Geoinformation management 2.

Project planning

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Abstract

The aim of the module is to give an overview of the process and practical methods of project planning. The module is starting with the project initiation process. Project planning and design will be discussed in details through the Logical framework Approach. Executing, monitoring, controlling and closing are introduced in the Module 3.

Table of Contents

Chapter 2. Project planning

1. 2.1 Introduction

A project is a temporary effort to create a unique product or service.

Project management from one side is a discipline: a set of principles, practices, and techniques applied to lead project teams and control project schedule, cost, and performance risks to result in delighted customers; and from a personal point of view it is a group of related and somehow interdependent people, the project management team.

Projects usually include constraints and risks regarding cost, schedule or performance outcome. The main challenges of project management are

- to achieve all of the project aims and objectives (scope) while honoring the defined project constraints.

- to optimize the allocation and integration of inputs necessary to meet definite objectives.

In the project development, we can tipcally distinguish the following 5 elements:

- Project initiation;

- Project planning and design;

- Project execution and construction;

- Project monitoring and controlling;

- Project closing.

Fig. 2.1. Project phases. (Source: http://en.wikipedia.org/wiki/File:Project_Management_(phases).png)

Project planning is a very basic part of project management. A project plan can be considered to have five key characteristics that have to be managed:

- Scope: defines what will be covered in a project,

- Resource: what can be used to meet the scope,

- Time: what tasks are to be undertaken and when,

- Quality: the spread or deviation allowed from a desired standard,

- Risk: defines in advance what may happen to drive the plan off course, and what will be done to recover the situation.

Fig. 2.2. The project triangle (Source: Coley Consulting Group)

The aim of project planning is to balance:

- The scope, and quality constraint against,

- The time and resource constraint,

- While minimising the risks.

The aim of the module is to give an overview of the process and practical methods of project planning. The module is starting with the project initiation process. Project planning and design will be discussed in details through the Logical framework Approach. Executing, monitoring, controlling and closing are introduced in the Module 3.

From the module you become familiar with the:

- Project initiation process

- Business, product and process requirements

- Stakeholder analysis tools

- Project charter

- Logical Framework Approach

- Logframe matrix

- Vertical logic - If-then causality

- Assumptions and risk management

- Horizontal logic – Indicators and Means of verification

After learning of this chapter, you will be able to:

- give an overview of the project initiation process as a whole,

- provide a stakeholder analysis,

- constract the power/interest grid of stakeholders,

- present a project charter,

- give an overview of the project planning process,

- build a Logframe matrix.

2. 2.2 Initiation

The initiation processes determine the nature and scope of the project. If this stage is not performed well, it is unlikely that the project will be successful in meeting the business' needs. The key project controls needed here are an understanding of the business environment and making sure that all necessary controls are incorporated into the project. Any deficiencies should be reported and a recommendation should be made to fix them.

The initiation stage should include a plan that encompasses the following areas:

• Analyzing the business needs/requirements in measurable goals

• Reviewing of the current operations

• Financial analysis of the costs and benefits including a budget

• Stakeholder analysis, including users, and support personnel for the project

• Project charter including costs, tasks, deliverables, and schedule

2.1. 2.2.1 Requirements

The requirement could be defined as a singular documented need of what a particular product or service should be or perform. Requirements show what elements and functions are necessary for the particular project.

The requirements phase may be broken down into requirements elicitation (gathering, understanding, reviewing, and articulating the needs of the stakeholders), analysis (checking for consistency and completeness), specification (documenting the requirements) and validation (making sure the specified requirements are correct).

Projects are subject to three sorts of requirements:

• Business requirements describe in business terms what must be delivered or accomplished to provide value.

• Product requirements describe properties of a system or product (which could be one of several ways to accomplish a set business requirements.)

• Process requirements describe activities performed by the developing organization. For instance, process requirements could specify specific methodologies to be followed, and constraints that the organization must obey.

Requirements are typically placed into the following three categories:

• Functional requirements describe the functionality that the system is to execute.

• Non-functional requirements describe characteristics of the system that the user cannot affect or (immediately) perceive.

• Constraint requirements impose limits upon the design alternatives or project operations. No matter how the problem is solved the constraint requirements must be adhered to.

The characteristics of good requirements are variously stated. However, the following characteristics are generally acknowledged (Based on Wikipedia).

Characteristic	Explanation
Unitary	The requirement addresses one and only one thing.
Complete	The requirement is fully stated in one place with no missing information.

