

PROPOSAL
PREPARATION
USING THE LOGICAL
FRAMEWORK
APPROACH &
PROJECT
MONITORING
PART II



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USING THE LEARNER GUIDE

The guide is divided into sections and contains icons to help you navigate through the guide.

Introduction to the Course

This course is designed to introduce and/or reinforce knowledge and skills in the application of the logical framework approach (LFA) as a means to design project proposals for funding assistance in the area of climate change adaptation.

This training complements and builds on the first round of LFA training (2013-14) as part of the EU-funded, SPC-administered GCCA: PSIS programme. The learner guide for the first round of training can be found at <http://tinyurl.com/o2cj634>.

Learning Objectives

The overall learning objectives of the training course is to build participant capacity in proposal preparation using the logical framework approach, and in project monitoring. More specifically at the end of this training programme

- participants will be able to apply the Logical Framework Approach to develop a robust logframe matrix
- participants will be able to develop an accurate timeline and budget for projects, based on identifying the tasks and costs to implement activities in the logframe matrix.
- participants will be able to develop a monitoring plan and understand how to monitor projects as they are implemented.

Learner Guide Icons

A range of icons are used throughout the body of this guide to signal when you have to do something such as completing a learning activity or assessment task.



Learning Activities are there to help you reflect on and consolidate your learning.



Readings are provided to guide you to further technical information to allow you to further build upon the learning objectives.

SECTION 1. THE LOGICAL FRAMEWORK APPROACH

The **Logical Framework Approach** (LFA) is a project design process based on **participation, critical analysis, strategic thinking, and logic**. The LFA has been around for since the 1970s and is used, or is required, by many donors for funding applications.

The LFA offers one of the best project management tools around, allowing project teams to communicate amongst each other, and with other stakeholders and funders. Beyond project design, the LFA can be used for strategic planning, and other tasks where ‘problems’ exist and solutions need to be identified.

The usefulness of the LFA is only as good as how it has been practised. As such, taking the time to go through the process in a participatory manner, using critical thinking and logic, produces better results than a ‘tick the box’ approach.

It is important to differentiate the LFA from the **logframe matrix**. The logframe matrix is one of the outputs, or products, of the LFA. So the LFA is a process, based on a sequential steps (see next section), and the matrix is the output of one step. Many people tend to jump straight to the logframe matrix, as this is often what the funding agency wants to see. A solid, useful logframe is built on strong foundations offered by the preceding steps. Jumping straight to the logframe may result in a flimsy design that will not lead to successful projects.

The logical framework approach steps

The LFA, as noted above, is a made up of sequential steps.

1. Situation analysis	Describing the current state
2. Stakeholder analysis	Identifying stakeholders’ roles and ability to affect the project (positively or negatively)
3. Problem analysis	Identifying the core problem, and the causes and effects of the problem
4. Solution analysis	Identifying all the potential solutions
5. Strategy analysis	Analysing potential solutions and deciding on the best approach
6. Logframe matrix	A simple, clear representation of the selected solution that describes the logical thinking between steps (if you do this, then this will happen), and how you will know whether you have been successful (what will show success, and how can I measure/demonstrate this)
7. Timeline	The finer detail that builds on the logframe matrix, and identifies tasks, the inputs required, responsibilities, and timeframes
8. Budget	Self-explanatory but never simple! Takes the project plan, and costs it out, so that projects don’t fall short during implementation

Each step builds on the previous. As noted in the introduction, jumping straight to the logframe matrix means that you have skipped a number of previous steps. Imagine trying to build a house from the second level, without the foundations, and first level! Quite difficult, and the result would not be very solid.

Step 1. Situation analysis

This step is about gathering information on a sector (e.g. water, agriculture, energy, transport, health etc.) and describing the existing situation. This may involve undertaking desktop research that reviews recent statistics and reports (e.g. by government departments, universities, donor agencies, regional and international organisations, NGOs etc.). The situation analysis will provide the context around the issue of concern. Depending on the information available, such as recent statistics, it may also provide ‘**baseline**’ data from which you can measure change against.

Step 2. Stakeholder analysis

The stakeholder analysis is about identifying individuals, groups and organisations that those that are directly targeted by the proposed project, or can affect it (either positively or negatively), and those that may ultimately benefit from the project’s outcomes.

When identifying stakeholders, it is important to consider potentially marginalised groups, such as women, the elderly, youth, the disabled and the poor, so that they are represented in the process, especially if the issue will affect their lives. Assessing how projects impact on gender roles is a key concern of funding agencies.

Applying a gender lens to project design

Some key questions to ask yourself in the stakeholder consultation phase are:

- How are men and women impacted differently by the problem?
- How will men and women benefit from the project? Will they face differences in their access to the benefits?
- Are differences expected in roles and responsibilities relating to the project?
- Have all stakeholders had an opportunity to provide input to the project design? How will they continue to input to design, implementation and M&E?

The **Pacific Gender and Climate Change Toolkit** can assist you in understanding how to apply a gender lens to your project.

<http://www.pacificclimatechange.net/index.php/eresources/documents?task=showCategory&catid=137>

The views of different stakeholders can be documented in a stakeholder matrix (Table 1). This can inform the project design, to ensure that stakeholders’ interests are accommodated or managed.

A stakeholder map (Figure 1) allows you to plot stakeholders based on their ‘power & interest’ and this can help you prioritise your level of engagement with them. Interest relates to the stakeholder’s level of interest in the issue. Power refers to their ability to facilitate or prevent change from happening.

Stakeholders with a high level of power and interest in your project, or the issue of concern, need to be managed closely. This could involve them being part of a reference group or steering committee.

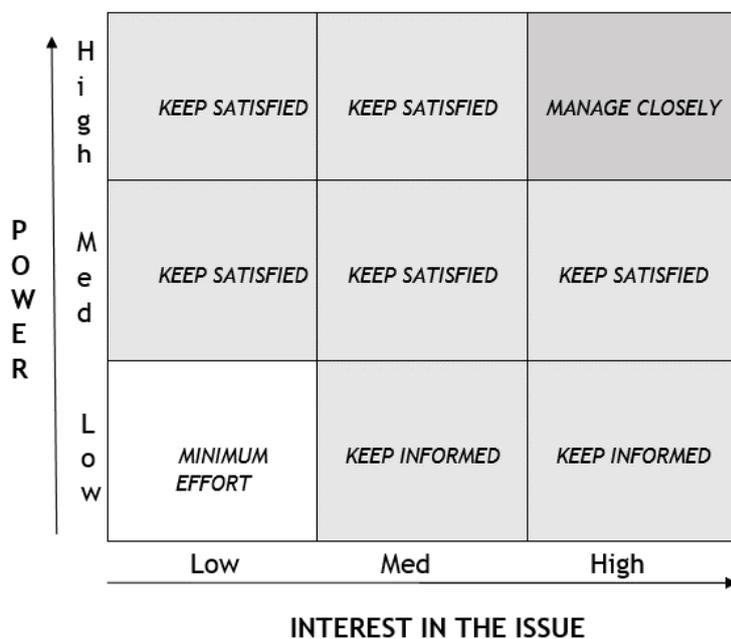
Other stakeholders may need to be kept satisfied, such as through regular project updates, and the ability to respond to their issues/concerns as they arise.

Stakeholders with little power or interest do not require much time/effort to be spent on them.

Table 1. Stakeholder matrix

STAKEHOLDER	STAKE IN THE ISSUE (how are they impacted, or how can they affect the issue)	LEVEL OF ENGAGEMENT WITH STAKEHOLDER (based on their influence- see stakeholder map)
<i>Stakeholder 1</i>		
<i>Stakeholder 2</i>		
<i>Stakeholder</i>		

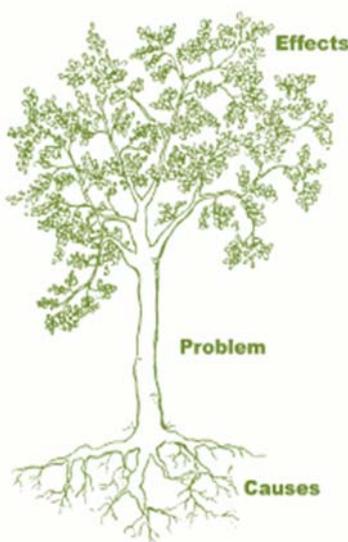
Figure 1. Stakeholder map



Step 3. Problem analysis

The problem analysis is a critical thinking process that identifies the cause-effect relationship. The result is commonly known as a ‘**problem tree**’.

A problem analysis should ideally be undertaken as a **participatory process** involving those stakeholders who are knowledgeable about the topic of concern and those that have the greatest influence on a project’s likely success, including the target group and ultimate beneficiary. Depending on the relationships between stakeholders, and practicalities, it may be necessary to undertake several problem analyses with various stakeholders, and for the project team to analyse these and consolidate them into a single problem tree.



The problem analysis process is as important as the final product (the problem tree) in that it requires the stakeholders to critically analyse and reflect on the causes to a specified problem. By having different stakeholders present, different views and interests can be expressed and this can be a learning and empowering process for all those that take part.

The problem tree that is produced should be a **robust but simplified version of reality**.

The problem tree cannot be too complicated or it will not be useful as a guide to tackling the problem.

“In many respects the problem analysis is the most critical stage of project planning, as it then guides all subsequent analysis and decision-making on priorities.” (EC, 2004).

In identifying the causes to a problem, it helps to have a basic understanding of behaviour change as changing an aspect of the human condition is critical to most development issues. Behaviour change goes beyond providing more knowledge about what to do, or why to do something. Other factors may have an important role in resistance to change.

The Theory of Planned Behaviour (Ajzen, 1991) describes three critical factors that determine the likelihood of a desired behaviour taking place. These are:

Personal beliefs	A person’s beliefs whether a specific behaviour will have a positive or negative outcome. This will determine whether the person has a positive or negative attitude to the specific behaviour.
Normative beliefs	What people who are considered important to a person (e.g. family, peers, leaders) think of a specific behaviour.
Control beliefs	The internal and external factors that facilitate or prevent a specific behaviour taking place. This includes infrastructure, laws, or a person’s real or perceived capabilities/skills to undertake the specific behaviour.

It is useful to keep these factors in mind when thinking about causes to a problem, in that it may not just be a 'lack of knowledge' that prevents a desired behaviour from taking place, but also norms and the presence of infrastructure or regulations.

Community-based social marketing (CBSM; McKenzie-Mohr, 1999) is a framework to design behaviour change interventions. CBSM outlines a range of 'tools' designed to overcome barriers to behaviour change. These are also useful to keep in mind in developing the problem tree, solution tree and the logframe matrix.

Barrier	Tool
Lack motivation	Commitment, norm, incentive
Forget	Prompts
Not the "right thing to do"	Norms
Lack knowledge	Communication
Inconvenient	Convenience



For more information on behaviour change, visit:

<http://www.evaluationtoolbox.net.au/> - look under the 'behaviour change' tab

<http://www.cbsm.com/>

<http://www.behaviourworksaustralia.org/>

How to undertake a problem analysis

The steps to undertake a problem tree are:

1. Get participant agreement on what the core problem is. Once a problem statement has been settled on, it may need to be rephrased so that it is specific to a target group and place (who, what, where).

How to write a problem statement

A problem statement should be phrased as a specific negative situation related to the human condition (development or environmental issue). It should also not be the absence of a solution. For example, 'high rates of water-borne diseases' is a problem, whereas 'no rainwater tanks' is not. The latter implies providing water tanks on its own will fix the problem.

A problem statement should not be too broad. The problem should be able to be overcome as a result of your project.

The problem statement now has to achieve the 'who, what, where' criteria: 'high rates of water-borne diseases in children under 11 years of age in Salamanca'

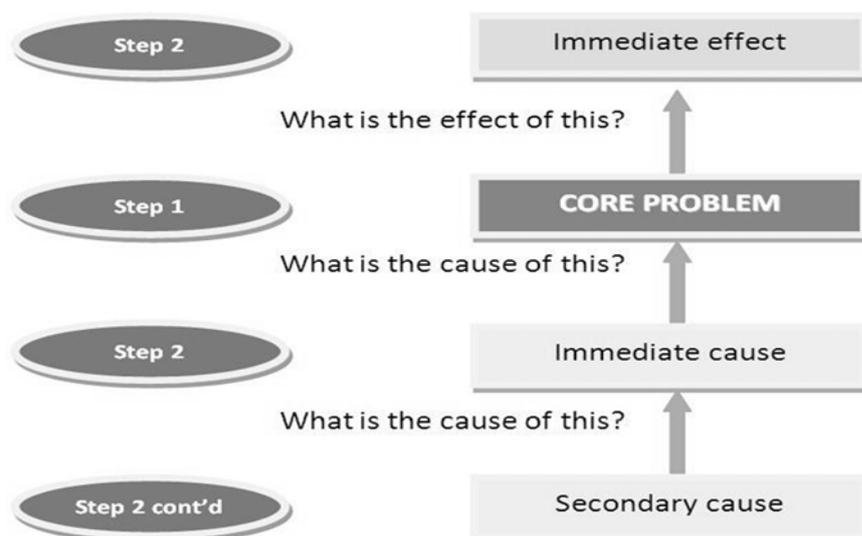
- Once the core problem is settled on, the participants identify the hierarchy of causes and effects (see figure 2 below). Causes are placed below the problem, and effects above.

Identify the causes. Start with the core problem and ask ‘what is the cause of this’. List each of the possible causes underneath the problem statement. All causes should be worded as negative statements. For each cause identified, again ask ‘what is the cause of this’ and document those sub-causes underneath. The identification of causes may lead to considerable discussion, and ‘cause statements’ may be moved about as a result. It is important that there is general agreement before moving statements around. If there are two or more causes, these can be placed at the same level.

Identifying effects. Start with the core problem and ask ‘what is the effect of this’. Write all the effects of the problem above the core problem. For each effect, again ask ‘what is the effect of this’ and continue to branch upwards.

The process of identifying causes and effects keeps going until there are no more additions. An example of a problem tree for a water quality-focused projects is presented in Figure 3.

Figure 2. Identifying the causes and effects of a core problem



- Review the problem tree that has been created. Any gaps should be noted and rectified by adding causes or effects. Once this is done, the problem tree needs to be copied onto paper, or into a software package (e.g. DoView® <http://www.doview.com/>). Arrows should be added to connect causes and effects.



- Read the handout for the Toktoklau case study and identify the broad issue of concern and its context, who the stakeholders are, and what the problem may be.
- Fill in the missing boxes for causes and effects in the Toktoklau problem tree handout.

Step 4. Solution analysis

The solution analysis flows on from the problem analysis, and can be undertaken as part of the same workshop. It requires flipping negative statements in the problem tree into positive ones to form a **solution tree**.

How to undertake a solution analysis

1. Reword negative statements into positive ones. Don't be afraid to reword the statements as required so they make sense.

