

Project management

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1 Management of water and sanitation programmes

This chapter will focus on planning and implementing water and sanitation projects. In general, projects may be stand-alone or may be integrated into a more comprehensive programme where several projects contribute to one overall goal (water and sanitation projects can fit within health, food security, education or capacity-building programmes). Despite the difference in scale and nature of projects, there are aspects of sound project management that are universal. The components discussed here are adapted to the humanitarian context and, more specifically, to water and sanitation interventions.

This chapter is based on Project-cycle management and the Logical Framework approach. Project-cycle management involves an approach and a set of tools for designing and managing projects, which are used by most humanitarian agencies and donors. However, there are also agencies which are strongly critical of the use of these tools, as the stages of the cycle are not so neat in reality, and they merge and involve an iterative process. Also, project-cycle tools put too much emphasis on planning and appraisal, and too little on implementation or evaluation.

The Logical Framework approach is a set of useful tools for planning and managing a project. Its purpose is to provide a clear, rational framework for planning the envisioned activities and determining how to measure a project's success, while taking external factors into account (Introduction to the LFA, Adam Walsch, 2000).

Guidelines and standards are also necessary and complementary tools for preparing and implementing projects, and these are addressed in Section 1.2.

1.1 Project-cycle management

The project cycle describes the phases of a project from concept to completion (see Figure 2.1). The cycle is a progressive sequence which outlines information requirements, responsibilities and key decisions for each stage of a project.

Project-cycle management is an iterative process in which the stages are not always discrete, and experience acquired during the development of the project serves to develop further stages and to define future projects.

There are six main phases in the project cycle.

1) *Strategy and policy*

Strategy and policy are the bases on which projects can be identified and prepared.

Implementing organisations and donors develop their own strategies which define principles, intervention criteria and methodologies. These strategies can be separate among organisations and developed by country or region, where national, regional and sector policies developed by governments and other agencies must also be taken into account. In this sense, it is important for implementing organisations and donors to work in partnership with governments and other stakeholders, contributing also to the definition of these governmental strategies and policies.

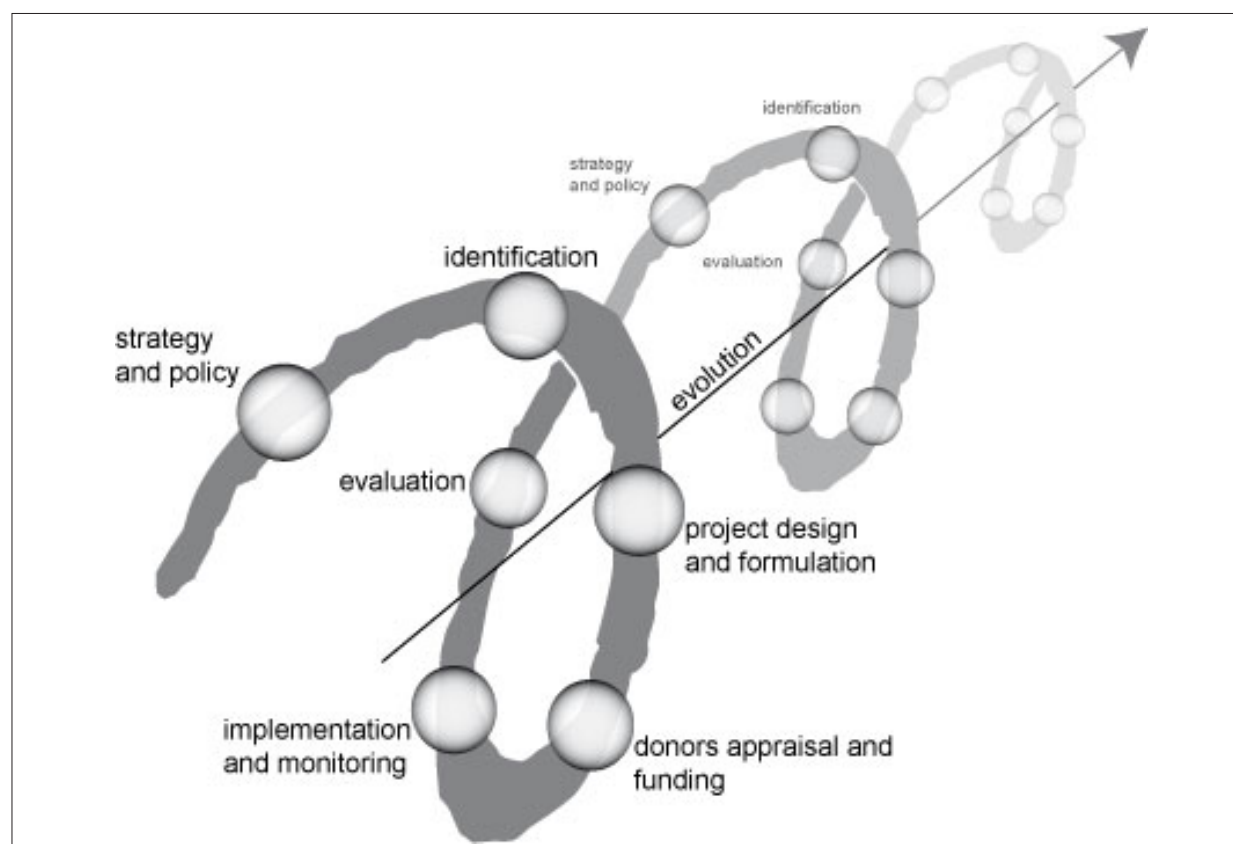


Figure 2.1: The Project Cycle.

Strategies should be periodically reviewed, updated and improved by taking project experiences and the changing operating environment into consideration.

2) *Project identification*

Identification of problems and analysis of the main options to address these problems are undertaken at this stage. Analysing the existing and potential capacities of various stakeholders and understanding the main characteristics of the context are required to create a well-developed project. This involves consultation with the intended beneficiaries, governments, NGOs and other stakeholders to ensure that needs are met and coordination is undertaken.

3) *Project design and formulation*

During this phase project ideas are developed, addressing technical and operational aspects. Once the main features are defined, the project is assessed for feasibility (whether it is likely to succeed) and sustainability (whether it is likely to generate long-term benefits for the beneficiaries). Projects should be assessed from technical, financial, economic, gender, social, institutional and environmental perspectives. The final steps of this phase are often the writing of a project proposal and its submission to potential funding agencies.

Note. – The separation of the project identification and project design and formulation phases is particularly important. Project preparation takes place in a social and political context, where expectations are raised and often-conflicting demands and aspirations must be reconciled. By adhering to the identification phase, the relevance of project ideas can be systematically established before the preparation process is too far advanced for the idea to be dropped. During the formulation phase, project ideas can then be fully developed with the knowledge that they are based on real beneficiary needs and are sufficiently ‘owned’ by the main stakeholders.

4) *Donors appraisal and financing*

Project proposals are examined by the funding agency, and a decision is taken on whether or not to fund the project.

5) *Implementation and monitoring*

Implementation of project activities is undertaken, with on-going monitoring of progress and feedback from beneficiaries and stakeholders. Adaptive management, or a continuous review and updating of operations in the context of the ever-changing situation, should be used. Even fundamental objectives may need to be modified in the light of any significant changes that may have occurred since earlier planning.

6) *Evaluation and evolution*

Achievements and lessons learned should be reviewed upon project completion. Evaluation findings are used to improve the design of future projects or programmes.

This chapter provides a general overview of the management of a project, but it should be complemented by the other chapters of the book.

Applying guiding principles and analytical tools and techniques within the structured decision-making process of the project cycle ensure that:

- *Projects are aligned* with agreed strategies and the needs of beneficiaries:
 - projects are linked to sectoral, national and implementing agency objectives;
 - beneficiaries are involved in the identification and the planning process from the earliest stage;
 - problem analysis is thorough;
 - objectives are clearly stated in terms of benefits to target groups.
- *Projects are feasible* in that objectives can be realistically achieved within the constraints of the operating environment and the capabilities of the implementing agency:
 - objectives are logical and measurable;

- risks, assumptions and implementing agency capabilities are taken into account;
 - monitoring concentrates on relevant targets.
- *Projects are sustainable:*
- factors affecting sustainability are addressed as part of project design;
 - previous evaluations building upon lessons learned are integrated into the design of projects;
 - beneficiaries are involved significantly through all the project-cycle phases;
 - methodologies and technologies are adapted to the specific situation;
 - local capacities and resources are utilised to the fullest.

1.2 Guidelines and standards

Standards and procedures for different aspects of the projects can be developed in specific guidelines as a support for designing and implementing projects. Guidelines can be set by a host of stakeholders (governments, donors, organisations, communities) at various levels (international, national, local, organisational). Implementing organisations should be aware of all relevant guidelines and utilise them to the extent that they are appropriate. Special attention must be paid during emergency responses, as normal standards may not be appropriate.

Different types of guideline can be used for different aspects of the project:

- standardised models and designs (e.g. type of latrine or water point);
- minimum requirements to attain (e.g. water quality or number of people per handpump);
- programme procedures (e.g. standard evaluation procedures).

Using guidelines can ensure that efforts are streamlined and simplified, and that it is easier to evaluate whether or not basic needs are met.

There are two main types of standard used for project management. One concerns reference values, designs etc. that are used as criteria for guidance and comparison (e.g. standard use of a specific handpump model in a particular region).

But *standard* also has the meaning of a level of service or resources necessary to cover the needs of a population (e.g. all the children in the schools should have access to enough clean water). Minimum standards in humanitarian projects are framed in this last sense and focus on coverage of the most basic needs.

Minimum standards should be complemented by quantitative and qualitative indicators. During the project identification phase, standards and indicators can be used to assess the needs of communities and to plan the intervention. For example, water demand can be estimated by comparing the quantity of water available per person per day with an expected indicator (i.e. X% of the population has Y litres per day less than the minimum requirement of 20 litres per person per day (l/p/d). Additional water supply should guarantee an extra of Z m³ of clean water per day to meet the standard).

Some reference indicators for water and sanitation programmes in emergency and stable situations are included in Annex 1. Box 2.1 describes some key aspects for the use of guidelines and standards.

Two guidelines are commonly used in humanitarian water and sanitation interventions:

– The *WHO Guidelines for Drinking-Water Quality* (www.who.int) contains common reference values, and outlines the relationship between water quality and the risks to human health (see Chapter 12 and Annex 7).

– The *Sphere Project Handbook* (www.sphereproject.org) includes the *Sphere Humanitarian Charter* and *Minimum Standards in Disaster Response*, which set out what people affected by disasters have a right to expect from humanitarian assistance. The aim of the Sphere Project is to improve the quality of assistance provided to people affected by disasters, and to enhance the accountability of the humanitarian system in disaster response. Sphere covers various fields including: water and sanitation, nutrition, food aid, shelters and site planning, and health services. Donors, policy makers and institutions often systematically refer to Sphere in relief programmes. Each guideline is developed as follows:

Box 2.1

Use of guidelines and standards.

Guidelines and standards must be considered as references to help in programme definition and implementation, and not as hard and fast rules. Guidelines are defined for common situations and may not be appropriate for all contexts. Each situation will require specific analysis to determine their relevance and use. It is always important to justify why set guidelines are used or not.

Not all the guidelines and standards have the same value. For water and sanitation humanitarian projects, priorities should be made to guarantee that minimum needs are met for survival, including:

- a minimum quantity of water per person;
- an appropriately determined number of people per latrine (along with other sanitation facilities).

The first priority is to supply of a minimum quantity of water. Quality of water also becomes a major concern when major health risks exist.

- *The minimum standards:* these are qualitative in nature and specify the minimum levels to be attained in the provision of water and sanitation responses (e.g. Minimum Standard 1 for water supply: *All people have safe and equitable access to a sufficient quantity of water for drinking, cooking and personal and domestic hygiene. Public water points are sufficiently close to households to enable use of the minimum water requirement.*).

- *Key indicators:* these are ‘signals’ that show whether the standard has been attained. They provide a way of measuring and communicating the impact, or result, of programmes as well as the process, or methods, used. The indicators may be qualitative or quantitative (e.g. *Average water use for drinking, cooking and personal hygiene in any household is at least 15 litres per person per day (see guidance notes 1-8).*).

- *Guidance notes:* these include specific points to consider when applying the standards and indicators in different situations, guidance on tackling practical difficulties, and advice on priority issues. They may also include critical issues relating to the standards or indicators, and describe dilemmas, controversies or gaps in current knowledge.

A common mistake in the use of Sphere is to consider the *key indicators* as the only reference without the consideration of the *minimum standard* and the *guidance notes* (for example, people often say that Sphere minimum standard for water supply is 15 litres per person per day but this is wrong: the minimum standard for water quantity and access is as written above; the key indicators can be more variable depending on the context, whereas minimum standards are intended to be universal). Programme objectives must be based on the *minimum standards* that express basic needs in a qualitative manner.

2 Needs assessment and project identification

2.1 Objectives of needs assessment

Any intervention or programme must be based on clear and well-defined needs. An assessment is the starting point of any project. It must be well planned and adequately resourced, with a clear description of how the assessment will be carried out (terms of reference).

The objectives of the assessment are:

- to understand the situation of the communities by identifying their needs and their problems;
- to understand the requirements and demands of these communities and how they understand their situation;
- to look at the resources and capacities available;
- to collect and analyse enough information to enable development of an effective plan.

Assessments must be conducted with a multidisciplinary approach and an understanding that the causes of problems are complex and cross-cutting (health, food security, water etc.), so a global picture is necessary. The assessment team should comprise several specialists and the analyses should be conducted collaboratively.

Assessments also should follow a systematic approach, combining different levels of analysis: country, region, community and household levels. Special attention must be paid to vulnerable communities and groups.

When identifying water and sanitation needs, projects must focus on the relation between water, sanitation and hygiene, and the basic conditions for life, including:

- health: water and sanitation-related diseases, routes of transmission and causes of development;
- food availability and production: relation with house income;
- quality of life: how water and sanitation affects the life of the communities, including access in terms of time and effort spent.

These three factors were already developed in the Chapter 1, but special attention must be paid to the transmission routes for water and sanitation-related diseases. Assessments should identify the linkages between water, sanitation and illnesses, identifying common paths for disease transmission. Figure 2.2 shows the faecal-oral routes of disease transmission and the estimated impact of different activities in the reduction of diarrhoeal diseases.

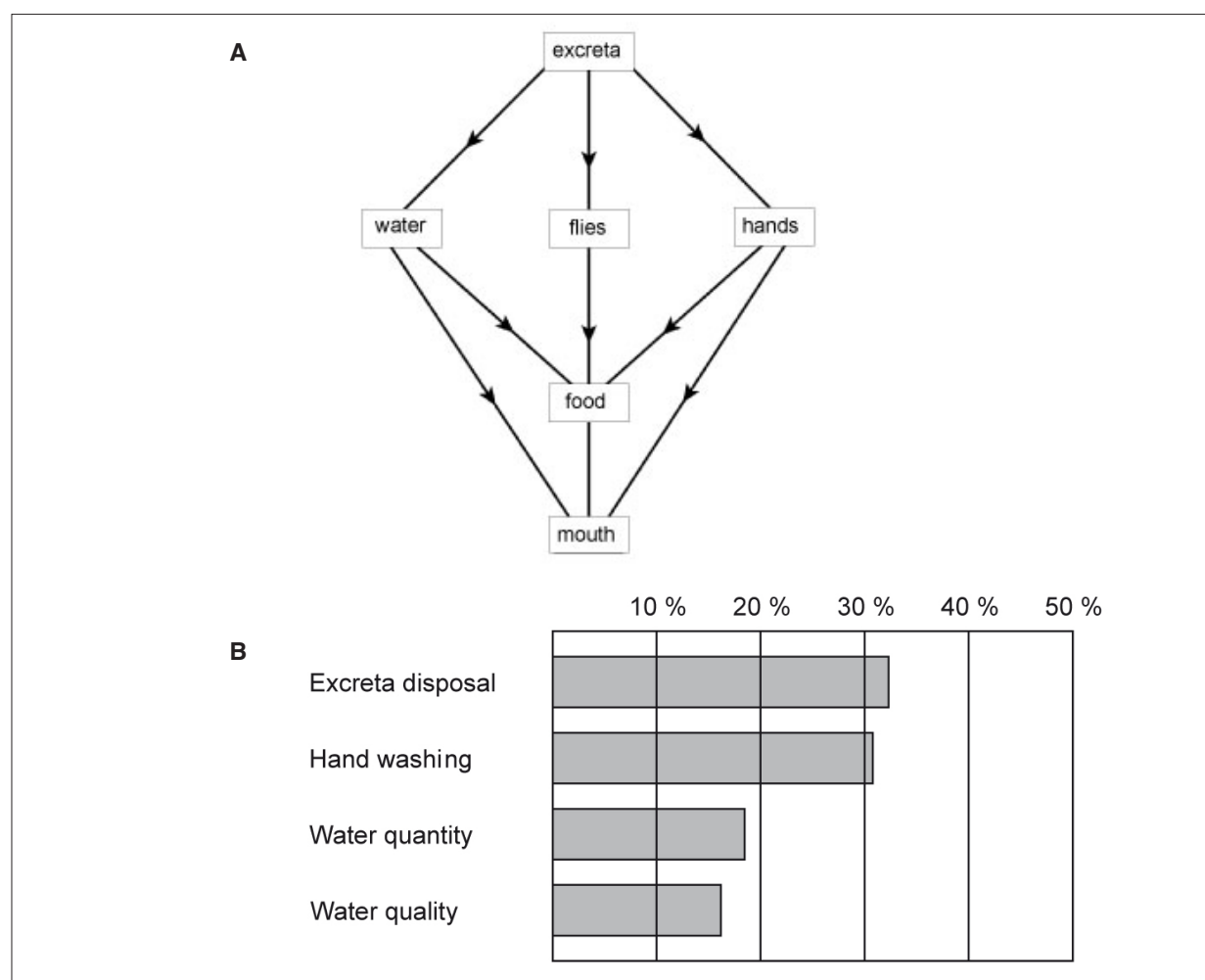


Figure 2.2: Faecal-oral routes of disease transmission (A) and estimated impact of different activities in the reduction of diarrhoeal diseases (B) (Esrey *et al.* 1991).