Consistent	The requirement does not contradict any other requirement.
Atomic	The requirement is atomic, i.e., it does not contain conjunctions.
Traceable	The requirement meets all or part of a business need as stated by stakeholders and authoritatively documented.
Current	The requirement has not been made obsolete by the passage of time.
Feasible	The requirement can be implemented within the constraints of the project.
Unambiguous	The requirement is concisely stated without recourse to technical jargon. It expresses objective facts, not subjective opinions. It is subject to one and only one interpretation. Vague subjects, adjectives, prepositions, verbs and subjective phrases are avoided. Negative statements and compound statements are prohibited.
Mandatory	The requirement represents a stakeholder-defined characteristic the absence of which will result in a deficiency that cannot be ameliorated. An optional requirement is a contradiction in terms.
Verifiable	The implementation of the requirement can be determined through one of four possible methods: inspection, demonstration, test or analysis.

2.2. 2.2.2 Stakeholder analysis

A stakeholder is any person or organization, who can be positively or negatively impacted by, or cause an impact on the project. Types of stakeholders are:

• Primary stakeholders: are those ultimately affected, either positively or negatively by the actions.

• Secondary stakeholders: are the 'intermediaries', that is, persons or organizations who are indirectly affected by the actions.

• Key stakeholders: (who can also belong to the first two groups) have significant influence upon or importance within the project.

Stakeholder Management is an important discipline that successful people use to win support from others. It helps them ensure that their projects succeed where others fail. Stakeholder Analysis is the technique used to identify the key people who have to be won over. The benefits of using a stakeholder-based approach are that:

• You can use the opinions of the most powerful stakeholders to shape your projects at an early stage. Not only does this make it more likely that they will support you, their input can also improve the quality of your project.

• Gaining support from powerful stakeholders can help you to win more resources – this makes it more likely that your projects will be successful.

• By communicating with stakeholders early and frequently, you can ensure that they fully understand what you are doing and understand the benefits of your project – this means they can support you actively when necessary.

• You can anticipate what people's reaction to your project may be, and build into your plan the actions that will win people's support.

Stakeholder analysis helps with the identification of the following:

- stakeholders' interests,

- mechanisms to influence other stakeholders,

- potential risks,

- key people to be informed about the project during the execution phase,

- negative stakeholders as well as their adverse effects on the project.

The first step in your stakeholder analysis is to brainstorm who your stakeholders are. As part of this, think of all the people who are affected by your work, who have influence or power over it, or have an interest in its successful or unsuccessful conclusion. Remember that although stakeholders may be both organizations and people, ultimately you must communicate with people. Make sure that you identify the correct individual stakeholders within a stakeholder organization.

You may have a long list of people and organizations that are affected by your work. Some of these may have the power either to block or advance. Some may be interested in what you are doing, others may not care.

Map out your stakeholders on a Power/Interest Grid (as shown in the next figure), and classify them by their power over your work and by their interest in your work.

Someone's position on the grid shows you the actions you have to take with them:

- High power, interested people: these are the people you must fully engage and make the greatest efforts to satisfy.

- High power, less interested people: put enough work in with these people to keep them satisfied, but not so much that they become bored with your message.

- Low power, interested people: keep these people adequately informed, and talk to them to ensure that no major issues are arising. These people can often be very helpful with the detail of your project.

- Low power, less interested people: again, monitor these people, but do not bore them with excessive communication.
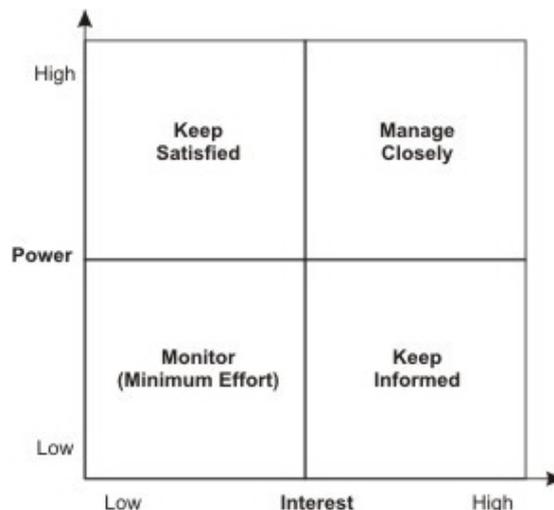
Fig. 2.3. Power/interest grid of stakeholders (Source: www.mindtools.com)

You can summarize the understanding you have gained on the stakeholder map, so that you can easily see which stakeholders are expected to be blockers or critics, and which stakeholders are likely to be advocates and supporters or your project. A good way of doing this is by color coding: showing advocates and supporters in green, blockers and critics in red, and others who are neutral in orange.