The core problem in the middle of the problem tree gets converted into the **core objective** or **purpose** of the project in the solution tree.

The cause-effect relationship from the problem tree is converted into a means-ends relationship in the solution tree.

For example, the core problem 'high rates of water-borne diseases in children under 11 years of age in Salamanca' gets reworded into the core objective (purpose) 'Reduced rates of water-borne diseases in children under 11 years of age in Salamanca'. An example of a solution tree building on the problem tree in Figure 3 is presented in Figure 4.

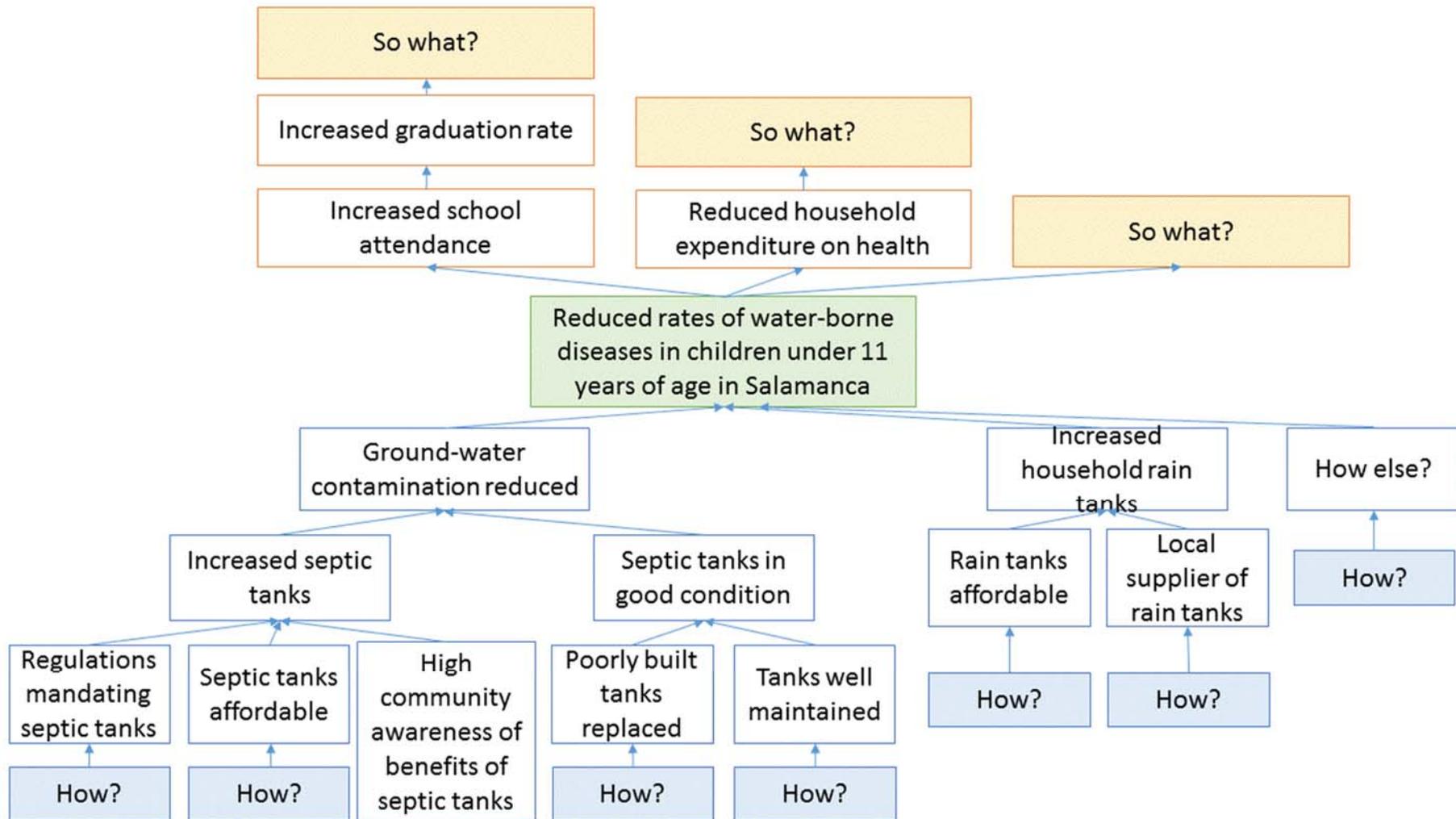
All of the different branches below the core objective (purpose) are now as a possible solution pathway that can assist to achieve the core objective. You can also remove certain pathways if they are not logical.

2. Review the means-ends relationship. Questions to ask include:
 - Will the activities lead to the outputs?
 - Is the purpose achievable? Will the outputs lead to the purpose being achieved?
 - Are there gaps in the logic? If so, add a step where necessary.
3. Once there is a general agreement on the solution tree, transfer it onto paper or a software programme.



Fill in the missing boxes, building on the problem tree handout, to complete the means-end relationship in the Toktoklau solution tree handout.

Figure 4. Example solution tree for a water quality-focussed project



Step 5. Strategy analysis - selecting the solution

The strategy analysis involves selecting the best solution for the documented problem. This may involve the use of tools like Cost Benefit Analysis to choose which solution pathway(s) from the solution tree represents the best solution to the problem. This step may also involve reviewing the solution tree created in the previous step and analysing the different solutions (or means) to achieve the core objective or purpose. This may involve reviewing the options against a set of criteria. For example:

- The expected contribution of different solutions to the strategic objectives and priorities of both the project proponent and funding organisation
- The complementarity with existing or planned projects
- Lessons learnt from previous projects, and reviews of best-practice
- Preferences of key stakeholders, including the target group and project partners
- Benefits to the target group, and ultimate beneficiaries
- Cost efficiency and technical feasibility of implementation
- The sustainability of different approaches (i.e. the likelihood that benefits will be maintained without further intervention)
- Environmental, social and economic impacts.

The strategy analysis will select one or more solution pathways for the project to implement. Mark or circle the chosen solution pathways on the solution tree. The chosen solution pathways will form the basis of completing the logframe matrix.

If pathways are not tackled by your project, these can be considered **assumptions** (which are discussed in greater detail in the logframe section), which are things that may need to occur beyond the scope of your project for your core objective to be achieved.



Identify what strategy you would select for the Toktoklau project by circling the pathway(s) on the solution tree handout, and write down what criteria you used to select this strategy.



The 'Integrated Planning Process, Project Design & Proposal Writing Guide' by the American Red Cross (2006) explains two tools to guide the selection of strategies- see pages 17 & 18.

<http://ngolearning.org/evanspmclass/Shared%20Documents/RedCrossLogframes.pdf>

SPREP PACC Technical Report No. 1 - Informing climate-resilient development: the application of cost-benefit analysis (CBA) in the PACC programme - Experiences and lessons learned on capacity building

<https://www.sprep.org/attachments/Publications/CC/PACCTechRep1.pdf>

SPREP PACC Technical Report no. 2 - Informing climate-resilient development: the application of cost-benefit analysis (CBA) in the PACC programme - Experiences and lessons learned in the application of CBA to PACC demonstration projects

<https://www.sprep.org/attachments/Publications/CC/PACCTechRep2.pdf>

Step 6. Logframe matrix

The logframe matrix displays the key elements of a project design and their relationships to each other in a way that facilitates project analysis, and guides project implementation and monitoring and evaluation.

The logframe matrix is generally presented as a table as laid out below (Table 2). The terminology used in the matrix can differ between organisations but the principle remains the same. It is therefore important to clarify amongst project partners, funders and other stakeholders the terminology to be used.

Table 2. Example logframe matrix



The baseline and target can be split from the indicator

Project Description	Indicators	Baseline	Target	Source of verification	Assumptions
Goal					
Purpose					
Outputs					
Activities					

Definitions for the project description column

Goal	This is the longer term outcome that the project will <u>contribute to</u> . This should reflect national priorities e.g. contribute to national sustainable development strategy...
Purpose	This refers to the development outcome the project <u>will achieve</u> . This may include changes in behaviours, knowledge, practices, capacity, enabling environments that the project will achieve. Generally written in the past tense, and use verbs like: decreased, increased, strengthened, enhanced, improved e.g. increased renewable energy production, reduced coastal erosion, enhanced food production etc. The core objective from the solution tree should help guide the purpose statement.
Outputs	The products and services a project will deliver. Generally written in the past tense e.g. solar panels installed, coastal revetment constructed, training delivered etc.
Activities	The things that are done with the inputs as a means to deliver the outputs, and accomplish the desired outcomes. Generally written in the present tense e.g. install solar panels, train people, develop materials, run workshops etc.

In developing a logframe matrix, the following points need to be considered:

- The matrix should provide a summary of the project design, and its length will be dictated by the project's complexity. It should generally be between one and four pages in length.
- If the logframe is too long, the project may not be focussed enough. If the logframe is too short, it may be missing parts.
- The matrix should only describe the main activities. The detailed activities should be documented separately in an **timeline**.

The contents of the matrix will be guided by the selected strategy (solution pathways). The higher level ends (top section of solution tree) will help form the goal. The purpose will be informed by the middle of the solution tree (purpose). The outputs and activities will be based on the means (chosen solution pathways in the bottom section of the solution tree).

Elements from the selected strategy may need to be re-written as they are transferred into the matrix.

Project description

The contents of the project description column outlines the project's objectives hierarchy, or the logic that supports the project. It shows the relationship between a project's activities, outputs, purpose and goal. This is also known as the **vertical logic**. It describes, reading from the bottom-up, how the project will achieve its ends.

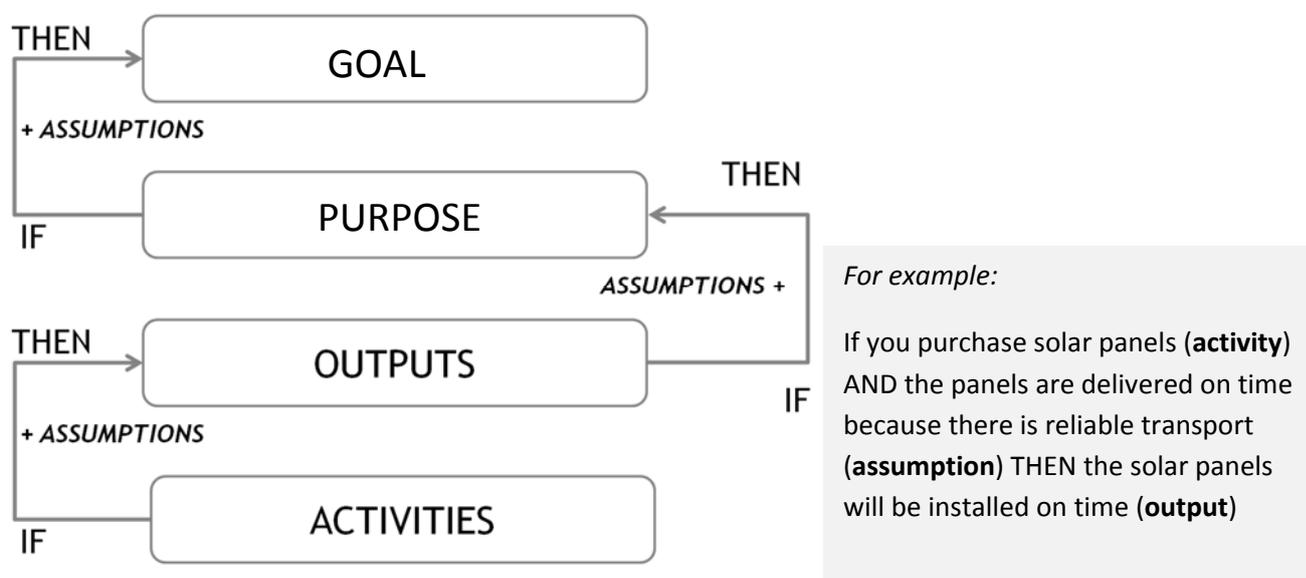
Inputs are generally not included in the project description column. They can sometimes be included adjacent to the activities (in the indicator column) and a high level summary of the budget may then be included in the means of verification column.

Assumptions

Assumptions refer to key factors outside the direct control of the project team which must hold true if the project is to deliver its outputs and achieve its purpose and progress towards the goal. If the assumptions do not hold true (certain events do not occur), then this may have a negative impact on the project. Identifying assumptions (or risks) are critical as these may have a strong influence on the project's likelihood of success.

Assumptions form part of the vertical logic of the matrix (Figure 5). Note that there are no assumptions for the 'goal' and thus the assumptions column is left blank.

Figure 5. The project description and assumption outlines the intervention’s logic



An assumption is worded as a positive statement of a condition that must be met in order for the project’s purpose to be achieved.

An assumption can also be seen as a **risk** to the projects if the assumption does not hold true. A risk is an assumption reworded as a negative statement. A risk matrix can be used to identify which ones to include as an assumption, or in the risk matrix (Figure 6).

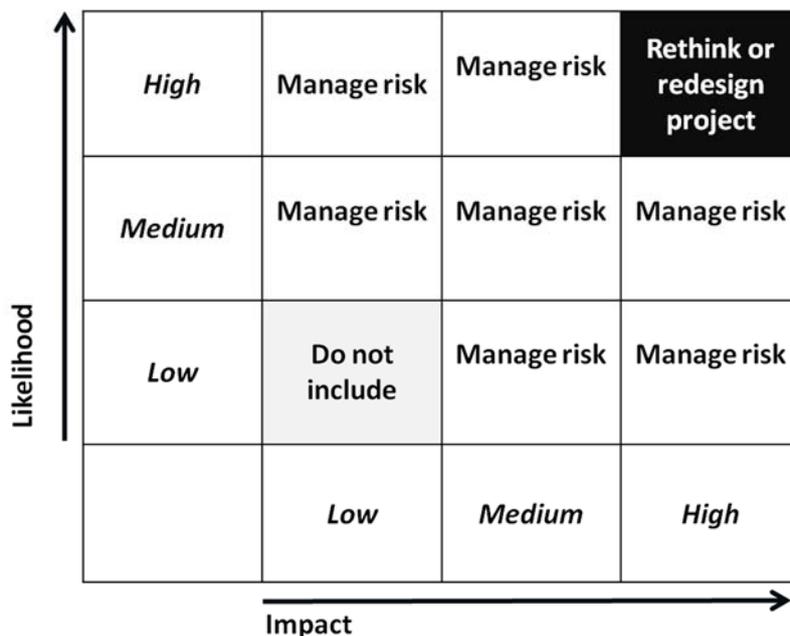
A **risk matrix** can be used to guide which assumptions need to be included in logframe. This requires turning assumptions into risks, and including into the matrix those that can be managed, and excluding those that pose little risk (i.e. those that have a low impact and low probability of occurring). An example of flipping an assumption into a risk is presented below

Assumption	Risk	Impact if risk occurs.	Likelihood of the risk occurring	Action to take
Solar panels are regularly cleaned of salt and other deposits	Solar panels are not cleaned regularly	High – the efficiency of the panels will be reduced resulting in increased operation of the back-up generator.	Low- a cleaning schedule has been developed and staff trained in how to clean the panels.	<p><i>What action should you take to reduce the likelihood of the risk happening?</i></p> <p><i>What action will you take if the risk does happen?</i></p>

Note that risks that have a high likelihood of occurring, and have a high impact, should lead to the project being redesigned, as these are likely to impact the project’s success.

