Guide on Measuring Decent Jobs for Youth
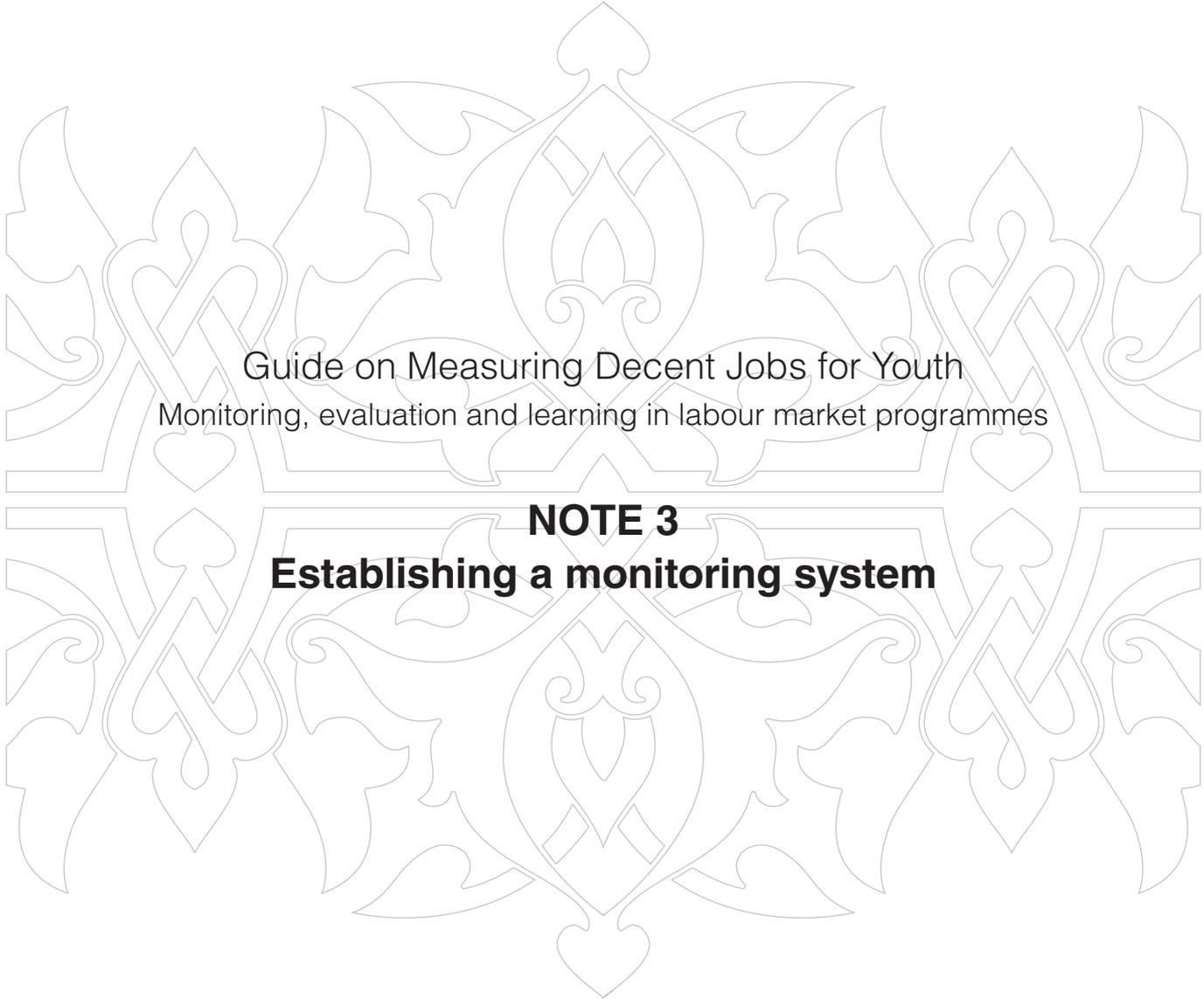
Monitoring, evaluation and learning in labour market programmes

International Labour Organization

Note **3** **Establishing a monitoring system**

Guide on Measuring Decent Jobs for Youth
Monitoring, evaluation and learning in labour market programmes

NOTE 3
Establishing a monitoring system

Contents

Establishing a monitoring system

Learning objectives:

At the end of this note, readers will be able to:

▶ develop a visual theory of change diagram and translate this into a results chain which maps out the intervention logic from inputs through to higher-level goals

▶ choose SMART (specific, measurable, attributable, relevant and time-bound) indicators that describe and explain change

▶ select appropriate measurement tools and specify the timing and responsibilities for data collection

▶ deploy a monitoring system to aggregate, analyse and report on results.

Keywords:

Theory of change, assumptions, results chain, logic model, inputs, activities, outputs, outcomes, higher-level goals, indicators, proxy measures, baseline, targets, quantitative data, qualitative data, logical framework, management information system

Monitoring provides information on a continuous basis to inform programme managers about planned and actual developments. Monitoring involves collecting and analysing 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. Effective monitoring should be central to all projects. It helps to detect problems, take corrective actions and lay the groundwork to produce evidence about what works in creating decent jobs for youth. That being said, monitoring systems come with a cost (see box 3.1).

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

This note summarizes the key steps for building a monitoring system that should be followed in any project, regardless of whether an evaluation will also take place:

▶ Step 1. Define the intervention logic: Draw a theory of change and results chain

▶ Step 2. Choose key performance indicators

▶ Step 3. Select data collection tools

▶ Step 4. Deploy the system to aggregate, analyse and report on results.

Step 1: Define the intervention logic

THEORY OF CHANGE: THE LINK BETWEEN PROGRAMME DESIGN AND HIGHER-LEVEL RESULTS

Underlying any programme design is a theory of change (ToC). The ToC can be expressed as a diagram showing how a programme plans to impact its beneficiaries, and the set of assumptions we make about why these particular project activities will foster positive change. Figure 3.1 maps a simplified theory of change, showing how on-the-job training can lead, through a series of intermediate steps and external assumptions, to higher levels of technical and core skills.

Practitioners should draw a visual theory of change for every intervention. Ideally, this is developed during the objective-setting phase of the project design (see Note 1), when all relevant stakeholders can be brought together to agree on a common vision for the project. A

Box 3.1: Resourcing

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 3.1). It is important that a project's monitoring system is properly budgeted. It is often the case that, when the costs are realized, programme managers hesitate to spend significant resources on a monitoring system, as this expenditure appears to be at the expense of intervention activities. Yet, without suitable monitoring systems, a programme runs the risk of underperformance or even failure. At the end of the day, monitoring systems are critical to project management and a crucial component of any intervention.