2.3. 2.2.3 Project charter

In project management, a project charter or project definition (sometimes called the terms of reference) is a statement of the scope, objectives and participants in a project. It provides a preliminary delineation of roles and responsibilities, outlines the project objectives, identifies the main stakeholders, and defines the authority of the project manager. It serves as a reference of authority for the future of the project.

The project charter or project definition report is usually a short document that refers to more detailed documents such as a project proposal.

The project charter establishes the authority assigned to the project manager, especially in a matrix management environment. The purpose of the project charter is to document:

• Reasons for undertaking the project

• Objectives and constraints of the project

• Directions concerning the solution

• Identities of the main stakeholders

The three main uses of the project charter:

• Serves as the primary document for the project.

• To authorize the project.

• As a focus point throughout the project - for example: project as people walk in to team meetings and use in change control meetings to ensure tight scope management

3. 2.3 Planning process

After the initiation stage, the project is planned to an appropriate level of detail. The main purpose is to plan time, cost and resources adequately to estimate the work needed and to effectively manage risk during project execution. As with the Initiation process group, a failure to adequately plan greatly reduces the project's chances of successfully accomplishing its goals.

Fig. 2.4. Overview of project planning (Source: Wikipedia)

Project planning generally consists of the following items

• selecting the planning team;

• developing the project aims (principal objective) and (specific) objectives;

• identifying the project outcomes;

• identifying the activities needed to complete those outcomes;

• risk planning;

• creating the work breakdown structure;

• estimating time for activities;

• networking the activities in their logical sequence (Gantt-chart);

• developing the schedule;

• estimating the resource requirements for the activities;

• estimating cost for activities;

• developing the budget;

• gaining formal approval to begin work.

Project team

The project planning team includes appropriate representation from customers/clients, and sometimes subcontractors and vendors. Initial roles and responsibilities should be defined. Deliverable: Initial project setup documentation.

Define Project Objectives

With the project team in place, the overall project purpose should be verified, and detailed project objectives developed. A phase-exit review will be conducted to ensure that the project is ready to move into the planning phase. Deliverables: project charter, phase-exit review checklist.

Initial plan

An appropriately detailed Work Breakdown Structure (WBS) will be developed to ensure the project scope is properly agreed and understood by all stakeholders. This also allows the complete project to be split into appropriate sub-projects and/or phases. Deliverables: Project work breakdown structure.

Once tasks of an appropriate level have been identified in the WBS, they will be organized by the project team into logical network diagrams, with estimated durations. This allows the project manager to predict when activities will be complete, assess the feasibility of target dates, and identify the critical path for the project. Deliverables: Initial work-plan

Resources, costs, risks

Certain project resources may be defined as critical resources. In particular, the project manager may suspect that key project staff may be faced with too much work. If so, estimated resource usage information can be added to the project plan to allow resource forecasting. Cost is obviously also critically important, and expenditures can be added to the plan to create estimated cash-flow requirements. Risk management can also be utilized on projects to provide a framework to better manage events that occur beyond the control of the project team. Deliverables: Resource availability and commitment profiles, risk identification and control strategies, cash-flow forecasts

Stakeholders support

To ensure the project is implemented as smoothly as possible, with the support of the involved parties, it will be necessary to review the initial plans with all the major project stakeholders, and solicit buy-in from each one. A phase-exit review will be conducted to ensure that the project is ready to move into the next phase, which is control. Deliverables: Approved final plan, phase-exit review checklist.

Communication

Once the plans are agreed to, they must be effectively communicated to all stakeholders. This can be done in hardcopy or via electronic media, depending on the resources available. On most projects a communications plan will be developed, and distribution of the plans will follow the guidelines laid out in the communications plan. Deliverables: Plan published to all stakeholders.

Additional processes, such as planning for communications, identifying roles and responsibilities, determining what to purchase for the project and holding a kick-off meeting are also generally advisable.

