitoring-cameras-rural-udaipur-india>

**TABLE 3.5** Examples of assumptions and project responses

Category	Potential Assumption	Under Our Control? Yes/No
<b>Input</b>	<ul style="list-style-type: none"> <li>• Trainers willing to work in project area can be found</li> <li>• Employer association ready to partner</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, but not hired yet</li> <li>• Yes, memorandum of understanding already signed</li> </ul>
<b>Activity</b>	<ul style="list-style-type: none"> <li>• Electricity available for training location</li> </ul>	<ul style="list-style-type: none"> <li>• No, but no problems in recent months</li> </ul>
<b>Output</b>	<ul style="list-style-type: none"> <li>• Youth can attend training and don't have to work to support family</li> </ul>	<ul style="list-style-type: none"> <li>• No, but vouchers given to compensate for lack of income</li> </ul>
<b>Outcome</b>	<ul style="list-style-type: none"> <li>• Training is relevant to labor market needs and delivered with high quality</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, employer surveys carried out and trainers' performance will be monitored</li> </ul>
<b>Higher-Level Outcomes</b>	<ul style="list-style-type: none"> <li>• Local economy (including market prices and wages) remains stable</li> </ul>	<ul style="list-style-type: none"> <li>• No, but predictions are good</li> </ul>

Assumptions that are not under our control should be inserted in the results matrix at the level they influence. In general terms, inputs and activities are more likely to be under the project's control than outcomes and higher-level outcomes.

Making unrealistic assumptions regarding some key elements of the program can seriously impede the success of the intervention, and should thus be avoided in any circumstance. This can happen when we overestimate the resources we have at hand, lack knowledge about beneficiaries and local context, and are unable to adequately assess external risk factors such as insecurity or opposition from local government. (*Development Marketplace 2008*).

### *Monitor Assumptions During Project Implementation*

In order to provide an early warning system on potential constraints as well as on possible solutions, assumptions should be closely followed. Monitoring assumptions allows us to know how they may be affecting project implementation and results, and therefore can help us explain deviations from our objectives and take corrective measures.

## **Establishing a Monitoring and Reporting System**

### **Planning**

After a full logical framework with indicators, data collection tools, and assumptions has been developed, the following tasks will help you to prepare for monitoring.

**Design necessary instruments.** Data collected systematically with well-designed instruments will enable reports to be generated quickly and reliably. Instruments should be piloted with a germane population during development, and results from the pilot exercise should guide the design of subsequent instruments.

**Develop procedures to protect young people.** Although not always required by national governments, professional norms dictate that data collection activities be administered in such a way to protect the rights and interests of participants. The exact nature of these procedures is subject to local requirements, but, at a minimum, the following are encouraged:

- Create instruments and interviewer training procedures that ensure the anonymity of young research participants.
- Obtain signed informed-consent forms that include details of the project and the potential risks associated with participation. These forms also clearly explain the rights of participants, such as the right to drop out of the data collection process whenever they like. Obtain oral consent from people who cannot read.
- Obtain informed consent from the parent or guardians of people who are under the legal age of consent, people who are developmentally disabled, and other vulnerable populations. If such a person is not available to consent, avoid collecting data on the vulnerable individual.

For more detailed guidance, see the section Human Subjects Protection in [note 7](#).

**Collect the data according to the chosen methods.** To the extent possible, existing processes such as participant registration or attendance records should be leveraged in order to minimize the data collection burden to staff and respondents.

**Develop the database.** If the data collected is complex, it may be beneficial to employ an experienced database manager to develop codes and procedures that allow multiple users to query the data and derive results with a little bit of training. A variety of database systems are appropriate, and the project should select a software program that provides a balance of analytical sophistication and user-friendliness.

### **Aggregating and Analyzing Information**

The methods for aggregating and analyzing findings are highly dependent on the methods one employs to monitor a project or intervention. Therefore, decisions on how to use monitoring data should start very early in the design process. The project team must decide upon the best ways to organize these data and conduct effective and efficient

#### **[ Tip ]**

Make sure that the instruments used capture various types of contact information (physical address, email, telephone number) from the respondent and also from friends and family who can help locate the highly mobile youth later on. Using social media channels such as Facebook can also help to communicate with and keep track of young people.

#### **[ Online Resource ]**

Sample survey instruments, some of which include consent forms

<http://www.iyfnet.org/gpye-m&e-resource11>

analysis. To facilitate analysis and reporting in bigger programs, it may be advisable to set up a Management Information System that connects all databases used by different program units.

**For qualitative data**, it is often ideal (albeit logistically challenging) to employ computer-based qualitative analysis software. There are many brands to choose from (such as Atlas.ti, NVivo, or MaxQDA), and each work in similar ways. Software for qualitative analysis allows the user to import all relevant documents (such as transcripts from interviews and focus groups, project documents, and photographs) and then apply a set of predetermined codes. Depending on the sophistication of the user, the codes can function as an organizing tool (grouping all like topics from various sources together) or allow sophisticated analysis that examines for relationships within these topics. The team should choose the software that meets their needs in terms of staff experience and costs.

