The EMPOWERS Approach to Water Governance

Guidelines, Methods and Tools

Produced by EMPOWERS, a project co-funded by the European Union MEDA Water Programme

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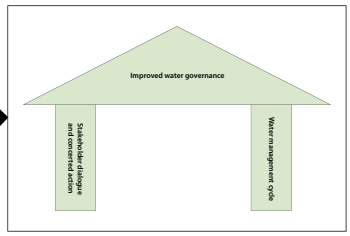
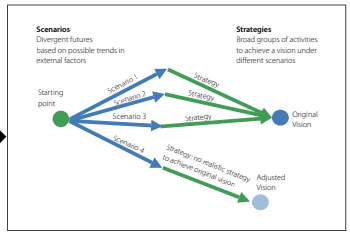
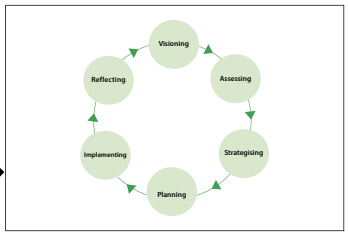
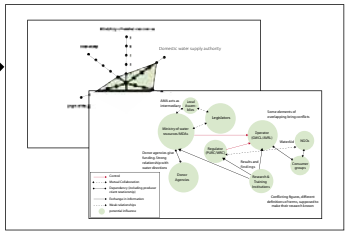
In Egypt, Beni Suef Governorate, and Ehnasia district, EL-Masharqa, Mansha'at Kassab, Bahsamoun, Mamaleek, Manyal Hani.

Overview of the EMPOWERS Approach

Source Documents	Description	Concepts, methods and tools
 Background and key concepts	**Overall Objective** • To improve local water governance and the access of the poor to water and water services	
 Guidelines, methods and tools: Chapters 1-3	**Fundamental building blocks** • Participatory processes and stakeholder dialogue that encourage communication both horizontally between stakeholders at same level and vertically between, stakeholders at different levels. • Strategic management that is based upon agreed information and decision making that is transparent and open to public scrutiny.	
 Guidelines, methods and tools: Chapter 4	**A strategic approach** • A framework for stakeholder dialogue based on programme cycle management. • A strategic approach to improved planning based on combined visioning, scenario building and strategy development.	
 Guidelines, methods and tools: Chapter 5	**A water governance toolbox** • A comprehensive set of tools and methods for use in the EMPOWERS approach • With practical tips and tricks, as well as pointers for further information sources	
	Outputs and outcomes: • Agreed SMART Visions and Strategies • Achievable Plans that take implicit account of uncertainty • A shared base of agreed information • Improved pro-poor water management and service delivery based on better relations and communications between stakeholders	

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Introduction - What this book sets out to do

Water is an increasingly scarce and contested resource around the world and especially in the countries of the Middle East. There is widespread agreement on the need to improve the management of water resources and the provision of water related services if the needs of current and future generations are to be met in a sustainable manner and the environment is to be protected. There is also general agreement about the need to improve governance – the process of making and implementing decisions about water.

These guidelines describe a practical and logical framework of activities based on the involvement of those who use and manage water, which leads towards improved local water governance, and to the development and implementation of integrated water development plans for towns, villages, district and governorates. The guidelines advocate a process of collaboration through dialogue, to bring about a change in the way that water sector professionals and water users work with each other.

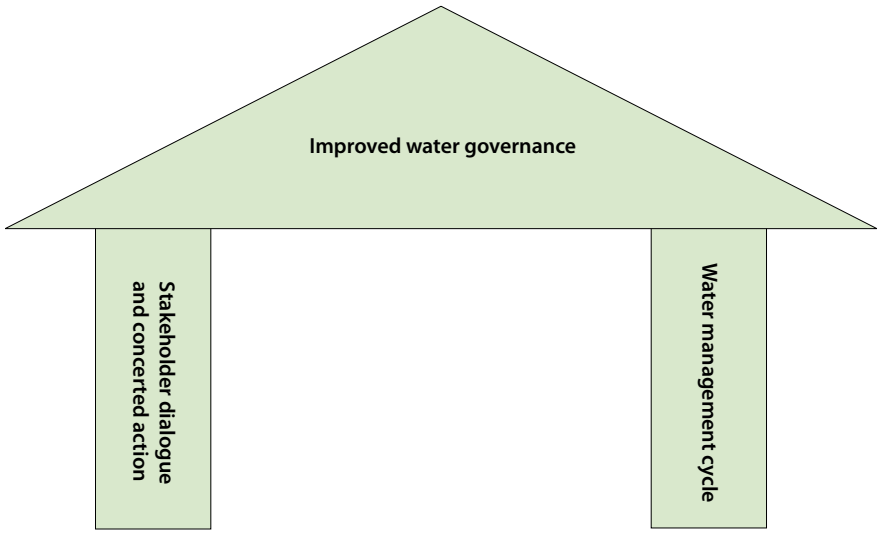


Figure1: The twin pillars of improved water governance

The approach described here is based on twin pillars, one of which is stakeholder dialogue and concerted action (SDCA) and the other of which is a management cycle for water. SDCA is the combination of discussion and action by stakeholders working collaboratively. Stakeholder dialogue involves creating time, space and an institutional platform for interaction between those who have a stake in water resources and services within a defined area. Stakeholders include users of water, those involved with governance, providers of services, institutions involved with learning or knowledge management, and NGOs supporting communities or services in this field. Concerted action means that discussion leads to actions that are coordinated and based on a common understanding and strategy. The second pillar in the EMPOWERS process is the

management cycle that starts by achieving a shared vision and uses an advanced planning tool known as scenario building to move towards a strategy for planning and implementing change, before reflecting on outcomes and a renewed vision. These concepts are further explored in Chapter 2. A detailed outline of the phases to be followed by those who wish to achieve improved water governance can be found in Chapter 4.

These guidelines are divided into 5 chapters:

- Chapter 1: Improved water governance
- Chapter 2: Overview of the approach
- Chapter 3: Facilitation and capacity development
- Chapter 4: The management cycle
- Chapter 5: Methods and tools

The first three chapters act as an explanation of the overall approach; Chapter 4 contains a detailed description of the individual phases and sub-phases of the management cycle for the intermediate and local levels. Finally, Chapter 5 contains a comprehensive set of methods and tools for working with the approach.

Who should use these guidelines, how, and where?

These guidelines are relevant to all those concerned with practical approaches for tackling the complex themes of water governance and Integrated Water Resources Management (IWRM). They are particularly relevant for those who want to initiate and facilitate change processes to improve local water governance. We believe that, so long as those who are leading the process have a high level of technical and facilitation capacity, these guidelines will help to achieve change. Of course, a framework cannot achieve anything by itself and is only useful in the hands of people with commitment and skills.