Table 3.1: Typical components of a monitoring budget

Fixed costs	
Staff costs	• Headquarters: Percentage of a monitoring and evaluation (M&E) coordinator's time to manage M&E system. Can range from 10 per cent to 100 per cent, depending on project size • Locally: Typically, 50–100 per cent of a local M&E officer's time to manage implementation of M&E activities, plus junior support staff
Equipment	Computers, voice recorders, cameras, etc.
Software	Licences for quantitative and qualitative analysis tools
Variable costs	
Training	Capacity building for staff, enumerators, community members, etc.
Travel	Travel from HQ 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.

theory of change helps both the programme manager and the evaluator to:

▶ reach a common understanding about the programme

▶ refine and enhance the programme logic using a visual tool

▶ differentiate between "what the intervention does" and "what it wants to achieve"

▶ communicate externally about what the intervention does, and how it makes a difference

▶ identify the important outcomes to be measured.

FIGURE 3.1: STYLIZED THEORY OF CHANGE FOR A YOUTH EMPLOYMENT PROJECT

Intervention: Job-training for disavantaged youth

Youth have increased levels of technical and core skills

Employers satisfied with young employees

Assumption: Real wage growth outstrips inflation

Reduced time to find a decent job

Ability to retain a job (lower turnover)

Assumption: No major shocks to economy or sector causing firms to lay off workers

Reduced social pressure from family and peers

Higher montly earnings

Increased level of self-esteem

Improved housing

Ability to marry and start a family

Improved physical health

Ability to financially support family

Higer degree of overall happiness

Positive intergenerational effects

Lower propensity to engage in anti-social activities

DEFINITION

A **theory of change** is an articulation of the way in which programme/project planners aim to produce results. Often, theories of change are represented in a visual format that can range in complexity and which can include a logframe approach or a results chain to depict programme/project theory.

Assumptions describe the conditions that must exist if cause–effect relationships in the theory of change are to occur as expected. They are external factors, beyond the intervention's control, but nonetheless critical for the success of the intervention.

THE RESULTS CHAIN: FROM THEORY TO PRACTICE

A theory of change can be "operationalized" in the form of a results chain. Results chains (also known as logic models) provide stakeholders with "a logical, plausible sequence" of how the planned intervention will lead to the desired results. As shown in figure 3.2, this sets out a sequence of resources, activities and services provided are expected to influence the direct and long-term effects on our target population.

FIGURE 3.2: STYLIZED EXAMPLE OF A RESULTS CHAIN FOR A RURAL EMPLOYMENT INTERVENTION

INPUTS	ACTIVITIES	OUTPUT	OUTCOMES	HIGHER-LEVEL GOALS
Resources mobilized	What the programme does	Products or Services delivered	Direct effects of outputs on target population	Long-term effects on labour market conditions
• Budget • Staffing • Trainers • Equipment • Curricula	• Training provided • Workshop organized • Job-placement service provided	• Rural women completed training • Participants attended workshop • Job-placement service used	• Improved technical skills • Raised awareness • Reduced time to find a job placement	• Reduced rural unemployment • Higher monthly wages

DEFINITION

Inputs: The resources used by the project, including budget, staff, partners, and equipment.

Activities: The actions, processes, techniques, tools, events and technologies of the programme. Describe these activities with an action verb (*provide, facilitate, deliver, organize,* etc.).

Outputs: The products and services provided by the implementing organization. They indicate if a programme was delivered as intended. Outputs are typically expressed as completed actions (trained, participated, used, funded, etc.).

Outcomes (also known as immediate objectives): The short- to medium-term effects (usually within several months of and up to two years after the implementation) 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 aspects such as behaviours, labour market status, job quality, etc., which may take more time to manifest themselves. 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 goals: The long-term project goals, usually relating to overall living standards in the area where the intervention takes place. They can be influenced by a variety of factors. This level of the results chain is also often labelled "development objective" or "impact". We prefer the phrase "higher-level goals" to avoid confusion with the specific meaning of "impact" in the context of impact evaluation (see Note 5).

Step 2. Choose key performance indicators

Once we have a results chain, how do we know whether what has been planned is actually happening? One of the biggest challenges in monitoring is choosing what kind of information to collect in order to know whether we are achieving our objectives. We now need to identify appropriate (key performance) indicators.

IDENTIFYING INDICATORS

Indicators answer the question "How will I know?". They 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 and evaluation (M&E) activities lose their capacity to compare actual progress with what was projected and agreed upon (Gosparini et al., 2003). They are required at each level of the results chain.[1] Indicators on the level of outputs, outcomes and higher-level goals are referred to as "key performance indicators".

Input indicators measure resource utilization. They track whether you have the inputs required to implement the intervention. Common input indicators include:
▶ budget allocation and expenditure
▶ amount and share of matching funds raised
▶ number of programme staff, by level
▶ number of local facilitators under contract
▶ number of local organizations who provide in-kind contributions.

Activity indicators measure what the intervention does. They seek to understand the extent to which a project was delivered as planned, and to highlight obstacles to implementation. Table 3.2 presents examples of activity indicators for different types of youth employment interventions.

DEFINITION

A **proxy** is an indirect measure of the desired change, which is strongly correlated to that change. It is commonly used when direct measures are unobservable and/or unavailable. For example, when looking for ways to measure young people's engagement and participation it may be appropriate to collect information about the numbers of young people involved in volunteering locally and how much time they spend doing these activities.

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[1] The following section is based on guidance issued by the UK Government. Available at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304626/Indicators.pdf.

Table 3.2: Examples of activity indicators for youth employment projects

Type of project	Activities
Training and skills development	• Number of workshops offered • Number of training hours • Number of youth screened/enrolled • Number of employers offering internships • Number of internships available
Subsidized employment (e.g. public works and public services programmes)	• Number of workfare projects by type and location • Number of municipalities providing public works/services
Employment services (e.g. job placement support)	• Number of career counselling services created (in labour offices, in schools, etc.) • Number of job counselling sessions offered • Number of career and job fairs organized
Youth enterprise and entrepreneurship promotion	• Number of business plan competitions organized • Number of hours of support services provided • Average number of hours of mentoring provided per week/month
Youth-inclusive financial services	• Number of workshops organized for participating financial institutions • Micro-loan scheme for young entrepreneurs launched • Youth-targeted savings account create

Output indicators measure what your intervention produces. They describe the delivery of tangible products and services, such as training and technical assistance. Table 3.3 presents examples of output indicators for different types of youth employment interventions.