Assumptions have to be carefully specified and worded to allow continuous monitoring.

Figure 6. A risk matrix can be used to guide the selection of assumptions



Indicators

Indicators provide a means to assess the project’s progress and success. This is especially important for the purpose and goal, as these may be interpreted differently by various stakeholders.

One way to think of indicators is to visualise what a successful project would look like, that is, what conditions would be met if the project was successful.

Indicators need to be closely linked to what you are trying to measure, so that you are confident that your project’s work was an important factor in the observed result.

Indicators should ideally meet the following criteria.

Valid	Does the indicator measure the result?
Precise	Do stakeholders agree on exactly what the indicator measures?
Practical, affordable, and simple	Is information actually available at reasonable cost? Will it be easy to collect and analyse?
Reliable	Is it a consistent measure over time?
Sensitive	When the result changes, will it continue to be susceptible to change?
Useful	Will the information be useful for decision-making, accountability, and learning?

Identifying valid and reliable indicators for the project’s goal may require careful consideration and stakeholder input, as the outcomes at the goal level may take time to be achieved. As such, you will need to identify an indicator(s) that can be measured within the project funding period.

You cannot use indicators from a lower level to demonstrate achievement of a higher level objective. For example, the indicator for ‘solar panels installed’ (output level) cannot be used as proof that the purpose (e.g. increased renewable energy generation) has been achieved. In such a case, the indicator for purpose could be ‘number of kWh generated per day from solar panels’.

There should be more than one indicator selected for each level of the vertical logic, but there should not be too many. The number of indicators to choose should be guided by the confidence required to demonstrate achievement of that particular level of the objective hierarchy. Between two and five indicators is generally sufficient.

Indicators can then be made more specific by identifying **baseline** and **target** measures. The indicator can make reference to the target (and baseline) or these can be separated out from the indicator and placed in separate columns, either in the logframe, or later on when you develop a monitoring plan.

Baseline and targets must be specific. This means that they need to specify the quantity of change expected, the quality of the desired change, and the timeframe in which the desired change is to occur. You can remember this as QQT (for Quantity, Quality, Timeframe), or SMART (Specific, Measurable, Achievable, Relevant, Timely).

The targets may be informed by existing strategies or action plans. Targets can be further broken down into 6-monthly, annual, or other timeframes so as to determine a measure of progress for the project (more about this in the monitoring section).

Both **quantitative** and **qualitative** indicators should be used where possible. Generally, indicators are not included for activities.

Quantitative and qualitative data

Quantitative	Qualitative
Quantitative refers to numerical data (e.g. number of people trained, number of rain tanks installed etc.).	Qualitative data deal with words or communication (whether that is text, voice, or visual). Qualitative research seeks, amongst other, to find out what people are doing and why they are doing it, or what stops them from changing, and how they see their role and actions in the wider scheme of things.
Quantitative methods can reach large number of people, and generally involve a short interaction. The popularity of collecting quantitative data reflects the old adage “that you can’t manage what you can’t measure”.	Qualitative methods generally involve a longer personal interaction, and reach a lower number of people. Qualitative evaluation trades off collecting information from few respondents with more in-depth and quality information.

Source of verification

Source of verification refers to where the information for indicators will come from (survey report, meeting minutes, commissioning documentation, purchase records etc.).

In determining the source of verification, the project team should consider whether appropriate sources already exist. Where new sources are required, it is important to consider the cost of data collection, as well as how valid and accurate the data collection process is.

Where indicators relate to a specific change in a condition, baseline data (what is the current state of things) may be required. This will mean that the means of verification requires both baseline and post-project data and data sources. The indicators and sources for the baseline and post project data may be the same, however you will obviously collect the data at different times in the project.



Complete the logframe matrix for the Toktoklau case study by filling in the missing elements in the handout.

Reviewing the logframe matrix

Once drafted, the logframe matrix should be reviewed to assess the:

- Vertical logic - whether the means-end relationship (column 1) and assumptions (column 4) makes sense
- Horizontal logic –what elements of project design will be measured and how

It is important to remember that the matrix represents broad steps, and not a detailed project plan.

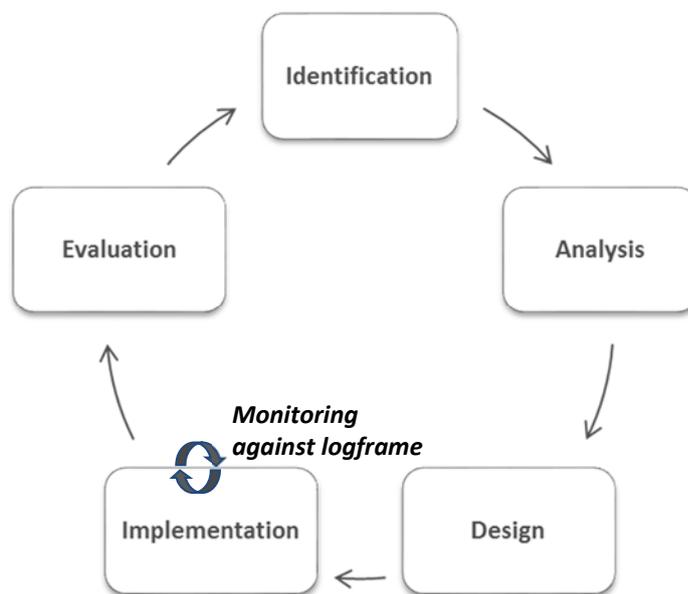
It is also important to remember that the LFA is an iterative process, and the matrix should be reviewed on a regular basis during the project's implementation, and changes made accordingly.

SECTION 2. MONITORING YOUR PROJECT

The logframe matrix provides the foundation for what you need to monitor during the project implementation to make sure you are on track. Regular monitoring is critical for good project management, as it allows early detection of issues so that they can be rectified (Figure 7). This is a process called **adaptive management**, whereby the implementation learns from experience, and minor changes, or sometimes major ones, may be made to ensure that the outcomes of the project have the best chance of being achieved.

A project design should identify how the project will be monitored, as this can influence the overall budget. It also puts the project on a good footing to be implemented as soon as the funding is secured.

Figure 7. Monitoring allows continual improvement during the project implementation



Monitoring plan

A **monitoring plan** identifies and defines how monitoring data will be collected, how often, and by whom (Table 3). It builds on the logframe matrix by providing the project team a more detailed guide to facilitate the collection of data.

The definitions of the column headings and an example are provided below the monitoring plan.

Table 3. A monitoring plan

Level	Indicator	Baseline	Target	Source of verification	Data collection methodology	Frequency of data collection	Person(s) responsible
Goal							
Purpose							
Output 1							
Output 2							
Output 3							

Level	All the contents of the level column are taken from the logframe matrix.	e.g. Purpose: Low rates of water-borne diseases in children under 11 years in Salamanca
Indicator	Taken from the logframe matrix. There is also an opportunity to add more indicators if you feel it would help measure success, or change them. If you change or add indicators, make sure this is also reflected in the logframe matrix.	e.g. number of children under 11 years of age from Salamanca presenting at medical clinic with water-borne diseases
Baseline	Refers to the measure before the project is implemented.	e.g. 100 children per year (2014) (presenting at medical clinic with water-borne diseases)
Target	The measure you want to achieve by a certain time (e.g. end of the project).	e.g. 75% reduction from baseline level by 2016
Source of verification	This refers to where the information or results will be reported. This is often different from the data collection methodology.	e.g. Mid and end-of-project reports, Legislation, Ministry of Health report, reports
Data collection methodology	This refers to the specific process/tool to collect the raw data (that can be reported on in the source of verification). The data collection methodology is where monitoring costs may be attributed to.	e.g. Questionnaires, Water quality testing, Review of clinic admission statistics
Frequency of data collection	This refers to how often the data will be collected. This can differ from how often it will be reported. For example, you may collect data monthly, but only report on it quarterly or annually.	e.g. Monthly
Person(s) responsible	This refers to the person(s) responsible for collecting the data, or making sure the data is reported in the source of verification.	e.g. Monitoring and Evaluation Officer

Note that monitoring for the ‘goal’ level can be difficult, as the project will only contribute to achieving the goal, and this may take some time for outcomes to be visible. Identifying valid and reliable indicators for the project’s goal may require careful consideration and stakeholder input.

Data collection methods

Identifying and/or establishing practical and affordable data collection methods is key to implementing a useful monitoring plan. Data collection that is difficult to undertake, or requires specialist skills that are not readily available within the project team, or is expensive, is less likely to be done.

Remember that data collection does not necessarily mean collecting new data. The first thing to check is whether someone else (e.g. a government department, or other organisation, such as clinics or hospitals) is collecting the data you need. In such cases, the project’s role is to access the data source and report on it.

Collecting new data may be undertaken in a range of ways. Projects should seek to include a range of data collection methods, including capturing both quantitative and qualitative data. This has a number of benefits, including avoiding bias, and verifying the results from different means.

A number of data collection methods are presented below.

Counts

Undertaking counts is a useful way to track easily visible outputs and outcomes (e.g. people attending training or workshops, number of water tanks installed, number of management plans created, number of mangrove trees growing in a coastal revegetation etc.).

It is useful to develop templates for undertaking counts so that recording of data is undertaken in the same manner over time and across different people (e.g. Table 4).

Table 4. Example template for recording mangrove regeneration project

Date	Location / Site	Lat/Long
12 June 2014	Itakaki village, Roanga	19.65 S, 154 W
Number of mangroves <0.5m high per 10m ²	4	Notes: yellowish foliage on two of them
Number of mangroves 0.5m to <1m high per 10m ²	6	
Number of mangroves 1m+ high per 10m ²	2	Notes:
Total number of mangroves per 10m ²	11	Notes:

Forms or templates formally record the data, and provide a ‘paper trail’ for external evaluators if required. Photographic evidence can also be used to complement recording forms.

Counts obtained during project implementation, and post-project, can be compared to baseline data to track the project's achievements and status.

Water quality testing and other specialised counts

Some monitoring may require specialised equipment or facilities. For example, water quality improvement projects may require water quality testing to assess the number of households with access to 'clean drinking water' based on meeting national or international standards. Water quality testing can be undertaken by taking water samples for laboratory analysis, or using more simple methods such as Hydrogen Sulfide Testing kits (H₂S strips), though studies indicate that the accuracy of the H₂S test results can be variable¹.



Develop a simple template for counts related to a project of your choice.

Questionnaires

Questionnaires are a common tool to gather data from a large number of people. Questionnaires can seem easy to prepare, but it is important to put careful thought into designing a good questionnaire. A good questionnaire can be a powerful tool to inform your evaluation, and a poorly designed questionnaire can make life difficult for both those that have to complete it, and those that have to analyse the data.

Timing of questionnaires

You should consider what sort of information you want to obtain from your questionnaire at the project design stage so that you can plan when you deliver questionnaires. For example, you may need to deliver a baseline questionnaire to obtain data before the project. This will allow you to compare your results against the baseline state.

¹ www.who.int/water_sanitation_health/dwq/WSH02.08.pdf

<http://onlinelibrary.wiley.com/doi/10.1111/j.1365-3156.2011.02887.x/abstract>

Different methods to implement questionnaires are summarised below:

Baseline questionnaire	Taken before the project is implemented, either at the project analysis or design stage. Allows comparisons to be made between the baseline and the project's intervention. You need to consider the sample size to ensure that results are statistically valid. This methodology should be used for larger projects. Can also inform the stakeholder analysis step, problem tree, and strategy analysis.
Post-questionnaire	Allows reporting of changes resulting from a project. This is best accomplished if baseline data already available from a questionnaire, or from other sources. A post-questionnaire on its own can be used where monitoring resources are limited, but care must be taken in wording questions, and interpreting results.
Retrospective post then pre-questionnaire	Overcomes some of the constraints of not having baseline data by seeking to capture the pre-existing condition in the same questionnaire as the post-project condition. Can be used where monitoring resources are limited.

Delivery formats and delivery methods

Questionnaires can be delivered in a variety of formats, including paper-based, online, and using 'smartphones'. The delivery method can also differ, such as respondents completing the questionnaire themselves, or an interviewer (or enumerator) asking questions either face-to-face with the respondent, or over the phone. In such cases, the interviewer writes down answers based on what respondents say.

The pros and cons of paper-based and smartphones are summarised below. Large, well-resourced projects should consider investing in several smartphones as these will make monitoring easier and timelier.

Paper-based questionnaire	
Pros	Cons
Relatively low-cost and easy Does not require technology Questionnaire can be left at household for them to fill out in their own time and picked up later.	May need to print out many pages Paper can be easily damaged, lost etc. Data needs to be entered manually, increasing the possibility of data entry errors, and time taken to analyse and obtain results

Smartphone questionnaire	
Pros	Cons
Does not require carrying around large amounts of paper Changes to questions can easily be made without reprinting lots of questionnaires Allows timely analysis and reporting of results	Access to smartphones Requires access to an internet connection for uploading data and downloading results (at the end of the day or when all surveys completed) Requires some training to design questionnaires and upload to server and phones

Field Task- an open source smartphone questionnaire application

Field Task, developed by SMAP Consulting, is a free open source survey questionnaire application for Android-based smartphones and tablets. The android device does not need to be connected to a network when collecting data, which means you can use it in remote areas. Completed questionnaires are stored on the phone, and can be uploaded once the smartphone gets a network connection.

Field Task allows you to design questionnaires with both open-ended (type in answers) and closed questions (select from a range of possible answers). In addition, you can take photos, record audio, and record the position where the interview took place using the GPS in the smartphone.

Field Task can be downloaded from the Google Play store. It requires a SMAP Server which stores the survey templates and collected data. SMAP Server is also open source and can be downloaded from the [SMAP Consulting website](http://www.smap.com.au) [www.smap.com.au]. Alternatively, for a small fee, SMAP can host your server for you. Training slides for using Field Task are also available from the SMAP website.



See SMAP Consulting for more on Field Task, including videos and downloads

<http://smap.com.au/>

Field Task training documentation can be downloaded from

<http://smap.com.au/downloads.shtml>

Questionnaire invitation and instructions

The questionnaire invitation and instructions should clearly outline why you want people to take part, and the importance of their participation.

It is important that you have clear instructions at the start of the questionnaire that explains:

- the purpose of the questions
- who the information is for and how it will be used
- the confidentiality of the answers, and any other information regarding ethics, etc.