The guidelines have been extensively tested within villages and towns in Egypt, Jordan and Palestine with populations ranging from a few thousand to 30,000 inhabitants. They have also been tested at the level of districts or governorates with populations of 200,000-300,000 people. While they have not been tested in larger cities, or regions, there is no reason to believe that the approach would not be suitable in larger administrative units, as long as the human and financial resources are expanded accordingly. Nevertheless, it should be noted that in general the larger the population, the more complex the issues – particularly those relating to the representation of different groups and interests. Some component parts of these guidelines are adaptations of well-proven methodologies from the fields of project management, business management and rural development, and they build on guidelines developed on Integrated Water Resources

Management (IWRM) by the EU[1] in 1998, and the RAAKS guidelines[2], widely used for stakeholder analysis in agricultural knowledge and information systems.

The guidelines are designed for use in processes of planning and dialogue within and between local and intermediate levels: in other words, a process involving more than one village or town, in dialogue with and supported by intermediate level stakeholders who are in turn involved in their own processes. However, elements of the guidelines are appropriate for use in stand-alone activities within a single municipality or governorate.

[1] EC Guidelines for water resources development cooperation. 1998. Towards sustainable water resources management. A Strategic Approach. Published DG Development and DG External Relations and North-South Co-operation.

[2] Engel, Paul G.T. and Salomon, M.L. 1997. RAAKS resource box, Networking for innovation, A participatory actor-oriented methodology. Royal Tropical Institute, KIT Press, Amsterdam.
Available at: http://www.kit.nl/smartsite.shtml?ch=FAB&id=4616&Part=Resources

Chapter 5

Table of Content:
Chapter 5: Continued.

Chapter 5. Methods and tools for the EMPOWERS approach

The tools and methodologies described here help to give shape to the first four phases of the approach, leading from the development of an initial vision, through the assessing and strategising phases and onto the development of detailed implementation plans.

This chapter contains a set of 31 methods and tools for activities identified in the descriptions of different phases of the cycle. In some cases the text describes methods for implementing phases of the management cycle such as visioning and planning. In other cases, what you will find here is a description of a tool to be used within one or more of the management phases. For a more detailed discussion of the aims and challenges of each part of the management cycle, the reader should look back to Chapter 4.

Tools and methodologies are grouped according to their use and place within the overall management cycle. The user is of course free to experiment and innovate with different combinations and sequences and to use tools wherever they seem to be useful. As the overall management cycle is an iterative process, tools may be used more than once.

Visioning

A visioning process is used to develop a precise and shared description of how an individual or a group of stakeholders would like the water resources and water services to be in their area of interest at some future time.

Objectives

- To develop a precise and shared description of how a group of stakeholders would like the water resources and water services to be in their area of interest to be at some future time
- For a group of stakeholders to reach a consensus on their vision
- To produce a vision that can provide a common focus and target for strategies and plans aimed at managing and improving water services

Materials and resources

The main activities related to visioning usually take place during workshops and a range of workshop materials will be required. These include: cards, flip charts and pens. Specialist support may also be necessary during workshops to ensure that visions are realistic and achievable. Specialist support may also be required when strategies for achieving visions are evaluated and, when visions have to be revised because none of the strategies identified have the potential to achieve the provisional vision.

Depending on the scale and complexity of the area of interest, the number of stakeholders, and the process to be followed, the visioning can take place in a single or a series of workshops. However, to achieve a realistic vision, there is always going to be a need for some form of iteration between visioning, information collection and analysis, and strategising.

Methods

In the management cycle, an initial vision is produced during the visioning phase. This is then improved and finalised during the strategising phase. The visioning process provides an excellent means of promoting dialogue between stakeholders and breaking down any inhibitions or deep-seated antagonisms that might exist. It is also notable that stakeholders often get considerable pleasure and a strong sense of achievement from a well facilitated visioning process.
Generic steps that can be used for developing a common vision are:

Step 1: Reach agreement on the area of interest and the timeframe for which the visioning is to take place. Ensure that all stakeholders are adequately represented in the process.

Step 2: Identify the main issues that are to be included in the vision. Issues can be identified and grouped using a combination of techniques that include problem tree analysis and brainstorming, using cards and/or a check list provided by the facilitators. Specialist knowledge or existing visions can also be helpful during this step.

Step 3: Develop an outline vision for the area of interest over the agreed timeframe. The vision is best described using a concise mixture of descriptive narrative and numerical targets. Stakeholders should also be asked to use the acronym SMART (specific, measurable, achievable,

realistic, time-bound) as a checklist of attributes for well-written visions, and to help avoid the vision becoming nothing more than a "wish list".

Step 4: Check that the draft vision is consistent with visions at higher or lower spatial or administrative scales. Similarly, check that the draft vision is broadly consistent with government policy. If it isn't consistent on both counts, it may be necessary to make modifications so as to secure political support and increase the probability of funding for activities aimed at achieving the vision.

Step 5: After scenario building and strategy development have been completed in the strategising phase (see the scenario and strategy development tools), assess whether or not any of the strategies have the potential to achieve the vision within the agreed time horizon. If not, revise the vision.

Step 6: Disseminate the vision widely within the area of interest. Elicit comments and feedback. Finalise the vision by taking account of constructive comments.

Who is involved?
Visioning is a pivotal component of water governance, and as such all stakeholders should be involved. The process of developing a provisional vision is carried out by a group of stakeholder representatives. The vision that they produce should be circulated widely for comment.

Tips and tricks

Benefits of visioning

The process and outcomes of visioning may seem vague and superfluous. The long-term benefits are substantial however as visioning:

- Encourages stakeholder dialogue
- Identifies direction and purpose
- Helps to look forward rather than to remain bogged down in current problems
- Alerts stakeholders to needed change
- Promotes interest and commitment
- Encourages openness to unique and creative solutions
- Encourages and builds trust and confidence
- Builds loyalty through involvement (ownership)

Vision killers

As you engage in the visioning process, be alert to the following vision killers:

- Tradition
- Fear of ridicule
- Stereotypes of people, conditions, roles and governing councils
- Complacency of some stakeholders
- Fatigued leaders
- Short-term thinking
- People whose outlook is persistently negative

Scenario building

A scenario is a consistent description of a possible future situation, a story about the way the world might turn out tomorrow. Developing a set of narrative scenarios helps to identify possible pathways (strategies) towards a shared vision of the future, based on current trends together with knowledge of the sources of greatest uncertainty in those trends. A scenario is not a specific forecast of the future, but a plausible description of what might happen. It is a story based on analysis and an understanding of current and historic trends and events. Scenario building can be used by an individual or by a stakeholder group to generate a range of plausible descriptions of the conditions that might exist at some time in the future. When used as an aid to strategising, scenario building focuses on the main issues covered by the vision, working in most cases to the same time horizons.