2.2 Water and sanitation-related diseases

It is necessary to distinguish between the infectious water-related diseases (caused by living organisms and transmitted from one person to another, or from an animal) and those related to the chemical properties of water.

Health and water chemistry

There are three main causes for diseases related to the chemical properties of water: the absence of necessary chemicals, the excess of harmful organics and the excess of harmful inorganics. The absence of essential substances in water is not generally a problem because there are alternative sources of these substances in food, and problems usually only occur when there is also a deficiency in the diet (e.g. iodine deficiency causing goitre, deficiencies of fluoride causing poor growth of bones and teeth in children). Diseases caused by harmful elements in water are discussed in Chapter 4.

Transmission of water and sanitation-related infections is mainly through the faecal-oral transmission routes, but also there are other routes also described below.

Water-related routes

There are four types of water-related routes by which a disease may be transmitted from one person to another (adapted from Cairncross and Feachem (1983) *Environmental health engineering in the tropics*):

Water-borne route: transmission occurs when the pathogen is in water which is drunk by a person or animal which may then become infected. All the water-borne diseases can be also transmitted by any route which permits faecal material to pass into the mouth. For example, cholera may be spread by various faecal-oral routes (for instance via contaminated food).

Water-washed route (or water-scarce): this concerns diseases for which transmission will be reduced following an increase in the volume of water used for hygienic purposes, irrespective of the quality of that water. There are three types:

- Infection of the intestinal tract, which includes faecal-oral route diseases (mostly diarrhoeal diseases, including cholera, dysentery) which can also be water-borne.
- Infection of the skin or eyes (bacterial skin sepsis, scabies, fungal infections of the skin, trachoma). These are not faecal-oral and not water-borne.
- Infections carried by lice, which may be reduced by improving personal hygiene and therefore reducing the probability of infestation of the body and clothes with these arthropods.

There are also other cases where availability of water is not a problem (floods, communities living in rivers or swampy areas), and risks of water-related diseases are high: again, hygiene is the key issue.

Water-based route: disease transmission is through pathogens which spend a part of their life cycle in a water snail or other aquatic animal. All these diseases are due to infection by parasitic worms (helminths), which depend on aquatic intermediate hosts to complete their life cycles. Guinea worm is the only one in this group which is normally transmitted in drinking water (it is not common, but schistosomiasis can be transmitted also in drinking treated water)

Insect-vector route: disease transmission is by insects which either breed in water or bite near water.

Table 2.I describes the main preventive strategies for the different types of water-related transmission routes. Further details of environmental classification for water-related infections are included in Annex 5A.

Excreta-related infections

Some excreta-related infections are related to water but several are not, so the following environmental classification of the excreta-related diseases is used:

1) *Faecal-oral diseases (non-bacterial)*: caused by viruses, protozoa and helminths present in human faeces; can be transmitted from person to person and through domestic contamination.

Table 2.I: Types of water-related transmission routes for infections (adapted from Cairncross & Feachem 1983).

Transmission route	Preventive strategies
Water-borne	Improve quality of drinking water Prevent casual use of unprotected sources
Water-washed (or water-scarce)	Increase water quantity used Improve accessibility and reliability of domestic water supply Improve hygiene
Water-based	Reduce need for contact with infected water* Reduce contamination of surface waters**
Water-related insect vector	Improve surface-water management Destroy breeding sites of insects Reduce need to visit breeding sites Use mosquito netting

* Applies to schistosomiasis only.

** The preventive strategies appropriate to the water-based worms depends on the precise life-cycle of each and this is the only general prescription that can be given.

2) *Faecal-oral diseases (bacterial)*: caused by bacteria; can be transmitted from person to person, or via food, crops or water sources contaminated with faecal material. Some of them can be transmitted in animal excreta.

3) *Soil-transmitted helminths*: this category contains several species of parasite worm whose eggs are passed in faeces. They require a period of development in moist soil, then they can reach humans by being ingested, for instance on vegetables, or by penetrating the soles of the feet.

4) *Beef and pork tapeworms*: these tapeworms of the genus *Taenia* require a period in the body of an animal before reinfecting man when the animal's meat is eaten without sufficient cooking. Any system which prevents untreated excreta being eaten by pigs and cattle will control the transmission of these parasites (it is also important to take care with treated sewage or sludge that is applied to grazing lands).

5) *Water-based helminths*: helminths present in human or animal excreta pass a stage of their life cycle in the body of an aquatic host (usually a snail). Then they can be transmitted to man through the skin or when aquatic food is not well cooked. It is important to avoid untreated excreta from reaching water.

6) *Excreta-related insect vectors*: there are two types: first, the *Culex pipiens* group of mosquitoes breed in polluted water (septic tanks and flooded pit latrines) and transmit filariasis; second, flies and cockroaches breed where faeces are exposed, and carry pathogens on their bodies and in their intestinal tracts.

Annex 5B includes the environmental classification of excreta-related infections.

An assessment should identify the presence of these water and sanitation-related diseases (mortality and morbidity rates, age distribution) and analyse the causes. Solutions will focus on decreasing disease transmission, hygiene promotion, sanitation and water supply.

It is also important to analyse all the factors that affect the spread of diseases and cause outbreaks, such as poor environmental conditions, high population density etc.

For a more complete presentation of water and excreta-related diseases, see Annex 5C.

2.3 Assessment components

Assessment should be an iterative process with differentiated stages (see Table 2.II and Figure 2.3). It starts with the preparation phase, where the different activities and resources necessary to run it are planned. Once the plan is made and the resources are available, it is important for the assessment team to introduce itself to the involved communities and stakeholders, explaining the aim of the assessment. Following this, a first overview serves to set the priorities and the various information-gathering activities are carried out. Analysis of the information starts at the same time as the collection process and continues until all the information is treated. Once the analysis is done and the results of the assessment are concluded, it is necessary to communicate and transmit them.

Box 2.2 presents some general advice to take into account during assessments.

Table 2.II: Components of an assessment.

1) <i>Preparation</i>	Collect and review existing information Terms of reference: – where is the assessment being carried out? – how long will the assessment be? – what resources (human and financial) are required? – what tools and materials are required? (checklists, computer, GPS) – what are the security constraints? Coordination with other stakeholders
2) <i>Introduction to communities, authorities and other actors</i>	Introduction of the organisation and the assessment team Explanation of the assessment, objectives and coordination requirements Collection and sharing of information
3) <i>First overview</i>	Global picture of the situation: main needs, actors involved, local capacities Identification of key informants Definition of priority communities and vulnerable groups More detailed planning of the assessment activities Basic mapping and general checklists to get information
4) <i>Surveys, questionnaires and sampling to gather qualitative and quantitative information</i> <i>Tools used vary depending on time and resources available</i>	Vulnerability surveys Field surveys Sanitary surveys Discussion groups Personal interviews Maps Sampling (water analysis, etc.)
5) <i>Analysis of information</i>	Organisation of information Prioritisation of information Conclusions and recommendations Reporting
6) <i>Communication of the results</i>	Communication and discussion with involved communities and other stakeholders

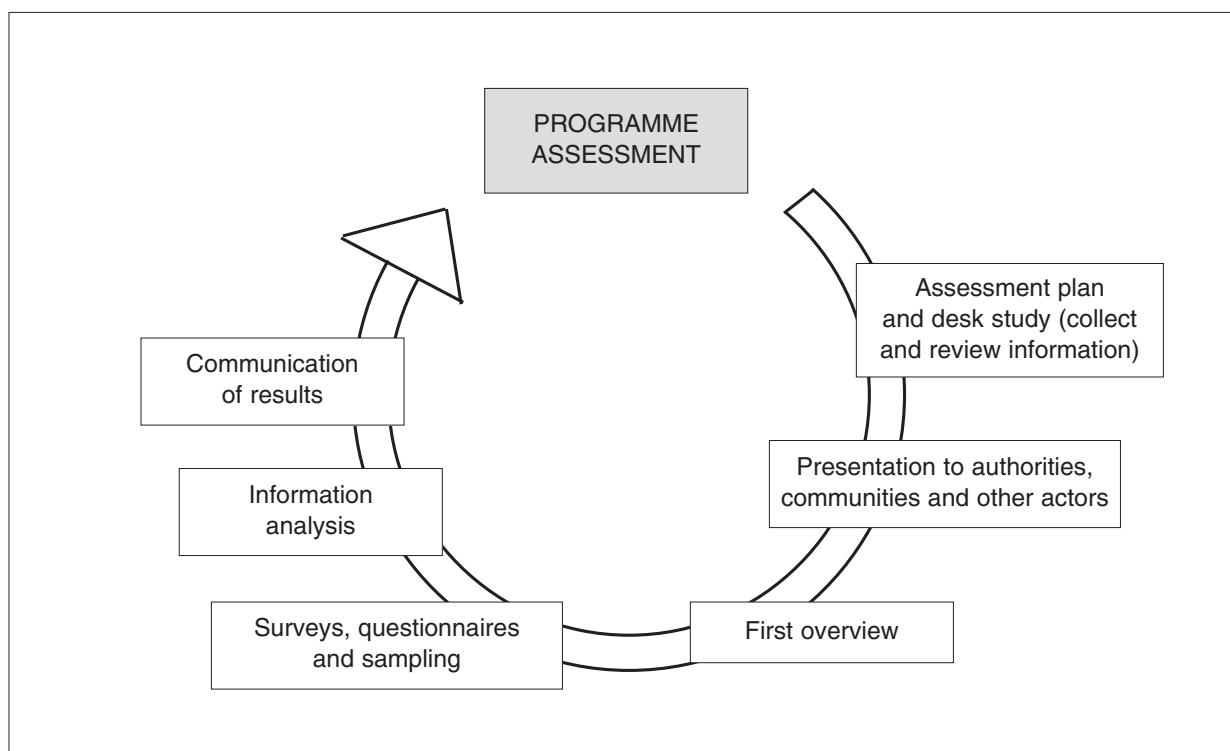


Figure 2.3: Stages of an assessment.

Box 2.2

General advice on assessments.

Several elements are fundamental to developing a useful assessment and they should be considered from the earliest preparation stage:

Timing should be allotted to each stage (strategy, assessment, etc.) as appropriate.

Respect for social and traditional protocols should be foremost in interactions with communities, the authorities and local leaders in terms of the following:

- following the traditional manners;
- dressing respectfully;
- choosing an appropriate place to make introductions such that others feel comfortable;
- structuring the interview and following an order, but leaving the interviewee to express his or her ideas and comments freely;
- building trust: not starting with sensitive issues, but building the trust of those interviewed first;
- limiting transcription: writing down everything someone is saying can be intimidating.

Discussions should be held with the team each day in order to brainstorm, plan activities, improve methodologies, etc.

Analysis of information must be done throughout all the steps – not only the final step. This continuous analysis allows the assessment process to be modified and adapted.

Communication of results to communities and other actors is important both to provide information and also to verify and complete information. Before leaving the community it is advisable to report the main conclusions of the assessment.

2.4 Resources and means to do an assessment

The size and expertise of the assessment team will depend on the objectives and magnitude of the assessment. However, different specialists should be involved, in order to have an integrated approach. Team members should include technical experts as well as those who are close to the target groups (translators are also necessary if there are members who do not speak the language fluently). Involvement of both men and women is particularly important, as a single-sex team may not be able to gain a complete picture of the community.

Transportation, food and financial allocations must be planned in advance. The equipment required depends on the type of assessment. However, some suggestions include:

- pens and paper for surveys and questionnaires (notebooks are useful);
- pre-prepared tools for working with groups: board, panels, diagrams etc.;
- brochures and papers presenting the organisation;
- GPS, altimeter and maps;
- technical water equipment: water-analysis kits, depth meter, flow meter, altimeter, pumping-test kits, geophysical equipment;
- computers and software: GIS (Geographical Information System) software (e.g. MapInfo, ArcView, ArcInfo), SPSS (Statistical Package for the Social Sciences), software useful for social analysis (including KAP surveys etc.), EpiInfo (Statistical software for epidemiological and health analysis) etc.

2.5 Information gathering

It is recommended to follow an iterative process between the collection and analysis of data. Quantitative information should be complemented with qualitative information. Statistics and figures must be analysed and explained so that they are understandable to the community.

Information should be collected from communities in a participatory manner. The approach can vary both among groups and within groups. Children, the elderly, marginalized people, and men and women may each require different approaches. Gender must be considered as a primary issue in assessments.

2.5.1 INFORMATION-COLLECTING TECHNIQUES

The choice of techniques and tools to collect information depends on the time and resources available. There are five main techniques:

- *Review of existing documentation.* This can be done during all the assessment process, and the information collected must be analysed and well referenced.
- *Conducting field and sanitary surveys.* Both technical measurements (water analysis, GPS location, water-table depth) and direct qualitative observations (e.g. queuing at water points) are important.
- *Personal interviews* (if it is difficult to cover all the target population then a representative sample of people can be selected from the community).
- *Interviews with key informants.* Select key people who can provide information about general or specific issues: teachers, local authorities, health personnel, water point managers, women's organisation leaders etc.
- *Focus-group discussions.* Between 5 and 10 is a good number of people for a group. Larger groups will require more developed interviewing and assessment skills. Participatory Rural Appraisal techniques ((PRA), see Chapter 15) solicit group participation and are useful for obtaining information. Homogeneous groups (by age, gender or social status) can be appropriate as people may be more open to express ideas without the pressures of other groups present.

Interviews require good skills and practice in order to obtain useful information. It is important to be well-understood and it is best to speak in the local language or have a good translator who is familiar with the community and its members (See Box 2.3).

Box 2.3

Interviewing techniques.

The delivery of questions is important in collecting useful information. Essential rules include:

Build trust

The interviewee must be comfortable with the interviewer. It is often a good idea if it is a member of the community who conducts interviews, after receiving training. It is also recommended that women are included on the assessment team, as in many cultures, women interviewees will be more forthright with other women.

Follow a sequence

Go from the general issues to the specific ones. Guiding words for questions are: Who? What? Why? When? Where? How? The interview is best conducted informally, more as a discussion.

Follow up

If a general question elicits an answer that implies more than one concept, follow up with more specific questions on each concept.

Avoid leading questions

Beware of assumptions. If the interviewer provides the answer in the question, other possibilities may be missed. Examples of leading/non-leading questions:

- Leading: “Do you fetch water from the well?” Non-leading: “Where do you fetch water from?”
- The leading question “Do you clean clothes in the well or the river?” should be formulated in several sentences: first asking “For which purposes do you need water?” and once a list of water uses is prepared, asking for each use “Where do you take the water from for this?”