It is also important to have clear instructions as to how to answer questions. Instructions need to be provided at the start of each new section that uses a different answering format or response scale.

Things to consider in instructions include whether you want respondents to:

- select one answer only
- select all that apply
- rate the answers
- provide a statement to an open-ended question.

Layout

The layout of questionnaires is very important if people will be responding to it themselves.

Things to consider include:

- Making sure the layout does not look cluttered. Use adequate spacing between questions.
- Ensuring the questions are numbered and presented in a logical sequence. Group questions by topics or themes.
- Starting with easier or less controversial questions and finishing with more personal questions, including demographic details such as age and income.
- Using larger or bold font to attract attention to headings or instructions.
- Using shading or colour schemes to group similar questions.

Length

People generally do not want to take too much out of their day to answer a long questionnaire, unless there is an incentive to do so. As such it is important that you consider how many questions you will be asking, and how long it takes to respond to the questionnaire.

The length of the questionnaire will be dictated by the questions you need to have answered. This is in turn informed by your monitoring plan, which identifies indicators, and data collection methods. You need to clearly differentiate between information you need versus information you want to collect.

Ideally, questionnaire should not take longer than 15 to 20 minutes to complete. After that, you may want to consider providing an incentive to complete the questionnaire (e.g. providing food etc. if visiting a community).

Wording and types of questions

The wording of questions is critical in ensuring you obtain the information required to answer your questions. This includes:

- using language that is appropriate to the audience
- using clear, simple questions that avoid ambiguity, double meanings, and jargon,
- avoiding leading questions that can lead to bias.

Questions can fall into the following categories:

Open-ended question	A question where the respondent creates their own answer. This allows respondents to think about the question, provide suggestions, or test their knowledge, but it is harder to analyse.
Close-ended question	A question where the respondent has to select their answer from the range of responses provided. The range of responses can vary from two-option answers, to ratings, ranking, or statements.

There are several options of close-ended questions:

Select from a range of answers Respondents need to select one, or multiple options (e.g. select top two, or select all that apply), from a number of independent or unique answers. This requires you to know the range of relevant choices. Alternatively, you may add an ‘other’ category with an open field, but you want to limit the number of people selecting this response, as it would otherwise make more sense to leave the question as an open-ended question.

E.g. What sources of drinking water do you use?

- Bore water
- Household water tank
- Community water tank
- Bottled water
- Other (please specify)

Would you make this a select one, or select all that apply?

Two option response Respondents need to make a defined choice (e.g. YES/NO). Care needs to be taken to make sure that respondents are not left unsure as to how to respond to the question.

E.g. If you use bore water, do you always boil it before drinking?

- Yes
- No

Asking ‘Do you boil bore water?’ and only providing Yes/No is less clear, as the question does not specify boiling for ‘drinking water’. Bore water may be used for washing and it may not be boiled in such a case.

Rating scale Respondents to select the most appropriate point on a scale. Scales can range from 3 points to 10 points.

5 point scales are the most commonly used. 7-point scales are becoming more common as they provide respondents with a greater ability to discriminate between choices.

Odd-numbered scale provides a mid-point (e.g. uncertain or neutral).

E.g. How would you rate the quality of the solar water purifier?

Excellent	Good	Fair	Poor
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

E.g. The training workshop provided me with the skills to maintain my rainwater tank.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
<input type="radio"/>				

Tips on wording questions:

Avoid double-barrelled questions Double barrelled mean asking the answer for two things in one question. E.g. “Do you take action to save water and energy?” should be broken down into two questions, one question about saving water and the other above saving energy.

Be specific about the subject of questions E.g. “Do you take action to save water?” can be broken down to specific actions, such as re-using washing water, taking short showers etc.
The same applies for attitudes and opinions- be as specific as possible in order to obtain the information you want.

Be specific about timeframes in questions E.g. In a questions such as “Have you taken action to save water in recent months?”, ‘recent months’ may not be specific enough for your evaluation. It may be best to use more specific timeframes, such as “Since the Water workshop held in July, have you taken action....”.

Avoid leading or loaded questions E.g. “Have you stopped taking long showers?” is likely to lead to most respondents answering “yes”. Further, a “yes” answer also does not differentiate between those that were taking long showers, and have since stopped, and those that have never taken long showers, but did not have another option to answer.

Analysing responses

Once the questionnaire response data is entered into Excel, or similar programme (for paper-based questionnaires), the data can be analysed using descriptive statistics (totals, averages etc.). Pivot tables can be used to analyse and summarise a lot of data quickly. Some online questionnaire programmes can provide simple descriptive analyses.

Online questionnaires

There are a number of software programs that allow you to develop online questionnaires. Some are free, others not. Most are relatively easy to use. As with all questionnaires, it is important to pilot them first to ensure that they make sense and that they work. Examples of online questionnaire programs:

[Survey Monkey](http://www.surveymonkey.com/) [www.surveymonkey.com/]

[Opinio](http://www.objectplanet.com/opinio/) [www.objectplanet.com/opinio/]

[Survey Gizmo](http://www.surveygizmo.com/) [www.surveygizmo.com/]

[Zoomerang](http://www.zoomerang.com/) [www.zoomerang.com/]



Develop a simple questionnaire (baseline or post-project) related to a project of your choice.



QUESTIONNAIRES

http://evaluationtoolbox.net.au/index.php?option=com_content&view=article&id=58&Itemid=154 OR <http://tinyurl.com/ogh74cs>

Dartboard

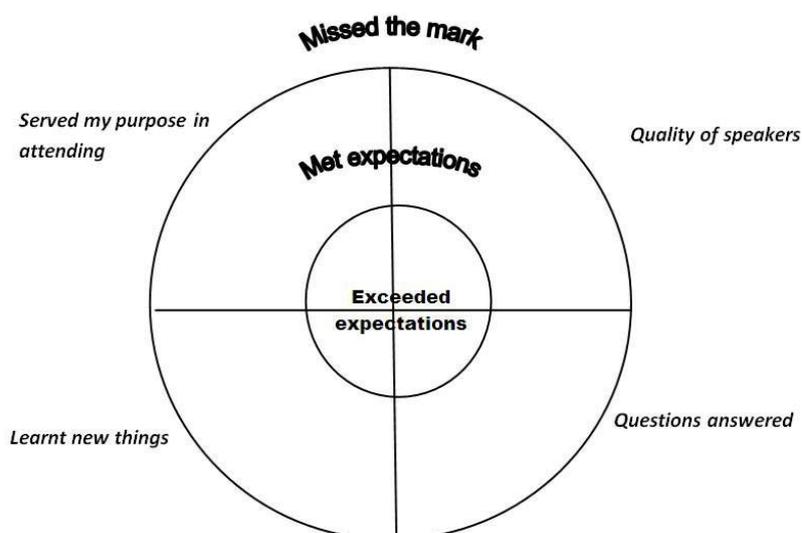
An evaluation dartboard is a quick and simple method for participants to rate the delivery of a workshop, training session or similar activity.

Participants, using sticky dots or a marking pen, make a mark on the dartboard based on a rating scale, for example from 'highly satisfied' to 'highly dissatisfied' or 'exceeded expectations' to 'missed the mark'. The dartboard provides a visual snapshot of participants' views without the need for further analysis or work (for example, compared to questionnaires).

An evaluation dartboard consists of drawing a large circle on a flip chart paper, a whiteboard or similar. You can then draw another ring in the centre of the circle to represent the bull's eye, and one in between the centre and the outer ring.

Participants are asked to place a separate mark within each sector that represents a question. The nearer the bulls eye, the more satisfied a participant is, and the further they are away from the centre, the less they are satisfied. This is presented in the diagram below (Figure 8).

Figure 8. A 'dartboard'



A constraint of the dartboard is that it does not provide reasons why people thought aspects were good, or not. As such, the dartboard can be complemented by asking people to provide notes on 'what worked well' and 'what can be improved'.

Stories

Stories can be a powerful tool to capture how projects impact or change the target group or beneficiaries, both positively or negatively. Stories can be captured in written format complemented with photos, or using audio, or video. Stories can capture the emotion that comes from the changes brought about by a project, which is often lacking in counts and questionnaires. However, capturing stories takes time, so the number of stories that can be collected is often limited.

Storytelling has a number of benefits including:

- Understanding the project from the viewpoint of the participants
- Reflects the importance of context and its impact on outcomes
- Allows the identification of unintended consequences
- Provides a means to engage participants in evaluation.

Capturing stories can be undertaken by developing a few open-ended questions that respondents can answer. One such method is called 'The Most Significant Change' (MSC). MSC is a participatory evaluation process that involves the collection of significant change stories at different levels of the intervention (for example project staff, target group, beneficiaries) and collectively deciding on the most significant change stories based on selected themes. The themes reflect broad categories, such as change in capacity to take action, or a change in participation in an activity, as well as lessons learned.

MSC stories can be collected by project staff, or members of the target group can be trained to collect stories from their community. This may involve writing down answers, or using audio, or audio-visual recording (e.g. using the Field Task application mentioned earlier). Selecting stories usually involves a hierarchical process, where the lower levels (e.g. those collecting stories from the 'respondents' select significant stories for the upper levels to review, and the upper levels select the most significant ones from the lower levels.

Framing a Most Significant Change question

The central part of MSC is an open question to participants, such as: 'Looking back over the last 6 months, what do you think was the most significant change in the target group's access to clean drinking water?'

The question has six parts:

'Looking back over the last 6 months...' – It refers to a specific time period.

'...what do you think was...' – It asks respondents to exercise their own judgment.

'...the most significant...' – It asks respondents to be selective, not to try to comment on everything, but to focus in and report on one thing.

'...change...' – It asks respondents to be more selective, to report a change rather than static aspects of the situation or something that was present in the previous reporting period.

'...in the target group's access to clean drinking water...' – It asks respondents to be even more selective, not to report just any change but a change in the target group's access to clean drinking water.



MSC

http://evaluationtoolbox.net.au/index.php?option=com_content&view=article&id=61&Itemid=157 or <http://tinyurl.com/nophmpe>

Interviews & focus groups

Interviews and focus groups are qualitative methods of inquiry that use a set of pre-determined questions to prompt discussion, and allow for the interviewer to explore particular responses further.

Interviews generally have an interviewer and one or two respondents at a time. This can be done face-to-face, or via phone.

Focus groups generally have a facilitator, and a note taker. Alternatively, answers can be audio-recorded. If an audio-recording is used, it is important to make sure that it will work, and that someone can transcribe the recording to text at a later stage.

Analysing interview/focus group notes or transcripts requires you to identify and interpret common, recurrent and emerging themes.

Establishing an indicator tracking table

An indicator tracking table builds on the logframe matrix by extending the target column to identify specific targets at regular stages of a project's implementation (Table 5). The number, or regularity of targets, may be based on the length of the project (e.g. greater time between intervals for longer projects), or the risk-level associated with the project (e.g. more regular tracking for riskier projects).

Regular monitoring against such targets allows the project's status to be assessed. If the target is being achieved, or surpassed, the project may be assessed as progressing to plan. If the target is being missed, the project may need adaptive management measures, such as identifying why things may not be working so well, and subsequently modifying activities, or putting more effort or expenditure in certain areas. Not achieving targets may also signify that the targets were too optimistic, but take care in revising targets downwards as this may lead to implementation issues being masked.

Table 5. An indicator tracking table

Level	Indicator	Baseline	Financial Year 2015				Financial Year 2016				Notes
			6 month target	6 month target achieved	12 month target	12 month target achieved	18 month target	18 month target achieved	24 month target	24 month target achieved	
Goal											
Purpose											
Output 1											
Output 2											
Output 3											

In the example presented below (Table 6), counts can be used for the output (count of solar water purifiers installed), purpose (number of children presenting sick) and goal (number of children failing). Counts can also be used for workshops or training events (e.g. number of people attending, broken down by age, or sex etc.). A questionnaire can be used to assess the extent to which solar water purifiers supply the household with drinking water.

It is possible to also add a 'traffic light' status to the indicator tracking table by highlighting in green where you are tracking well (on target or surpasses) and highlighting in red where further work is needed (where targets are not being achieved). This is demonstrated in the example in Table 6.

Table 6. Example indicator tracking with results

Level	Indicator	Baseline	Financial Year 2015			
			6 month target	6 month target achieved	12 month target	12 month target achieved
Goal						
Contribute to improved educational outcomes for primary school children in Akitaki	Test scores ⁺	20% children failing			<5%	
Purpose						
Reduced rates of water-borne diseases in children under 11 years of age in Salamanca	Reduction in children under 11yo with water-borne diseases ⁺	100 children per year (2014)	> 30% reduction (<70 children)	27% (73 children)	>75% reduction (<35 children)	
Output 1						
Solar water purifiers installed	# households with purifiers installed ⁺	3 (2014)	25	20	50	
	% purifiers providing >90% of household drinking water needs ⁺⁺	66% (2014)	80%	85%	90%	

⁺ Obtained by count

⁺⁺ Obtained by questionnaire

SECTION 3. DETAILED PROJECT PLANNING

Detailed project planning takes the information from the logframe matrix and builds on this to identify the specific tasks required to do all the work in the project. Once all the tasks have been defined, the project team can identify the resources required (staff, equipment, time etc.) and the costs involved can be quantified. This enables a detailed project plan to be developed, with a clear understanding of what is achievable within a project's funding period and funding amount. Detailed project planning consists of two main steps, developing a timeline and budget.

Step 7. Timeline

Most people are familiar with a project timeline that lists project activities and graphically shows when the activities and tasks will start and finish. A timeline can also be referred to as an activity schedule or Gantt chart.

A timeline documents all the work that the project must complete to produce all outputs and achieve the project purpose. The timeline must be detailed enough so that a member of the project team, project partner or funding agency staff can fully understand what needs to happen in the project. The timeline will also help the project team estimate how long the project will take to complete and what resources (staff, contractors, materials, equipment) will be needed to undertake the work within the project timeframe. The information from the timeline is also crucial to informing an accurate budget.

The key steps to develop a timeline are listed below. These steps follow a process that will create a list of project tasks on sticky notes, in a participatory team-based approach. These are then used to create timeline on a wall before copying the information into a spreadsheet. Other tools like Microsoft Project, or the free GanttProject www.ganttproject.biz can also be used instead of Excel to create your timeline.

It is possible to create your timeline directly in a spreadsheet, however, by skipping the steps below you are likely to miss important tasks and you reduce your ability to involve the project team to get a better end result.

Steps to create a timeline

1. Breaking down activities into tasks – The Work Breakdown Structure	Activities are broken down into more detailed tasks using a Work Breakdown Structure tool.
2. Estimating task time	Estimate how long it will take to complete each task.
3. Identify resources	Identify the people (who and how many people, or organisation and position) responsible for delivering specific tasks. Identify what other materials and equipment are required to support the tasks.
4. Organise tasks into a timeline	Identify estimated start and end date for each task. Identify task dependencies and what tasks can run concurrently. Create a timeline of tasks and activities.
5. Determine key milestones	Identify the key events that provide a measure of progress towards meeting the targets.
6. Documenting your timeline in a spreadsheet	Copy the sticky note timeline into a spreadsheet

Each step will be expanded upon in further detail.