Scenario building improves strategy development by making stakeholders more aware of uncertainties, risks and constraints. Scenario building helps to switch mindsets from only one possible future towards thinking about a number of possible alternatives. This results in development of strategies that take better account of and mitigate future uncertainty and risk.

It is important that the scenarios maintain a focus on issues identified during the visioning phase. It is also important that each scenario is plausible, internally consistent and based on good quality information.

Objectives

- For a group of stakeholders to build four or five scenarios for an area of interest
- To provide a basis for developing strategies that take good account of inherent uncertainties, constraints and risks

Materials and resources

Scenario building can be carried out in any of the early phases of the management cycle, but can only be finalised after the establishment of a quality-controlled and shared information base and a carefully-targeted awareness raising programme. In complex situations, statistical analysis of trends and the frequency and severity of extreme events will improve the usefulness and reliability of scenarios.

Scenario building has a higher probability of success if the process is facilitated by trained and experienced facilitators. Ideally, scenario building should follow the visioning process and involve the same stakeholders. Brainstorming and other activities will inform the scenario building process.

Initial outlining of scenarios usually takes place during workshops and a range of workshop materials will be required. These include cards, flip charts and pens. Specialist support may be necessary during and after workshops to ensure that scenarios are plausible and internally consistent.

Methods

Typically, scenario building will involve preparatory work including vision development, stakeholder workshops and post-workshop activities. It also requires a common information base, developed during the assessment phase to produce high quality final scenarios. The main steps are described below.

In the stakeholder workshop:

Step 1: Brainstorm to identify all factors that will affect achieving the vision, local factors that may be open to change and external factors that are beyond the direct control of participants. Through discussion, separate local factors from external factors. The difference can be fuzzy, so do not be overly dogmatic – it is most important that the stakeholders recognise the scenarios they are developing.

Step 2: Together with participants classify the external factors as in figure 7 (which can take the form of a wall chart to which cards are attached). The factors in the upper-right quadrant (the most important and most uncertain) are used to differentiate between possible futures described by the narrative scenarios. Ideally it is preferable to limit these key factors to two or three, as this reduces the number of possible combinations and hence scenarios. An example of an important and uncertain factor might be "availability of external financing" which could have states of "high" or "low" – according to which different strategies would be required.

Step 3: Identify different future states for each factor, and combine the results to come up with the main "storylines" of different scenarios. Use the less uncertain or less important factors in the other three quadrants to develop a "background story" that is shared by all the scenarios. Stakeholders should then discuss the scenarios, identify them as high or low probability and refine them as necessary.

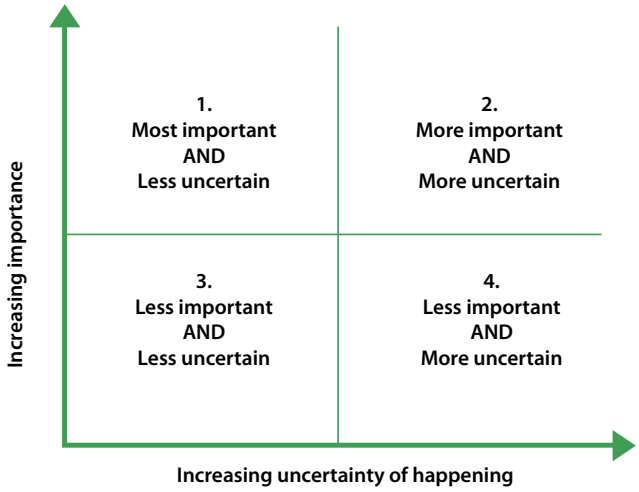


Figure 7: Matrix for assessing external factors according to importance and uncertainty

After the workshop:

Step 4: Write up a series of narrative scenarios in which the factors from quadrant one of the chart provide a common background story to a set of diverging possible futures described by those factors in quadrant two. Depending on the length and detail of the scenarios being developed factors from quadrants three and four can be included or left out of the write-up. Where useful, add other factual information/data from data collection, and use models to examine the internal consistency of the scenarios.

Step 5: Discuss the write up with key stakeholders and adjust as necessary.

Who is involved?
Scenario building is best done in a group setting. This allows different skills and points of view to be brought together. Ideally the group should include stakeholder representatives from all the main interest groups within the community as well as those representing service providers and other intermediate level groups.

Tips and tricks

- Separating local from external factors is not easy. Stakeholders typically focus on the former. The facilitator should explain the importance of also working with external factors, and help participants to identify and classify these.
- Developing scenarios is as much art as science and depends on the skills and understanding of stakeholders and facilitators. There is no objective way to combine all the different factors.
- Scenarios can and should be a mix of qualitative and quantitative information.
- The aim of the exercise is to lead to improved decision making by forcing participants to think more widely than normal about key assumptions that exist when making long-range decisions. Therefore, the scenarios should be at the same time believable and thought provoking.
- It is important to focus on probability rather than on desirability – the aim is to produce realistic scenarios, rather than dreams.

Strategy development

Strategy development is about making decisions in a fundamental strategic direction, identifying broad groups of possible actions and identifying how the problems and challenges posed in achieving the vision are to be overcome. It is not about detailed planning of activities (which takes place later).

Objectives

- To develop strategies which have the potential to achieve the vision
- To ensure that the strategies mitigate potential risks identified during the scenario building process
- To ensure that strategies, as far as possible, internalise potential externalities
- To develop strategies that take account of traditional practices and existing successes as well as new or emerging opportunities

Methods

The following steps can be used as a guide for developing a strategy:

Step 1: Identify and list practical options and opportunities for achieving the vision during a strategy development workshop. Suggestions for options and opportunities are likely to originate from many sources. Some will be based on existing practices others might be entirely new to stakeholders in your area of interest.

Step 2: Assess the social, technical, political, economic and environmental acceptability and viability of these options and opportunities, especially of those that are new to stakeholders.

Step 3: Identify risks and constraints that could impact on whether or not strategies are likely to be successful. Risks and constraints could include slow disbursement of funds, lack of capacity, corruption, limited consideration of environmental impacts, and a host of other factors.

Step 4: Develop an outline of various possible strategies, or major elements within strategies, to achieve the vision, using information collected in the assessment phase. One output of this step will be a summary table listing the main potential strategic elements that could be applied under each scenario (figure 8 and figure 9).