Avoid ambiguous questions and unknown terms and concepts

- The question “Is it difficult to find water?” can be understood as difficulty in fetching the water (steep slopes or time consuming) or difficulty in actually locating water at all.
- Quantities and measures (distance, volume, weight, time, etc.) that are familiar to the interviewer may not be familiar to the interviewee. “How many litres do you consume per day?” may be inappropriate if the interviewee is not clear on the quantity associated with a litre. Interviewees may attempt to give answers in measurements they are not familiar with in an effort to answer. It is best to keep questions simple and try to solicit responses in measures common in the community. For example, if you see jerry cans at a person’s house, ask how many jerry cans they use. For distance, use familiar points of interest, for example “The water point is twice the distance to the school”. Rather than asking how many hours it takes to collect water, find a way to ask in terms of local schedules, maybe using meal times, as in “I leave after breakfast and come back before lunch”.

Cross-check information among a variety of sources to compare and validate it.

Most information is subjective and often represents personal points of view or personal interest. One person’s information may not fit the reality of the entire community. The interviewer must observe the attitude of the interviewees and gather information from many sources.

2.5.1.1 Participatory techniques

Participatory techniques are an approach (and family of methodologies) for shared learning with local communities in order to plan appropriate interventions together.

Bases of the participatory techniques:

- *Triangulation*. Analyse the problem from different perspectives:
 - using a variety of techniques and sources (observation, bibliography, survey);
 - meeting with various target groups (men, women, youth, elders, marginalized people etc.);
 - using more than one assessment team.

– *Understand possible information gaps.* Selecting only specific groups may not represent the reality of the entire community. Common errors in information collection are due to:

- easy access: places with easy access may not be the most representative;
- seasonal variations: problems and life may be different in different seasons. Be sure to account for this in information collection;
- personal points of view: this will vary among interviewees. Be sure to interview several people representing different views, not only community leaders;
- access to women: it can be difficult to speak with women. However, speaking directly with women is essential. It may be necessary to do this when a man is not present to gain more accurate information;
- expectations of the population: for example, if a community knows that the organisation is working on water, water may appear to be the major priority as they are trying to access all the assistance they can. However, a water-supply intervention may not be the most appropriate;
- courtesy: people may try to make you comfortable with their answers, at the expense of the true picture.

– *Knowing when to stop collecting information.* It is not possible to know everything. Given time and resources, at some point the programme manager will need to decide that enough information has been collected.

Good examples are the PRA techniques (Participatory Rural Appraisal).

PRA originated in RRA (Rural Rapid Appraisal, using on questionnaire-based surveys, popular until the 1970s). PRA was developed to provide a less extractive and more participatory approach that gave communities more ownership of the process and results.

PRA principles are described in Box 2.4 and main participatory techniques used by PRA are described in table 2.III.

PRA techniques are explained further in Chapter 15.

Box 2.4

PRA: key principles.

Participation: local people serve as partners in data collection and analysis.

Flexibility: there is no standard methodology. It depends on purpose, resources, skills and time.

Teamwork: outsiders and insiders, men and women, mix of disciplines are included.

Cost and time efficient, but ample opportunity for analysis and planning.

Comprehensiveness: for validity and reliability, partly-stratified sampling techniques and cross-checking should be used.

Table 2.III: PRA: key techniques.

Interviews/discussions: individual, household, focus groups, community meetings

History line

Mapping: community maps, personal maps, institutional maps

Ranking: problem ranking, preference ranking, wealth ranking

Problem trees

Trend analysis: historical diagramming, seasonal calendar, daily activity charts

Gender profiles

2.5.1.2 KAP surveys

Knowledge, Attitudes and Practices (KAP) surveys are focused on hygiene habits and behaviour and, together with participatory techniques, serve to identify and understand the approaches of the communities to these issues. The surveys are conducted to better understand why people are not practicing good hygiene. It may be because they do not have the knowledge necessary, there is something in the local culture or attitude that gets in the way or there is a breakdown in practice even though people hold the appropriate knowledge and attitudes. KAP surveys are also useful for measuring the impact of hygiene promotion projects and identifying where changes took place. KAP surveys are explained in more detail in Chapter 15.

2.5.2 Types of information

An assessment of water and sanitation first requires a general overview of the situation (what are the main general needs and what are the main problems that affect the community) as well as a good understanding of the relations between the different domains (health, food security, education etc.). After this is obtained, deeper analysis of water and sanitation issues should be conducted.

Information should be gathered at macro and micro levels, from reports, maps, databases etc. Special attention must be paid to the definition of indicators that describe the more basic needs.

2.5.2.1 General information

The main general information to be collected in the project identification phase is listed below:

- Geographic characteristics: principal locations, borders, climate, vegetation (accompanied by maps if possible). Natural disaster impact.
- Population: numbers and demographics (ages, sex, ethnic group, religion, nomadic populations, urban/rural migration, vulnerable groups).
- Politics: structure of the communities, local and traditional authorities, conflict between groups.
- Culture and religion.
- Resources: production, commercialisation, wealth indicators.
- Food availability:
 - markets: type of products, prices, access;
 - local production:
 - . agriculture: seasonal calendars;
 - . livestock;
 - . other resources;
 - food aid received:
 - . quantity per person per day;
 - . type of distribution, time and agency responsible;
 - access to food:
 - . family reserves;
 - . income-generation activities;
 - . coping mechanisms (changes in consumption patterns, capital losses, mutual support mechanisms etc.).
- Education: levels of schooling and literacy, general conditions in the schools.
- Health:
 - common diseases, prevalence and incidence of water and sanitation-related diseases;
 - risks of epidemics: critical places and periods;
 - mortality and morbidity rates: main causes of death;

- general conditions of sanitary structures;
- access to health services and drugs.
- Nutritional status (anthropometric surveys, weight-for-height).
- Local capacity: market availability of supplies, private contractor capacity, leadership capacity of the local authorities etc.
- Security situation.
- Communications: access, routes, transport, phone, radio, e-mail.
- General coverage of water and sanitation.
- Risk management.
- Preparedness capacities.
- Actors involved and areas of work: donors, international organisations and agencies, local organisations, local structures, businesses, private individuals, schools, universities or research entities.

Key indicators serve to better measure the situation and its evolution. Use and calculation of general key indicators are included in Annex 2A.

2.5.2.2 Specific information on water and sanitation

Specific information related to water is developed as follows.

1) Information related to the most basic needs

- Water-related diseases.
- Quantity of water related to different uses and requirements (human consumption, agriculture, livestock, environmental needs, other uses).
- Access to water: distance from household to water point, and collection time. Queuing time, and who collects water. Number of people using the water point and pressure on the water point.
- Water-quality analysis at various stages (water point, transport, storage, distribution, consumption). Identification of source of contamination.
- Are there any minimum standards as references?

2) Information relating to existing policies

- National, regional and local laws/traditions concerning water and sanitation.
- Existing guidelines and standardised solutions.

3) Water resources (Table 2.IVA)

- Exploited and potential resources.
- Characteristics of the resources: water quality, capacity of supply, definition of the aquifers.
- Prospecting information: geological studies, maps, aerial / satellite photos, water-resource studies.
- Seasonal variations of quantity.
- Water quality.

4) Water Systems

- Number and characteristics of existing water points (Table 2.IVB).
 - Type.
 - Condition and cleanliness.
 - Yield.
 - Quality of water.
 - Date of construction, constructor.
 - Ownership.
- Water source.
- Flow system: type (gravity, pump etc.) and characteristics (Table 2.IVC).

Table 2.IV: Types of water resources, water points and extraction systems.**A. WATER RESOURCES**

<i>Rainwater</i>	Annual rainfall distribution Calculation of water collected in the possible catchment area
<i>Surface water</i>	Exploitable water volume Access to the resource: distance from the settlement, topography Sustainability of the resource: rate of rise and fall Water quality
<i>Groundwater</i>	Location of the aquifer Exploitation capacity Geophysical characteristics Recharge rate Water quality (arsenic, etc.)

B. WATER POINTS

<i>Rainwater</i>	Volume of water available per day: depends on rainfall regime, catchment area, storage and consumption systems Percentage of the year with water availability Water quality
<i>Boreholes</i>	Depth, equipment, recharge rate, seasonal variation, yield, diameter, casing type, location of screen Water quality Pumping system Date of commissioning Ownership Constructor
<i>Wells</i>	Type: traditional, protected, type of casing Characteristics: depth, seasonal variation, recharge rate, yield, diameter, location of the catchment. Lift system: pumps, pulleys, etc. Date of commissioning Ownership Water quality
<i>Springs</i>	Flow, seasonal variations Protection of the spring (catchment) Distance from village Distribution system Water quality

C. WATER-ABSTRACTION SYSTEMS

<i>Manual</i>	Abstraction capacity Cleanliness of equipment (rope and container) Water quality (especially bacteriological) and identification of source of contamination
<i>Handpumps</i>	Type Characteristics Yield Length of pipes and depth of the cylinder Water quality (bacteriological, iron, etc.)
<i>Motorised pumps</i>	Power and electrical characteristics Pump curve, yield and total generated head (TGH) Depth of pump, diameter, length of the pipes Water quality (bacteriological and iron) Working hours per day
<i>Solar systems</i>	Power and electrical characteristics Pump curve, yield and TGH Operating hours and capacity of supply per working day depending on the season Maintenance schedule Water quality
<i>Wind pumps</i>	Pumping characteristics Wind characteristics Operating hours and capacity of supply per working day depending on the season Water quality Management Ownership

- Treatment system.
 - Need for treatment.
 - Type of treatment.
 - Treatment monitoring (water analysis).
 - Household treatment (boiling, filtration with clothes etc.).
 - Availability and type of disinfectant and or filtration.
- Water-supply system.
 - Distribution at the water point.
 - Water trucking: volume of storage, quality of water, final supply modality, supply management, access problems.
 - Water-distribution networks.
 - . Type of network (gravity or pumped).
 - . Quantity and quality of water produced.
 - . Reservoirs: type and volume.
 - . Pipeline characteristics (length, diameters, materials, fittings, control devices, pressures).
- Water distribution: (number and type of taps, public places). Who is going to take the water?

5) *Containers and household handling of water, type, volume, cleanliness, storage*

6) *Water management*

- Hours of use.
- Management.
- Ownership.
- Are user fees being paid?
- Does price limit access?
- Capacities for maintenance and new construction (availability of skilled people, equipment, materials and spare parts).
- Restricted access for animals.

Sanitation and hygiene promotion information require a good knowledge of beliefs and social habits (see Chapters 13 and 15). A summary of the main information required is listed below:

- Sanitation facilities.
 - Excreta disposal, characteristics and conditions.
 - . Latrines
 - Type and condition.
 - Coverage of latrines (people per latrine, % of people using a latrine).
 - Public latrines / family latrines.
 - Emptiness and life expectancy.
 - . Sewerage system characteristics.
 - . Existence of grey water and black water treatment.
 - Hygiene facilities (rivers, showers, laundry areas etc.).
 - . Coverage.
 - . Type and condition.
 - . Drainage.
 - Refuse management.
 - Existence of flooding problems due to poor drainage.
- Hygiene habits.
 - Knowledge, use and habits.
 - Availability of soap and hygiene products.

- Main vectors of diseases. Identification of the most exposed areas.
- Environmental conditions.
 - Characteristics related to water resources: sources of contamination, overexploitation.
 - Deforestation, erosion problems.
 - Stagnant water, drainages systems.

Calculation of key indicators for water, sanitation and hygiene are included in Annex 2B.

2.6 Assessment in emergencies

Assessment tools and methodologies must be adapted for emergency responses. Time is an important constraint and will affect the way assessments are carried out.

2.6.1 RAPID APPRAISAL

Rapid appraisal is the first activity to be undertaken at the onset of a disaster. It should take place immediately after the disaster occurs and be completed as soon as possible – usually within a few days.

The purpose is to gather sufficient information to decide whether the agency should respond to the emergency or not. It is not intended to be an in-depth assessment of the situation and often will not even involve personnel leaving the office.

The information can be gathered from:

- Local/national media such as TV, radio, newspapers, specialised relief agencies (IRIN etc.).
- Networking with other agencies, NGOs, government departments, UN agencies etc.
- Individual contacts.

The kind of information required includes:

- Whether or not the disaster represents a widespread threat to life, and if so, in what way.
- How and when the disaster occurred.
- The extent of the destruction resulting from the disaster.
- The area affected and the impact.
- The people affected and how they are affected.
- Capacity of local structures/resources to deal with the disaster.
- The extent to which other agencies (local, national or international) are able and ready to intervene and whether or not any possible response is adequate.
- The security situation.

If the initial decision is:

- *No action needed* – the disaster should be monitored and re-visited if and when circumstances change.
- *Action is needed* – a concept paper should be written detailing the assessment that needs to be undertaken, including terms of reference. In severe disasters, this will occur very quickly.

2.6.2 RAPID ASSESSMENT

A rapid assessment needs to provide timely, relevant and adequate information to enable effective decision making. The short time available and the need to provide a quick response are important factors that determine the assessment process and techniques. The assessment process is normally more directive than participative: the various information sources should be consulted but this is not the time to develop group dynamics well with the affected communities.

Box 2.5 presents the three main components of a rapid assessment.

Checklists are a very useful tool for emergencies, guiding the assessor in compiling the most important information to assess the situation. One example is the water supply and sanitation assessment checklist provided by Sphere (Annex 3).

Box 2.5

The 3Ds of rapid assessments.

Desk study (other people's information and views).

Direct (personal observations and measurements).

Discussion (semi-structured interviews or small meetings with key groups and individuals).

2.7 Sanitary surveys

A sanitary survey is a quick assessment focused on the evaluation of the environmental factors and human practices which could signify a danger to health. Most systems use checklists where parameters are scored 0 or 1, to produce a “total risk score” from the sum of specific risk points, which can be used to compare different situations.

Sanitary inspections are useful to identify possible sources of contamination of existing water sources in order to establish the remedial actions required and to assign priorities. They also provide an important baseline to monitor the situation and the impact of projects.

Sanitary surveys and inspections focused on water quality are further explained in Chapter 4. Examples of sanitary inspection forms and an example of risk analysis are included in Annex 7B.

3 Project design

The *identification phase* must provide a clear picture about needs, existing capacities and specific characteristics to understand and prioritise a situation. With this picture, a decision about whether or not to proceed in the preparation of a project can be made.

The *project design phase* goes further in the definition of the project, studying different possible solutions and how they can be developed. Any proposed actions should be analysed in terms of relevance, feasibility and sustainability.

During both phases, the participation of beneficiaries and other stakeholders is fundamental to guarantee the success of the project.

Project design can be undertaken in a variety of ways. However, the most commonly used method is the *Logical Framework Approach* (LFA), which it is a planning tool for development projects and useful for management. It can be split into two phases:

- Analysis Phase: where the existing situation is analysed with the aim of developing a ‘future desired situation’.
- Planning Phase: where the project's operational details are developed.

3.1 Analysis phase

A properly planned project addressing the real needs of the beneficiaries cannot be achieved without an analysis of the existing situation. A situation can be perceived in different ways by different groups or stakeholders, and all of them must be involved in the analysis phase.

The analysis phase can be included in the project cycle within the identification phase. Although the participatory tools used can be the same, the analysis phase is oriented towards the development of a project, whereas identification is a wider concept and not necessarily related to the design of a project.

The analysis phase has three stages:

- Problem analysis.
- Analysis of objectives.
- Strategy analysis.

3.1.1 PROBLEM ANALYSIS

To design a project well, it is necessary to identify and analyse the negative impacts of a given situation, establishing cause-effect relations. Involving all the project stakeholders, in a participatory process, is essential.

Problem analysis can be done in three steps. Often this overlaps with the identification phase; however, the problems should be reviewed in the context of designing a project rather than just understanding the context. The three steps are:

- Identification of the stakeholders.
- Identification and prioritisation of the major problems faced by the communities and other stakeholders.
- Development of a problem tree to establish causes and effects.

The analyses done with the various stakeholders should be combined with others such as technical, economic and social studies.