Step 1. Breaking down activities into tasks - The Work Breakdown Structure

The logframe matrix documented a summary of the key high level project activities required to show how project outputs will be produced. To create the timeline we need break down each activity in the logframe into smaller manageable tasks.

There are several alternative approaches to identifying detailed project tasks:

- Top-down approach** This is the approach used by the LFA and demonstrated in this guide. Each high activity in the logframe matrix is broken down into smaller tasks. The project team should be able to read the resulting tasks and understand what is required to carry out that piece of work. This includes understanding what resources (staff and equipment) are required, how long the task will take to complete.
- Bottom-up approach** The project team may brainstorm all the tasks they think are required to complete the project. Each task is written on a sticky note. Related tasks are grouped together and these would then correspond to higher level activities or outputs that are then named.
- Mixed methods** Project teams can use both approaches to identify the detailed project tasks and compare the outcome before merging the two lists together. The top-down approach is targeted and time-efficient. However, using the bottom-up approach can help identify miscellaneous tasks missed by the top-down approach.

Difference between an Activity and Task

For the purpose of developing the timeline, it is useful to be able to differentiate between an activity and a task.

Activity	Task
High level unit of work. Summarises what needs to happen. Groups of activities produce project outputs. Can be broken down into two or more detailed tasks.	Low level unit of work. Clearly describes in detail what needs to be done. Detailed enough to accurately estimate work effort (number of days) to complete the task. Detailed enough to identify what resources (staff, tools, equipment and materials) are needed. Can sometimes be broken down further into multiple sub-tasks
<p>Examples:</p> <ul style="list-style-type: none"> • General statement to build something or deliver a key service. • 1.1 Conduct household survey • 1.2 Install water tank • 2.1 Design new road • 2.2 Construct new road 	<p>Examples :</p> <ul style="list-style-type: none"> 1.1.1 Recruit and train survey team 1.1.2 Develop questionnaire 1.1.3 Print questionnaire 1.1.4 Conduct survey 1.1.5 Analyse survey data and write report



For each item in the table, specify if you think it is an activity or a task. Explain your choice. **Background context:** The 2 year project costs \$100,000 and is focused on increasing food security in response to increased drought events.

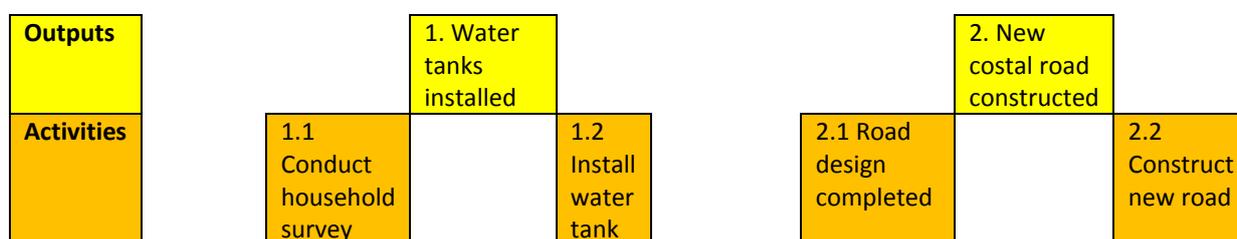
Item	Activity ✓	Task ✓	Explain your answer
Research drought tolerant taro varieties			
Run community awareness campaign			
Build seedling nursery			
Lease land for nursery			
Establish drought tolerant agriculture demonstration pilot site			
Install water irrigation system for seedlings			
Plant taro varieties			

Introducing the Work Breakdown Structure

A Work Breakdown Structure (WBS) is a tool that can help break down the activities into tasks and where required, smaller sub-tasks (Figure 9). Follow these steps to help you create a Work Breakdown Structure.

- a) **Preparation.** Write each of the project outputs and activities from the logframe matrix onto an individual sticky note or small piece of paper.
- b) **Laying out.** Stick the notes onto a table, whiteboard or wall in a similar layout to that presented below. Leave some space between each group of activities.

Figure 9. Sample layout for outputs and activity sticky notes



- c) **Review the list of outputs and activities.** The logframe matrix contained only a summary of the key outputs and activities so that it remained short and concise. The timeline needs to include more detail and it provides an opportunity to add in more outputs and more key activities if these were not included in the logframe. Add in any additional outputs if they are needed to more accurately describe what the project will produce. Add in additional activities if they help describe the key steps required to deliver the output(s).

For example, do you need additional outputs or activities to reflect any knowledge management products that the project needs to produce (e.g. video documentary, photo stories, technical guidelines, lessons learnt report, post-project summary report). Each knowledge management product could be a separate output, or knowledge management could be a high level output and each activity could focus on the delivery of each product.

- d) **Breaking down the activities.** Focus on each activity one at a time. Break down the activity into two, three, four or more smaller tasks that when combined together will represent ALL the work described by the activity. Write each task down on an individual sticky note and paste it underneath the activity.

Don't worry about getting all your tasks in the correct order. Don't worry about assigning numbers to your tasks.

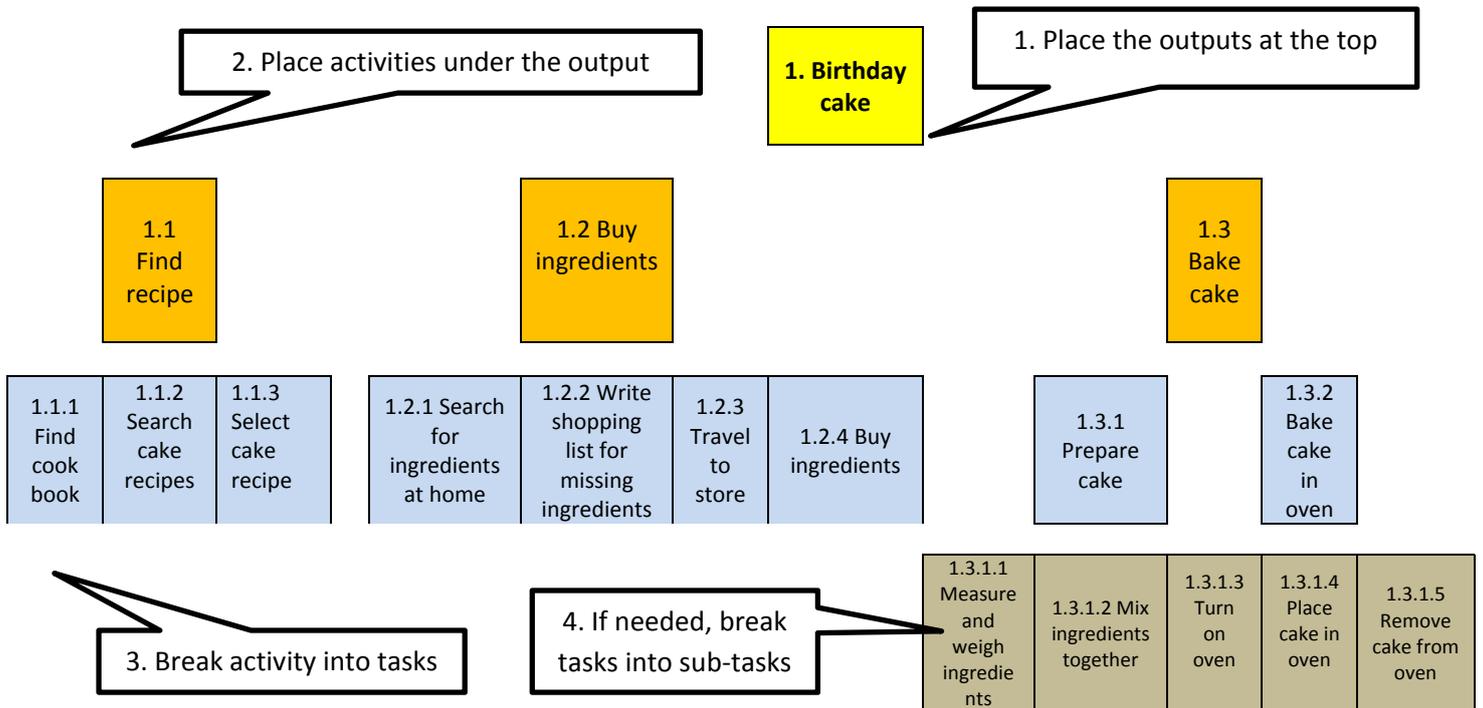
Need help to break down activities into tasks

To help you break down activities into tasks you can use these techniques:

- Involve people from different departments who will be doing the work or have done similar work in the past. These people will have a good idea of the work that is required to complete the project activities.
- Ask the question “What small task needs to happen first to start this activity?”
- Review the timeline from a similar project or a project with similar outputs. It may be possible to copy over and customise relevant tasks (and activities) if they are similar.
- Close your eyes and imagine what instructions you would need to tell someone else to complete an activity. Each of these instructions might become a task, so have someone else write them down on sticky notes as you speak them out loud.
- Is there something that the activity should produce? If so, then then you need a task to create that ‘thing’.
- Is there any design or planning work that needs to be done before you create the ‘thing’? If so, this design / planning becomes a task.
- Are there materials or equipment you need to create the ‘thing’? If so, you may need a task to describe the purchase of these materials and equipment.
- Do you need a task to transport materials or outputs? Only include these if they are significant in terms of time, cost or really critical to the project.
- Does the activity need to deliver a service of some kind (e.g. a survey, community education or water testing)? IF so, think of all the tasks needed to deliver the service. Do you need to recruit specialised staff or consultants to assist with these activities? If so recruitment, advertising, interviews and contracting may all become tasks may all become tasks.
- Is there training required? If so you may need tasks to conduct a training needs analysis, create a training program and another task to create the training resources. Other tasks might be to book a venue and organise catering, send invitations and confirm attendance. Some of these are very detailed tasks and you could argue that they are best rolled up into one main task called ‘organise training’. Of course you will need a task to ‘conduct the training’.
- Ask the question “What small task needs to happen to finish this activity?” Is there a need for some kind of review, quality control inspection, sign-off or approval? If so, this becomes a task too.

Below we demonstrate how to create a simple Work Breakdown Structure for an output called “Birthday cake” (Figure 10).

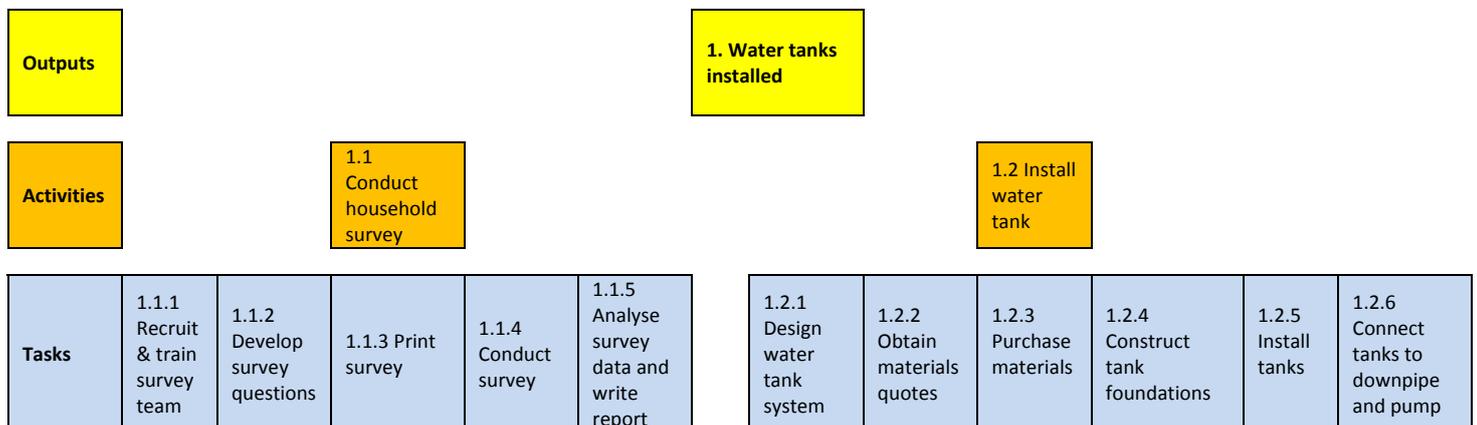
Figure 10. Simple Example - Baking a cake Work Breakdown Structure



The baking a cake example shows how the output ‘Birthday cake’ was made by three key activities, ‘Find recipe’, ‘Buy ingredients’ and ‘Bake cake’. Each of these key activities was broken down into smaller tasks. The ‘Follow cake recipe’ task was broken down into two small sub-tasks to demonstrate this process. In a real life project you need to follow some general guidelines and use your judgement to determine if you need to keep breaking tasks down into smaller sub-tasks. If we were baking a real birthday cake there would an activity (and related tasks) to “Decorate the cake” as well!

Another example of a Work Breakdown Structure is presented below for an example water security project. Figure 11 below focuses only on one output.

Figure 11. Water security project Work Breakdown Structure



In the example above the output “1. Water tanks installed” had two activities that were taken from the project’s logframe matrix. The project team broke the first activity “1.1 Conduct household survey” down into 5 smaller tasks. If all the 5 project tasks are completed, then the related activity “1.1 Conduct household survey” should also be fully completed. If all tasks shown in the work breakdown structure are completed then the Output “Water tanks installed” should also be fully delivered.

If it was a large project involving thousands of households and if it had a complex survey, then the “Analyse survey data and write report” task might take several weeks to complete and require a report review process before final sign-off. If this were the case, then it would make sense to break the task down into several smaller sub-tasks, “analyse data”, “write draft report”, “submit report for review” and “finalise report”.

e) Final checks

Does the WBS pass the 100% rule? The tasks in the WBS should include 100% (ALL) of the work required by the project to achieve the project purpose documented in the logframe. If it doesn’t, then go back and add additional tasks and activities.

Avoid duplication. There should be no duplication of work between different tasks or sub-tasks. For example, if you had tasks ‘deliver workshop at schools’ and ‘run school education program’, then there is a high chance, the work in the first task will be also included in the second task.

Including project management and monitoring and evaluation

All projects need to conduct project management, monitoring and evaluation. Chances are that these tasks will be missing from your work breakdown structure. To add these tasks we recommend you add a new Output called “Project Managed”, “Project Monitored” and “Project Evaluated”. Now follow the steps of the WBS to break your outputs down into activities and tasks.

Some common activities and to consider are listed in the table below. You are not required to break all these activities down into smaller tasks unless you feel it is required to estimate the time & resources required. The purpose of adding these additional outputs is to get you thinking about what core project functions need to be performed by the project. It may influence how many project staff you decide to hire to support the project and its activities.