Scenario	Strategy
1	1
	2
	3
2	1
	2
	1
3	2
	3
	4
4	1

Figure 8: Blank form for plotting strategic elements to achieve visions. Figure 9 overleaf shows a real-life example from the strategic plan for Balqa Governorate, Jordan.

Main elements of strategy	Scenario			
	1	2	3	4
• Increase dam capacity or construct new dams to store the rainfall water and recharge the ground water	√		√	
• Decrease the overuse of water from ground water	√	√	√	√
• Upgrading of field applications techniques (changing from surface to drip irrigation)	√	√	√	√
• Improve the domestic water network (decrease the water losses)	√	√	√	√
• Increase the water storage capacity by constructing water reservoirs in Balqa governorate to provide the inhabitants with water directly from the reservoir	√	√		
• Conduct research on making use of the unconventional water resources	√		√	
• Extensive and improved operation of existing wastewater treatment plants (6 MCM/a total capacity) to make their effluents safe of use for irrigation	√		√	

Note:
Important and certain factors common to all scenarios: old water network; lack of water use awareness; low storage capacity; high population growth rate; lack of coordination/cooperation among the S/H; weak application of water policy/legislation; inappropriate crops; increased demand for touristic and industrial sectors; illegal water use; confidence in drinking water quality

Scenario 1: High average rainfall; local government has good access to funds
Scenario 2: High average rainfall; local government has poor access to funds
Scenario 3: Reduced average rainfall; local government has good access to funds
Scenario 4: Reduced average rainfall; local government has poor access to funds

Figure 9: Assessing the potential for possible elements of a strategy to contribute to achieving a vision under different scenarios. An example from Balqa Governorate, Jordan.

Step 5: Evaluate which strategies have the greatest potential to achieve the vision. Figure 9 is an example of a strategy evaluation table. If the evaluation indicates that none of the strategies have the potential to achieve the vision, revise the vision. A range of analytical or modelling techniques can be used in this evaluation.

Step 6: From the list of strategies that have the potential of achieving all, or in some cases part of the vision, devise a single broad strategy. This selection should be based on criteria that have been agreed amongst the stakeholders. Different strategies will probably benefit certain groups more than others, and some form of conflict resolution may be needed.

Step 7: Polish or refine the strategy, ensuring that budgets exist (or have the potential to exist) to cover its implementation. Ensure that the strategy has a high level of political support.

Who is involved?
Strategy development is a key component of local level water governance. As such all stakeholders and/or their representatives should be fully involved. Support will be required to ensure this involvement is both active and effective. This support will come from trained staff with skills that include facilitation, awareness raising, conflict resolution, information management, modelling, economics, social development, gender analysis etc.

Tips and Tricks

- Facilitators can help stakeholders to avoid inappropriate strategies arising from:
  - Lack of creativity in identifying possible strategies
  - Failure of stakeholders to identify a single common strategy to achieve their vision
  - Failure to identify any strategies capable of achieving the vision (in this case it is likely that the vision will need to be modified)
  - Capture of the process by powerful stakeholders – to the disadvantage of less powerful ones
  - Failure to take sufficient adequate account of risks, constraints and other external factors
- Information collected during the assessing phase can be used to check on whether options are viable.
- Lessons learnt from earlier projects and programmes will help to identify risks and constraints.
- It can be helpful, particularly with village level stakeholders, to select a single "most likely" scenario as a focus for strategy development, and subsequently adapt it to other scenarios.
- It is usually helpful to separate a complex vision into component parts before evaluating a strategy's potential to achieve the vision.
- During finalisation of the strategy, a consultation process is recommended to check whether there is scope for improving the strategy by mitigating risks, reducing costs, improving outcomes, or internalising externalities. This may involve incorporating ideas from strategies developed for other scenarios.

Planning

Depending on the size and complexity of the strategy, there may be a single plan, or more likely multiple plans to achieve different parts of it. Project planning is an integral component of project management which is the discipline of organising and managing resources in such a way that resources deliver the work required to complete a project within a defined scope, time and cost.

Objectives
- To convert a strategy into a (set of) plan(s) ready for implementation
- To identify specific roles and responsibilities
- To produce costings, work schedules and, if relevant, issue contracts
- To assess capacity needs for implementing work and, if relevant, initiate a capacity building programme

Effective planning uses a variety of tools. These are chosen to match the complexity, size, duration and cost of the activities. Detailed planning as a part of the overall management cycle uses a wide selection of different tools. A few of the more popular tools will be described here.

Challenges that are specific to participatory planning processes include ensuring that:
- Stakeholders who were involved in visioning, scenario building and strategising continue to participate in, and feel a sense of ownership of, planning processes;
- Plans represent agreed strategies and important elements are not omitted;
- Elites and/or commercial interests do not take over and dominate the planning process at the expense of the marginalised.

Materials and resources

With the exception of very small projects, planning requires the inputs of people with specialist skills that may include project management, contracting, accounting, economics, engineering, hydro(geo)logy and environmental impact assessment. Although specialist inputs can be expensive, the risk of not using specialists is that plans will be poor and the project will fail.

Assembling a team requires careful attention. A balance needs to be struck between specialists and stakeholders. As planning is usually best done in small teams, systems need to be developed for feeding back outcomes to stakeholders and eliciting their comments.

Methods

Gantt charts

Gantt charts are tools for analysing and planning complex projects. They:

- Help to sequence the tasks that need to be completed
- Provide a basis for scheduling when these tasks will be carried out
- Support the allocation of resources needed to complete the project

Critical path analysis

Critical Path Analysis (CPA) helps to plan tasks that must be completed as part of a project. The analysis acts as the basis for preparation of a schedule and for resource planning. A CPA allows you to monitor achievement of project goals, and to see where remedial action needs to be taken to get a project back on course.

Critical Path Analysis formally identifies tasks which must be completed on time, and identifies which tasks can be delayed if resources need to be reallocated. The disadvantage of CPA is that the relation of tasks to time is not as obvious as in the case of Gantt charts. This can make CPA more difficult to understand for someone who is not familiar with the technique.

Time estimation

Accurate time estimation is essential to good project management because time has an important bearing on cost. Usually people vastly underestimate the amount of time needed to implement projects, particularly when they are not familiar with the task. You can only start to estimate time accurately when you have a detailed list of all the tasks that you must achieve. Ensure that within your estimate for each task you also allow time for project management, detailed project planning, liaison with outside bodies, meetings, quality assurance and preparation of any necessary supporting documentation

Transparency

The risk of corrupt practices increases dramatically during the planning process. Unless proper accounting and tendering procedures are implemented, funds will probably go astray. A range of transparency tools can be found at: http://www.transparency.org.