Development of a problem tree

Preliminary discussions with stakeholders give the assessor an understanding of the problems faced by people. After collecting this information, a workshop can be conducted to explore the root causes of problems and a ‘problem tree’ can be created to enhance understanding of the problems at hand. Workshops should be led by facilitators trained in participatory techniques and project design. Steps in leading a discussion include:

- Listing of problems: identification of problems can be done with the communities and other main stakeholders through brainstorming. Each problem can be written on paper and stuck on a board.
- Grouping: problems can be grouped by theme. Those repeated or not relevant can be eliminated in consensus with the group.
- Prioritise: the next step is to list the problems in order of importance, choosing the most relevant or representative from each group.
- Exploring roots: begin to explore the cause-effect relations in order to prepare the tree. Causes should be logical, direct and hierarchical; creating different levels and branches. One problem should be at the top of each tree, as in the examples in this chapter, or at its centre. During the construction of the tree, problems can be modified and other problems can be identified and added. Once complete, the problem tree represents a comprehensive picture of the existing situation and enables project designers to understand where interventions can and should be targeted. Figure 2.4 shows a simple example of a problem tree.

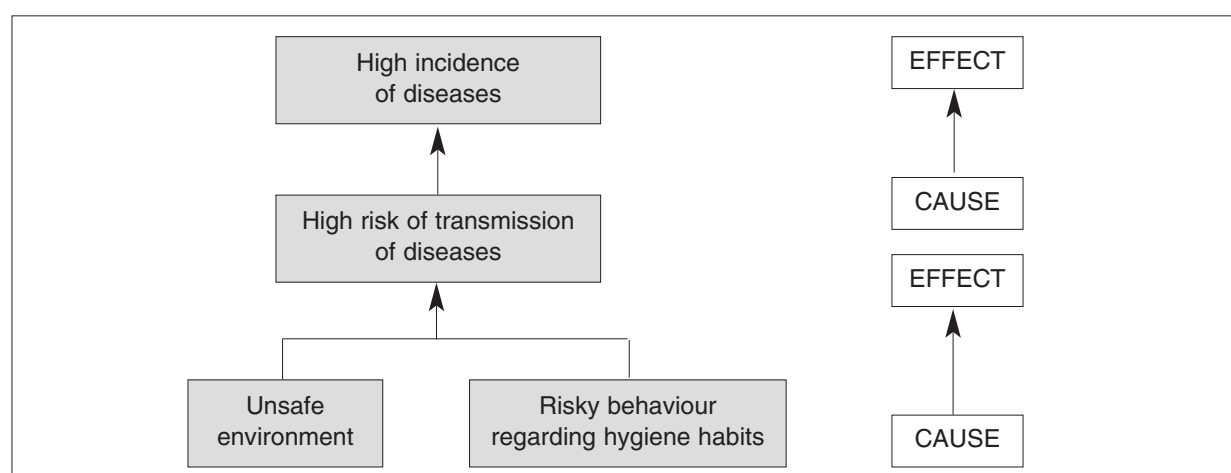


Figure 2.4: Simple example of a problem tree.

– Problems must be well specified and statements must be in enough detail to understand the causes of the problem.

Note. – Problems should be stated not as the absence of a solution (e.g. water is not treated) but as an existing negative state (e.g. water is contaminated).

Figure 2.5 illustrates the elaboration of a problem tree.

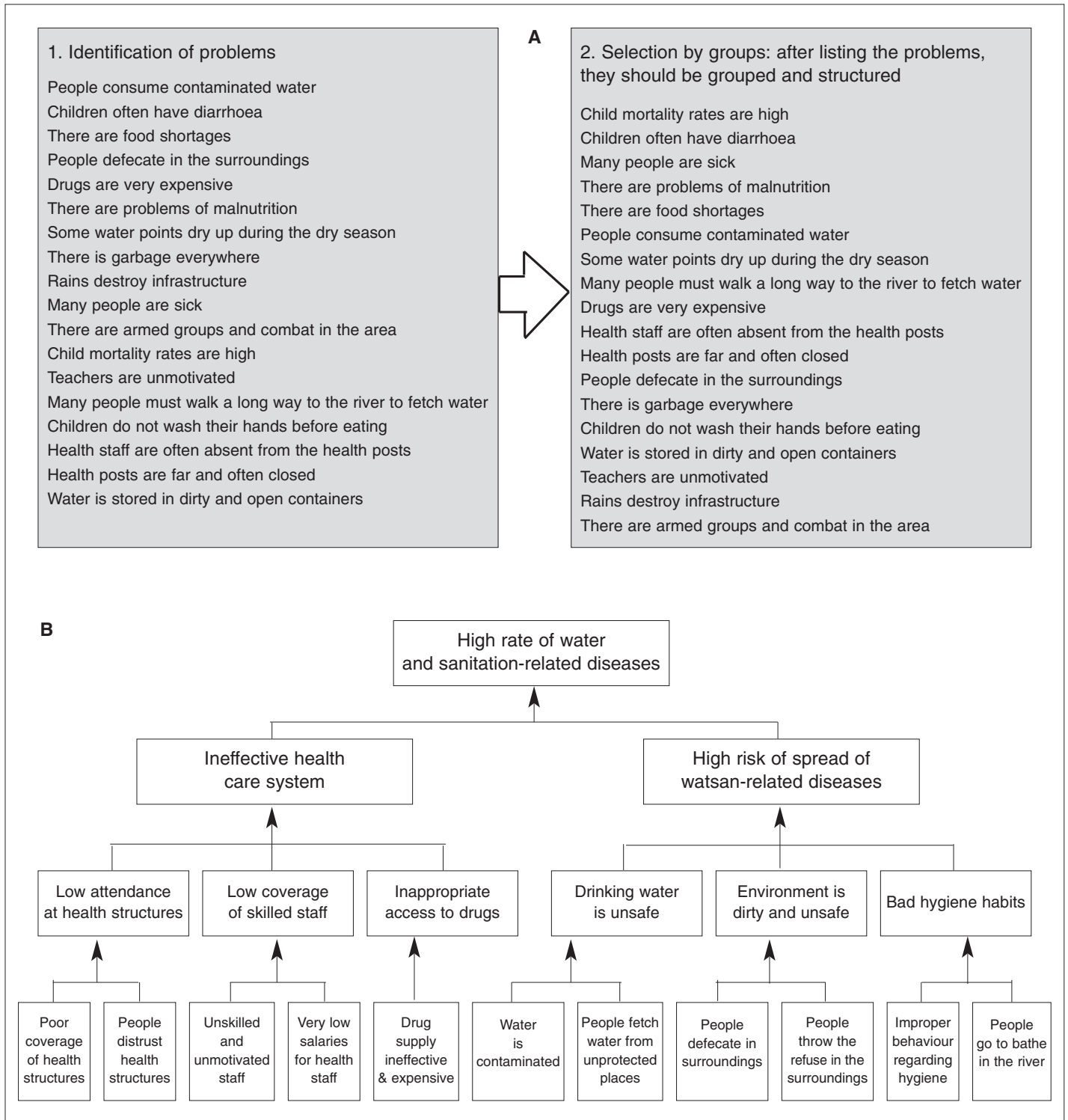


Figure 2.5: Example of elaboration of a problem tree.

A: listing of problems and selection by groups. **B:** problem tree.

During the development of the problem tree, problems can be reformulated, some can be combined in order to express one concept and others can be rejected after consensus among the group and explaining why. Figure 2.5B presents the development of the problem tree from the problems identified above.

3.1.2 ANALYSIS OF OBJECTIVES

The objective tree presents a picture of the desired future situation and often transforms problems into objectives, as shown in Figure 2.6.

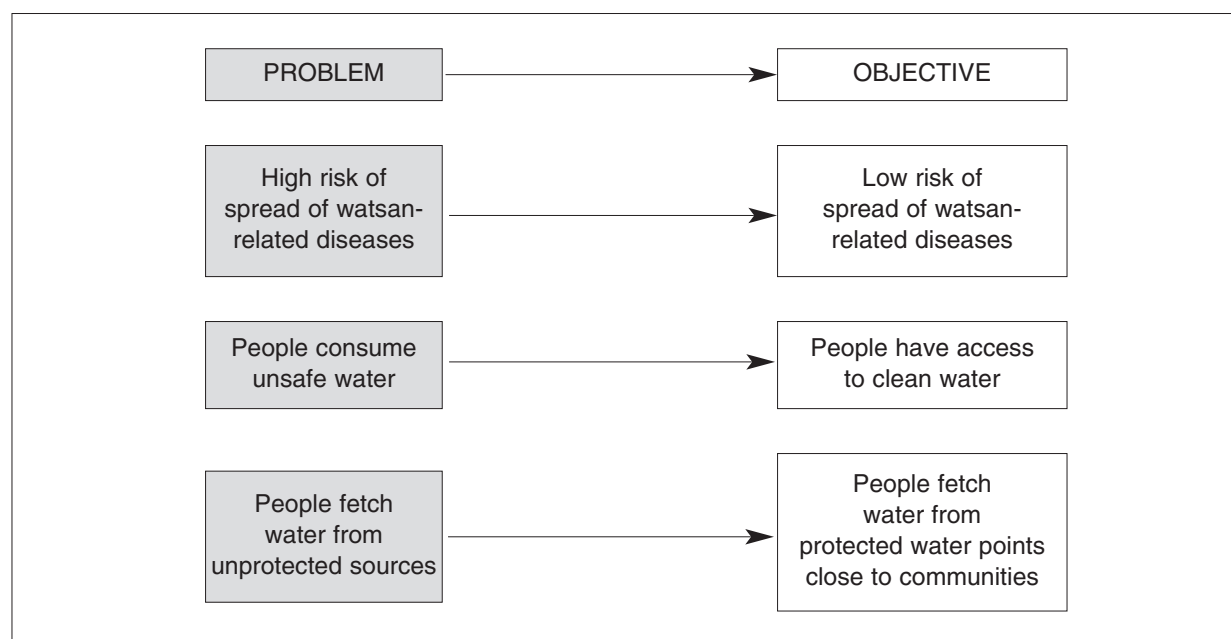


Figure 2.6: Transforming problems into objectives.

Objectives should be positive statements of the desired situation, rather than the specific actions required to solve the problem. An example with correct and incorrect transformations of problems into objectives is shown in Table 2.V.

The objective tree can be conceptualised as the positive mirror image of the problem tree, and the ‘cause-and-effect’ relations become ‘means-to-ends’ relations. The objective tree can be modified and relations between objectives should be reviewed and reorganised as necessary (keeping the logic and the hierarchy). Some objectives may be unrealistic, so alternatives to tackle the problem need to be found or the attempt has to be abandoned.

Figure 2.7 shows the development of the objective tree from the problem tree developed in Figure 2.5.

Table 2.V: Transformation of problems into objectives.

Problem	Water-supply system in bad condition
Objective	<i>Incorrect:</i> Repair of the water-supply system
	<i>Correct:</i> Water-supply system in good condition

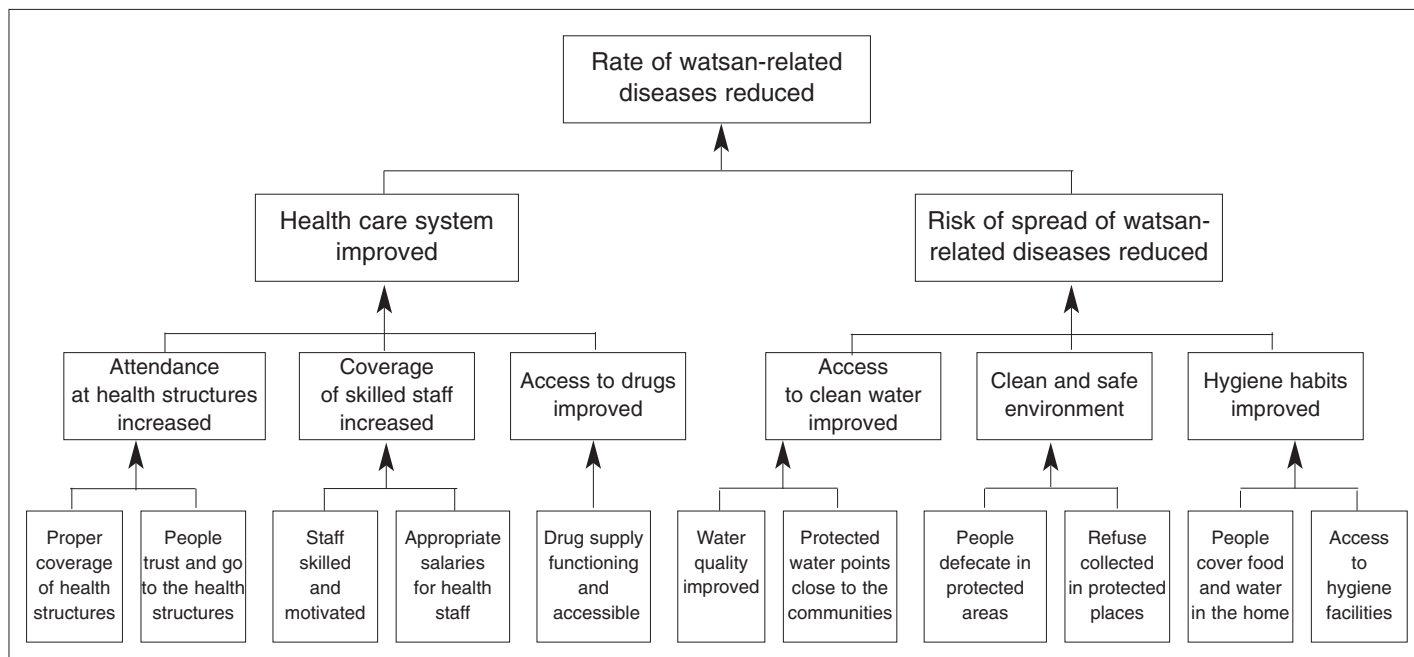


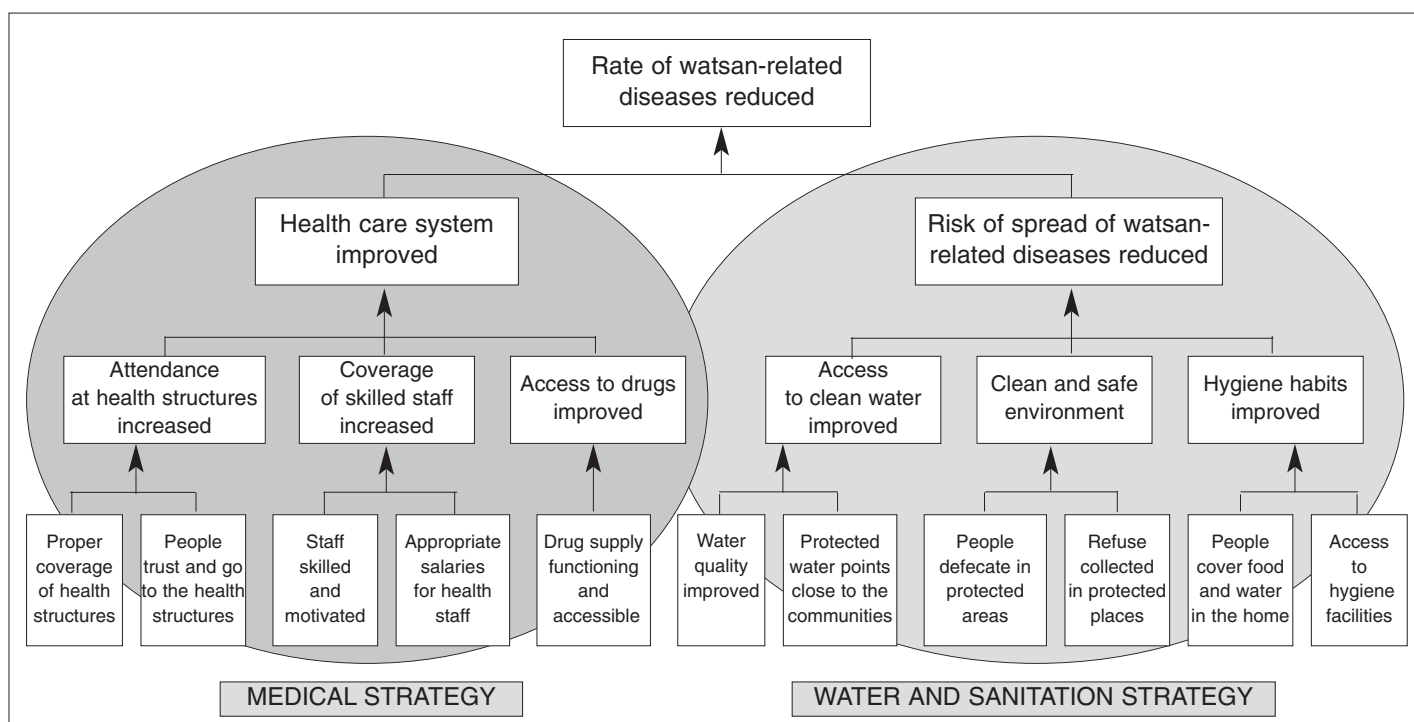
Figure 2.7: Development of an objective tree.