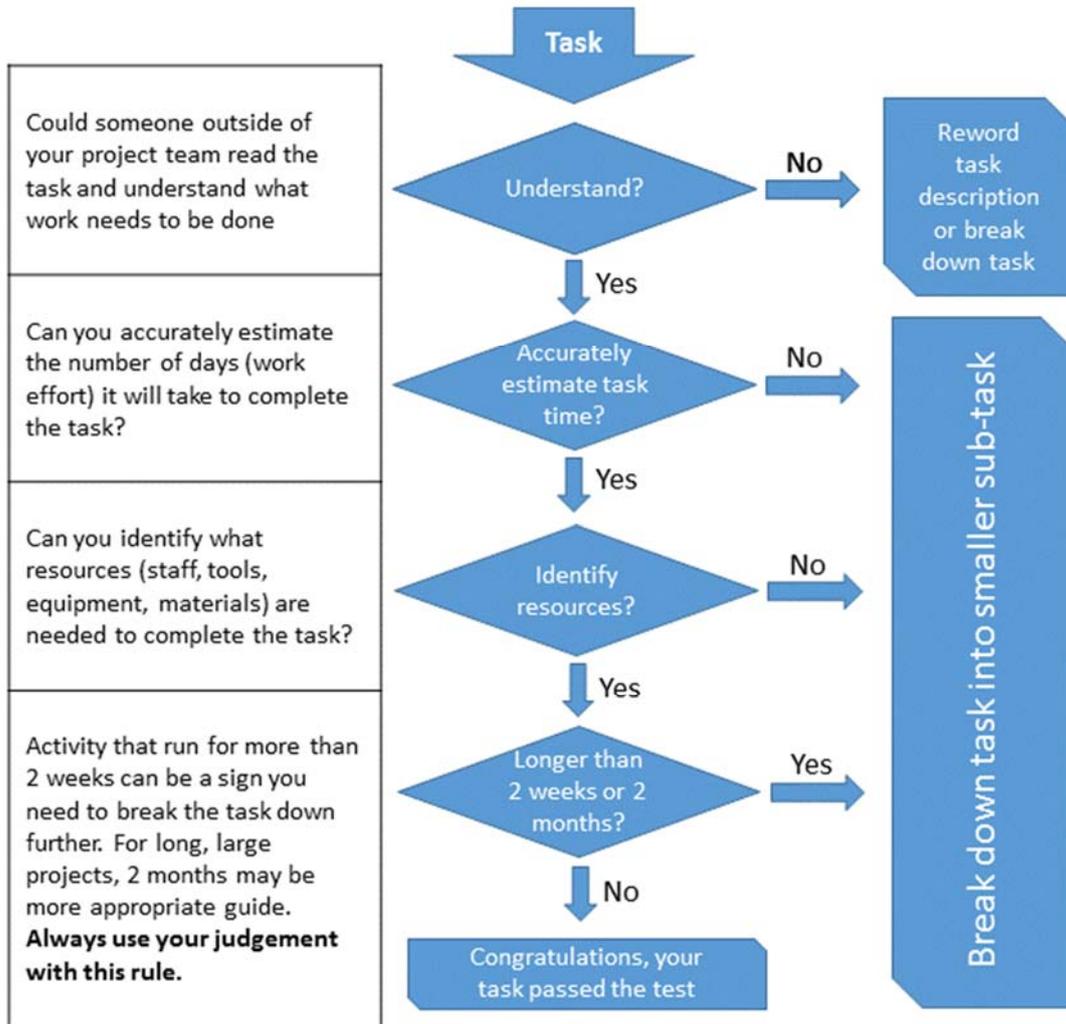
Project Monitored	Project Evaluated	Project Managed
<ul style="list-style-type: none"> • Conduct a baseline, mid-point and post-program survey • Interview beneficiaries • Collect and document photos, stories, outcomes and lessons • Collect technical monitoring data (e.g. water or soil quality testing, crop yields) • Collect the number of people reached / benefiting 	<ul style="list-style-type: none"> • Complete project progress report – what’s working & what needs improving • Create evaluation report(s) mid-point and end of project 	<ul style="list-style-type: none"> • Track expenditure against budget • Track progress against timeline • Track risks in risk matrix • Manage staffing (hiring) • Attend meetings • Produce 3, 6, 12 monthly reports • Financial acquittals / reconciliation • Revise logframe matrix & project design based on M&E • Manage procurement

• Update indicator tracking table		•
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Is my task detailed enough or do I need to break it down into smaller sub-tasks?

It can be difficult for new project managers to know when they need to break a task down further into sub-tasks. The flowchart below (Figure 12) will help you determine if your tasks are detailed enough or if you need to break them down again into smaller more detailed sub-tasks.

Figure 12. Flowchart to identify whether tasks need to be broken down further



At the end of the day use your judgement and common-sense to decide if you should break tasks down further into sub-tasks.

Steps 2. Estimating task time & 3. Identify resources

The Work Breakdown Structure tool helped identify all the work (tasks) required by the project. The task duration to complete each task must now be estimated.

What is Task Duration?

- Number of days required to complete a task or activity
- Factors influencing the duration include the number of people that can work on a task; and the need to wait for other people or things to happen before you can complete the task (e.g. waiting for cement to set)
- Weekends or non-work days are not included in the task duration

Examples

The project manager will assume there is only one tank installer. One person working full time will take 10 days to install five rain water tanks. The task duration is also 10 calendar days.

Two people working full time will take 5 days each to install five rain water tanks. The task duration has been reduced to only 5 calendar days.

If there is only one worker and they must wait 3 days for a cement slab to set before installing the tanks, then the task duration will increase to 13 days with 3 days waiting for the cement to set and 10 days to install the tanks.

How do you estimate task duration?

There are many ways to estimate the task duration and some of these are outlined in the table below. Most projects use a combination of subjective (guessing) and empirical (past experience) to come up with an accurate estimate.

Estimation technique	Description
Subjective	Relies on guessing and the perception of the person of team doing the estimation. For example, the project team guess that it will take 2 weeks to lay the foundations for a new road, but no-one is really sure. Two weeks feels about right.
Comparative	Based on past projects to produce similar outputs or achieve a similar purpose. For example, a previous project lay the foundation for a new road and it took 20 days work effort for a 5 kilometre road. A new project that needed to create a 5 kilometre road might also require a work effort of 20 days to lay the road foundation.
Empirical	Based on real-life experience and observations from past projects. For example, the project team know from experience that the cargo ship is often delayed by 1 month there is a chance the required equipment will not arrive on the cargo ship.

To estimate the task duration, it is important to consider what resources (staff, contractors, equipment and materials) you need to complete the task. These resources will also be documented as part of this step.

Also remember that the knowledge, skills and experience of that that will work on the project will also influence the estimation of work effort required to complete a task. Skilled and experienced staff working on a task will complete the task in less time resulting in less work effort required and a shorter duration.

What are Resources?

Resources refer to anything that your project needs to do work. To keep things simple, we will categorise project resources into two groups.

1. Equipment, materials, tools and facilities

Examples: Laptop, water quality testing equipment, tractor, bolts, gravel, cement, garden tools, seeds, monitoring equipment, stationary, solar panels, water tanks, access to office, storage shed

2. Human resources – Staff and contractors

Examples: Administrative staff, project team staff, external contractors and consultants, board members

Putting it into practice - Step to follow to estimate time and identify resources

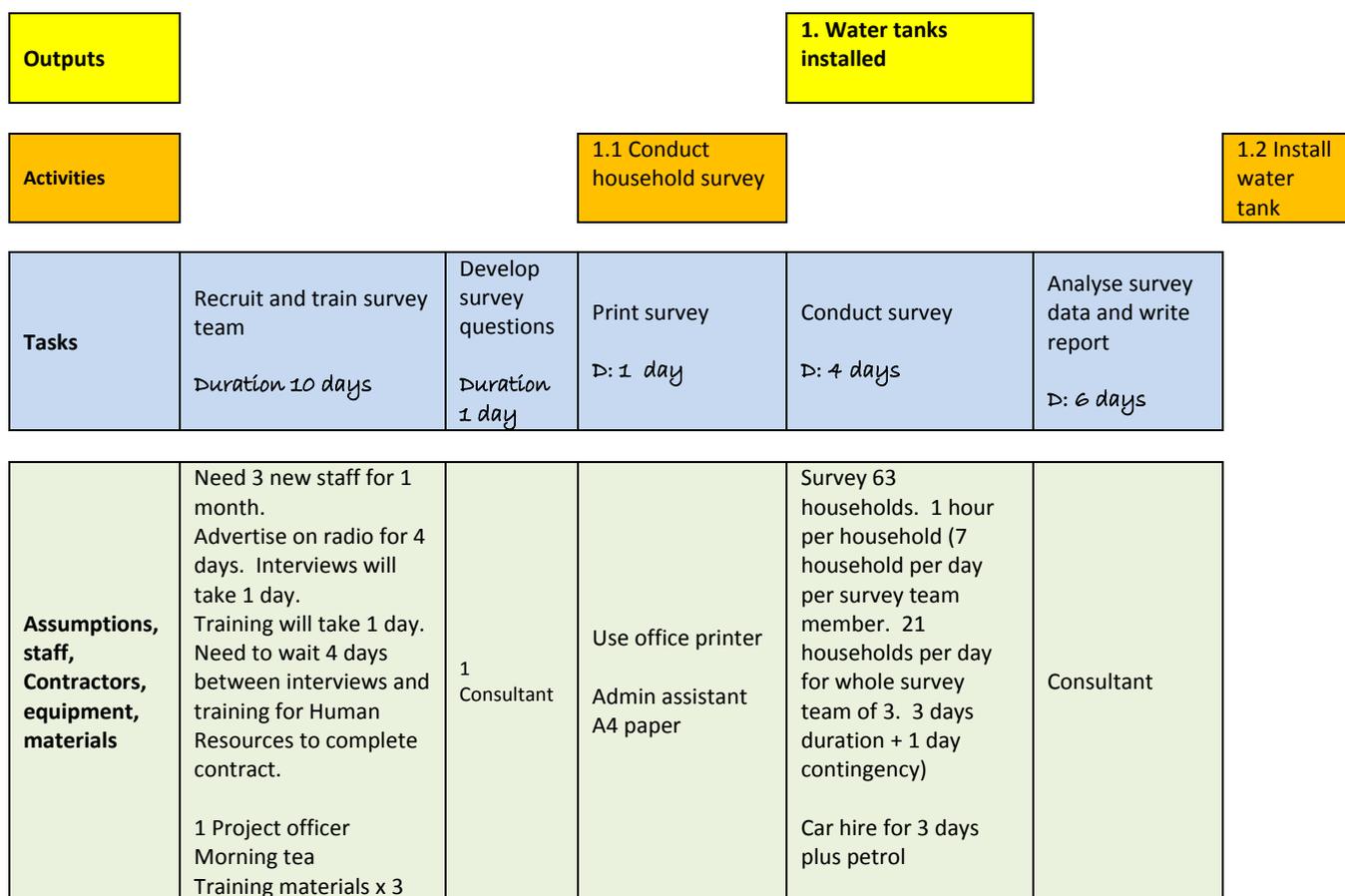
- a) Gather your project team together. If possible invite, or consult with other stakeholders who have experience in conducting the required work.
- b) Select a task on the Work Breakdown structure. Discuss the task with your team to estimate the work effort (number of days work for one person) required to complete the task. Remember to think back to your past experiences to help you estimate. If you are just guessing, maybe you need to ask an expert outside of your team.
- c) For the same task, estimate the task duration (the number of calendar work days required to complete the task). Remember this takes into account the number of people working on the task and if there is any need to wait before, during or after the real work has taken place.
- d) Write the estimated task duration (D:) down on the sticky note for that task. On another sticky note, write down any assumption you made to come up with that estimated work effort. For example, if you estimate 4 days to construct the concrete foundation of a building, how many workers are employed? Are you assuming the workers will use an electric cement mixer or wheelbarrow to mix the concrete? The assumption may make a big difference in work effort and duration estimated.
- e) On the second sticky note also add a list of resources required to complete the task (number of staff, contractors, materials, equipment, tools etc.)
- f) Repeat the above steps for every task or sub-task on the Work Breakdown Structure



Don't forget to take photos of your completed work breakdown structure

Figure 13 shows an example Work Breakdown Structure that has been expanded. Firstly, the work effort and estimated duration for each task is written on every task sticky note. Secondly, new sticky notes are added below each task to list the assumptions that were made to estimate the work effort and duration. The staff, contractors, materials and equipment to complete the task are also documented.

Figure 13. Expanded Work Breakdown Structure



In the example above, task “Recruit and train survey team” has a duration for the task is 10 days. The number of days the project officer needs to work may only be 2 days, however the complete task duration is set at 10 days because, the interviews cannot start until the project officer waits 4 days for the advertising on the radio to complete. Once the project officer has selected the team, they must wait another 4 days for contracts to be signed. So in total, the duration is 10 days. 2 days work plus 8 days waiting.



Estimate the work effort and duration to complete every task below. Document any assumptions you made. Write a list of resources (staff, contractors, materials and equipment) required to complete the task.

Don't forget to write in the number of resources required too (e.g 2 project staff members)

Task	Duration (# of days)	Assumptions	Resources
Research drought tolerant taro varieties			
Install water irrigation system for seedlings			
Plant taro varieties			
Write research findings report on drought tolerant crops			
Design livelihoods survey for farmers			
Clear land for access road to pilot site.			

Step 4. Organise tasks into a timeline

The timeline provides a way to visually organise activities and tasks into their sequential order. The timeline allows project teams to identify what tasks can be run at the same time (concurrently) and what tasks need to wait for other others tasks to complete before they can start (dependency). Once activities and tasks are organised in a timeline it is possible to determine how long the project will run for (the project duration).

Term	Description
Concurrent	Describes two or more tasks that can run at the same time. Running tasks concurrently may mean that the project may be completed is less time. Limitations might mean that some tasks that could run concurrently cannot in real life. For example, two tasks for an activity might be to “design a survey” and “recruit new survey team”. In theory, both of these tasks could happen at the same time. However, imagine there is only one project officer allocated to the project. This one person cannot do both tasks at the same time, so the tasks cannot run concurrently.
Dependency	Relationship between two or more tasks. The most common dependency is Finish – Start. That indicates that one task cannot start until another task finishes. For example, task “install rainwater tank” cannot start until task “create rainwater tank foundation” has finished.



Review the simple baking a cake Work Breakdown Structure (Figure 10) on page 37. Write down two tasks that could occur concurrently. Write down an example of a dependency between two tasks. Explain your choices.

	Tasks	Explanation
Concurrent		
Dependency		

Estimating the start-date

When pasting an item onto the timeline you need to decide when the item should start.

As a general rule, an item should start at the earliest possible logical date on the timeline.

If the item can run concurrently (at the same time as other items), then the start-date should be the same (or close to) the start-date of the item that it can run concurrently with.