Cost estimation

Poor estimation of costs is a frequent source of project failure. Cost estimates need to be based on the development of detailed bills of quantities and estimates of resource requirements. Cost estimation for all but the simplest projects requires specialist skills.

Capacity development

There is often a need to develop the capacity of stakeholders. Planning adequate time and resources for capacity development is essential, especially for post-implementation activities related to operation and maintenance of new systems, and the management of new institutions.

Who is involved?
All but the simplest planning requires a range of specialist inputs, either additional staff or dedicated time from the facilitation team. Space also needs to be reserved for inputs from particular stakeholders where required.

Tips and tricks

Scheduling simple projects

Typically, simple projects involve few people, have few tasks dependent on other tasks, and are relatively easy to coordinate. Timetables and action plans are often sufficient to coordinate and implement them. Gantt charts and critical path diagrams may overcomplicate project scheduling and communication for such projects, especially if project team members are not trained in their use. They can "blind people with science", leading to poor communication and muddled projects.

Project planning software

A wide range of software is available to support all aspects of planning. Planning charts and costings for simple projects can be handled in a spreadsheet such as EXCEL. For more complex projects, Microsoft PROJECT or similar software is often used.

Tools for participatory learning and action

Participation in water governance means having a stake or share in decision-making processes. Participatory processes actively attempt to involve the public or stakeholders in dialogues and decision-making processes to ensure that decisions match needs and aspirations. A range of participatory tools have been designed to involve stakeholders in the collection and analysis of information, and to involve them actively in processes of improvement and change.

Participatory rural appraisal (PRA) tools

Participatory rural appraisal (PRA), also known as participatory learning and action (PLA), refers to a broad group of tools and activities designed to identify and incorporate the knowledge and opinions of stakeholders in the planning and management of development projects and programmes, especially grass-roots stakeholders such as water users. It is used to gather data based on sampling a range of experiences from people at local or intermediate levels. There are literally hundreds of participatory techniques and tools, designed to empower providers of information as well as those who collect it. Several tools are described in this chapter. Most can be used with and by people with low-levels of formal education and/or literacy.

Objectives
- To collect and analyse primary data together with stakeholders including water users
- To collect information in a way that empowers stakeholders to use the information for themselves and to have the skills to collect further information as and when required

Three broad groups of tools can be identified as being useful in information collection for the approach, these are:
- Sampling tools, such as transect walks, wealth ranking, social mapping
- Interviewing tools, such as focus group discussions, and semi-structured interviews
- Visualisation tools, such as Venn diagrams, matrix scoring, timelines

Materials and resources
The varied materials and resources required for PRA depend largely on the tools being used. Most tools are developed for use with community based participants who may have less formal education. They rely on locally available and general workshop materials (flip charts, pens, etc). Maps of various kinds can be a particularly useful resource. Skilled facilitation is absolutely essential to successful PRA, as is good management of the collected information.

Methods
PRA is not one specific tool but reflects a philosophy towards development, with a variety of tools and activities adapted to specific needs and situations. All share two key characteristics:
- Helping people to make use of their own information. If information is only going to be used by external people collecting it (for example census information) PRA tools may not be appropriate. PRA is about empowering people through involving them, not only in information collection, but also its use and analysis.
- Ensuring inclusion: it is essential that the poorest and most marginalised people are actively involved in PRA exercises, to avoid the process being captured by elites.

Who is involved?
By their nature PRA tools are most appropriate for grass-root stakeholders – i.e. water users. However many of the tools are also useful for group-work with more institutional stakeholders at intermediate level. The most important requirement is skilled facilitation.

Tips and tricks

- Because PRA is open, qualitative and less formal compared to traditional means of information collection, it is prone to capture by elites, to misinterpretation, or to systematic bias. These problems can be mitigated or avoided by skilled facilitation, which is essential for good quality PRA.
- Appropriate feedback mechanisms must be identified to feed back the results of information collection and to share the process of analysis with all stakeholders, especially those about whom information is being collected.

More information

Many websites are dedicated to promoting PRA. Some of the most useful are:

Participatory Rural Appraisal, from the World Bank Sourcebook on Participation
http://www.worldbank.org/wbi/sourcebook/sba104.htm

Participation Manuals and Toolkits, an online collection, part of the ELDIS Gateway to Development Information
http://www.eldis.org/manuals/participation.htm

Rapid Rural Appraisal, from the FAO manual on Market Research and Information Systems
http://www.fao.org/docrep/W3241E/w3241e09.htm

Participatory Learning and Action, journal with many articles available for downloading, maintained by the International Institute for Environment and Development (IIED)
http://www.iied.org/NR/agbioliv/pla_notes/index.html

Keep It Working: a field manual to support community management of rural water supply
A book related to community management of water supply. It offers practical tools to facilitate communication and community decision-making processes and checklists that help field staff to organise their work. http://www.irc.nl/page/1896

Problem tree analysis

Problem trees are one of the main tools in Objective / Goal Oriented Project Planning (OOPP or GOPP), and therefore a core element of project cycle based approaches.

Objectives

- To identify the main water related problems affecting stakeholders; their causes and effects
- For stakeholders to begin the process of analysing and understanding their water resources and services
- To begin to identify the main needs for information collection

Problem trees help stakeholders to move beyond stating "problems" (often in the form of reformulated solutions – lack of staff, resources, etc) and to identify the fundamental causes of these problems and their most important effects.

The main output of a problem tree exercise is a diagram that creates a logical hierarchy of causes and effects and the links between them.

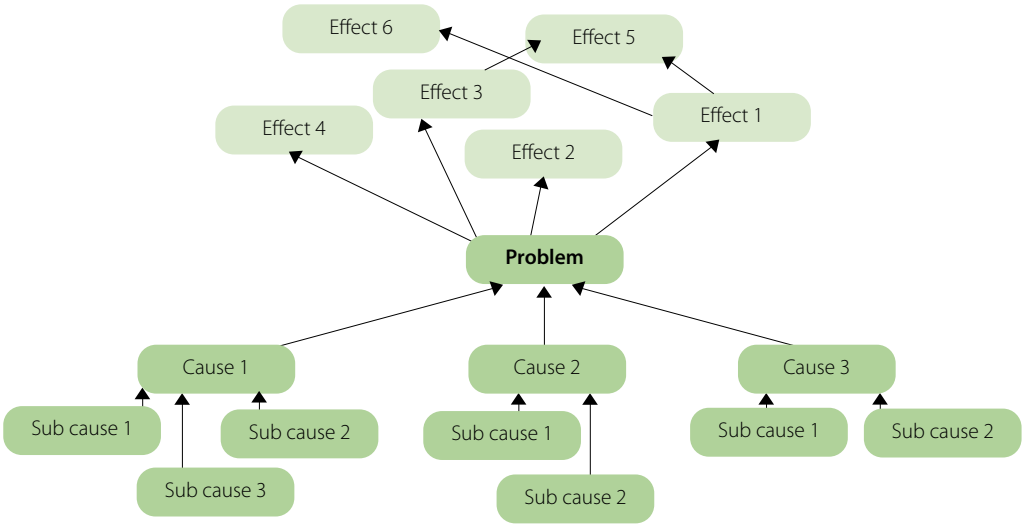


Figure 10: Problem tree after sorting causes and effects

Creating a problem tree that illuminates a situation calls for skilled facilitation, as well as plenty of time. It is crucial that there is good representation of stakeholders during problem tree sessions to achieve a shared understanding of water related issues. There may be considerable differences of opinion and perceptions between different stakeholders.