3.1.3 STRATEGY ANALYSIS

The last stage of the analysis phase involves the identification of the different possible strategies. This is done by making groups of objectives closely related and with a similar purpose (as 'branches' of the tree)

A strategy can be developed after one or more focal objectives have been chosen. This analysis includes the feasibility of achieving the objectives (amount of work entailed, capacities to do it, period of time to be covered, budget available, interest and participation of the community concerned etc.) and the relevance and sustainability of the strategy. Based on criteria set for each situation, some

Figure 2.8: Strategy analysis.



objectives will be selected and others excluded. Figure 2.8 presents the strategy analysis based on the objectives developed in Figure 2.7.

Strategies are further developed to create a basis for project preparation. A deeper development of the intervention should be conducted and further technical analyses must complement the basic strategy in designing the project. It is important also establish priorities and different phases of the intervention.

Coverage maps are a useful tool to plan the intervention and the following planning phase (see Figures 2.9A and 2.9B).

Example of strategy based on several phases

Phase 1: first response to achieve 15 litres of water per person per day and 20 people per latrine.

Phase 2: permanent water points and household latrines.

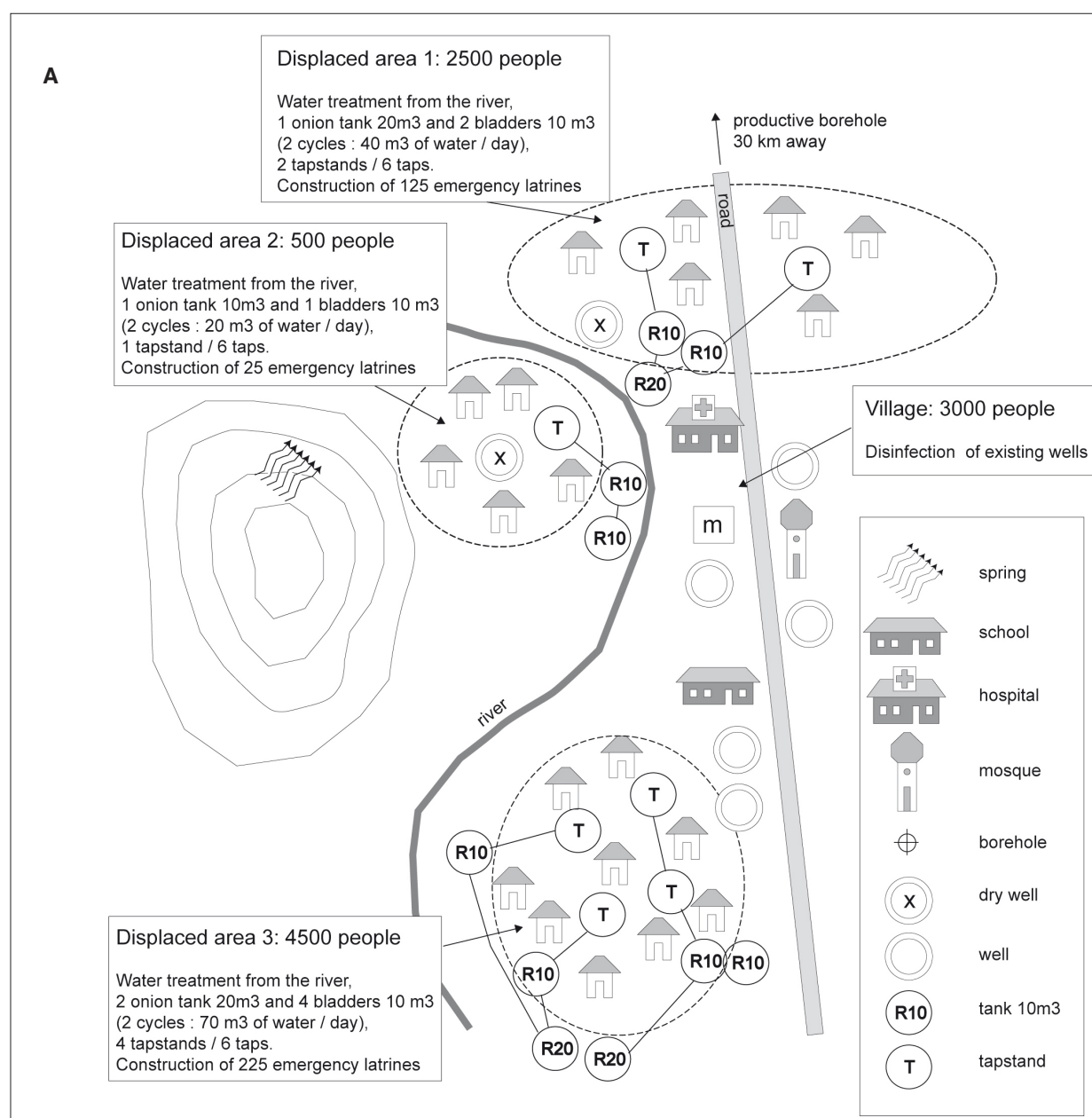


Figure 2.9: Water and sanitation coverage map. A: phase 1, response to a population displacement.

3.2 Planning phase

The planning phase is when the necessary operational project details are developed.

Where the logical framework approach (LFA) is used, the *Logical Framework Matrix* is the main output of this phase. The matrix is a format for presenting the results of the LFA as a process, and is developed on the basis of the LFA tools applied earlier during the analysis phase.

The matrix can also be used as a basis for more a detailed workplan and to determine what resources are needed.

3.2.1 LOGICAL FRAMEWORK MATRIX

The logical framework matrix (LFM) lays out key aspects of an operation.

It provides a summary of the key information on the project and an easy overview that allows a quick assessment of the consistency and coherence of the project logic, and facilitates the monitoring and the evaluation. The method consist of an analytical process and a way of presenting the

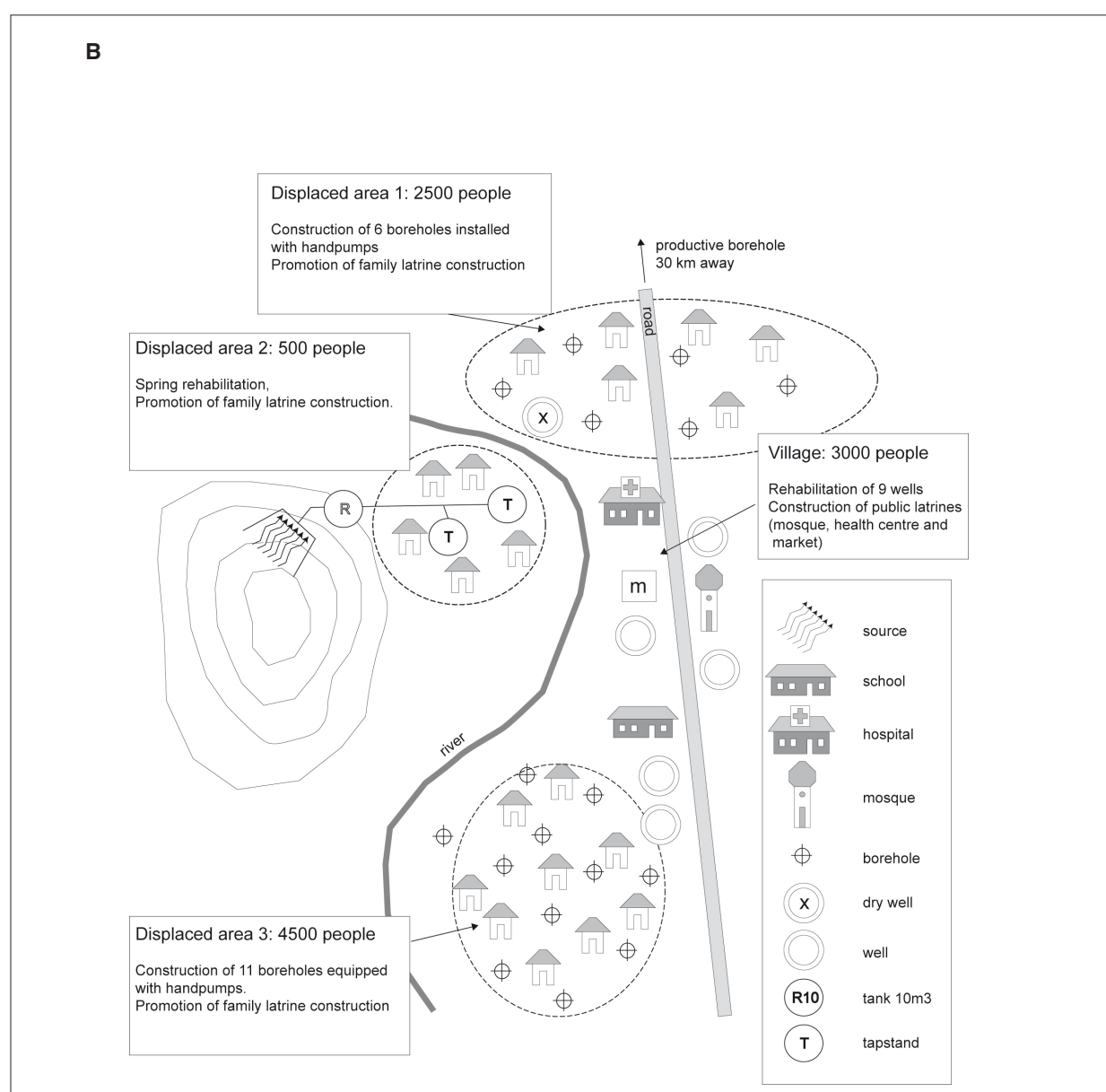


Figure 2.9: Water and sanitation coverage map. B: phase 2, response to a population displacement.

	Intervention logic	Objectively verifiable indicators	Sources of verification	Risks and assumptions
General objective/ <i>Goal</i>				
Specific objective/ <i>Project purpose</i>				
Results/ <i>Outputs</i>				
Activities		Means	Costs	
<i>Inputs</i>				Preconditions

Figure 2.10: Logical framework matrix.

results of this process, which make it possible to set out systematically and logically the project / programme objectives and the causal relations between them, to indicate how to check whether these objectives have been achieved and to establish what assumptions outside the scope of the project may influence its success.

The LFM (Figure 2.10) should not be seen as simply a set of mechanistic procedures, but as an aid to thinking and framing the project designer's ideas into a coherent plan of action. Using the tool can help to create an organised, comprehensive and well thought-out project.

Developing the LFM is not easy, and requires time and training. Beneficiaries and other stakeholders must also be involved in this process.

Logical framework analysis is a dynamic, iterative process, which should be reassessed and revised as the project itself develops and circumstances change.

The LFM is comprised of 16 'boxes': four columns and four rows. Within the vertical logic of the matrix, following the first column which represent the project strategy, it can be identified what the project intends to achieve and how (clarifying the causal relation between the different levels of objectives), specifying important underlying assumptions and risks (fourth column of the matrix). Within the horizontal logic of the matrix indicators to measure progress and impact are specified and the sources of information or means by which indicators will be verified (Introduction to the LFA, Adam Walsch, 2000).

3.2.1.1 Parts of the matrix

Intervention logic

This corresponds to the first column of the matrix and it displays what the project intends to achieve, and how, by clarifying the causal relations between the different levels of objectives or project strategy.

General objective/Goal

The *General objective/Goal* describes the large-scale goal to which the project will contribute together with other projects or actions, but which cannot be achieved by the project alone.

Specific objective or Project purpose

The *Specific objective/Project purpose (SO/PP)* is normally the first piece in the LFM and is the key reference point of the project. The SO/PP is defined in terms of the benefits or the immediate

impact upon project beneficiaries as result of the project services. The SO/PP must clearly state the desired change, where the change will take place, and the magnitude of the change to be achieved.

The achievement of the SO/PP should depend on the team responsible for the project and also on the beneficiaries involved in order to ensure sustainability of the services.

The following advice is given regarding the project purpose:

- It is recommended to develop only one specific objective per logical framework matrix. More than one matrix may be needed for a more complex project.

- Objectives should be set such that they are achievable within the time and resource constraints of the project. The matrix inputs should describe the desired outcome and not the process or activity for achieving the result. Terms such as “guaranteed” or “assured” can be difficult to achieve in some programmes and should be used carefully.

Results/Outputs

The *Results/Outputs* describe the services to be delivered to project beneficiaries. Outputs are the specific actions that achieve the SO/PP, and they are the product of the *activities* undertaken.

Note. – It is important to distinguish between results, activities and indicators. Results statements should describe the change in the service provided and they will be the effect produced by the proposed activities: For example, ‘100 latrines constructed’ it is not a result, it is an activity, and the result of this activity will be ‘Better access to sanitation services’. Indicators of the results should be chosen for measurement of the result. In this example, the result will be ‘1 500 people have access to latrines, and use them’.

Activities

Activities are how the services of the project will be delivered, the things that must be done to achieve the results.

Some recommendations on presenting the activities are:

- Activities should be presented with the corresponding result.
- Activities should be expressed in a tangible way, and should be achievable within the project timeframe.

- While activities are tangible, flexibility is also important. For example ‘Construct 10 water points’ allows the type of water point to be chosen during project implementation whereas ‘Construct 10 wells’ precisely defines the type of water point and may not be appropriate. It is easier to justify changes in the activities in the implementation phase than changes of results or specific objectives; however, it is necessary to understand how changes can affect the project in terms of timing, budget, human resources etc.

Vertical logic

Within the vertical logic of the LFM the indicators to measure progress are specified and the sources of information and means by which indicators are to be measured are identified. In the last column, the risks and assumptions concerning the project are presented.

Objectively verifiable indicators

Objectively verifiable indicators (indicators) are parameters used to measure, state and check how the specific objectives, results and activities have been achieved. They are important for monitoring the project. Indicators can be qualitative or quantitative.

Note. – It is important to distinguish between the indicators discussed earlier that serve to characterise a situation and the indicators that measure actions undertaken. Indicators of the situation are parameters used to define a specific quality or state and they are used mainly in the identification phase (i.e. water-quality parameters). However, objective and results indicators precisely express changes brought about by interventions (e.g. ‘water supplied will have between 0.4 and 0.6 mg/l of residual free chlorine’).

Before defining an indicator, it is necessary to verify the feasibility of measuring it. For example, diarrhoea morbidity can be difficult to measure by a water and sanitation project if the health care system does not include proper monitoring.

Some activities, results and specific objectives may require more than one indicator, as one may not provide enough information to assess progress.

Indicators must be “SMART” (Roche 1999):

- *Specific*: with regard to quality, quantity, target group, time / period, and place.
- *Measurable* (direct or indirect) and *unambiguous*: they must be precisely defined through objective data and their measurement and interpretation should be unambiguous.
- *Attainable* and *sensitive*: they should be achievable by the project and sensitive to changes the project aims to make.
- *Relevant and easy to collect*: the indicators chosen should be relevant to the project in question, and it must be feasible to collect information on them at reasonable cost.
- *Timebound*: indicators should describe by when a certain change is expected.

Indicators may be direct or indirect. Direct indicators are related to a directly observable change and indirect indicators are indirect consequences of this change. For the result ‘Water access improved’, a direct indicator could be ‘100 families have access to improved water points’, and an indirect indicator could be ‘More children attend school’ (because they spend less than 15 minutes collecting water and this leaves them time to go to school).

Specific objectives/results can focus on capacity building or behaviour change. In these cases, indicators are mainly qualitative. However, they must still be rigorous. For the result ‘Water department capacities’, ‘Number of people attended training’ is not enough as the only indicator because it does not demonstrate change. ‘10 technical staff have improved their knowledge on water-point maintenance’ should complement the first indicator. Although ‘improved knowledge’ is qualitative it is a measure of progress.

Sources of verification

Sources of verification (also called *means of verification*) indicate how, where and in what forms the required information on the achievement of SO/PP and results can be found.

Sources of verification must be trustworthy and accessible, and they must provide the information required to verify the chosen indicators. They include official or private reports and evaluations, internal surveys and reports, technical surveys and reports. Cross-checking information from different sources is recommended for certain indicators.

Means of verification must indicate the source (project records, official statistics etc.), which provides the information and how regularly it should be provided. The work and cost of collecting and analysing information must be assessed and covered by the project.