4. 2.4 Logical Framework Approach[1]

4.1. 2.4.1 Logframe matrix

The results of the logical framework analysis (LFA) can be presented, and further analysed, through the development of a Logframe matrix (LFM). The matrix should provide a summary of the activity design and, when detailed down to output level, should generally be no more than three or four pages long.

Tasks which are part of the activity work program may be listed in the logframe matrix itself. However, it may often be better to describe 'indicative' sets of tasks (required to produce each output) in the main narrative of the activity documentation. The implementation and resource schedules should be used to further detail when key elements of the work program are expected to be undertaken, as well as the division of work responsibilities between the various partners to implementation.

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[1] This chapter is based on: AusGuidlines – The Logical Framework Approach, AusAID, 2005

The Logframe matrix has four columns and usually four or five rows, depending on the number of levels of objectives used to explain the means-ends relationship of the activity.

	Description	Objectively Verifiable Indicators	Means of Verification	Risks and Assumptions
Principal Objective				
Specific Objective				
Results				
Activities		Resources/	Costs	

Fig. 2.5. The structure of the Logframe matrix

The vertical logic (reading up and down columns 1 and 4 of the matrix) clarifies the causal relationships between the different levels of objectives (column 1), and specifies the important assumptions and uncertainties beyond the activity manager's control (column 4).

The horizontal logic (reading across the rows of the matrix) defines how the activity objectives specified in column 1 of the Logframe (e.g. Goal (Principal objective), Purpose (Specific objectives), Outputs (Results)) will be measured (column 2) and the means by which the measurement will be verified (column 3). This provides a framework for activity monitoring and evaluation.

The Activity Description is completed first, then the assumptions, indicators, and finally the means of verification. However, completing the matrix must be approached as an iterative process. As one part of the matrix is completed, there is a need to look back at what has been said in previous parts to review and test whether or not the logic still holds. This process will often require the modification of previous descriptions.

The option of whether or not to include both an overall activity outcome and intermediate results/component objectives should be left open to the activity designers, depending on the scope and complexity of the activity. For example, in some cases it may be sufficient to have a goal, outcome and outputs, and to leave out intermediate results/component objectives.

It is recommended that in most cases the matrix itself should not include a listing of the work program of tasks required to produce outputs. The main reason for this is to keep the matrix as a concise summary of what the activity aims to do, rather than specifying in too much detail how it will do it.

The work program required to deliver outputs (if this detail is needed) can instead be separately detailed in an implementation schedule format, using reference numbers to link each group of tasks to a specific output. It can also be presented as narrative description in the main body of the design documentation.

Where different elements of the envisaged work program are allocated to different implementation partners, this is also presented in the resource schedules.

It is important to keep firmly in mind that the Logframe matrix produced during design is essentially a draft. It provides a snapshot in time. The activity design summarised in the matrix will need to be reassessed, refined and updated on an ongoing basis once activity implementation starts.

There is a careful balance to achieve. On the one hand it is important to provide enough detail in the design matrix to provide a clear and logical plan of action (which can be appropriately costed and, if required, contracted). On the other hand it is important to avoid being too prescriptive and establishing too rigid a structure that is more likely to constrain than facilitate activity implementation.

4.2. 2.4.2 Vertical logic - If-then causality

Constructing the Activity Description in the matrix involves a detailed breakdown of the chain of causality in the activity design (and the associated means-ends relationships). This can be expressed in terms of

- if inputs are provided, then the work program can be undertaken;

- if the work program is undertaken, then outputs will be produced;

- if outputs are produced, then component objectives will be achieved;

- if component objectives are achieved, then the purpose will be supported,

- if the activity purpose is supported, this should then contribute to the overall goal.

Each level thus provides the rationale for the next level down: the goal helps justify the purpose, the purpose the component objectives, and so on down the hierarchy.

4.3. 2.4.3 Assumptions and risks

Any activity is subject to influence by factors that are difficult to predict and over which no-one has direct control. Like life in general!

The fourth column of the matrix is used to highlight assumptions about the external conditions that need to be fulfilled if the vertical logic of the activity description is to hold true. It is also used to highlight key assumptions about the relationships between, and respective inputs of, the partners to activity implementation.