Table 3.3: Examples of output indicators for youth employment projects

Type of project	Outputs
Training and skills development	• Number and percentage of youth who attend at least 80 per cent of the training • Number of certificates awarded • Number of youth placed in internships • Average length of internships completed (in weeks)
Subsidized employment (e.g. public works and public services programmes)	• Number of beneficiaries employed in each activity • Number of temporary jobs created (by type and sector)
Employment services (e.g. job placement support)	• Number of youth participating in job placement services • Number and percentage of youth matched with employers • Number of companies and youth participating in local careers/jobs fairs
Youth enterprise and entrepreneurship promotion	• Number of youth submitting completed business plan • Number of youth enterprises supported annually • Number and percentage of youth talking to their mentor at least once every two weeks
Youth-inclusive financial services	• Number of staff trained in partner financial institutions • Number of business loans issued to young people (by type of enterprise) • Average loan size • Number of youth saving accounts opened

Outcome and higher-level goal indicators require particular attention. The results of youth employment interventions can be highly diverse and are not limited to labour market outcomes. We therefore need to choose indicators across different domains of employment, including employment opportunities, job quality, equal access to employment and skills development. Note 2 provides a "menu" of indicators that youth employment interventions can choose from when determining the outcomes and higher-level goals.

GOOD PRACTICE WHEN SPECIFYING INDICATORS

Bring in other stakeholders: Choosing indicators without the proper involvement of internal and external stakeholders can result in a lack of ownership (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 programme.

Choose the right number of indicators: 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 complicate the monitoring system and increase the burden of data collection, analysis and reporting. It is important to identify two or three key indicators that best capture each change in the results chain (see table 3.4 for examples).

Meet quality standards: Even though there are no absolute principles governing what makes a good indicator, the commonly cited SMART characteristics can be useful. SMART indicators are:

▶ **Specific** – to clearly set out what information is required

▶ **Measurable** – to ensure that the information can actually be obtained at a reasonable cost

▶ **Attributable** – to the efforts of the intervention

▶ **Relevant** – to the result we want to measure

▶ **Time-bound** – to ensure that the data can be obtained in a timely fashion, with reasonable frequency.

Don't just be SMART … BUILD:

For indicators to drive learning as well as fulfil upwards accountability and reporting requirements, indicators have not only to be technically robust (fulfilling the SMART criteria) but they also need to help those implementing the programme to measure, analyse and improve the impact that they are having on **target groups**. The social investor, the Acumen Fund, has proposed that indicators also need to conform to BUILD characteristics. Information collected through BUILD indicators is:

▶ **Bottom-up** – nurturing the habit of listening to programme partners and target groups in order to provide actionable insight on their needs and interests

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DEFINITION

A **target group** comprises the specific individuals or organizations for whose benefit a development intervention is undertaken.

▶ **Useful** – yields data that is of sufficient quality to support decision-making

▶ **Iterative** – allows for learning, adaptation and replication

▶ **Light-touch** – uses low-cost tools and technologies that require a minimal investment in terms of time and money

▶ **Dynamic** – enables rapid data collection within a fast-changing environment.

Table 3.4: Examples of indicators

Category	Example result	unSMART indicators	The problem?	SMART indicators
Input	Two trainers and facility within budget of US$10,000.	Two trainers complete at least two training courses each under budget.	Not relevant (describes the activity level of the results chain).	• Two trainers skilled, equipped and deployed. • Cost of programme in US dollars within desired budget.
Activity	Provide life skills training for youth (20 hours).	Training delivered.	Neither specific (not clear what information should be collected) nor measurable (no way of objectively verifying training delivery).	• Number of training hours delivered. • Number of youth participating by age, gender, level of education. • Date by which training was provided.
Outputs	100 youth participated in training.	Number of youth who finished the training (by age, gender, level of education).	Not time-bound (unclear when the information should be collected and assessed).	Number of youth who finished the training (by age, gender, level of education) at the end of each calendar month.
Outcomes	Increased knowledge of effective communication.	By the end of the programme: • number and percentage of youth increasing their self-confidence due to improved communication skills.	Not attributable (self-confidence may be an indirect effect of skills training, but is not directly linked to intervention efforts).	By the end of the programme: • number and percentage of youth able to communicate effectively, measured against a predetermined communication scale. • number and percentage of youth with improved problem solving skills, measured against a predetermined problem solving ability scale.
Higher-level goal	Improved employment of youth aged 18–24.	Youth will find jobs more easily than they could before the intervention.	Neither specific (vague as to what information is required) nor time-bound.	Number and percentage of youth aged 18–24 who are in employment and receive above minimum wage in their field of training within three months of completing the programme.

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 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 programme registration forms may tell us that the average monthly income of participants on entering the programme is US$100. This is our baseline value that allows us to compare how incomes change during and after our intervention.

Define targets: If indicators are not assigned a time frame or magnitude of change, we will not know whether we are on track or have reached our objective. For example, if the desired outcome is increased household income, our indicator may be monthly earnings in US dollars. Then, the target may be set at a 30 per cent increase (magnitude) 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, targets can also be expressed as a range (see projecting results in box 3.2).

TIP

It is usually a good idea to pilot indicators during the early phases of an intervention before integrating them into the monitoring system. This will highlight how well they work in practice, and whether they actually capture the information that the project manager and other stakeholders are interested in collecting.

Ensure consistency: Although it is not always possible, in order to ensure consistent monitoring we should seek to keep the same indicators over the lifetime of an intervention. Having said that, it is not uncommon to add new indicators and drop old ones as we modify the programme design or streamline the monitoring system. However, it is important to retain a level of fidelity to our original objectives: 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 factor in our reporting. Indicators accepted at the beginning of the intervention should not be changed unless objective criteria exist to justify the change.

Box 3.2: Projecting results

Projections are the results that are expected from an intervention, within a given time limit. They serve a number of important purposes.

At the intervention-level, projections help implementing teams to think through when change is likely to happen, which is an important factor in effective measurement planning for monitoring activities. Projections and the assumptions on which they are based, also help to identify gaps in knowledge and flag areas for data collection. Projections can also feed into portfolio management decisions about where, when and how to intervene to achieve greatest sustainability and scale, and to make decisions about different interventions' relative value for money.

In order to be effective, projections should be made at the outset of an intervention. They are reasoned estimates, not wild guesses, of the changes we can expect to be brought about by intervention activities. Projections are made for every box in each intervention results chain against key indicators. As projections predict the change that will result from the intervention, they can be made for the two years following the end of the intervention. Each projection must be based on carefully thought-out assumptions and findings from market analysis and research, field observations or other credible sources, such as government data, relevant studies by development projects, etc.