Problem trees should be revisited and revised throughout the first three phases of the management cycle.

Materials

- Flip chart paper
- Markers
- Scotch tape (or pins) for displaying charts
- Cards
- String

Methods

Step 1: Brainstorm all water-related problems in the domain of interest and put each problem on a separate card.

Step 2: Identify shared core problems, and write precise definitions of these, each on one card.

Step 3: Divide the other cards into causes and effects of the core problems; and stick them respectively below and above the relevant core problem on a large sheet.

Step 4: Use string to link each card to all those cards that are a direct cause for it, and to all cards that it in turn affects. There will probably be multiple different causes for each effect, and multiple effects for each cause. Some cards (such as poverty) may be both fundamental causes and principal effects – in this case use two cards for the same issue.

Step 5: For each problem, look at the cards that may be causal, and ask "are these cards sufficient to explain why this occurs?" If the answer is no, write new cards until all causes are identified.

Step 6: Group cards so that those that describe causes and effects of the same outcomes/ causes are on the same horizontal level (see figure 11). Where cards are very similar create a single new card to represent them all.

Step 7: Review the logic, and alter the links until all in the group are satisfied with the result.

Step 8: Photograph the final problem tree, or copy it carefully onto flip chart paper.

Step 9: Share a copy of the final problem tree with stakeholders.

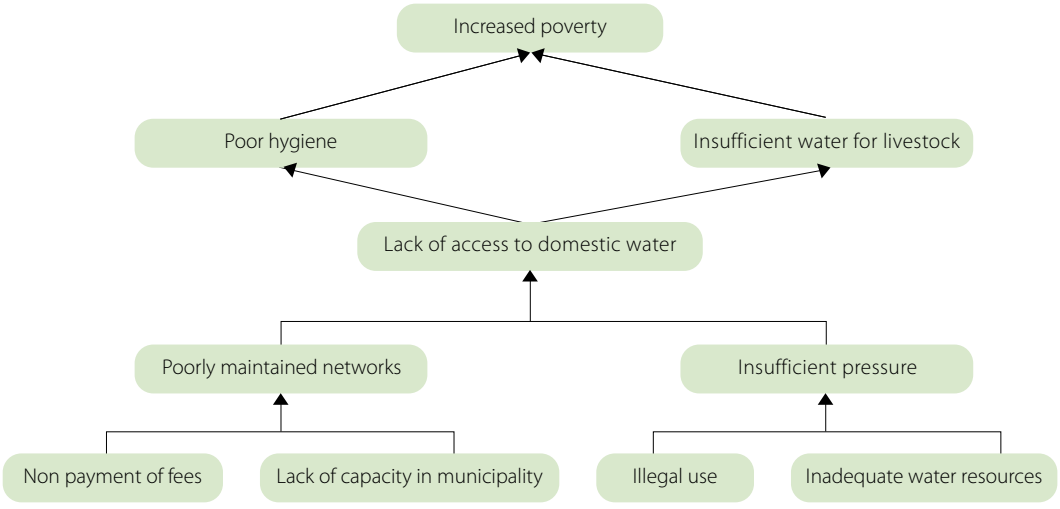


Figure 11: Output from a problem tree exercise after cards have been grouped

Who is involved?
It is very important that the problem tree exercise is carried out with a good and representative group of stakeholders. This is one of the first exercises where the inter-linkages between different water uses and users will start to be identified, and it is therefore essential that all key water-user groups, as well as the major societal groups are represented.

Tips and tricks

- Write problem statements in BIG LETTERS visible from a distance.
- Take the time to ensure clear agreement about the meaning of each card, and its relation to others. Make sure this meaning is documented, for example by writing on the back of the card. If possible, put problems of similar relative importance on one horizontal row.
- A good problem tree session is very dependent on skilled facilitation. Facilitators should be familiar with the problem tree approach, as well as with water related issues to support stakeholders in making links between causes and effects.
- The problem tree is as important for generating dialogue and increasing understanding between stakeholders as for the final output. Sufficient time must be given to allow for the process and for discussions, arguments and tangential interventions.
- Where the group taking part in the exercise is large, it may be beneficial to break into smaller groups, each producing a separate tree and then compare results. This is also important where, for example, women may be shy to speak in front of men, or to get a perspective from young people or a particular group. It is important that everyone feels comfortable in putting their point of view forward.

More information

IAC/Wageningen UR "Participatory Planning Monitoring and Evaluation Resource Portal" http://portals.wdi.wur.nl/ppme/?Problem_tree

Semi-structured discussion

A semi-structured interview is an open discussion between an interviewer and a single interviewee (sometimes a small group), in which the interviewer is guided by a checklist of key questions. This structure ensures that the interview covers essential areas but has the flexibility to follow up interesting areas that may not have been included in the list of topics.
A semi-structured interview has advantages over a more formally structured interview that generally only addresses issues from the perspective of the interviewer, and does not explore other areas important to the interviewee. It has advantages over an unstructured discussion because the checklist of key questions elicits information that can be compared between interviews.

Objectives
- To support systematic analysis of a situation in a way that helps to identify potential ways forward

Methods and resources
Semi-structured interviews are usually carried out by members of the facilitation team, possibly with stakeholder representatives. They should be carefully prepared and properly documented, preferably written up in full on the day of the interview.

To carry out a semi-structured interview: determine the issues about which information is to be collected.

Develop a checklist of a few major questions. Prepare factual questions (what?, when?, where?, who?) and analytical questions (why? and how?).

Step 1: Conduct the interview in a quiet place away from possible disturbances.

Step 2: Let your interviewee(s) know how much time it will take. Interviews should not usually last more than 20 minutes, or interviewees may lose interest.

Step 3: Explain to the interviewee(s) why s/he was invited. Make it clear that s/he has freedom to answer as s/he wishes.

Step 4: Conduct the interview, making brief notes for future reference.