The relationship between assumptions and the activity description is shown in the next figure.
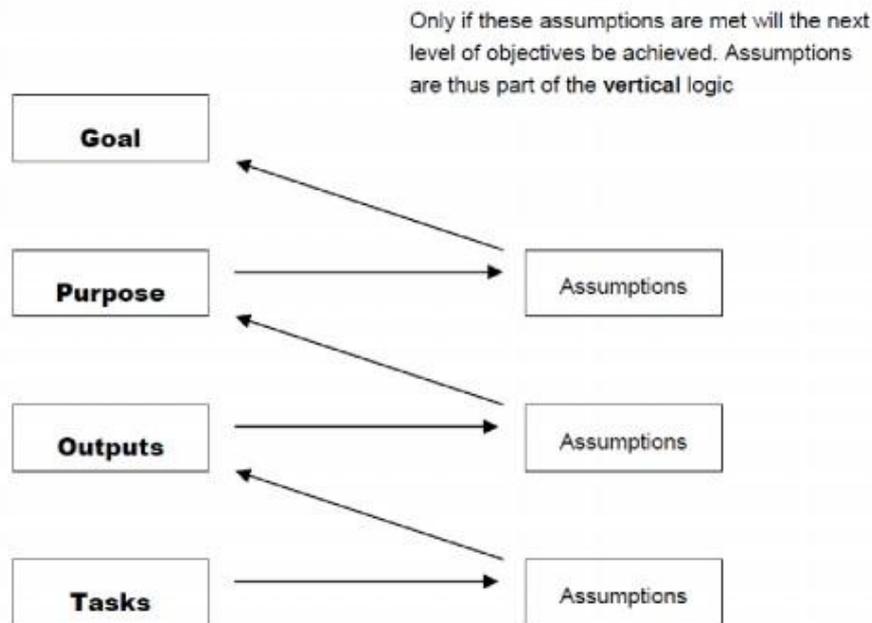

Fig 2.6. The relationship between assumptions and the activity description (Source: AusAID)

Understanding and assessing the nature of these assumptions is an essential part of good design. Failure to realistically identify and address assumptions is a common source of activity failure.

Some Logframe users prefer to talk about 'risks' in this fourth column - the primary distinction being that risks are negative statements about what might go wrong, whereas assumptions are positive statements about the conditions that need to be met if the activity is to stay on track. Whether assumptions or risks are used, the purpose is the same, namely to assess and address external impacts on the activity and improve where possible, the robustness of the design.

The primary difference between the assessment of risks for a policy or program support activity and for project support or once-off TA relates to the issue of 'manageable interest' (or 'who is in control'). Because a policy or

program activity works primarily through or within partner government institutions and systems, the partner government has greater control over the activity 'environment' than might be the case for a stand-alone activity.

Thus, some risks that a project support activity might face can be more explicitly brought within the planned scope of the policy or program based activity, if they are (reasonably) within the control of partner government institutions. Conversely, projects may be chosen as a preferred form of aid specifically because it is considered too high risk to work through or within government systems. Assessment of the operating environment on a case by case basis is therefore required.

A decision tree to help analyse the importance of potential risks, and decide what should be done about them, is shown in the following figure.

The Logframe provides a starting point for further risk assessment, stakeholder consultations on risk, and the preparation of a risk management plan.

4.4. 2.4.4 Horizontal logic

Indicators

Indicators specify how the achievement of activity objectives will be measured and verified. They provide the basis for monitoring activity progress (completion of work program tasks, delivery of outputs and progress towards outcomes).