It is important to note that projections are not targets. Targets tend to be fixed and denote funders' performance expectations. Projections should be regularly reviewed (at a minimum, twice a year) and updated where necessary to reflect new data collected and to clarify any assumptions.

An example of a projection against a results chain and assumptions, which anticipates the impact of an intervention on rural entrepreneurs (REs) and sales agents (SAs), is given in figure 3.3.

FIGURE 3.3: EXAMPLE OF A PROJECTION

Source: Samarth (2015)
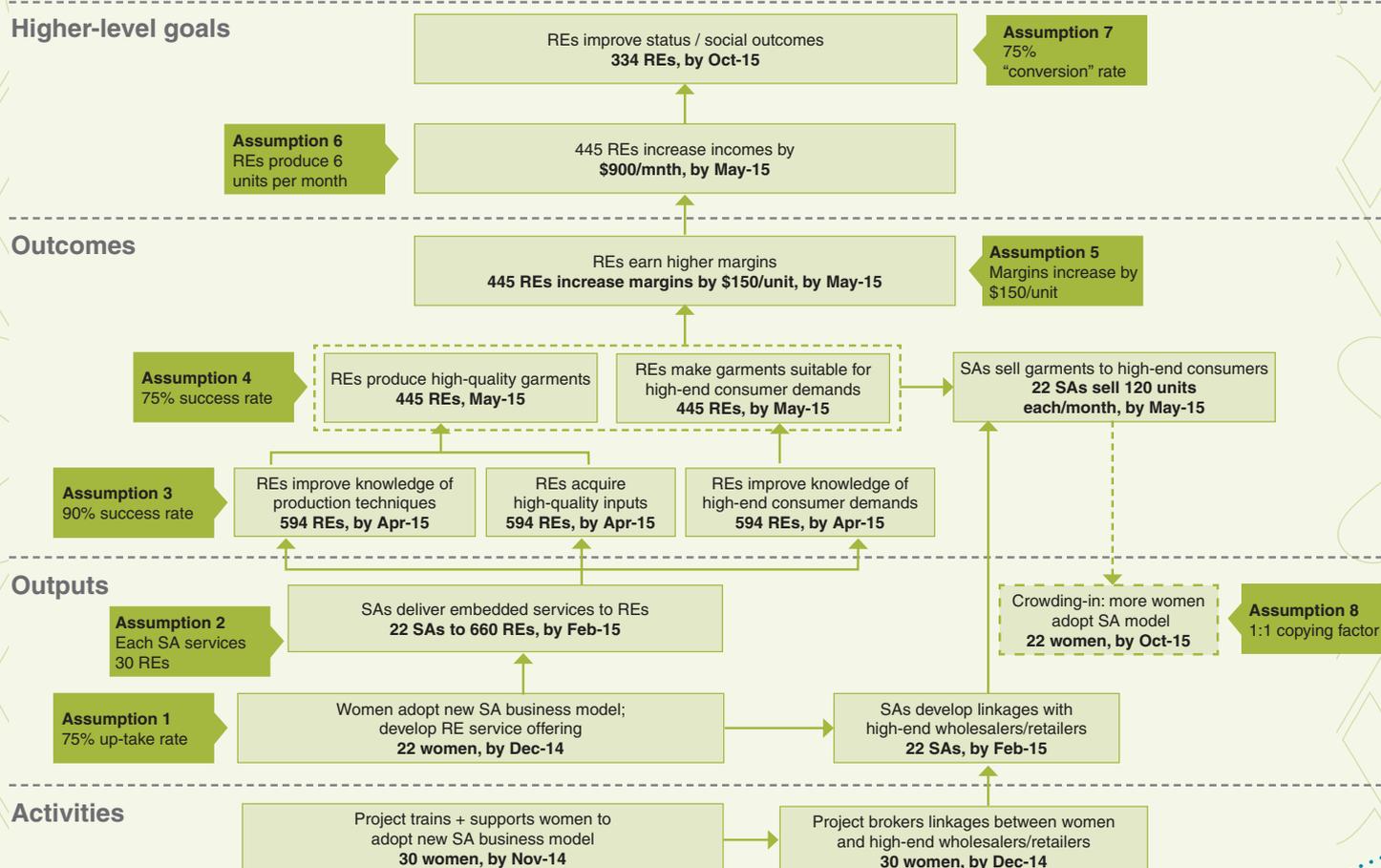
Step 3: Select data collection tools

For each indicator, we need to choose how to collect information. In general, we can use two types of data: quantitative and qualitative.

Quantitative data come in numerical form and can be put into categories, ranked or ordered. Quantitative methods aim to provide objectively measurable data on demographic or socio-economic profiles, often using statistical techniques. They are usually based on standardized structured instruments that facilitate aggregation and comparative analysis. Common examples include tests, surveys and censuses.

Qualitative data come in non-numerical form and 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 analyse 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. Qualitative methods tend to be quicker to implement than quantitative methods and are often less expensive.

Combining qualitative and quantitative data (applying a "mixed-methods" approach) is often recommended to gain a comprehensive view of the programme's implementation and effectiveness.

WHICH DATA COLLECTION TOOLS?

A variety of different data collection tools can be used at each level of the results chain. Table 3.5 describes a range of common tools, along with their respective advantages and disadvantages. 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, in order to understand the underlying mechanisms of whether and how certain effects were achieved. Finally, since higher-level outcomes usually relate to broader changes beyond the 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 socio-demographic characteristics.

WHEN TO COLLECT MONITORING DATA?

Many development programmes are deploying an "adaptive management" approach – shortening the feedback loop between activities and their effects by monitoring changes in as near to real time as possible and flexibly adjusting plans based on experience.

Access to good-quality data has long been the factor constraining such rapid, iterative learning.