If a dependency exists between items, then the start-date for the item in question should be after the end-date of the related item. The start-date may be just after the related item's end-date, or there may be a gap in the middle (days or weeks) to allow for a contingency.

Estimating the end-date

When pasting an item onto the timeline you need to decide when the item should end. Most of the focus needs to be on estimating the end-date for sub-tasks and tasks. The end-date for activities (and task that have sub-tasks) can be calculated later.

The end-date for a task is the task start-date plus the task duration. The task duration was estimated in the previous step. The task duration did not include weekends or non-work days, so these must be added on when calculating the end date. For example, if a task starts on 1 May and the duration is 7 days, then the end-date is May 11 as there are two weekends (an extra 4 days) included over the 7 day duration.

End-date = Start-date + Task Duration + weekends and public holidays – 1 day

The end-date for a task with sub-tasks is the latest end-date of all its related sub-tasks.

The end-date for an activity is the latest end-date of all its related tasks.



Estimate the start-date and end-date for each of the tasks in the table below. The project start date is Monday 4th of May 2015. Remember to add on weekends where required to calculate the end-date.

Assumption: The survey questions can be developed at the same time that the survey team are being recruited and trained.

Recruit and train survey team <i>Duration 10 days</i>	Develop survey questions <i>Duration 1 day</i>	Print survey <i>D: 1 day</i>	Conduct survey <i>D: 4 days</i>	Analyse survey data and write report <i>D: 6 days</i>
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Activity / Task	Start-date	Duration	End-date
Activity 1.1 Conduct household survey	4/5/2015		
Recruit and train survey team		10	
Develop survey questions		1	
Print survey		1	
Conduct survey		4	
Analyse survey data and write report		6	

Creating the timeline

Follow the steps below to create a timeline for your project. You should do this activity with the assistance of your project team.

- a) Use a whiteboard (or table/wall and sticky notes) to create a template similar to the one below. Customise the estimated start-date and end-date for your project. The length of your project will help determine the horizontal time intervals. For short projects, you might use days or weeks. For longer projects (1 – 3 years), you might use months or quarters.

2016				2017	
March 2016	April	May	June ... Dec. etc.	Jan	Feb
<i>First activity</i>					
<i>First task for first activity</i>					

- b) Review the Work Breakdown Structure. Take what you think should be the first (or next sequential) activity and paste that onto the timeline in the next blank row. The first activity will start at the project start-date.
- c) Review all the tasks for the selected activity. Take what you think should be the first (or next sequential) task for the activity.
- d) Estimate the start-date and end-date (follow the guidelines given on page 45).
- e) Paste the task on the timeline on the next available blank row in line with the estimated task start date. If the end-date is beyond the dates taken up by the sticky note on the timeline, then draw a line across the timeline until the end-date is reached to show how long the task runs for.
- f) Review the remaining tasks for the selected activity. Stick each task onto a new row of the timeline in sequential order, using the estimated start-date and end-date to locate each sticky note.
- g) If the task has sub-tasks
 - i. Review all the sub-tasks and paste the one that should occur first onto the timeline in a new row underneath the task. Estimate the sub-task end-date. If the end-date is beyond the dates taken up by the sticky note on the timeline, then draw a line across the timeline until the end-date is reached to show how long the task runs for.
 - ii. Review the remaining sub-tasks for the selected task. Stick each sub-task onto a new row of the timeline in sequential order.
- h) Repeat the above steps for all activities in the Work Breakdown Structure
- i) Once all the activity's tasks and sub-tasks have been pasted onto the timeline, then the activity (and tasks with sub-tasks) end-dates can be estimated and drawn in.
- j) Review the entire timeline with the project team. Are all activities and tasks included? Are the assumptions that were used to estimate the work effort and duration reliable enough? Does the order of tasks make sense?

Project Duration

The project duration can now be calculated by looking at the project start-date and end-date on the timeline. The project end-date is the end-date of the last (or latest) activity on the timeline.

You need to check that the project duration and project end-date are both within the project funding guidelines. For example, donors may specify that funding will only be provided for 2 years and that all work must be completed by December 2017.

If your project end-date or duration falls outside of those guidelines, then you may need to:

- Rethink your activity scheduling - Can more tasks be completed concurrently or can they start earlier?
- Rethink the scope of your project - Do less to reduce the time required.
- Add more resources to the project – Have more people working on tasks so they can be completed in a shorter period of time.
- Seek additional funding – Additional funding from another donor could support the work that falls outside of the timeframes specified in the project guidelines.



Complete the timeline

Review the activities and tasks below. Draw a line from each sticky note to the cell in the timeline that best reflects the activity / task start date.

Draw a line across the timeline to indicate the activity / task duration if it is beyond the week the activity / task starts in.

Assumptions:

- The project starts on Monday 5th October 2015.
- Tasks “Recruit and train survey team” and “Develop survey questions’ can occur at the same time.
- Activity “1.2 Install water tank” cannot start until after Activity “1.1 Conduct household survey” has finished

Activity 1.1 Conduct household survey	Recruit and train survey team Duration: 10 days	Develop survey questions D: 5	Print survey D: 1	Conduct survey D: 10	Analyse survey data and write report D: 9	Activity 1.2 Install water tank D: 20
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Sample timeline template

5/10/2015	12/10	19/10	26/10	2/11	9/11	16/11	23/11	30/11	7/12

Step 5. Determine key milestones

Milestones are key points in time on your project timeline that reflect the achievement of an important activity, output or outcome. A project should have at least three or four milestones. Each milestone will have:

- Milestone number - starting at 1
- The achievement – the name of the completed activity or output
- The planned completion date - the date that the activity, or output should be completed by

Example Milestones

Milestone 1	Milestone 2	Milestone 3
Survey team trained 20/5/2015	Survey work completed 10/6/2015	Final report submitted 30/3/2015

Milestones are usually documented in funding contracts and project plans. The achievement of a milestone is sometimes tied to the receipt of the next round of funding. Projects must report on the progress they have made towards achieving their milestones. Milestone reporting allows the project team and donors to quickly evaluate if the project is tracking according to the planned schedule or is running ahead of, or behind schedule.

Follow these steps to creating milestones for the project:

- a) Review the project timeline. Select several key project activities or outputs that could be milestones.
- b) Create a new sticky note with the words “Milestone <number>” up the top.
- c) Write a description of the milestone underneath followed by the milestone date the milestone should be achieved by
- d) Paste the milestones together at the bottom of the timeline
- e) Take photos of your completed timeline for future reference.



Don't forget to take photos of your completed timeline

Step 6. Documenting your timeline in a spreadsheet

Using sticky notes is a great way to work together as a team to think through and create the project timeline, however, most project proposals will require you to document your timeline electronically as a spreadsheet, table or Gantt chart. The good news is that all the hard work has been done and it is a simple exercise to copy your timeline into a spreadsheet or other format.

The simple spreadsheet layout we will use is documented below. A simple Microsoft Excel template has been prepared to assist you.

Activity / Task	Duration (days)	Assumptions	Resources	2016			2017
				Oct	Nov	Dec	Jan
Act. 1.1 Build new road	65						
Conduct land survey	5	Few days wait on maps	Surveyor consultant				
Secure land lease	20	18 days for land-owner to consider	Lease Project officer				
Purchase equipment	30	27 days to deliver	Project officer				
Clear land	10	2KM per day per bulldozer	2 bulldozers				

Follow the steps below to copy the sticky note timeline into a spreadsheet

- a) Open the spreadsheet template provided or create your own.
- b) Review the sticky note timeline one row at a time.
- c) Copy the details for each activity, task or sub-task into the spreadsheet.
- d) The activity or task name should be copied into the first column.
- e) The work effort, duration, assumptions and resources get copied over into their respective columns.
- f) Shade or colour cells in the timeline section to indicate the activity task start-date and duration. These should reflect where the sticky note was placed on the timeline and where required, the horizontal line that was drawn to the task end-date.
- g) Enter all the milestones into the Timeline. Identify the task or activity that the milestone relates to. Scroll across to the end date and in that cell for that task or activity, enter the milestone details 'Milestone XX – xxxxxxxxxxxxxxxxxxxx'.

Step 7. Budget

A budget documents an estimate of all the project costs. The budget developed as part of the Logical Framework Approach is called a Resource Schedule and it goes one step further and seeks to document where the required project funding will come from. A more complex resource schedule will also indicate what time (year or month) the project funds are required. This information helps the funding organisation know not just how much funding a project needs, but when the project needs it.

A thorough understanding of a project's costs is critical. Funding agencies will be influenced by the amount and quality of the budget and it may partially drive their decision to invest in the project. In determining the project budget, it is important to be realistic as an under-costed project will impact negatively on the project's implementation, and likelihood of success. An over-costed project may not get funded.

Follow the steps outlined below to develop the budget for your project. A more detailed list of steps to follow is provided after Step 5, however you should read through all the information in steps 1 to 5 below before following the detailed guide.

- Step 1. Identify budget line items
- Step 2. Categorise costs
- Step 3. Estimate costs
- Step 4. Allocate source of funding
- Step 5. Adding contingency & currency exchange

Step 1. Identify budget line items

Budget line items are the name given to the goods and services your project needs to include in the budget. Each line item describes a good or service that your project needs to buy or hire. Examples of budget line items include might include:

- Water tanks
- Soil assessment (contractor)
- Car hire or Purchase car
- Shipping freight
- Project manager (salary)
- End of project financial audit
- Cement
- Laptop computer
- Office internet
- Video documentary production
- Project officer (salary)
- End of project independent evaluation

If you have created a detailed timeline as described in STEP 6 Timeline in this guide, then identifying budget line items is easy. Most of the budget line items are already included in the "Assumptions" and "Resources" columns of your timeline.

For each task on your timeline, review the assumptions and resources and create a new budget line items for each item you identify. A portion of a sample timeline is present below to help demonstrate how to identify budget line items.

Sample portion of timeline

Activity / Task	Duration (days)	Assumptions	Resources	2016			2017
				Oct	Nov	Dec	Jan
Act. 1.1 Build new road	65						
Conduct land survey	5	Few days wait on maps	Surveyor consultant				
Secure land lease	20	18 days for land-owner to consider	Lawyer Project officer				
Purchase equipment	30	27 days to deliver	Project officer				
Clear land	10	2KM per day per bulldozer	2 bulldozers				

From the above table you can easily identify the following budget line items

- Surveyor consultant
- Lawyer
- Project Officer
- Bulldozer

Land clearing equipment (the other equipment required is not specified in the timeline, but experts in our team might tell us we need to purchase chain saws, marker posts, culverts for drainage, shovels, safety protection equipment)

Thinking through each task more you might be able to identify additional budget items. For example:

- Fuel (for the bulldozer)
- Bulldozer driver
- Road clearing team (it will take more than just 2 people and 2 bulldozers to clear the path for the new road.
- Car hire or purchase for the project officer (if required)
- Office / desk for the project officer and his team
- Lease lodgement fees (or similar) in addition to the layers service fee.

If the same budget line items keep appearing in different tasks, you do not need to create a budget line item for each one. As you will see alter, you can simply increase the amount of the good or service that you need to buy or hire. (e.g 2 weeks of car hire instead of 1 week.)

An alternative approach to the one described above for land clearing work would involve the project sub-contracting the entire road clearing task to a private company. In that case, there would be just one budget line item for most of the road clearing expenses – Road clearing contract.

Once you have identified all the different budget line items, you can add them to the budget table, however, it is a good idea to categories the budget line items first (see the next step).

Step 2. Categorise costs

To develop a budget, project teams must be able to review all the project tasks and identify what budget items are included in those tasks. Examples of budget items include staff salaries, contractor costs and the cost of materials and equipment.

It can be useful to think about the different types of project costs when identifying items that will go into the budget. Several high level cost categories are outlined below that will be used to help develop the project budget. The donor or funding agency may use different categories, so please refer to their funding guidelines. Project cost categories:

- **In-direct Costs.** These are not directly linked to the project, but they are required to help support the project. These costs are more difficult to identify and estimate. They might include a percentage of the office building rent or overheads (electricity bill, phone bill, internet charges) required to keep an office running where the project team work.
- **Direct Cost.** These are costs linked directly to your project. These costs can be identified easily when looking through the tasks in the timeline. Direct costs can be further broken down into two sub-categories:
 - **Goods.** Includes equipment, tools and materials that need to be purchased, leased or rented. It can also include the transport and shipping of goods.
 - **Services.** Includes the cost of project staff and contractors. Costs to support staff to do their work can also fall under this sub-category. For example, staff transport, vehicle hire, fuel or mobile phone credit. Any sub-contracted work could also be included here. For example, 'H&J building land clearing'.



Categorise your costs

Review the tasks below taken from a Work Breakdown Structure. Identify at least 5 items that need to be included in the budget. Write the name of each budget item into one of the three columns of the cost category table to reflect the item's correct cost category. There should be one or more budget items in each cost category.

Recruit and train survey team D: 10 days	Develop survey questions D: 1 day	Print survey D: 1 day	Conduct survey D: 4 days
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Need 3 new staff. Project officer Morning tea Training materials	Consultant	Use office printer Admin assistant A4 paper	Survey 63 households in 3 villages Car hire for 3 days plus petrol
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Cost categories table

Indirect costs	Direct Costs	
	Goods	Services

Step 3. Estimate costs

Once the budget items have been identified and categorised they can be costed. Different strategies may be applied to items in each cost category to help with the estimation process.

- **Indirect costs.** A percentage of an indirect cost can be allocated to the budget item. For example, if the total electricity bill for the Ministry of Environment office is \$2000 per year, then the project budget may take on 2% or 5% of that cost to represent the use of that electricity by the project staff. Determining what the percentage of the total indirect cost should be used requires some judgement. The result must be fair both to the project (funder) and the organisation that normally pays for the item.
Instead of using a percentage, an indirect cost like rent of office space could use a rate per desk per year. For example, 2 project staff desks x \$500 per year, totalling \$1000 per year.
- **Goods.** To estimate the cost of goods we need to identify a number of things:
 - **Unit of measurement.** This describes how we will measure the number or quantity of items needed. For example, for equipment, for a bulldozer, the unit of measurement would be 'per bulldozer' if the project were buying one, or 'per bulldozer per day' if hiring one. For water pipe, the unit would be 'per meter of pipe'. For venue hire, the unit would be 'per day'. For bricks, the unit might be 'per pallet of 50 bricks'.
 - **Cost per unit.** This describes how much each unit of the item costs. For example, how much is one bulldozer? How much is one day of venue hire? How much is one pallet containing 50 bricks?
 - **Quantity required.** Describes the number of units required. For example, one bulldozer. Fix pallets of bricks (each pallet containing 50 bricks)

The total price of budget item is then calculated using the simple formula

Budget item cost = Cost per unit x Quantity Required

- **Services.** Staff and contractor and larger sub-contracted work can be estimated using the same technique as the goods. The unit of measurement will likely be days, weeks, months or years. The unit of work for sub-contracted work will likely just be the entire job described in the sub-contract. For example, the unit of work may be 'Drill 5 boreholes and install pumps by JJR Drillers'.