Indicators are established in response to the question: 'How do I know whether or not what has been planned is actually happening or has happened?' We look for indications or signs to help us. For example: 'How do we know that more teachers have been trained this year? What would tell us that the training had had an impact on classroom performance? How do we measure progress towards the objective of strengthening community management capacity?' How do we know if these benefits are likely to be sustainable?'
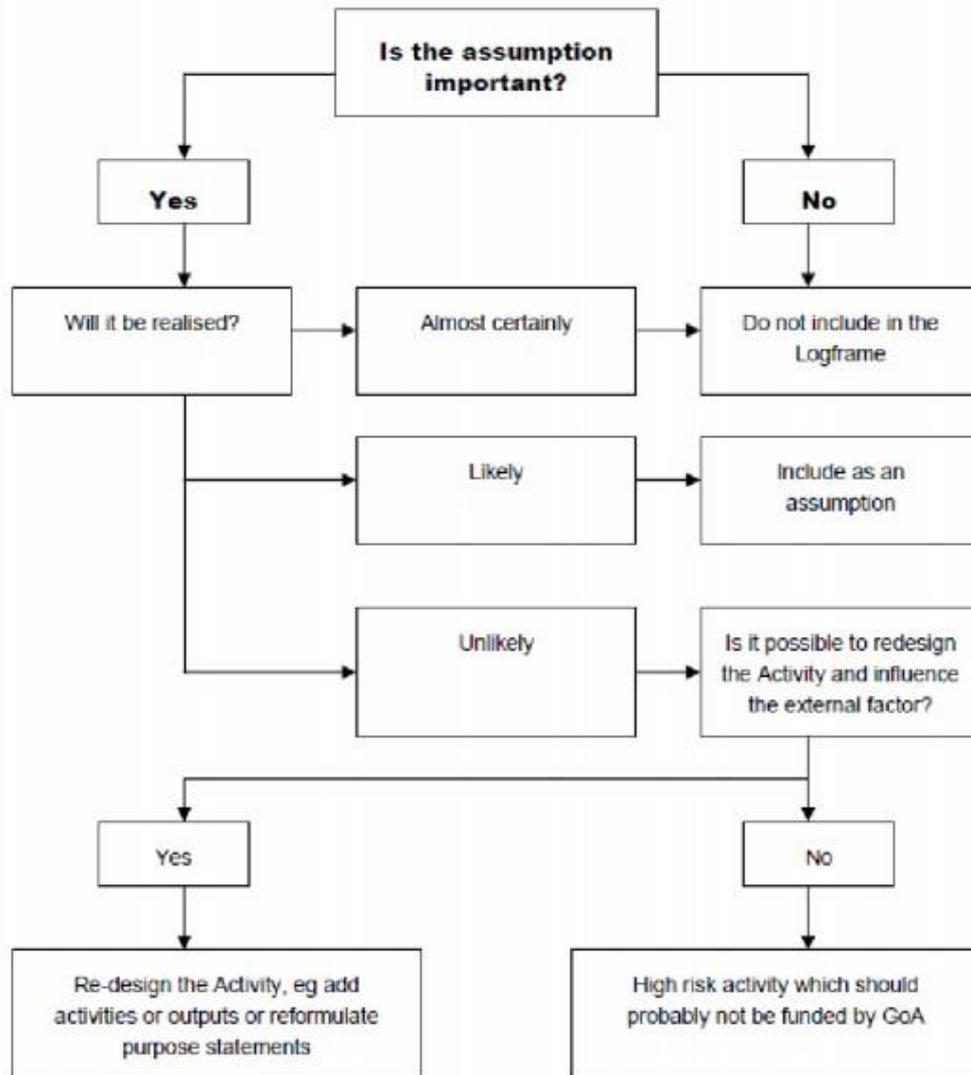
Fig. 2.7. Assumptions decision tree

There are no absolute principles about what makes a good indicator of physical achievement, however the SMART characteristics listed below (Specific, Measurable, Attainable, Relevant, Timely) are useful.

Specific – Key indicators need to be specific and to relate to the conditions the activity seeks to change. Cement delivered to a site is not a good indicator of the number of houses constructed. Likewise seedlings distributed from a nursery may not be a valid indicator of plants established. The horizontal logic of the Logframe matrix helps to test these criteria.

Measurable – Quantifiable indicators are preferred because they are precise, can be aggregated and allow further statistical analysis of the data. However, development process indicators may be difficult to quantify, and qualitative indicators should also be used.

Attainable – The indicator (or information) must be attainable at reasonable cost using an appropriate collection method. Accurate and reliable information on such things as household incomes and crop production from small-scale dryland farming are, for example, notoriously difficult and expensive to actually collect.

Relevant – Indicators should be relevant to the management information needs of the people who will use the data. Indicators must also be selected to meet the management and informational needs of all partners to implementation. Field staff may also need particular indicators that are of no relevance to senior managers, and vice-versa. Information must be sorted, screened, aggregated and summarised in different ways to meet different managers' needs. (However, the Logframe matrix itself should not attempt to contain this detail. Rather the

detail should be incorporated in the monitoring and evaluation framework, which is a key element of the final activity design.)

Timely – Information on an indicator needs to be collected and reported at the right time to influence many management decisions. Information about agricultural based activities, for example, must often come within specific time periods if it is to be used to influence events in the whole cropping and processing cycle. There is also no point choosing indicators that can only tell you at the end of an activity whether you succeeded or failed in meeting certain objectives. They may be lessons learned but the information comes too late for personnel to act on.