Step 5: Wrap up the interview by thanking the interviewees and by asking whether you may approach them again when the need arises. Should more questions have to be asked it may be better to come back a second time, rather than go on too long.

Who is involved?
The interviewer will typically be a member of the facilitation team. However, as part of capacity building and institutionalisation of the approach, relevant stakeholders should be involved wherever possible.

Tips and tricks

- Individual interviews may be more useful than interviews in groups. The greater freedom of discussion may reveal more about difficult issues.
- Interviews should take into account cultural sensibilities. Often this means that men should interview men and women should interview women. Mixed groups can be interviewed by a small mixed team of men and women.
- Ask interviewees about their own behaviour and knowledge, rather than the behaviour and knowledge of others (unless you specifically want to know their perceptions of others).
- Avoid leading questions ("Surely you wash your hands…", "Do farmers waste water?") since they push the interviewee in a certain direction.
- Open questions ("What do you do next?" or "Does anyone in your community waste water?") provide more reliable information.
- Skip questions that seem irrelevant.
- Ask additional questions if they seem relevant, in response to replies from the interviewee.
- Often people say what they think is "correct", or what they think you want to hear. Ask questions in more than one way at different points in the interview (triangulation) to check for consistency.
- Silence is a useful tool. People often add what they really think, after they have given their "formal" answers. A silent smile or nod can encourage them to say more.
- Memory is unreliable. Write up the interview as soon as possible, preferably the same day.

SWOT analysis

SWOT stands for strengths, weaknesses, opportunities and threats. An analysis of these four elements gives a good pointer to the direction activities should take.
This tool recognises that there are usually two sides (positive and negative) to any given situation and encourages discussion of both. Importantly, it also recognises and makes explicit the difference between internal factors (strengths and weaknesses) and external factors (opportunities and threats).

Objectives
- To support systematic analysis of a situation in a way that helps to identify potential ways forward

Good facilitation of open, in-depth, and focused discussions is required because agreement must be reached to identify strengths and weaknesses, where we find opportunities and what threats we have to deal with. Information obtained through other tools (such as a problem tree) help in a SWOT analysis.

Materials and resources

The most important resource is a good facilitator who understands the key differences between the different SWOT elements, and particularly the importance of separating internal factors (those that stakeholders themselves can change) and external factors (that they have no direct control over).

A SWOT can be carried out in a workshop setting or with individuals. A SWOT typically provides its results on one or two sheets of paper. Because of its succinct nature a SWOT is ideally suited to process documentation.

Methods

These basic steps are described for a workshop – and should be adapted as relevant for other settings.

Step 1: On a large piece of paper create a matrix with four divisions: strengths, weaknesses, opportunities, threats.

Step 2: Clarify the objective. SWOT is most useful when related to a specific objective or activity such as improving the powers of a water user association; or improving the operation and maintenance performance of a department.

Step 3: Identify the strengths, weaknesses, opportunities and threats affecting the objective.
- Strengths are internal factors helpful to achieving the objective (e.g. well trained staff).
- Weaknesses are internal factors harmful to achieving the objective (e.g. poorly motivated staff).
- Opportunities are external factors helpful to achieving the objective (e.g. government support).

- Threats are external factors that are harmful to achieving the objective (e.g. insufficient funding).

Step 4: Use the SWOT to assess the likelihood of achieving the objective. Assess whether the objective is realistic by asking:

- How can we use each strength?
- How can we stop each weakness?
- How can we exploit each opportunity?
- How can we deal with each threat?

Bear in mind that the SWOT analysis may show that the objective is unrealistic and should be modified or abandoned.

Who is involved?
SWOT is useful in a variety of different settings and can be used with all stakeholders, so long as skilled facilitation is available.

Tips and tricks

- The success or failure of SWOT rests on the skills of the facilitator, and the willingness of stakeholders to follow and accept the logic – even if this suggests abandoning an objective or activity.
- Where many SWOT elements are identified it is useful to reduce them by grouping or ranking.

More information
http://en.wikipedia.org/wiki/SWOT_Analysis

Prioritisation and ranking

Choice and decision making lie at the heart of improved water governance. Maintaining confidence in how choices are made – particularly in the objectivity and transparency of decision making – is critical to maintaining high levels of stakeholder buy-in. Given the inherently political nature of water management, tools and methods that help stakeholders make the process clearer and less subjective can be very useful in increasing transparency and acceptability. The ranking tool is a relatively simple yet powerful method for making choices, particularly between a range of possible options emerging, for example, from a strategy development process).

Objectives
- To stimulate discussion about different options leading to well considered decisions
- To rank possible options systematically, objectively, and transparently according to criteria established by stakeholders

A ranking exercise can range from very simple to quite complex. The method described here starts simply, but once weighting is brought in, becomes more complicated.

While offering the potential to make decisions more open and transparent, ranking (like other tools) is of course still open to manipulation, particularly by the person facilitating the exercise or by domineering members of a group.

Materials and resources
The main resource required for ranking is a skilled facilitator. Ranking can be used in many settings from working with individuals to large workshops. Within a workshop setting standard workshop materials are used (flip chart, cards, pens etc.)

Methods
The steps set out here are generic to most ranking exercises – they can be adapted to a wide variety of settings.

Step 1: Develop a clear and unambiguous list of the elements to be ranked. These can be problems or solutions to problems.

Step 2: Develop a list of key criteria by which to rank the elements, for example, the cost and likely impact of solutions to problems; or the impact of problems on the poorest and most marginalised.

Step 3: Draw up a matrix, putting selected elements on the horizontal axis and the selection criteria on the vertical axis. Ensure that descriptions are clear to all stakeholders.

Step 4: Ask participants to give each element a score according to the criteria. A number of variations for scoring are possible. Two of the most common are:

- For each criteria decide which possible solution is best, which one is second best etc. Give the best a score equal to the number of choices and the give next best a score one less than the number etc. (If the number of possible solutions is 4, give the best a score of 4, the next best 3 etc.). This kind of scoring has the advantage of simplicity – but does not allow great differentiation between best and worst options.
- Allocate a limited set number of "votes" to each participant and allow them to allocate them wherever they like in the matrix. This will identify the "best" solutions and at the same time highlight the elements and criteria judged to be most important. Allocate a "weight" or "score" to each of the criteria to emphasise their relative importance. Then multiply this weight by the score given to each element.

Step 5: Once all the solutions have been ranked against all criteria, add up the scores and discuss the results. Allow people to voice doubts, and explore these. The aim should be to arrive at consensus on the ranking – or as near as possible. Allow people to change their minds if they feel the final score does not correspond to their feelings.

Who is involved?
Ranking is useful in a variety of different settings and can be used with all stakeholders. The most important element is skilled facilitation.