Examples: KAP surveys can be the source of verification for indicators of hygiene-behaviour changes, water-quality analysis can be used to verify improvement in the quality of the water etc.

Means and costs

Means are the human, material and service resources (inputs) needed to carry out the activities. *Costs* are the financial resources needed to carry out these activities.

Activities must be detailed with the required means and costs (instead of indicators and sources of verification). Some logical frameworks have the means and the costs separated from the activities, in another line called ‘inputs’.

Risks and assumptions

Risks are key events, actions or decisions upon which project success depends, which may be subject to delay or which may not materialise. They are not supposed to occur, but there is a probability that they might.

Assumptions are external factors outside the immediate control of the project, but crucial for the achievement of activities, results and objectives. The aim of specifying assumptions (and preconditions) is to identify and assess potential risks to, and dependencies of, the project right from initial stages of the project design, to support the monitoring of risks during the implementation of the project and to provide a basis for necessary adjustments. It is important to identify the assumptions at each level of the logical framework analysis.

Some assumptions can be identified during the analysis phase as objectives included in the objective tree. Those objectives are not achieved by the project but they can be important for achieving the purpose of the project. For example, a nutrition project may have ‘improved nutritional status of the population’ as its purpose, in a context where this may only be achieved on the condition that a complementary water project achieves its specific objectives. One of the assumptions behind the nutritional project therefore may be that this condition is met.

Other examples are: ‘access to water will be guaranteed, assuming that there is no sabotage of the transmission line of the water system’, or ‘capacity in the region will be improved, assuming that the authorities continue to participate in training’, or ‘a system can be built in a specific area, assuming that access to the area is guaranteed’.

There are different levels of assumption depending on their relevance to the project. If an assumption for success is unlikely then the project should be redesigned. If it is sure, or almost sure, that it will occur, then it is not necessary to include it in the logical framework.

Preconditions

A precondition is a condition that must be satisfied before the project starts.

Examples: ‘an end to the conflict allows access to the area’, ‘communities agree to participate in activity implementation’ or ‘local authorities respect signed agreements and agree to collaborate’.

3.2.1.2 Construction of the logical framework matrix

The strategy chosen for inclusion in the project is transposed to the first column of the matrix (logic of intervention): going back to the objective tree is a helpful at this stage (see Figure 2.11). The first step is to define the *specific objective* of the project, then transpose the rest of the levels. The project strategy incorporated in the *logic of intervention* has to be reviewed to see whether the *means-to-ends* relations between the different levels are consistent and what is remaining to complete this logic.

The next steps consist of developing key indicators, means of verification (except for the activities, where resources and budget must be included instead) and assumptions for each level, as well as the preconditions to start the project. A complete example of a logical framework matrix is shown in Figure 2.12.

3.2.1.3 Checking the logic of intervention

Once the matrix is developed, it is important to check the logic of the LFM from the bottom to the top (to see if it is coherent) as show figure 2.13.

3.2.2 ACTIVITY (WORK-PLAN) AND RESOURCE SCHEDULING

The activity schedule (work-plan) determines the sequence of activities, estimates their duration, sets milestones and assigns responsibilities.

Making work-plans mainly consists of:

- Listing the envisaged project activities.
- Breaking down the activities into manageable tasks.
- Establishing the sequence of implementation.
- Estimating the duration and start and completion dates of each activity.

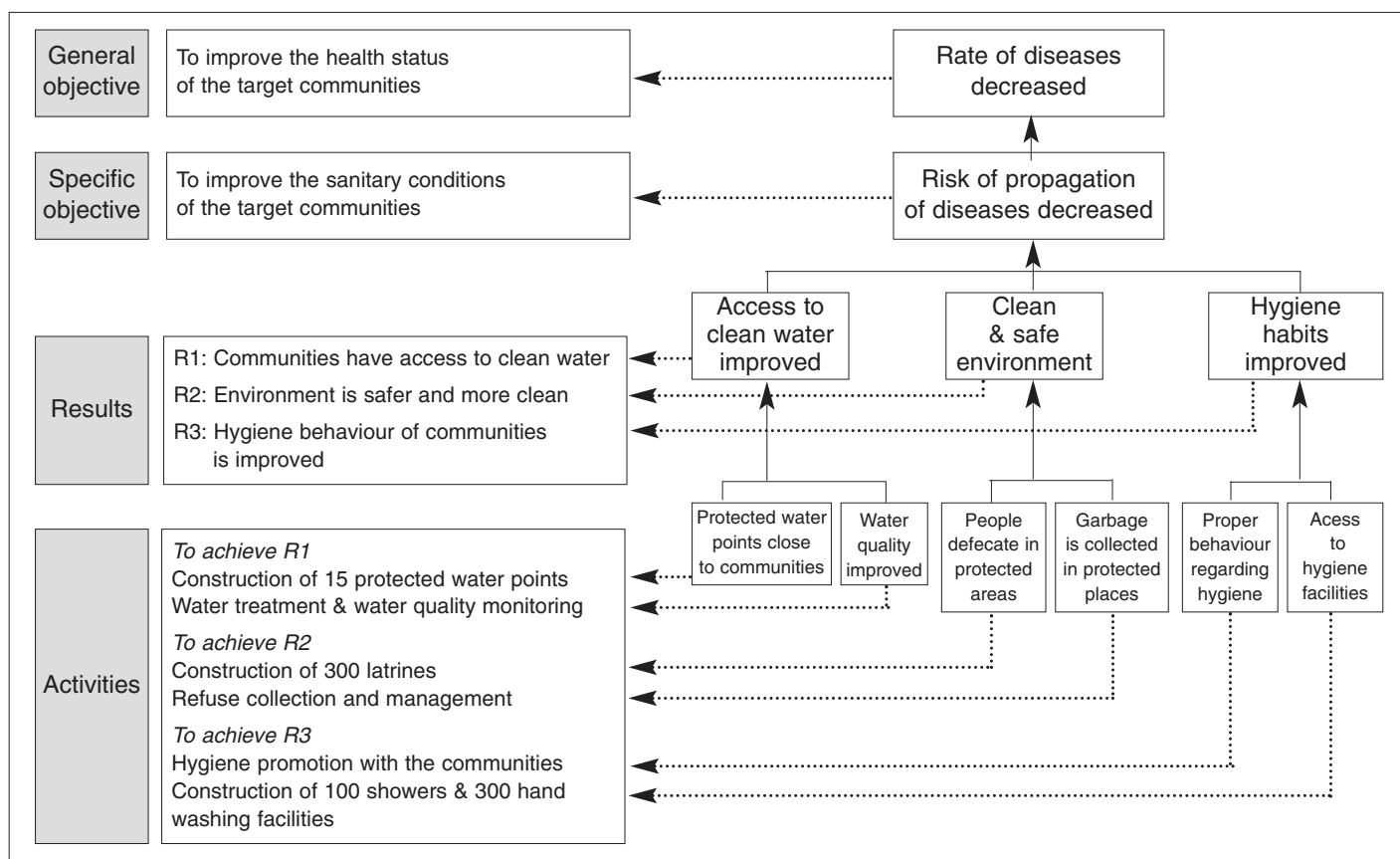


Figure 2.11: Construction of the logical framework matrix from the problem tree.

Figure 2.12: Example of a completed logical framework matrix.

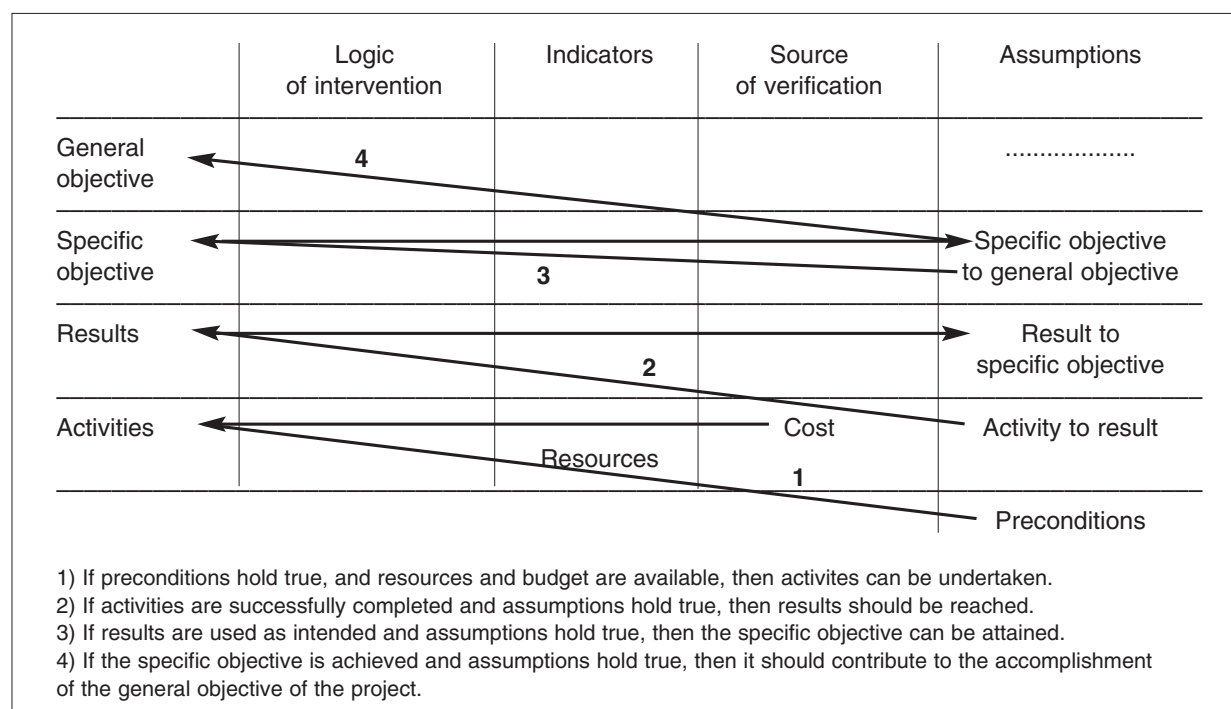


Figure 2.13: Checking the logic of intervention.

	LOGIC OF INTERVENTION	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATIONS	ASSUMPTIONS
GENERAL OBJECTIVES	Incidence of water and sanitation-related diseases reduced	Mortality and morbidity rates are reduced to be those for a normal situation	Health assessment Health centre records	
SPECIFIC OBJECTIVES	Sanitary conditions improved	100% water and sanitation coverage for the target communities Disease transmission routes (via water, excreta and refuse) reduced in the 3 communities	Internal report External evaluation Sanitary evaluation	Medical programme developed by X is effective No existence of an epidemic outbreak Vulnerability of communities will not increase due to food shortages or other crises
RESULTS	R1: Communities have access to clean water	15 litres of clean water available per person per day 0 faecal coliform/100 ml. and 0.4 mg/l of free residual chlorine in supplied water	Project report Water quality report Sanitary assessment	Arrival of new people will not be the cause of an epidemic outbreak
	R2: Environment is more safe and clean	1 latrine available per family Each family has and uses a refuse pit One community refuse bin per 10 families	Sanitary assessment Evaluation report	Upland farmers abide by agreements and do not use pesticides or contaminate the water
	R3: Hygiene behaviour of communities is improved	All the teachers are trained and they include hygiene promotion in their programmes Communities improve their awareness regarding hygiene People use handwashing facilities and showers	KAP surveys Programme reports	No new external vectors cause new diseases
	MEANS		COSTS	ASSUMPTIONS
ACTIVITIES	<i>To reach the R1:</i> 1) Construction of 15 water points 2) Water treatment & water quality monitoring <i>To reach the R2:</i> 3) Construction of 300 latrines 4) Refuse collection and management <i>To reach R3:</i> 5) Hygiene promotion to target communities 6) Construction of 100 showers and 300 hand-washing facilities	Construction equipment Construction materials Transport Treatment systems Treatment consumables Water analysis kit & consumables Construction materials 30 cans Tools 5 donkey carts for refuse collection Teaching materials Construction materials 200 litres water tanks and taps	30 000 € 45 000 € 5 000 € 10 000 € 2 000 € 5 000 € 30 000 € 2 000 € 3 000 € 3 000 € 10 000 € 15 000 € 6 000 €	No sabotage of the water facilities Natural disaster will not destroy the facilities Communities have access to facilities Communities maintain motivation & awareness of the promotion done Administration follows agreements regarding the maintenance of the existing water points and construction of new water points and latrines Water communities maintain water and sanitation facilities correctly Water points will not dry up
COMMENTS	Means and costs include: staff, transport, housing, communication, assessment and evaluation (this list is not comprehensive), but exclude indirect cost, such as administrative costs, which should be not in the logical framework matrix. A detailed breakdown of costs should be in the budget, not in the matrix. The total cost of activities must be within the budget.			<i>Preconditions</i> Voluntary participation of beneficiaries in the project Access to equipment and materials Security in the area to allow the implementation of the project

– Defining the monitoring tools and procedures.

– Allocating tasks among the teams.

The work-plan is fundamental to the monitoring of the project. It is important to include the monitoring tasks, as these will also be essential for the evaluation at the end of the project.

An example work-plan is presented in Figure 2.14.

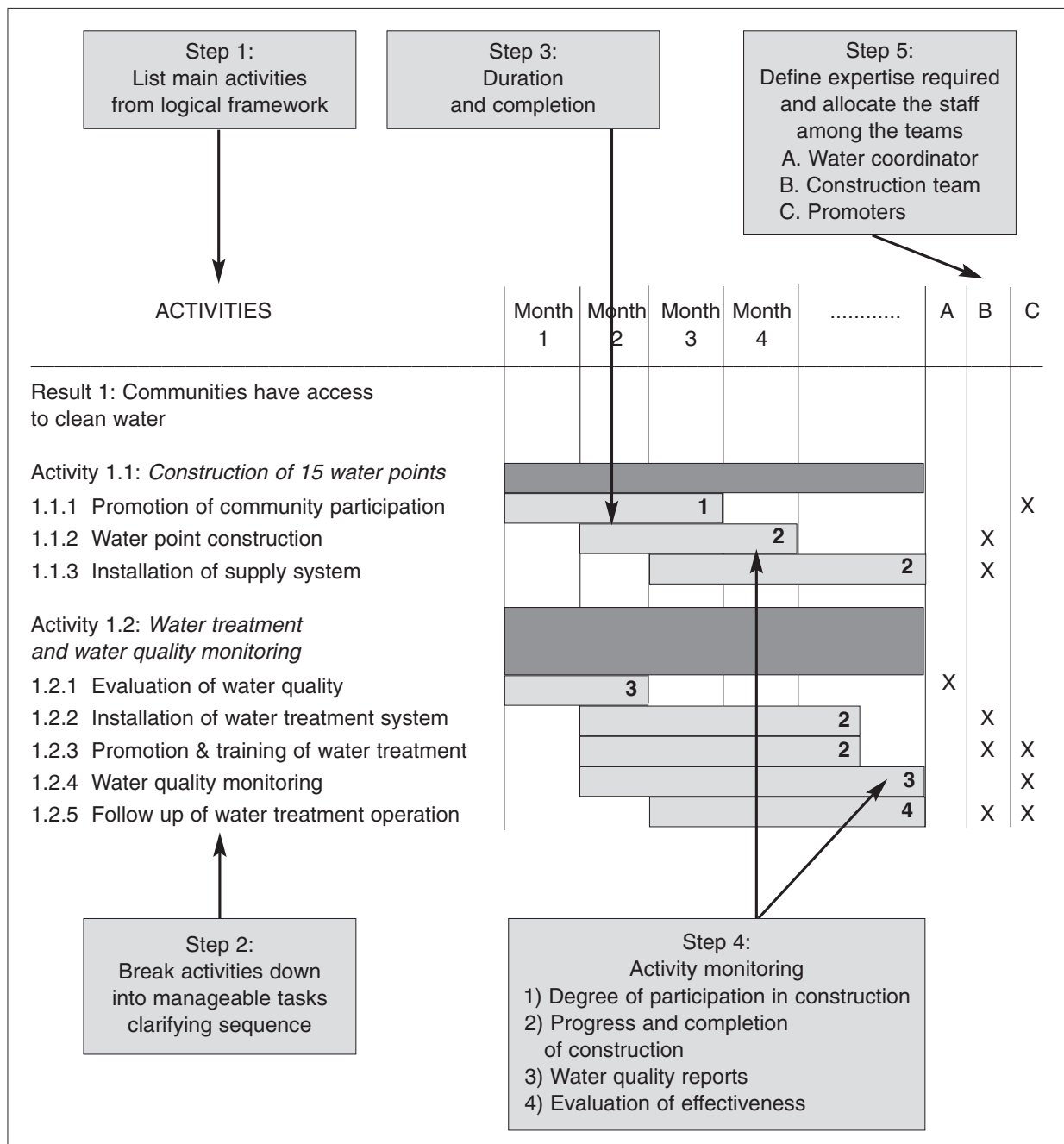


Figure 2.14: Example of an activity schedule (work-plan).