Table 3.5: Overview of data collection tools

Tool	Description	Use	Advantages	Limitations
Administrative and management records	Documents that provide information on project management processes	To examine the effectiveness of project management or strategy implementation	• Provide information on process that is difficult to obtain through other means	• Programme specific, not generalizable • Dependent on reliable management records systems
Field visits (combination of observation and interviews)	In-depth examination of a specific site or location	To monitor and understand context	• High level of detail • Access to observational data	• Programme specific, not generalizable • Highly dependent on access to appropriate field sites
Key informant interviews	In-depth data collection method with highly informed individuals	To obtain specific and highly detailed information on a particular issue or set of issues	• High level of detail • Can address unanticipated topics • Has flexibility to explore issues in depth • Can capture a range of stakeholder perspectives	• Programme specific, not generalizable • Quality is highly variable depending on interviewer skills and interviewee comfort
Focus groups	In-depth data collection method with informed members of a specific sub-population (e.g. women, youth, elderly workers)	To obtain specific and highly detailed information on stakeholder perspectives on a specific issue or set of issues	• Same as for key informant interviews • Allows for interaction with and among participants	• Programme specific, not generalizable • Quality highly dependent on group dynamic (e.g. participants can be influenced by moderator or dominant group members) • Interpretation challenges • Time-consuming analysis
Direct observation	Method of collecting data through direct observation (e.g. classroom observation), information is recorded in a log or diary	To obtain naturalistic data	• High level of detail from a neutral observer • Provides information on actual behaviour rather than self-reported behaviour	• Not generalizable • High potential for observer bias • Interpretation and coding challenges
Review of official records	Official documents that provide background information or historical data on certain phenomena	To examine underlying processes or historical trends/data for certain phenomena	• Provides information that may be difficult to obtain through other means • Inexpensive	• Possible access restrictions • Must verify validity and reliability of data • Data may not be exactly what is needed
Mini surveys (often mobile-based)	Brief questionnaire/survey that collects limited data set	To obtain quantitative data on a limited number of people or issues	• Faster and less expensive than household surveys	• Limited scope and therefore usually not representative
Household surveys	An extensive set of survey questions whose answers can be coded consistently	To obtain information on a large number of respondents regarding their socio-economic status, demographic data, consumption patterns, etc.	• Provides in-depth information on population of interest • More generalizable than mini surveys • May be designed to collect data of specific interest	• Expensive • Requires special expertise to ensure validity • Difficult to persuade people to respond to long questionnaire
Panel surveys	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	• Same as for household surveys • Can capture dynamics over a period of time	• Same as for household surveys • May have problems with participant retention over time

However, a number of recent tech-based innovations have brought down both the costs and the time required for data collection (see box 3.3 and 3.4). The surge in mobile phone ownership in many parts of the developing world has made both SMS and voice calling popular means of surveying. These tech-enabled methods not only collect data in near-real time, they also significantly reduce the costs of measurement compared to face-to-face techniques. In Kenya, for example, the price of administering an SMS survey can be as little as $0.17 per respondent, and $7.17 for a voice call survey.[2]

There is value in using quick feedback mechanisms, especially tech-enabled ones, even

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[2] Based on a standard 10-question SMS survey and a 30-minute call centre survey, excluding labour costs. Prices from EngageSpark, correct as of January 2018.

Box 3.3: Harnessing technology for real-time data

The social investor Acumen leverages mobile surveys as part of their Lean Data Service. Lean data (a type of mini survey, as described in table 3.5) aims to collect meaningful monitoring data while making limited demands on the respondent's time and attention. In 2015, Acumen worked with Edubridge, a vocational training company that seeks to improve labour market outcomes for workers in India who are migrating from rural to urban areas. The company wanted to know the answer to a question critical to their theory of change: How do "successful" trainees – those who are offered and accept job placements immediately after they undergo Edubridge training – differ from less "successful" trainees?

Acumen Lean Data conducted a phone-call-based survey of several discrete populations: people who had expressed an interest in Edubridge courses but had never signed up for one; people who had completed an Edubridge course but had not accepted a job offer that they had received afterwards; and people who had both completed a course and accepted a job offer. The project took just four months. Existing Edubridge call centre operators acted as enumerators, setting aside one hour of their time per day for survey calls. They completed a total of 650 calls, and each call lasted seven to eight minutes.

The results provided rich insight into Edubridge outcomes. The theory of change had hypothesized that trainees with close friends in urban areas would be more likely to accept jobs than other trainees. This turned out to be true: trainees who had friends in a city where a job was located were 21 per cent more likely to take that job than trainees who had no friends there. Another hypothesis was that trainees from higher-income families would be more likely to accept jobs than trainees from lower-income families. That turned out not to be true. Those who had accepted jobs were 8 per cent poorer than those who had not. The company is now using data from the survey to shape its strategy as it prepares to expand its operations to 100 training centres over the coming years.

Source: Adapted from Dichter et al. (2016).

when outcomes are more predictable, as they can bring down the costs of data collection. This approach is particularly suited to fragile, fast-moving and complex operational environments – or innovative intervention models – where the evidence underpinning the theory of change is more uncertain. However, certain studies have shown that over-reliance on mobile surveys in particular can lead to bias against more marginalized/vulnerable groups, who may not have access to mobile phones or good reception. Projects should therefore start with an assessment of likely mobile phone penetration in target communities.

Key decision points:
▶ Is the programme operating in a data-constrained environment?
▶ Is the theory of change less "proven" and eventual outcomes more uncertain?
▶ Are mobile phones, and particularly smartphones, widely used in the country/community?

TIP

The timing of data collection should be planned according to local realities so that collection does not impose a burden on an individual or a family. Data collection should not coincide with youth taking school exams, for example, or when young people's labour is needed during particular agricultural seasons.

Recommendations:
▶ Consider tech-enabled monitoring wherever possible, but especially where physical access to target groups is constrained and would come at prohibitive costs, for example when there are large distances between beneficiaries.
▶ But carefully consider whether exclusively mobile-based monitoring will lead to vulnerable groups being excluded. Consider mixing different data-collection tools, such as more "traditional" face-to-face interviews and field observation with remote digital data collection.

Box 3.4: Mobile data collection is cheaper … but is it reliable?

In Kenya, the World Food Programme wanted to see whether mobile phones could be used to collect reliable information on nutrition indicators. They conducted an experimental trial to see whether the mode of data collection affected survey responses. Comparing computer-assisted telephone interviewing (CATI – a telephone surveying technique in which the interviewer follows a script provided by a software application) with face-to-face (F2F) interviews, they found a number of advantages and disadvantages.

Advantages:
- higher response rates with CATI
- one-third the cost of F2F per survey ($5 vs. $16)
- more feasible to collect data from insecure areas.

Disadvantages:
- higher risk of sampling bias: women without mobile phones had fewer assets overall
- patchy network coverage
- more difficult to collect a range of social outcomes, especially regarding more sensitive topics.

Source: https://ec.europa.eu/jrc/sites/jrcsh/files/hachhethu_kusum_day3_session9_room1.pdf

WHO COLLECTS DATA?

It is important to clearly define data collection responsibilities. In practice, different types of monitoring will fall under the responsibility of different actors, both in the field and at headquarters. The following people could be recruited as data collectors in various circumstances:

▶ programme 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 gathering data, clarify what happens to the information, once collected. Integrate data collection plans with procedures for storing, aggregating and analysing the data to guarantee that those who need the information have timely access to it.