**For quantitative data**, when resources allow, it is often best to use a number of systems. One should be a relational database, such as Microsoft Access. Relational databases allow for an easy investigation and display of data along a number of different variables. Typically, however, the analyses performed in relational databases are fairly descriptive in nature, providing measures of central tendency (e.g., means, modes, medians, standard deviations). If the project demands, and the instruments are designed and administered in such a way as to allow for more sophisticated analysis, the monitoring staff may want to use a statistical software package such as SPSS or Stata. In addition to commonly available statistical software packages that are based on the hard drive of a single computer, there is also an increasing use of “cloud”-based data management and analysis systems, which allow a large team to collaborate on monitoring and analytical tasks.

### Learning and Decision Making

Monitoring has little value if we do not learn from and act on the data that results from the analysis. Being in a constant cycle of action and reflection helps to remember that situations change, that the needs of project beneficiaries may change, and that strategies and project activities need to be reconsidered and revised. Organizations and projects stagnate when they don’t learn, and rigorous monitoring forces us to keep learning (Shapiro 2003).

According to Shapiro (2003), translating learning into action entails

- looking at the potential consequences of our analysis on our program.
- listing options for action.
- discussing the options with internal and external stakeholders, reaching consensus, and obtaining a mandate to take action.
- sharing adjustments and plans with the rest of the organization and, if necessary, with our donors and beneficiaries.
- implementing the plan.
- monitoring the effects.

#### [ Definition ]

A **Management Information System** is the combination of computer technology, people, and procedures put in place to collect, organize, and analyze information in order to support decision making. It allows for centrally managing large amounts of data and for comparing indicators by beneficiary characteristics and over time.

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*In 2011, Youth Business International (YBI), a network of more than thirty-four independent youth entrepreneurship programs around the world, began implementation of a cloud-based global Operations Management System (OMS) for monitoring purposes. The OMS allows YBI members to track and analyze a broad range of key performance indicators relating to organizational efficiency and outcomes. The quality of a member’s loan portfolio and the success of their entrepreneurs’ businesses can be assessed against factors such as the sociodemographic characteristics of the entrepreneur, the mentoring and training delivered, and the terms of the loan. The platform helps increase accuracy and facilitates real-time aggregation of information by the central YBI network team.*



## Reporting

Typically, the higher the standing of our audience in an organization's hierarchy, the less we need to provide a lot of detail and explanation in communicating our findings. Presenting clear messages substantiated by aggregated data and concise information tends to be more appropriate for high-level audiences, who are mostly interested in the big picture. We can tailor the format of our reports to suit each audience (see table 3.6).

**TABLE 3.6** Tailoring reports to audience

Target Audience	Format	Timing/Frequency
<b>Project Staff</b>	Oral presentation and written summary statistics at team meetings	Weekly
<b>Management Team</b>	Written reports and oral presentation	Monthly
<b>Partners</b>	Oral presentation and written summary statistics	Monthly
<b>Donors</b>	Depends on donor requirements. Usually short written reports highlighting project progress, issues experienced, outcomes and impact, efficacy of intervention/strategy, etc.	Quarterly/biannually

Monitoring data should always be reported in comparison with their baseline and target values and presented in a “simple, clear, and easily understandable format” (Kusek and Rist 2004, p. 133). Visual tools, such as graphs, charts, and maps can be very useful in highlighting key data and messages.

## Resources

Monitoring systems can be expensive. In addition to fixed costs (computing hardware and software, staff) there are also variable costs that include training local enumerators, contracting outside consultants, and publicizing findings (see table 3.7). It is important that a project's M&E system is properly budgeted and accounted for in any strategic plan. It is often the case that when the costs are realized, program managers hesitate to spend significant resources on an M&E system, which appear to be at the expense of intervention activities. Yet, without suitable monitoring systems, a program runs the risk of underperformance or failure, with little awareness of these problems. Also without monitoring, we may not be able to seize those opportunities where great successes are being realized. At the end of the day, monitoring systems are critical to project management and a crucial component of any intervention.