Resource scheduling is developed from the work-plan, and details the financial, human and physical resources required to carry out the project. It is also important to include indirect costs (such as administrative costs required by the agency to maintain its structure and capacity).

The evaluation of the project costs by donors will have significant influence over the project appraisal and approval.

Figure 2.15 shows an example of a resource schedule.

3.3 Proposal writing

Once the project is defined and it is determined that donor funding is needed, it is necessary to write a proposal. Each donor organisation has its own proposal guidelines and formats. However,

Activities/ Resources	Unit	Quantity per period				Cost	Fund.	Code	Schedule cost				Total cost
		Q1	Q2	Q3	Q4	per unit	source		Q1	Q2	Q3	Q4	
Construction of 15 water points													
Equipment													
Well tripod	unit	2	...	...	...	400 €	ECHO	B 67-A	800 €				800 €
Ring moulds	unit	4	...	...	...	300 €	ECHO	B 67-A	1 200 €				1 200 €
Tool set	kit	2	...	...	...	300 €	ECHO	B 67-A	600 €				600 €
Handpumps	unit	3	4	4	4	700 €	DFID	C 42	2 100 €	2 800 €	2 800 €	2 800 €	10 500 €
Materials													
Cement	20 kg	130	130	130	130	25 €	ECHO	B 67-B	3 250 €	3 250 €	3 250 €	3 250 €	13 000 €
Reinforcing bars	12 m	240	320	320	320	3 €	ECHO	B 67-B	720 €	960 €	960 €	960 €	3 600 €
Salaries & allowances													
Masons	month	16	16	16	16	300 €	ECHO	B 27	4 800 €	4 800 €	4 800 €	4 800 €	19 200 €
Pump installer	month	1	1	1	1	300 €	DFID	D 32	300 €	300 €	300 €	300 €	1 200 €
Labourers	month	20	20	20	20	200 €	ECHO	B 27	4 000 €	4 000 €	4 000 €	4 000 €	16 000 €
Team leader	month	4	4	4	4	500 €	ECHO	B 27	2 000 €	2 000 €	2 000 €	2 000 €	8 000 €
Transport													
Car rent etc.	month	8	8	8	8	300 €	ECHO	B 85	2 400 €	2 400 €	2 400 €	2 400 €	9 600 €

Figure 2.15: Example of a resource schedule.

the proposals will be essentially similar, whatever the donor concerned. An example of a proposal structure can be found in ECHO's guidelines (www.echo.org).

3.4 Project approval and financing

There are several types of entity which fund projects, including national and international aid departments (such as ECHO (European Commission Humanitarian Office) DG (Directorate General, European Union), DfID (United Kingdom Department for International Development) etc.), regional and municipal governments, associations, businesses and NGOs. Each has its own guidelines and procedures for project approval and financing.

Project approval and financing involves a range of discussions between donors and implementing agencies before signing a contract. Participation of the donor in proposal making depends mainly on their strategy. Budget negotiation is one of the main issues.

Timing for approval of the project mainly depends on the availability of funds and agreements with other stakeholders. Emergency funds are normally assigned quickly.

Once the project is approved, funds come in at established times or on completion of agreed outputs. Once funds are allocated and contracts are signed, the project starts. The implementing agency regularly communicates with the donor through periodic progress reports.

4 Project implementation and monitoring

Project implementation and monitoring are the core stage of a project. Resources are mobilised and activities are carried out with the aim of providing beneficiaries the planned services.

This chapter can not develop all aspects related to the implementation phase; many of them are developed in other chapters of the book. This section describes some important issues related to the management of the activities developed during the project: planning of activities, staff management, internal procedures, security and safety awareness, community involvement, and management of information collected.

Implementation corresponds to the activities defined in the logical framework. Common activities in water and sanitation programmes include: construction and rehabilitation of infrastructure, provision of supplies, training and health promotion activities, studies, and assessments. Monitoring is also required. For example, the implementing agency should check back periodically to ensure that the handpump installed is properly used by the beneficiaries and is covering their needs. The reason for this monitoring is 1) to ensure the implementing agency is properly carrying out its work, 2) to be sure the planned activity is adequate, 3) to answer any questions that beneficiaries have which were not addressed in the initial intervention and 4) to be sure that training is adequate.

Many aspects of a project need to be actively managed. During implementation, and in consultation with beneficiaries and other stakeholders, the project-management team assesses actual progress against planned progress to determine whether the project is on track towards achieving its objectives. If necessary, the project is re-oriented to bring it back on track.

Monitoring is a system to collect, analyse and use information to verify that the project stays on track towards the achievement of its objective. Monitoring will measure the level of accomplishment of the planned activities, but it is also a larger concept that involves evaluation of the degree to which results are obtained and objectives are reached during the different phases of implementation.

4.1 Planning

Planning is the first step of project implementation, and is an essential tool that ensures that all project activities are considered and scheduled.

Planning project implementation consists of review and further development of the work-plan and resource schedule which were drawn up at the end of project identification.

When planning project implementation, the following points must be taken into account:

- Humanitarian context (emergency, refugees or internal displacements, post emergency etc.): planning will not be the same in all contexts, and depends a great deal on the severity of the situation.

- Programme duration: the implementation time is initially defined when making the proposal. Extensions and amendments can be negotiated with the donor if the context changes between writing the proposal and starting implementation (if the funding decision causes a delay), or during implementation (if delays in implementation can be justified).

- Human and financial resources.

- Security situation: if the project area is unsafe for any of the staff, this factor must be taken into account in the plan as well as in the working methods.

- Project participants' availability: some people from the communities involved in the project may be away for part of the year (e.g. in Guatemala, the farmers from the area of 'El Altiplano' leave their villages and go to the coffee plantations to work as casual workers for the harvesting season). Activities must be scheduled taking into account periods when community labour is not available.

- Rainy season: some countries are affected by a heavy rainy season for several months of the year, including countries like Myanmar which experience monsoons. Reaching remote communities and conducting field work like drilling boreholes may be impossible during several months.

- Technical constraints: these issues include variation in yield of water sources, such as springs and rivers, which may be very significant between the rainy season and the dry season. The choice of the source, which is made on the basis of the water demand and, in some cases, distribution-network calculations, must be based on lower flows. The water table in a borehole may drop during the dry season and this must be accounted for when setting pump depth. Other technical constraints include difficulties in prospecting for, and reaching, groundwater, inappropriate national or regional technical policies etc.

- Political context: external events can delay the implementation of the programme. Some, such as elections, can be forecast, but others cannot.

- Collaborating with counterparts (local/international NGOs, universities, local authorities etc.) may require time at the beginning (making contact, presentation, training and organisation) but is essential for proper project implementation in terms of sustainability, time efficiency, and programme effectiveness. Given these elements, planning must be as participatory as possible and must involve all the people and entities affected by the project.

4.2 Staff management

Staff require administrative and operational management. The number of staff and the structure of the team vary according to the context, the nature and size of the project, the degree of involvement of beneficiaries and other stakeholders, and staff competencies. Emergency responses usually require a high number of staff; however, this also depends on the context and the degree of beneficiary involvement.

4.2.1 CREATING THE TEAM

Creating a project team is one of the first steps in implementing a project and it is fundamental for its development.

- A flow chart should provide a clear picture of staff structure and the relationships among the different positions. Common positions include: administrators, managers, technicians and logisticians, among others. Each position requires a different set of skills.

- A job description needs to be created for each position, including:

- Name of the position.
- A brief description of the project.
- Responsibilities of the position. It may be appropriate to include specific tasks and activities to be achieved. However, the programme manager should be aware that when many specifics are included it can be difficult to alter the responsibilities if required as the project adapts to the context.
- Location of work and working hours.
- People to manage, person who supervises this post, co-ordination and reporting responsibilities.
- Other work conditions: salary, holidays etc.

- Following the creation of a job description, a job vacancy is posted, first internally and then among other NGOs, universities, institutions, on the radio and in newspapers etc. Applications and curriculum vitae are received from candidates.

- Candidates for the post are chosen and interviewed. Interviews aim to check if the information given on the curriculum vitae is accurate, to obtain additional information, and to present the organisation, objectives and activities. The methodology used is mainly open discussion and, for certain positions, a written test. Interviews should be conducted by the immediate supervisor and other appropriate staff.

- Once an appropriate candidate is selected and the job has been offered and accepted, a contract (for a specific duration) and work regulations are signed.

- The new staff person should be appropriately briefed and introduced to the organisation.

- Periodic review of staff needs, the staffing structure and the organigram should be undertaken.

4.2.2 THE ROLE OF THE PROJECT MANAGER

The project manager is responsible for the overall management of the project, and can also be involved in the strategy of the organisation at the country or regional level, participating in coordination bodies, conducting new assessments, defining new projects etc.

Overall management involves: human-resources management; collaboration and coordination with local or international NGOs, institutions and local authorities; capacity building; budget monitoring; material and equipment orders; budget and supply forecasting; equipment maintenance; data

collection and analysis (assessment, monitoring and evaluations); reporting; institutional learning; investigation; development; security; strategy; project definition; integrated approach with other technical departments; gender issues; environmental issues; and any other points that come up.

In the area of human resources, project managers are responsible for:

- defining human-resources needs for the project, preparing job descriptions and organigrams; and recruitment if needed;
- organising staff trainings and meetings;
- leadership, motivation and communication;
- organisation and supervision of the team;
- evaluation of each person in the team.

A sample water and sanitation project manager job description is included in Annex 4.

4.2.3 LABOUR RELATIONS AND CONTRACTS

There are several ways to hire people to conduct work:

– *Regular staff*: these people are full employees with standard employment contracts which must follow the national laws and guarantee benefits such as insurance, holidays, sick leave, end of contract compensation etc.

– *Casual workers*: these people are paid daily and are normally under informal contracts or no contract at all. A letter of understanding is recommended to establish engagements, and the organisation must take the responsibility to cover the worker if an accident occurs.

– *'Food-for-work' casual workers*: food-for-work can be an option in situations where food aid is needed, where people are paid in food for work that is generally considered to be the responsibility of the community. This type of payment is usually made in situations where food aid is deemed necessary and labour is available. It is necessary to do a proper food-security analysis before implementing these activities, to ensure that:

- local food production is not in danger due to the food aid;
- the food-for-work programme is adapted to the needs of the beneficiaries;
- voluntary work is not discouraged.

– *Sub-contracting*: a complete activity can be subcontracted to a company, to a group of people or to another organisation. The contractual relationship must be established correctly, and payment for the services provided must be dependent on the quality of the work.

One problem associated with subcontracting is that community participation becomes more difficult, as subcontractors normally do not have a social agenda. Subcontractors may also economise too much on money and time, which can lead to a drop in the quality of work. On the other hand, contracting out work can be the best way to make use of good professionals and relieve the project of many management and logistical tasks.

A common problem in project design is that personnel budget lines are often inflexible, whereas subcontracted activities or casual workers can be assigned under the activity implementation budget lines. However, if budgetary problems are the primary reason for subcontracting or using casual workers, it is preferable to renegotiate the budget to increase the personnel budget lines. This ensures that personnel are under regular contracts and enjoy social labour rights and other advantages. It is also preferable to employ staff as there is more opportunity for capacity building.

4.2.4 SPECIAL MANAGEMENT TASKS

Training

Training of staff serves the project, the organisation, and the team members. A skilled, autonomous, motivated and responsible team is essential for reaching the objectives of the project and build sustainability.

Training can be developed in two ways:

- Continuous training: day-to-day work and communication enables constant transfer of skills and knowledge.
- Specific organised training: this may be undertaken on specific topics according to the needs of the programme and the capacity of the staff.

It is important to design a training plan, where objectives are defined over a distinct period of time. The first steps are to evaluate personnel capacities and expectations. Staff should be involved in setting the training agenda and it is important to consider the professional growth of each staff member.

Training topics range from technical (e.g. borehole drilling, hygiene promotion, community mobilisation) to administrative (e.g. warehouse management) to organisational (e.g. strategy formulation). Training can also be focused on humanitarian issues, such as human rights etc., and can be a way to involve staff in the organisation's principles and mandate. Other training can be aimed at reinforcing specific skills such as languages, computer use, mathematics, literacy etc.

Training should be evaluated to measure its impact, improve future trainings and provide ideas for other subjects for training. If several training sessions are held with the same group, each session can include a review of topics covered in previous sessions and the opportunity can be taken to evaluate the training.

Staff training can be internal or external, in seminar format or as a practical demonstration. Training can be carried out locally, nationally or regionally and for an individual or a group.

Coordination within the team: organisation and supervision / meetings

Team management requires respect, flexibility, clear rules, fairness, transparency, communication (understanding, listening and access to information), leadership, availability, delegation, and no discrimination.

Frequent meetings ensure good communication within the team and the organisation.

It is important that delegating responsibilities is done with appropriate control and supervision. Conflict resolution is another important issue in staff management.

Evaluation of personnel

Evaluating the performance of each staff member is important for the person, the project and the organisation. Evaluations should be conducted as an open discussion between the supervisor and person being evaluated. An evaluation form should be used, containing both general criteria (e.g. contact with local population, with authorities, respect of the organisation's rules, commitment to the project etc.) and specific criteria (technical, managerial etc.). Evaluation objectives should be fixed at the beginning of the employment contract (professional behaviour, understanding capacity or technical basis etc.).

Staff evaluations should be constructive and honest. They must always be done together with the person concerned, who should have the freedom to express their agreements or disagreements. If there are different points of view, they must be explained. Both people should read the completed evaluation form and sign it upon completion. One copy of the completed evaluation form should go to the staff member and another should put in their personnel file.

It is also useful to have bottom-up evaluations of managers by the people they manage as well as top-down evaluations of staff by their managers, to help to improve management relations and avoid possible problems.

4.3 Internal procedures

The organisation must be ruled by clear and transparent procedures to guarantee fair and smooth operations.

- Administrative procedures should exist for:
 - use of funds;
 - cash management, money and supply forecast, orders and budget monitoring;

- agreements with other organisation or institutions;
 - staff management (recruitment, contracts, staff regulations, meetings, working hours, evaluations etc.).
- Logistics procedures should exist for:
- orders, quotations, purchases;
 - stock management (in/out, storage);
 - use and maintenance of material and equipment (spare parts, maintenance and repairing procedure);
 - transport of material and equipmen;
 - use and maintenance of vehicles (weekly planning);
 - radio, phone and e-mail communications (the security situation will determine many of these procedures).
- Security procedures: staff movements, working hours, hours in the field, places to go and not to go, communication etc. (see Section 4.4).

4.4 Security and safety awareness

Security and safety must be a priority for humanitarian programmes and interventions should not take place (or must stop) if security and safety are not guaranteed.

Humanitarian interventions often take place in areas with serious security considerations. ‘Security’ refers to the risks of conflicts or intentional violence. Establishing security procedures requires a good understanding of the situation. Security must be a priority for all the members of the team and a security plan must be established and continuously updated with clear and understandable guidelines and rules (see Figure 2.16). This requires that the programme manager does the following:

- Obtain and collect reliable information.
- Maintain close and continuous contact with local communities and key informants.
- Analyse trends, risks and vulnerabilities related to security.
- Have and respect the security plan.
- Ensure all team members follow the rules and respect the decision-making mechanisms and the people responsible for security.
- Communicate and train staff on the procedures and what to do in case of emergency.
- Ensure that all staff demonstrate good behaviour with the communities and other actors.
- Maintain neutrality in a conflict.
- Respect the local social structure and decision-making mechanisms.