A number of "full package" providers are available, who offer tech-enabled solutions and often use off-the-shelf surveys and question banks to automate data collection, aggregation and presentation. Service providers relevant to data collection on employment outcomes are ULULA, a multi-language supply chain management, stakeholder involvement and M&E software for responsible supply chains, Laborvoices for supply chain management, which includes feedback from workers on suppliers, and Laborlink, an online worker-centric solution that uses direct

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 when 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.

worker feedback to identify and evaluate factory improvements. Other service providers offering technology-enabled data collection include:

▶ https://www.engagespark.com/ (voice, SMS and social media)
▶ https://telerivet.com/ (SMS and voice)
▶ https://www.ushahidi.com/ (crowd-sourced mobile surveys)
▶ http://www.frontlinesms.com/ (SMS texts)
▶ https://www.echomobile.org/public/main (SMS, voice, sensors, web)
▶ https://viamo.io/ (mobile phone surveys).

To learn more about participatory monitoring and evaluation, consult Sabo Flores (2008), Powers and Tiffany (2006) and Chambers (2007).

For an example of how photo monitoring improved teacher attendance and reduced the need for monitoring visits in India, see Duflo et al. (2012).

Step 4: Deploy the system to aggregate, analyse and report on results

The key parts of the monitoring system can be brought together in the form of a **logical framework** matrix. This popular project management tool summarizes the results chain, indicators, data collection tools and assumptions. An example is included in table 3.6.

AGGREGATING RESULTS

Depending on the complexity of the programme, data may need to be aggregated: that is, compiled into a single location to aid data processing and analysis. Data can be aggregated at the level of an intervention (for example, different data on the same indicator, but from different training cohorts or geographic locations) or across a programme (for example, the number of jobs created for youth across different interventions).

The project team must decide on the best ways of organizing the data to conduct efficient analysis. For most projects, a simple Excel workbook will suffice. To facilitate analysis and reporting in bigger programmes, it may be advisable to set up a **management information system** that connects all the databases used by different programme units.

If the data collected is particularly 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 limited amount of training. A variety of database systems are appropriate for this purpose, and the project should select a software program that offers a balance of analytical sophistication and user-friendliness.

▶ For **qualitative data**, computer-based qualitative analysis software can be used. There are many brands to choose from (such as Atlas.ti, NVivo or MaxQDA), and each works in a similar way. 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 user's level of training , the codes can function as an organizing tool (grouping all similar topics from various sources) or allow sophisticated analysis that identifies relationships within these topics.

DEFINITION

A **logical framework** (or "logframe") is a management tool used to improve the design of interventions, usually at the project level. It involves identifying strategic elements (inputs, outputs, outcomes, higher-level goals) and their causal relationships, indicators and the assumptions or risks that may influence success and failure.

DEFINITION

A **management information system** is the combination of computer technology, people and procedures put in place to collect, organize and analyse information in order to support decision-making. It allows large amounts of data to be managed centrally and comparison of indicators both by beneficiary characteristics and over time.

Table 3.6: Logical framework for an entrepreneurship promotion programme (example taken from the ILO's Start and Improve Your Business programme)

Key components of the results chain	Indicators	Sources	Frequency	Assumptions
Longer term goals	• Additional employment created • Quality of employment improved • Labour demand improved	• Number of full time equivalent jobs • Average monthly wage • Number of employed youth as active contributors to a pension, sickness or unemployment insurance scheme • Average length of time for beneficiary firms to fill a vacancy	• Administrative data • Employee surveys	e.g. yearly	• Businesses meet consumer demand • Adequate regulatory, economic and institutional environment • Start-ups benefit from investment/credit
Outcomes	• Improved core work skills • More and better business plans • Better business practice • New start-ups established • Increased business performance and competitiveness	• Number of participants with an increased ability to analyse and solve problems within their businesses • Number of business plans drafted • Indicator of quality of business plans, e.g. number of loans received • Number of businesses operating • Number of newly created firms with more than one paid employee • Number and types of better business practices established • Amount of yearly sales and profits • Number of employees	• Participant surveys • Employee surveys • Administrative data	e.g. bi-annually	• Participants learn from training • Training prompts expected behavioural change • Credit/grant is used for enterprise • Credit agency/franchisor does not exploit entrepreneur
Outputs	• New curriculum available • Trainers trained • Demand-driven training services delivered	• Number of trainers trained • Number of training institutions advised • Number of training courses delivered and participants attending each	• Programme monitoring data • Participant registry	e.g. monthly	• Content, intensity and delivery of the training is tailored to the needs of the target group • Correct group is targeted and participates in complete training
Activities	• Carry out market assessment • Develop training of trainers • Train and advise training providers on how to deliver training services • Link businesses to microfinance organizations • Entrepreneurship training, advice and mentoring				
Inputs	• Budget, staff, trainers, partnership, facilities, supplies, technical expertise, training tools				

▶ For **quantitative data**, several different systems can be combined. One should use a relational database, such as Microsoft Access. Relational databases facilitate the investigation and display of data along several different variables. Typically, however, the analyses performed in relational databases are descriptive in nature, providing measures of central tendency (e.g. means, modes, medians, standard deviations). If the project demands more sophisticated

analysis, and the instruments are designed and administered to allow it, M&E staff might 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 (see previous sub-section).

DATA ANALYSIS

Monitoring has little value if we do not learn from and act on the data that we gather. A constant cycle of reflection and actions helps to keep interventions responsive to often-dynamic implementing contexts and the shifting needs of project beneficiaries. Organizations and projects stagnate when they don't learn and rigorous monitoring forces us to keep learning (Shapiro, 2003).

Monitoring processes often produce an array of data but little actionable knowledge. The step of interpreting and analysing the data is therefore vital to help ensure that monitoring generates useful information which supports evidence-based decision-making.

Consider data collected about the knowledge and attitudes of youth who participated in a skills development training course. Survey responses have been collected and processed, and the data entered and tabulated in an Excel file by project team staff. To analyse this data and turn it into useful information (see an example in box 3.5), some "tips" for the project team include:

▶ **Analyse information throughout the research period, including during data gathering:** For example, if survey results came only from one particular district: does the limited amount of data (only 25 per cent of the respondents were able to accurately recall key learning outcomes) already signal a problem with the

training product? Does this trigger a need for more in-depth data collection?

▶ **Structure analysis around the results chain***: The project team should take a specific box in the theory of change as the "entry point" for analysis and check to see if their logic still holds true (e.g. "training participants demonstrate improved technical skills").

▶ **Analysis should include not only problems but also potential solutions:** Avoid simply producing a list of problems without identifying any avenues for follow-up/potential solutions. Analysis should explore all the problems identified and shorten the list to highlight a few key issues that must be addressed/discussed.