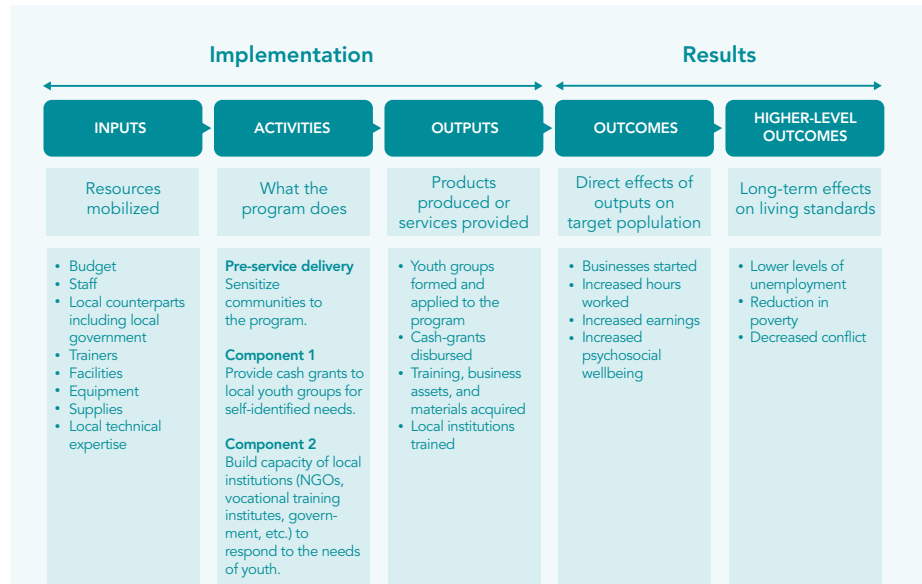
**TABLE 3.7** Typical components of a monitoring budget

Fixed Costs	
Staff Cost	<ul style="list-style-type: none"> <li>Headquarters: Percentage of an M&amp;E coordinator's time to manage M&amp;E system. Can range from 10 percent to 100 percent, depending on project size.</li> <li>Locally: Typically 50–100 percent of a local M&amp;E officer's time to manage implementation of M&amp;E activities, plus junior support staff.</li> </ul>
Equipment	Computers, voice recorders, cameras, etc.
Software	Licenses for quantitative and qualitative analysis tools
Variable Costs	
Training	Capacity building for staff, enumerators, community members, etc.
Travel	Travel from HQ staff to the field for periodic check-ins and technical assistance. Local travel to field sites to ensure standardized implementation of M&E activities
Data collection and Analysis	Contracting of third party vendors such as survey firms
Consultants	Contracting of external experts for specific tasks
Printing	Instruments, reports, etc.

### Key Points

1. Every intervention must have a solid monitoring system to be able to continuously track implementation and results, regardless of whether the project will be evaluated.
2. Program managers and key stakeholders need to jointly develop a results chain to clearly specify the logic of the intervention and identify key indicators, data collection mechanisms, and assumptions.
3. The monitoring system provides continuous information on the direction, pace, and magnitude of change. It also allows us to identify unanticipated developments in the project or its environment. This provides the foundation for knowing whether an intervention is moving in the intended direction and makes good monitoring critical to effective project management.
4. Monitoring data is descriptive and does not necessarily explain why and how certain changes are taking place. It also does not provide the basis for attributing the observed changes to the intervention; that is, it does not prove that changes are taking place because of our program.

## NUSAF Case Study: Monitoring System



In order to build the foundation for interpreting the results of the impact evaluation, it was crucial for the NUSAF program to have good information about whether the Youth Opportunities Program was implemented as intended. NUSAF therefore used a mix of quantitative and qualitative tools to track activities and outputs. For example, since cash grants were disbursed to youth groups through the central government, youth were asked whether they actually received the funding. This information was then compared with government records.

The program also tried to understand the distribution and use of the money within the group. Because the money was intended for training, materials, and tools, NUSAF tracked attendance rates, the number and value of their tools and materials, whether they began a business, and whether they were still operating the business.

Although this information did not provide answers regarding the impact of the program, it helped program officials, monitoring staff, and the evaluators to understand whether the program was delivered as planned and how it may have affected participants. This understanding would also help during the analysis of evaluation results, for example to explain why some participants may have benefited from the program to a different extent than others.

Source: Blattman, Fiala, and Martinez (2011).

### Key Reading

Donor Committee for Enterprise Development. 2010. *The DCED Standard for Measuring Achievements in Private Sector Development. Control Points and Compliance Criteria.* Version V.

<http://www.enterprise-development.org/page/measuring-and-reporting-results>

Kusek, J. Z., and Rist, R. C. 2004. *Ten Steps to a Results-Based Monitoring and Evaluation System: A Handbook for Development Practitioners.* Washington, DC: The World Bank. See chapters 2–6.

<http://www.oecd.org/dataoecd/23/27/35281194.pdf>

Taylor-Powell, E., Jones, L., and Henert, E. 2003. *Enhancing Program Performance with Logic Models*. University of Wisconsin–Extension, Program Development and Evaluation. <http://www1.uwex.edu/ces/lmcourse/>

W. K. Kellogg Foundation. 2004. *Logic Model Development Guide*. Battle Creek, MI: W. K. Kellogg Foundation.  
<http://www.wkkf.org/knowledge-center/resources/2006/02/WK-Kellogg-Foundation-Logic-Model-Development-Guide.aspx>

## Notes

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