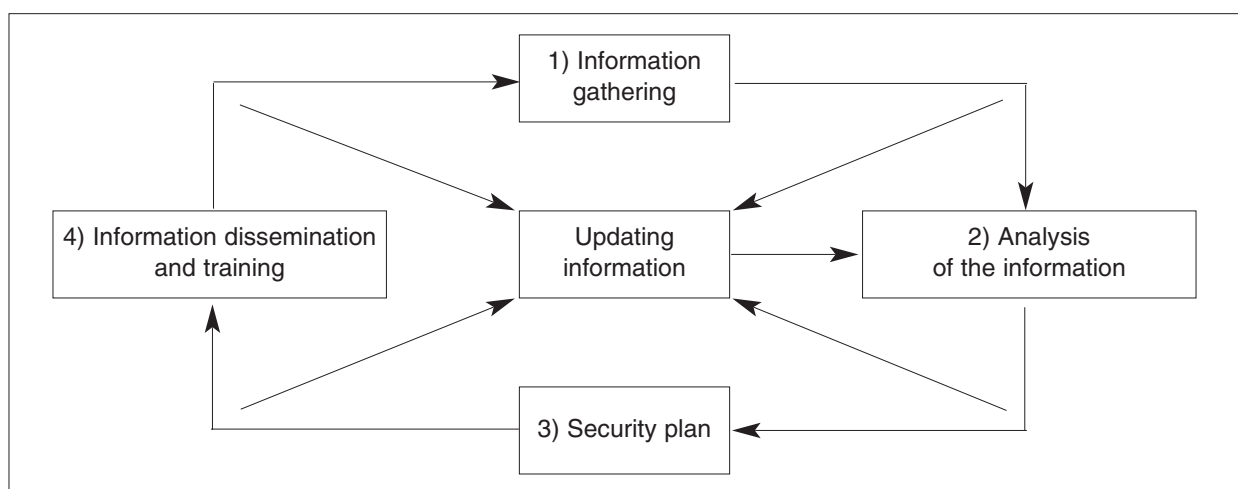


Figure 2.16: Process for developing a security plan.

- Involve the communities in the security of the team and the project assets.
- Continuously evaluate the organisation's capacity to response to security problems.

Security must be taken into account from the early stages of the project cycle as a fundamental characteristic of the context in order to properly define the project. It is also essential to plan appropriate resources and time in the project design to ensure security throughout the project. Security is the first priority in the field. If it is not guaranteed, the project must be stopped or not implemented.

'Safety' refers to risks associated with natural events and work activities, as well as accidents related to daily activities, and medical problems of the staff. Safety procedures are aimed at reducing vulnerability from such occurrences, and require the following:

- Safe working practices, including:
 - having a set of safety regulations and provision of safety equipment;
 - awareness and training about hazards and regulations;
 - team members taking responsibility for ensuring the safety of themselves and others;
 - having procedures in case of accident, and basic medical kits;
 - having insurance cover for workplace accidents, which meets legal requirements as a minimum.
- Choosing, designing and constructing facilities which guarantee the safety of the communities during their use. (e.g. avoiding open wells without any protection in schools, building fences, protecting wells to prevent accidents during standby in construction etc.).
- Involving communities in their own safety during construction and use of facilities upon completion:
 - protect against any community member disturbing the construction site, endangering themselves, others, the equipment or the facilities;

Table 2.VI: Safety measures for some water and sanitation activities.

Activity	Measures
Construction / rehabilitation of wells: people falling in, tools and equipment falling in, collapsing soil, accidents with pick-axes and hammers, accidents with electrical dewatering pumps (broken electrical cables), poisonous gases from pump engines or explosives	Use safety equipment: helmets, boots, gloves, harnesses, good-quality lifting and lowering equipment (tripods, pulleys etc.) to lower rings Reinforce walls in areas at risk of collapsing Keep people out of water when using an electrical pump Use compressed-air-powered equipment rather than electrical pumps for dewatering Monitor the availability of air at the bottom of the well and ensure enough for people inside Do not use engines inside the well, to avoid gases Cover and protect the well during standby periods
Drilling: equipment falling, accidents with the drilling rig, burns from motor parts, compressor tubes with no security connections	Use safety procedures and equipment (helmets, gloves, boots, safety glasses, ear defenders) Limit access to the area where equipment is placed
Use of chemicals: water treatment and analysis	Use gloves and safety glasses, especially for procedures which use methanol for disinfecting water-analysis equipment Use appropriate masks when handling dusty or volatile treatment chemicals Store and transport chemicals safely
Accidents with vehicles	Proper maintenance, following rules

- put the community in charge of the worksite and safety equipment during non-working hours;
- ensure that communities understand that they are responsible for the facilities once the work is finished, and this involves safety (maintenance of the safety barriers, ensuring that other members of the community are aware of risks etc.);
- establish responsibilities through signed contracts with communities upon project inception.

Table 2.VI describes some activities related to water and sanitation projects that require special attention to safety.

4.5 Community involvement

Successful implementation and sustainability of a project depends directly on full support from the beneficiaries. Communities must appropriate the project and its outputs. This is only ensured if they are involved in all phases of the project – from the early stages of project definition to implementation, operation and maintenance. Beneficiary input is also essential for project evaluation.

Participation of communities in the project design (i.e. choice of water source, technology used, level of service and placement of facilities) helps to prevent:

- social problems such as unfair distribution of facilities, loss of access to the resource for certain people/groups, change of social habits (e.g. rivers, public water points and laundry areas are important places where women meet and so installing individual water points may have a negative impact on the social structure);
- technical problems such as technology that is not appropriate to the community's needs or lack of knowledge and resources for operation and maintenance of the system.

Community participation serves to motivate people, develop local capacities and reduce the cost of construction. The sense of ownership is also important to guarantee sustainability.

Communities can participate in the project in different ways: by paying part of the cost of construction, collecting materials (sand, gravel, water etc.), or participating actively in construction. Beneficiaries should also take on responsibilities in the project, such as looking after the facilities, ensuring the safety of the community during the work, helping accommodate the teams carrying out the work etc. Involvement in the construction also benefits the operation and maintenance capacities (see Chapter 16 for more details).

Finally, the community will be involved in the hygiene-promotion programme which is necessary in all water and sanitation projects (see Chapter 15).

4.6 Management of information, lessons learned and reporting

During the development of projects, a large volume of information is gathered. This information, in addition to being used by the project designers, should be organised, analysed and transmitted to the other stakeholders at all stages. Distilling the information systematically is also necessary in order to capture learning in order to improve:

- Project evaluation: rather than waiting until the end of the project, there is a great deal to be learned throughout the project cycle by regularly processing the information gathered.
- Adaptive management: actions, methodologies, objectives, and strategies can evolve throughout the project in response to lessons learned.
- Comparative learning: information gathered can be compared at various scales such as local, regional, national and international to enhance learning.
- Capacity building and learning: information distilled can facilitate transfer of knowledge, improve skills and share successful experiences or lessons learned.

Access to the information gathered also facilitates transparency in project management.

Typical tools for information management and sharing include reports, publications and studies, databases, maps and geographical information systems.

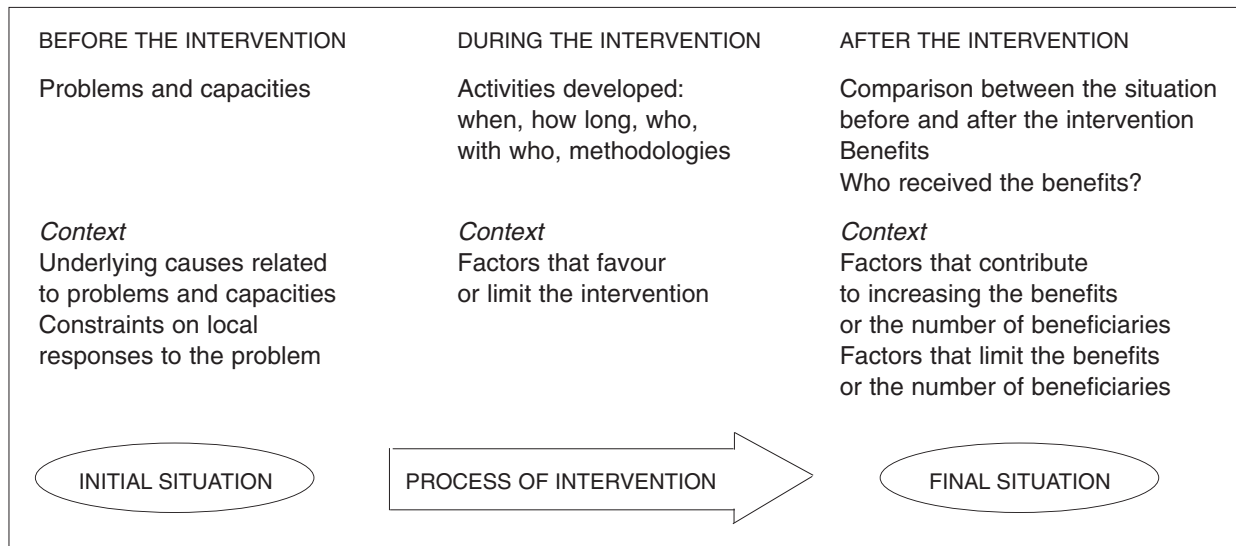


Figure 2.17: Selection and structure of information during the project.

Reporting is essential to evaluate the progress of the project and also serves to communicate lessons learned to local authorities, institutions and donors. Reports are also the usual way to document project progress and a typical first step in discussing possible project changes with donors. There are different types of report:

- Internal reports (monthly, quarterly and/or annual) between project base and capital or capital and headquarters.
- Intermediate (often quarterly) and final donor reports (as stipulated in the contract).
- Special reports on specific issues.

Capitalisation of experience can be done in a participatory manner where stakeholders define the success, failure and innovation of certain project aspects. This information can be used to help define future actions.

Information should be selected and structured during all the project process. It is recommended to follow a methodology and prepare it systematically as described in Figure 2.17.

This participative capitalisation of a project implies:

- Evaluation of the need capitalise and what to capitalise.
- Identification of actors who should be involved in the process.
- Collection and classification of necessary information.
- Interview process.
- Description of the intervention.
- Reporting and forms.
- Communication of the results.

4.7 Monitoring

Monitoring concerns the analysis of project progress related to the situation and the changes which take place. It requires continuous information and data collection, and analysis and use of information for adaptive management and decision making. It applies to:

- An analysis of the evolution of the logical framework, mainly a focus on the results, resources and activities. Verification of relevance of objectives defined in the project.
- The progress of programme activities compared with the plan.
- Evaluating if the needs and constraints of the project are addressed and what changes of situation and needs require changes in the intervention.

- Evaluating the management of resources (financial, human and material) in relation to the definition of the project and the results obtained.
- Review of the implementation procedures to determine information needs at the different levels of the project-management structure. Essentially, this means matching information needs to decision-making roles.

Monitoring can be a great way to involve the community. Participatory monitoring allows communities to learn lessons and work with the team to make programme changes.

It is important to create a monitoring system that has clear objectives and that specifies the human and financial resources required and the responsibilities involved. A monitoring system should be simple and manageable. Steps in creating a monitoring system include:

- Selecting relevant indicators (relevant and easy to collect and to analyse, see SMART project indicators in Section 3.2.1).
- Defining the data collection method and the responsibilities of the people involved in those processes.
- Defining how the analysis will be presented, discussed with people involved and used to inform programme planning and adaptive management.

Monitoring and evaluation are two different activities, with different objectives, which may use the same information. Monitoring is progressive and more focused on project management, and evaluation in the project cycle aims to assess if the project has fulfilled its objectives and other aspects to consider for future interventions. Normally, monitoring feeds into evaluation.

5 Evaluation

Evaluation is a systematic way to review the achievements of a project against planned expectations and to use project experiences and lessons learned to design future projects and programmes. Evaluation can be defined as an assessment of the relevance, efficiency, effectiveness, impact, economic and financial viability, and sustainability of a project. Evaluation is based on the measurement of indicators (see Section 3.2.1).

Evaluation can either be internal (done by the organisation that implements the project) or external (done by someone who is not involved in the project). It is recommended that projects have external evaluations.

Evaluations require time and resources, and it is important to include the necessary time and resources in the initial project design and budget.

Main criteria used for project evaluation

There are six main criteria used to evaluate a project:

Effectiveness

Degree of achievement of the specific objective defined by the project (comparison of the results achieved with the specific objective planned).

E.g., 80% of the objective achieved: only 80% of the population have access to safe water after the project instead of the 100% expected.

Efficiency

Efficiency measures the outputs/results (qualitative and quantitative) in relation to the resources (inputs): does the programme use the least-costly resources to achieve its objectives with quality in the context where it is implemented?

This generally requires comparing possible alternative approaches to achieving the same outputs/results to see whether the most efficient process has been used.

E.g., other projects used local technologies for the pumping system, reducing the cost of this activity by 70% and improving sustainability.

Impact

Impact looks at the wider effects of the project: social, economic, political, technical, and environmental. It includes changes that are immediate and long-term, intended and unintended, positive and negative, and macro and micro.

Impact studies address the question: What difference has the project made to the beneficiaries?

Sometimes it is difficult to assess impact because there are several factors which can influence the results (the problem is to know to what extent the project affects the situation, taking account of the other factors) and also because a result can have several impacts.

E.g., improved access to water had a positive impact in the economic status of the families: x% of the cost of water consumption was saved.

Sustainability

Sustainability refers to the impact of the project once it is completed and over a long period. It involves, in the long term, the proper use and the good condition of the facilities provided, the retention and use of the knowledge acquired by the beneficiaries during the project and the continuity of the community organisation developed by the project. Sustainability is tested through questions such as the following: Can more permanent actors continue achieving the programme objectives when this project stops? Do the host country and beneficiaries 'own' the programme, such that they have the motivation and capacity to continue it?

The main factors influencing sustainability are:

- financial and management capacities of the host institution;
- socio-cultural factors relating to the acceptability of the programme;
- technical factors: the appropriateness of the technology to the host institution's financial and human capacity.

Sustainability is generally a higher priority in longer-term development projects than emergency relief projects. However, even emergency aid should be based on local capacities and movement towards self-sufficiency of the population.

E.g., 80% of the facilities are still working and managed by the communities one year after the end of the programme.

Relevance

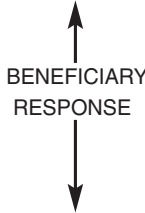
In terms of relevance, evaluations seek to answer questions such as the following: Is the project aligned with the needs and priorities of the beneficiaries, with the global objective and with ACF's strategy? Was the objective appropriate to the context throughout the project? It is useful to explore this last point for learning lessons which can be applied to future projects.

Replicability

The following questions may be asked: Is the community or local institution able to continue and/or expand services? Is the project transferable to other places and situations or was it so specific to the particular context that it was an isolated experience? The answer to this may be neither positive nor negative, but a full exploration of what can be learned and replicated and what cannot is useful for the design of future projects, both in the same location and different ones.

The evaluation criteria developed above should be used at different levels of the logical framework matrix in order to have a complete overview in the evaluation of the project. Table 2.VII locates the evaluation criteria in the logical framework matrix and describes the type of information required and the timing of collection.

Table 2.VII: Evaluation indicators and logical framework matrix (adapted from E.U. Project Cycle Management Training Handbook, ITAD, 1999).

Level of logical framework matrix	Type of information	Timing of collection	Measurement concept
GENERAL OBJECTIVES	Substantive development change specific to the sector Measurement based on trends, possibility of key sectoral indicators <i>Note: the project is only one of many factors influencing change</i>	Project completion & ex-post	SUSTAINABILITY “Continuing the flow of benefits” IMPACT “Making a difference in the wider environment” RELEVANCE “Meeting target-group needs”
SPECIFIC OBJECTIVE	Realistic and sustainable change in target-group situation, specific to project intervention	Mid-term & project completion	
 BENEFICIARY RESPONSE	Early warning of likelihood of implementation success from opinions of beneficiaries about their access to, use of and degree of satisfaction with services provided by the project	Quarterly / yearly (collected as part of results monitoring)	LEADING INDICATORS Proxies for relevant and sustainable change
RESULTS	Quantitative and qualitative measures of physical progress in service delivery Cost ratios and input-output ratios of performance Comparisons of actual achievements with planned targets	Quarterly / yearly at the end of the project	EFFECTIVENESS “Progress towards objectives – doing the right things” EFFICIENCY “Efficient implementation – doing things right”
ACTIVITIES	Measures based on activity schedule Comparisons of actual start and completion dates with planned dates Variations from the planned schedule Milestone dates and events	Weekly / monthly	ECONOMY “Ensuring the best relation between cost, quality and time”
COSTS	Measures based on project budget Comparisons of actual against planned spending Analysis of government, donor and beneficiary contributions Cost variance analysis	Weekly / monthly	