▶ **Make sure that there are sufficient data to underpin the analysis**: If the information is weak, then say so, and be careful not to draw conclusions which are not justifiable. For example, even if the project team collects an initial round of surveys that show low levels of knowledge among training participants, the sample size (of five respondents) or locality (restricted to one district) might be too small to allow accurate conclusions to be drawn.

▶ **Triangulate the data using multiple data sources to verify findings and develop a more robust basis for decision-making:** The findings from one data source may prompt questions that require further

investigation, perhaps using other tools. For example, if survey results show only modest interest in seeking employment among youth, the project could conduct focus group discussions/in-depth interviews with a small sample of respondents to determine the reason (if this is not clear from the survey results).

A detailed discussion on evidence uptake and policy formulation related to youth employment is available in Note 7.

REPORTING ON RESULTS

Different stakeholders will have different data reporting demands. Typically, the higher our audience is in an organization's hierarchy, the less detail we need to provide and more we need to summarize findings. Presenting clear messages, substantiated by aggregated data, and concise information tends to be more appropriate for high-level audiences, who are mainly interested in the big picture.

We can tailor the format of our reports to suit each audience (see table 3.7).

Monitoring data should always be reported in comparison with their baseline and target values and presented in a straightforward and easy to understand manner. Visual tools, such as graphs, charts and maps, can be very useful in highlighting key data and messages.

Table 3.7: Tailoring reports to our target audience		
Target audience	**Format**	**Timing/frequency**
Project staff	Oral presentation and written summary statistics at team meetings	Weekly
Management team	Written reports and oral presentation	Monthly
Partners	Oral presentation and written summary statistics	Monthly
Donors	Depends on donor requirements. Usually short written reports highlighting project progress, issues experienced, outcomes and impact, efficacy of intervention/strategy, etc.	Quarterly/biannually

Box 3.5: Bringing monitoring data to life

Kuza is a UK Department for International Development (DFID) project that takes a market systems approach to expanding employment opportunities for poor and marginalized youth in targeted sectors in Mombasa County, Kenya. It aims to increase the employability of 8,000 young people over the life of the project, while creating at least 5,000 sustainable jobs.

The project's early analysis laid out the youth employment challenge in Mombasa. The 44 per cent unemployment rate among youth was higher than the national average, and there was also a significant mismatch in the types of skills that youth were being taught in existing educational institutions and those required by the job market.

Kuza adopted a sectoral focus on manufacturing, waste management, investment promotion and micro-retail. Operating in a dynamic context where access to good data proved difficult, Kuza collected monitoring data in as near real time as possible to allow it to adapt and evolve its intervention design during the implementation phase. This involved:

- developing hypotheses and running short-term experiments (called "micro pilots") to prove or disprove hypotheses
- quickly gathering useful information about the hypotheses and any unexpected developments
- drawing meaningful conclusions and adapting behaviour
- reacting quickly to identify and build on emerging good practice and limit/learn from failures.

To aid in implementing this approach, Kuza developed a simple dashboard for monitoring data, accessible to all staff (see figure 3.4). The idea was to integrate basic market information (sales data) with target group data (on jobs and incomes) to inform rapid decision-making.

FIGURE 3.4: DASHBOARD FOR DATA MONITORING DURING HALF-DAY CLASSROOM-BASED TRAINING

Basic sales info

Jobs and incomes

Simple network analysis

	Comp. 1	Comp. 2	Comp. 3	Comp. 4	Comp. 5	Comp. 6
Participant 1	Y	Y	Y	Y	Y	N
Participant 2	Y	Y	Y	Y	N	Y
Participant 3	Y	N	N	N	N	N
Participant 4	Y	Y	N	N	N	N
Participant 5	Y	N	N	N	N	N
Participant 6	Y	Y	Y	Y	Y	N
Participant 7	N	N	Y	N	N	N
Participant 8	N	Y	N	N	N	N
Participant 9	N	N	N	N	N	N
Participant 10	Y	N	N	N	N	N
Participant 11	N	N	N	N	N	N
Participant 12	N	N	N	N	N	N
		NEW		REPLACING		WORK IN PROGRESS (WIP)

Sentiments and perceptions

MD Assessment of suppliers			
	Sales Trends	Supplier Contacts	Comments
Company 1			Improve quality
Company 2			Profit margin vs. competitor low
Company 3			Price is high vs. competitors
Company 4			
Company 5			Need market activation
Company 6			
POOR	AVERAGE	GOOD	N/A

Capacity

Supplier Assessment		
	Payment	Product Distribution	Best MD
Supplier 1			
Supplier 2			
Supplier 3			
Supplier 4			
Supplier 5			
Supplier 6			
Supplier 7			
Supplier 8			
Supplier 9			
Supplier 10			
Supplier 11			
Supplier 12			
POOR	AVERAGE	GOOD	N/A

Impact Assessment

	MD Change in income	Avarage Salary	Avarage attrition rate %	#Youth (Female)	#Youth (Male)	Comment
	26%	10.000	43%	1	40%	
	#MDs	New MDs	#Reps	New Reps	Vacancies	Comment
Phase 1	10	2	44	4	16	Immediate - 2 vacancies
Ezzi	1	1			1	

Emerging successes/failures

MR Team Comments
Not all MDs are stocking the full range from all suppliers MDs are at various stages of development; so sales trends seem erratic
Company 1 sales on upward trend, though affected by loss of Company xx in Company xx and start-stop effect of Company xx/Company xx Company xx
Total sales to date is Kshs.6.5M (GBP45,000) excluding Company xx Appointed 2 new MDs in Company xx, Company xx and Company xx Company xx model kicked off with appointment of MD in Company xx 5 new reps recruited within the week. Company xx Company xx restarts in Company xx

Source: ILO (2016) and DCED (2016).

KEY POINTS

1. **Every intervention needs to have a solid monitoring system to allow continuous tracking of implementation and results.** Effective monitoring helps to detect problems in a timely manner and allows corrective actions to be taken. Monitoring also provides the foundation to evaluate an intervention.

2. **Underlying any programme design is a theory of change, which can be expressed as a diagram showing how a programme plans to impact its beneficiaries**. It also shows the set of assumptions we make about why these particular project activities will foster positive change. Programme managers and key stakeholders need to collaborate to develop the theory of change and translate it into a results chain, in order to provide stakeholders with "a logical, plausible sequence" of how the planned intervention will lead to the desired results.

3. **Indicators are required at each level of the results chain**. They help us to understand whether what has been planned is actually happening. Indicators are a crucial element of a monitoring system because they drive all subsequent data collection, analysis and reporting. For each indicator, we need to choose the appropriate method of collecting information. In general, we can use a combination of quantitative (numerical) and qualitative (non-numerical) data. A variety of different data-gathering tools can be used at each level of the results chain, from simple low-cost observation to complex high-cost surveys.