Estimating Work Effort

When estimating the quantity of units required for contractors or part time staff, it is important to think about the concept of **work effort**. **Work effort** refers to how much actual work is required to complete a task.

Example A. A project task may have a duration of 20 days, however, you may only need a supervisor to work 4 days on the task. The other 16 days may be spent waiting for some other event to happen (transport of materials). In this case, the quantity required cost for supervisor will only be 4 days (not 20) and the cost estimation should reflect this.

Example B. A task may take 10 days duration to complete, however if we assume there are 5 construction staff working full time on the task to get it done in 5 days, then we have a total of 50 days work effort (10 workers for 5 days each). The units required for the item construction labour will be 50 days (not 10) and the cost estimation should reflect this.

Some things to consider about work effort:

- the use of machinery (instead of manual labour) will reduce the work effort.
- the use of experience skilled staff will also reduce the work effort.

Accuracy

How accurate does the unit price and quantity required need to be? The answer is 'it depends' on why the budget is being prepared and at what stage the budget is being prepared. Different levels are detailed are required at the concept note, project proposal and implementation stage.

- **Concept Note.** At the concept note stage you might be able to get away with using your team's expertise to estimate the cost based on their past experience and knowledge. The actual budget expenditure from past projects can also be reviewed and used as a guide in some cases. For high cost or uncertain items, you may need to call around some service providers to gain a high level estimate over the phone.
- **Project Proposal.** A more accurate cost estimate is required to ensure your budget contains **all** the funding required to support the goods and services to run the project. This may require your team to phone organisations to obtain or confirm quote estimates. For high cost or complex budget items you should obtain one or more written quotes.
- **Implementation.** During project implementation, the procurement policy agreed to in the funding contract should be followed. This may require obtaining three written quotes. These updated costs should be reflected in the budget and used to monitor and report on any variance (likely overspending or underspending).

Quote tip

Always request the organisation providing a quote to ensure their quote is valid for a number months from the quotation date. The number of months should be guided by the time between the quote date and the date you actually expect to buy the good or service.



Cost estimation

Estimate the budget cost of the items in the table below.

Background information:

- 100 trees will be planted. A box of 10 trees costs \$10.
- A packet of 25 tree guards costs \$20.
- Two staff will plant the trees over 5 days.
- Each staff member is normally paid \$50 per week.
- A new shovel costs \$10.
- A contractor will be hired to clear 100 square meters of land to plant the trees for a lump sum price of \$500.
- The combined electricity, telephone costs for the Ministry of Environment office are \$3,000 per year.
- The Ministry has 10 full time staff.
- The new project will be hiring one project manager for 12 months.
- A project manager normally gets paid \$100 per week.
- The cost of renting office space for a private business is \$10 per week per desk.

Simple budget template

Budget item	Unit of Measurement	Quantity required	Cost per unit (USD)	Total cost (USD)
Goods				
Tree seedlings				
Tree guards	Packet of 25 tree guards			
Shovel	Per shovel	2	10	20
Services				
Project manager				
Tree planters				
Land clearing contract 100 m	100m of land clearing	1	500	500
Indirect costs				
Office expenses	Per year	1	300	300
Office rent	Per desk, per week	52	10	520
Total project cost				\$

Step 4. Allocate source of funding

Who pays - Where does the funding come from?

Once all the project costs have been estimated, the project team needs to indicate where the budget funding will come from. The type of project funding being offered will help the project team make the decision of where project funds will come from. Make sure you read the funding guidelines to determine if the funding is:

- All-inclusive. The donor agrees to pay all project costs.
- Matching funds or co-contribution required. The donor agrees to pay part of the project cost, but only if the implementing organisation or another donor also agrees to contribute a percentage of the total project cost or a percentage of the donor's funding. For example, if the donor required a co-contribution of 50% of the donor's funding, then for every dollar the donor gives, the implementing organisation or another donor must also contribute fifty cents. In some cases both cash and in-kind contributions can be used to match the donor's.

Providing a co-contribution, even if a co-contribution is not required, demonstrates to the donor that your Government is committed or has some buy-in to the project. This can help the donor build confidence that the Government will make a strong effort to successfully implement the project and can increase the likelihood of a project being funded.

- What will the donor fund, and not fund. Some donors will specify in their guidelines that they may not fund particular expenditure areas, such as office costs etc. In such a case, make sure that you allocate these costs as a matching contribution.

Cash vs in-kind co-contribution

Co-contribution can often be made by either a cash or in-kind contributions.

- A Cash co-contribution refers to a monetary payment made by an organisation.
- An In-kind co-contribution refers to a project cost that is avoided by the project team supplying the good or service required free of charge. The value of an in-kind contribution is estimated in the same way as a normal good or service cost.
For example, the project needs to hire a car to transport the survey team around the island. Instead of hiring a care for 2 weeks at \$300 per week, the Ministry of Environment agree to allow the project team to use a Government car for the week at no cost to the project. Therefore the car-hire cost of \$600 (2 x \$300) is an in-kind contribution given by the Government. The item still appears on the budget as it is a valid project cost, however the cost will be allocated to a separate column to indicate it is an in-kind contribution from the Government and not funding required from the donor. Use of a Government building to run a workshop or a staff member's time (and associated cost) can also be donated to the project as an in-kind contribution.



In-kind contributions

List some in-kind contributions that your organisation/Ministry may be able to give for a water and sanitation education project focused on education in schools. List the item and make some assumptions to calculate the in-kind contribution cost.

Step 5. Adding contingency & currency exchange

In the context of a budget, a contingency is an additional amount of project cost that is added onto the budget. A budget contingency can be added because there is some uncertainty as to the exact cost of a budget item. The risk of something going wrong, or not to plan, can also highlight the need for a contingency to be added. Risks and uncertainty might lead to the project needing to spend more money than is currently budgeted for, therefore a contingency is added to cover that additional possible cost.

Where to apply the budget contingency amount?

- **Budget line item level.** A budget contingency can be applied at the budget item level. This allows the project team to apply a contingency only to the budget items that have a high risk or high degree of uncertainty. The easiest way to add a contingency to a budget line item is to increase the estimated 'cost per unit'. Always review the total line item cost after doing this to make sure the contingency amount is appropriate. Another way to apply a contingency is to enter or type a revised total cost including the contingency value in the "Total cost" column for the line item. In a spreadsheet, the Total cost value would normally be calculated by a formula.
- **Total budget project cost.** A budget contingency can also be applied to the total budget project cost. This allows the project team to apply a contingency to the entire budget to compensate for perceived underestimates, uncertainty in project scope and project delays.
- **Both approaches.** Both of the above approaches can be successfully used together in moderation.

Whichever approach you take, it is most important to document what contingency has been added and to justify the contingency in writing to explain why it was added.

How much should the contingency amount be?

A contingency is generally applied as a percentage of either a budget item or total budget cost. The amount of the contingency generally reflects the level of risk (or uncertainty) that a budget item or project has. A very short and simple project may have no contingency included. An average project may have a contingency between 3% and 6% added. A larger or more complex project with many uncertainties may include a contingency of between 10% and 15%. A contingency for a concept

note budget will likely be much higher than the contingency included for a detailed project budget developed for a project proposal. The decreased contingency amount reflects the decreased level of uncertainty about the time and cost estimation as more work is put into these estimations when developing a detailed timeline and budget. **Always** check with the donor to see if they have any guidelines around contingency amounts and how they want you to handle contingency in your project.

Budget tip

Always make it clear what currency is being used in a budget. Include the currency in the budget table columns.

Managing multiple currencies

Budgets for development projects often need to deal with multiple currencies. There are two situations where dealing with multiple currencies may be required.

1. Donor funds are in another currency. The donor may request that a budget be developed using the local currency. However, the total amount of funding required from the donor needs to be requested in the foreign currency used by the donor. At the time of project implementation, the donor will allocate funds to the project in the foreign currency.

2. Goods or services need to be paid for in foreign currency. Goods and services purchased overseas may need to be paid for in a foreign currency.

Risk of currency exchange rate fluctuation.

Most currency exchange rates are not fixed and therefore there is a risk that a shift in the exchange rate will leave your project with less funds than needed to purchase the required goods and services.

Rising local currency. If the local currency rises in relation to the foreign currency between the time the budget was created and the time the funds are transferred, then your project will receive less funds (in local currency).

Falling local currency. If the local currency falls in relation to the foreign currency after you have received your donor funding, then the cost of overseas goods and services you need to buy in foreign currency will cost more (in local currency).

Exchange rate contingency.

When developing the project budget, work with your finance department and ask them to assist you to develop a contingency in your currency exchange rate so the project budget is protected from changes in exchange rates that may see the project have less funds than required for implementation.

Always document what the official exchange rate was at the time of performing any currency conversion for preparing a budget. Write down the source of where the exchange rate came from. Document both the official exchange rate and the exchange rate used in the budget (if a contingency was included).

Always work with your finance officer / department to assist with foreign currency conversions and exchange rate contingency.



Adding budget contingency

Review the simple budget below and add a 10% contingency to the total building materials cost to allow for uncertainty in the volume of materials needed. Add a 5% contingency to the total project cost to allow for uncertainty in the overall project and it is possible additional work may be needed to secure the building foundations.

Simply budget – requires contingency to be added

Budget item	Original Cost (TOP \$)	Adjusted cost (with contingency) (TOP \$)
Goods		
Building materials cost	100,000	
Services		
Project manager	40,000	40,000
Builders contract	50,000	50,000
Total project budget cost (TOP)	190,000 TOP	TOP
Contingency amount to add		TOP
New Project budget total including contingency (TOP)		TOP

A final word of caution on contingency

Don't be afraid to apply a contingency to your budget, but don't use contingency as a work-around for laziness in clearly defining your project activities, tasks, times, materials and cost estimates.

Don't use a budget contingency to be greedy and gain extra funding for your project. If the budget is too high or the contingency too great, then the donor may not fund the project.

Be careful of the multiplier effect. If you add a contingency to a budget item, then add a contingency to the total budget cost (that includes that increased cost for the budget item) and then apply a currency exchange rate contingency, then the first contingency amount you added will be multiplied an additional two times. The end result is that the actual final total budget including the contingency may end up being far greater than you originally intended and higher than is needed.

Developing your budget - Putting it into practice

A budget template spreadsheet has been provided to assist prepare the project budget. Note that the budget contains formulas to make the process easier. All cells with formulas have been shaded in a red colour, so be careful not to type in these cells unless you want to override the formula.

Follow the steps below to create a project budget. These steps summarise all the high level steps and tasks covered in the budget section:

1. Open the budget template spreadsheet or use an existing budget template normally used by your team.
2. Customise the template by including any additional donors in the far right hand side columns if required.
3. Decide if the budget will be created in local currency or a foreign currency (as per the donors requirements). Include the currency to be used in all cost related all column headings.
4. Review the timeline and focus on one task at a time. Identify the possible budget line items by reviewing the task, the assumptions, staff, materials and equipment listed.
5. Categorise the budget item. Decide if the budget item is a Good, Service or if there are any Indirect costs.
6. Create a new separate budget line item in the appropriate section (Good, Service, indirect cost) of the budget and enter the name of the budget item in the first column.
7. Enter a value for the 'Unit of Measurement', 'Units required' and 'Unit cost'. Where appropriate, obtain quotes for the unit price of items or make the most accurate estimate with the input from your project team.
8. For indirect costs, you have two options. Enter the flat rate cost in 'Cost per unit' column and enter 1 in the 'Quantity required' column. Alternatively, to apply a percentage of the total indirect cost, enter the total indirect cost in the 'Cost per unit' column and the percentage to be paid for by project into the 'Quantity required' column – Ensure you enter the % following the number. E.g. 10%
9. Once all the columns key costing columns for the budget line item are completed the total item cost should be automatically calculated.

10. If there is a high degree of uncertainty about a specific line item, then add a contingency amount and make a note of this in the Comments column to describe why the contingency was added and how much was added. A contingency can be added by either increasing the Cost per unit or manually entering a larger value in the Total Cost column for item.
11. When buying goods and services from overseas, don't forget to convert the foreign currency amount to the currency used in the budget. Always apply a contingency to the exchange rate and don't forget to document the exchange rate details and contingency in the Comments column.
12. Next decide who will pay for the budget item cost. Enter values in the "Where will the funds come from" columns to indicate which organisation will pay for the budget item. Will it be the Government making a cash co-contribution or in-kind contribution? Will it be a donor or will the cost be shared between the Government and donor?
13. If the same budget line item is identified in several tasks, then only include the item once in the budget. Instead you should update the budget line item by increasing the number of units required.
14. Repeat steps 4 to 13 for each task and sub-task in the timeline. You can insert new rows in the budget template as required. If inserting new rows, ensure you copy the formula down to the new cells created for columns G, O and P.
15. Review the project budget to determine if all the project costs have been captured.
16. Check the value next to "Are all costs covered by a donor or the Government?" down the bottom of the budget table. If the value is 'YES', then you have correctly allocated all the projects costs to the Government or donors. If the value is 'NO', then review the values in columns O and P to check which budget line items have been under or over allocated in the "Where will the funds come from" columns. Correct these items until all values match and a "Yes" is displayed next to "Are all costs covered by a donor or the Government?"
17. **The main budget is now complete.**
18. If required, you should now apply a contingency percentage to the total project cost. Below the main budget table, type this value into the orange cell next to "Contingency percentage to apply". Don't forget to justify why you chose that contingency percentage.
19. Below the "Contingency" section is a Summary Information table where you should be able to source all the key budget values to inform a project proposal. Don't forget to work with your finance department if you need to convert your budget totals into foreign currency amounts.

An example budget is presented in Table 6.

Table 6. Example budget for Toktoklau case study.

Only a small number of cost items are displayed.

Budget item	Unit of measurement	Quantity required	Cost per unit (AUD)	Total Cost (AUD)	Government cash	Government In-kind	Donor 1
GOODS							
Solar panels - 200w	Per panel	500	250	125,000			125,000
Panel frame	per frame	500	25	12,500			12,500
Panel stand	per stand	500	50	25,000			25,000
cement	bags	500	10	5,000			5,000
Wiring 10 amp wire	meters	200	20	4,000			4,000
Inverter	per inverter	6	9,000	54,000			54,000
.....						
SERVICES							
Research assistant	weeks	2	200	400			400
Project Manager	years	1.5	20,000	30,000			30,000
Ministry of lands staff	days	1.5	100	150		150	
.....						
INDIRECT COSTS							
Office rent for project staff	per desk per ye	3	500	1,500		1,500	
Utilities (phone, elect, internet)	per year	1.5	1,000	1,500			1,500
	Total budget project cost (AUD currency)			259,050	-	1,650	257,400