Where possible, indicators should incorporate elements of quantity, quality and time. This is about setting targets for implementers to work towards and against which progress can then be measured. As the saying goes, "what gets measured gets managed".

Caution should nevertheless be exercised when specifying quantified targets in the Logframe (rather than just the indicator or unit of measurement), particularly for Activities which focus on process/capacity development outcomes. Two issues are important here

- the Logframe should provide a summary of the activity and not contain more detail than is necessary. Details of the proposed management information system should be documented separately, using the Logframe as a guiding framework, and

- targets may be indicated during design, but the detailed assessment of what is really feasible needs to be undertaken and agreed upon by the implementing agencies once the activity starts. Setting targets is an important part of good planning, but the quality and usefulness of such targets depends very much on when and by whom they are set. Design teams may not have adequate information to confidently propose specific targets, particularly for process-oriented Activities implemented in partnership with local agencies.

Two particular limitations associated with specifying indicators using the Logframe structure also need to be recognised

- the indicators selected may be relevant to some, but not all, stakeholders. It cannot necessarily be assumed that all stakeholders have common interests and information needs, and

- even within one agency, information needs will vary between levels of the institutional hierarchy. As the level of management changes, so do the level of detail required and the nature of indicators.

The indicators selected for inclusion in the Logframe are usually focused on meeting the information needs of selected stakeholders and at specific management level, eg policy makers, program managers, AusAID. The point of view reflected in the hierarchy of objectives summarised in the Logframe may therefore need to be broken down into sub-sets of objectives, indicators and targets for each level of management once activity implementation starts.

Means of verification

The different means (and costs) of collecting information must also be considered when choosing appropriate indicators. Some indicators may give the information you would ideally like to have, but when the means of getting this is carefully considered it might become impractical, eg too complex or expensive. The Logframe matrix is a useful analytical and presentational structure for systematically identifying and assessing appropriate 'means of verification' for each indicator that is chosen.

Once it is clear what information managers might require (the key indicators) it is then necessary to consider how this might be obtained.

The following questions should be asked and answered

- how should the information be collected, eg sample surveys, administrative records, national statistics (as in the census), workshops or focus groups, observation, PRA or rapid rural appraisal techniques?

- what source is most appropriate? eg Who should be interviewed? Does the Bureau of Statistics already collect the required information? Is the source reliable?

- who should do it? eg extension staff, supervisors, an independent team?

- when and how often should the information be collected, analysed and reported? eg monthly, annually, according to seasonal cropping cycles?

- what formats are required to record the data being collected?

When developing answers to these questions, one of the main issues to keep in mind is the resource and capacity constraints that will be faced by those responsible for collecting the information. There is no point designing procedures which are too complex or costly as this will merely lead to frustration and disappointment in the outcomes. A balance must therefore be struck between what would be desirable in an ideal world and what is feasible in practice.

Staff working on an activity may need to collect some primary information specific to their work, but should aim to use existing sources where these are available. Where local systems are failing or inadequate, rather than build parallel systems, it may be more effective in the long-run to support the development and use of local systems. The main point is to build on existing systems and sources (where possible and appropriate) before establishing new ones. Check what's already there before assuming it isn't.

5. 2.5 Summary

The aim of the module was to give an overview of the process and practical methods of project planning. The module is starting with the project initiation process. Project planning and design will be discussed in details through the Logical framework Approach. Executing, monitoring, controlling and closing will be introduced in Module 3.

From the module you become familiar with the project initiation process, Business, product and process requirements , stakeholder analysis tools, project charter, Logical Framework Approach, Logframe matrix, assumptions and risk management, indicators and means of verification.

After learning of this chapter, you will be able to:

- give an overview of the project initiation process as a whole,

- provide a stakeholder analysis,

- constract the power/interest grid of stakeholders,

- present a project charter,

- give an overview of the project planning process,

- build a Logframe matrix.

Review questions

1. Summarize the project initiation process as a whole!

2. Explain the sorts of requirements!

3. What are aims of the Stakeholder analysis?

4. Give example for the power/interest grid of stakeholders!

5. Compose a project charter for a simple project!

6. What are the main items of the project planning?

7. Describe the structure of the Logframe matrix!

8. What is the relationship between assumptions and activity description?

9. Explain the role of indicators and means of verification!

References

A Guide to the Project Management Body of Knowledge, PMBOK® Guide, Project management Institute, 2000.

AusGuidlines: *The Logical Framework Approach,* AusAID, 2005.