4. **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 determining whether an intervention is moving in the intended direction and makes good monitoring critical to effective project management. To achieve this aim, data must be systematically aggregated, analysed and reported.

KEY RESOURCES

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Case study:

ESTABLISHING A MONITORING SYSTEM FOR THE JORDAN RURAL ECONOMIC GROWTH AND EMPLOYMENT PROJECT

Learning objectives

By the end of this case, readers will be able to demonstrate the following learning outcomes:

▶ identify key programme results and translate them into an intervention logic in the form of a visual theory of change, complete with underlying assumptions

▶ select appropriate measurement tools to capture qualitative and quantitative change

▶ identify constraints to effective data analysis and suggest solutions to overcome them.

Introduction and case study context

Economic growth over the past decade has not led to a significant increase in the number of jobs available to Jordanians. The unemployment rate is estimated at around 15 per cent, and among young people, aged 15 to 24 years old, unemployment stands at 36 per cent as of 2017.[3] Almost 90 per cent of all the unemployed are under the age of 40.

Jordan's agricultural sector has been experiencing a shift from traditional labour-intensive methods to more modern, mechanized capital- and water-intensive systems. However, agriculture's contribution to GDP has declined, from 8 per cent of GDP in 1990 to 3.4 per cent in 2012. It is estimated that 20 per cent of the population depends on agriculture for some part of their income and that the sector is the main source of income for 7–8 per cent of Jordanians.

Studies have identified a range of high water value crops, which Jordan can produce at prices which are competitive on the export market, particularly during winter (which is the off-season for European producers). These crops can create employment along the value chain and much of the work involved is particularly suited for rural women. There is an urgent need to support job-creating agricultural growth.

To this end, and to support the Government's Poverty Reduction Strategy 2013–2020, the International Fund for Agricultural Development (IFAD) funded an agricultural development initiative called the Rural Economic Growth and Employment Project (REGEP) to be implemented by the Jordan Enterprise Development Corporation (JEDCO). Launched in 2015, REGEP runs over 6 years with a budget of US$11.34 million. The main outcomes are to enhance the technical capacity and competitiveness of smallholder farmers and rural micro, small and medium-sized enterprises (MSMEs) and to increase access to sustainable and readily accessible rural financial services.

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[3]   ILO modelled estimates for 2017, available at: www.ilo.org/ilostat.

Part I: Define the intervention logic

In line with the Government of Jordan's poverty reduction goal, REGEP aims to create a wide range of financial and non-financial benefits for the target group, including increased incomes, empowerment and institutional strengthening, training and capacity building, access to finance, value chain linkages and job opportunities.

To achieve this goal, the programme aims to target smallholders, rural entrepreneurs and the unemployed and underemployed in rural areas directly, through existing and new associations, Saving and Credit Groups (SCGs), and through MSMEs which create employment in rural areas, in order to:
► build their technical and business capacity
► increase access to rural financial services
► build win–win value chain linkages and enhance access to high value domestic and export markets through marketing initiatives
► improve post-harvest handling, quality standards and certification.

As a direct consequence of the above, REGEP expects to:
► improve access to finance in rural areas through enhancing the technical capacity and competitiveness of small farmers and small and medium-sized agricultural companies
► integrate smallholder farmers in value chains
► create employment opportunities in rural areas for women and youth
► contribute to economic growth and increase income
► increase agriculture exports of fruit and vegetables.

Discussion topics

1. Based on what you now know about REGEP, how would you formulate the main programme's outcomes and outputs – as well as its higher-level goal?

2. A results chain is a diagram that shows how a programme plans to impact its beneficiaries. Can you draw a results chain for the REGEP programme?

3. A good results chain and underlying theory of change also includes the assumptions we make about why this particular logical sequence of programme results will foster positive change. Can you identify some key assumptions underlying the REGEP logic?

Part II: Selecting data collection tools

Based on their theory of change, REGEP came up with a set of indicators to measure programme progress. At the outcome level, these included:
► the percentage increase in farm gate value of sales for smallholders
► the percentage increase in value of sales for supported MSMEs
► improvement in access of poor to financial services
► level of effectiveness of pro-poor policies.

And at the output level:
- number of smallholders participating in "farmer field schools"
- number of MSMEs benefiting from business mentoring
- the amount of disbursements for value chain upgrading investments
- number of "Global GAP" certificates issued
- value chain working group established and operating
- number of policy briefs prepared and disseminated.

Discussion topics

1. REGEP has asked for support in choosing suitable data collection tools to gather information on each of the indicators. Pick two outcome indicators and two output indicators and complete the table below.

Indicator	Data collection tools	Frequency (when and how often to collect data)	Responsibility (implementing partner, M&E officer, etc.)

2. No measurement tool is "perfect" – each has its respective advantages and disadvantages. Refer to table 3.5 in Note 3. What are some of the possible disadvantages of the data collection tools you have selected – and how would you overcome them? Add two more columns to the table you used in question 1 to list the disadvantages of each data collection tool and possible risk mitigation strategies to overcome them.

Indicator	Data collection tools	Responsibility (implementing partner, M&E officer, etc.)

Part III: Data analysis and interpretation

Before beginning implementation, REGEP set up an M&E system with several components, including:

▶ *Output monitoring:* Focusing on physical and financial inputs, activities and outputs. Data will flow directly from records at different levels and will be monitored quarterly. Annual Work Plans and Budgets provide yearly targets for first level monitoring.

▶ *Outcome monitoring:* Assesses the use of outputs and measures their benefits at beneficiary, association, enterprise and value chain levels. Performance indicators will be compared with historical values and expected targets.

The REGEP was implemented through an array of partners. To ensure a consistent approach to data collection and analysis, a mandatory reporting system was established. This includes three sets of reports:

1. a quarterly progress report by each implementing partner, consolidated at the level of the Project Management Unit (PMU)

2. a biannual progress report by the PMU, and

3. an annual progress report by the PMU.

Each report is then submitted to the Programme Steering Committee for approval and then to IFAD and the Government.

Discussion topics

1. Monitoring systems often produce an array of data but little actionable knowledge. The process of interpreting and analysing the data is therefore vital to help ensure that monitoring generates useful information which supports evidence-based decision-making. What do you think are the two main strengths and two main challenges facing the REGEP's M&E system in terms of effective data analysis?

2. REGEP wants to decide on the best way of organizing data to conduct efficient analysis. What technology, systems and processes do you recommend that they use to manage the large amounts of data coming into the PMU?