Tips and tricks

- Matrix ranking works best if the number of elements being compared is relatively small (ideally no more than 5-6) and there are clear differences between them.
- Discussion of the scoring criteria is extremely important. Differences of opinion, for example among well-to-do and poor people or among men and women, are a good opportunity to discover that people may have different norms and values. Differences of opinion should not be covered over, and do not necessarily have to be "resolved". It is more important that they are accepted since this allows them to be dealt with.
- For sensitive issues individual or secret scoring can be useful.
  Be aware that if you allow each person to have a high number of votes to award, there will be a tendency to award a score to every option, minimising the differences. If you limit the total number of votes each person has, they have to make harder choices. You may find the latter more useful in sorting out the real winners and losers.

Accountability and rights analysis

Accountability and rights analysis is a PRA tool to discover who is seen to have rights over water allocation and use and who is accountable for those rights. Accountability and, by association, ownership is only assumed by individuals or community groups when (i) they perceive the benefits, (ii) they have rights, access and control over resources, (iii) they have the knowledge and capacities to manage resources, and (iv) they have the organisational strength and claim-making-power to realise these activities.

This tool analyses the extent to which people as individuals or groups take responsibility for what they do themselves and the extent to which they are willing to account for these acts to others and themselves. This can be measured by specific actions and measures people take and by the formal and informal rules and regulations that people agree and abide to.

Accountability analysis reveals the extent to which the socio-economic and institutional environment enables people to assume accountability for the management and use of local water resources. One method is to identify proxy indicators for the extent that local people can assume accountability for and ownership of sustainable water resource management. The results of such assessment provide important clues about why ownership is taken or not taken, and give pointers for priority actions and advocacy. At other times, it can be used for monitoring.

Objectives
- Obtain detailed social/power information about different water use/user categories
- Obtain insights into why local people cannot assume accountability for activities related to use and management of their water resources
- Obtain insights into why local people are unable to claim their access rights to water

Materials and resources
Good facilitators are required to conduct individual and group interviews and, if resources are available, more formal community-level studies.

Methods
The analysis is done by looking in-depth at the four necessary conditions mentioned above (perceived benefits, control over resources, capacity to manage resources, and organisational strength). Semi-structured checklists of questions and issues can be developed to seek out information.

However, this tool has to be capable of differentiating between genders and different wealth and power groups, as well as between different water use categories, to ensure that the poorest and most vulnerable have their equitable share in water and can exercise control and ownership.
The following steps can be used:

Step 1: Identify different water user categories in a community with regard to direct physical availability of water, access and rights to water, how they use water of various qualities and the type of technology used.

Step 2: Uncover which water users (categories) can be considered under-privileged in terms of access and rights to quality water and sanitation. This probably gives clues to other dimensions of social, cultural, or economic differentiation within the community.

Step 3: Find out for each water user category what local mechanisms in their community enhance or restrict access to (quality) water for under-privileged water user categories.

Step 4: Ask different water user categories about who is considered to have rights to water and why? Who does not and why not? Who holds this opinion?

Step 5: Find out (using participatory approaches) about the direct priorities of each water user category (especially the under-privileged) and about the local and immediate solutions they see to achieve these priorities.

More in-depth information can be obtained by questioning selected categories of water users about:

Step 6: The benefits they perceive from existing and proposed water resource management and water service provision interventions (irrigation, drinking water, sanitation etc.).

Step 7: The knowledge and capacities they have or lack to implement and manage existing and proposed water resource management interventions.

Step 8: Any effective formal and/or informal rights they have to access water resources in the community or to benefit from existing or proposed water resource management interventions;

Step 9: How they exercise influence (i.e. their claim-making power) on community leaders and other influential persons or institutions inside or outside their community to improve their access to clean water and effective sanitation. How they acquire the necessary knowledge and capacities to manage these; to get a greater share of benefits; and, to achieve rights and access with regard to existing or proposed water resource management interventions.

The purpose of Step 9 is to identify what power relations in a community positively or negatively affect a user's share of quality water.

On the basis of answers to above questions:

Step 10: Analyse what obstacles these water users experience that constrain them from feeling accountable for or taking ownership of a specific water intervention that is in their interests.

Step 11: Explore with different water user categories what can be done to overcome technological, socio-economic, institutional, or legal political barriers to ownership and accountability.

Step 12: Explore at institutional levels outside the community what can be done to overcome cultural, socio-economic, institutional, or political barriers to ownership and accountability for each specified category of water user.

Who is involved?
Facilitators must carefully select the categories of water user for whom accountability and rights analysis is most useful. Those users are closely involved in this process.

Tips and tricks

When the analysis has been done, feed back outcomes and results to the community as a critical part of verifying conclusions.

The results/answers to the four questions under Steps 6-9 can be structured using the framework in the following figures.

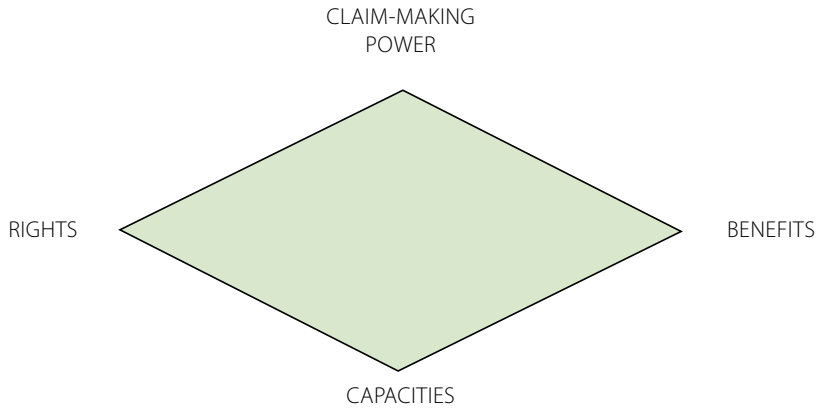


Figure 12: Accountability at local levels for natural resources management

Pre-conditions	Low	Slight	OK	High
Awareness/Capacities and knowledge				
Benefits				
Rights, Access and Control				
Claim-making Power				

Figure 13: Extent that pre-conditions for local level accountability in IWRM are fulfilled

More Information

Laban, P. (2007). Accountability and Rights in Right-based Approaches for Local Water Government. In: International Journal for Water Resources Development (Vol 23, No 2, p 333-345, June 2007)

Tools for assessing

This group of tools and approaches is used primarily within the assessing phase of the EMPOWERS approach. The approaches described here are concerned with the collection, analysis and storage of physical and societal information related to water. Outputs from some of these tools are illustrated in Appendix 1.

Resources, infrastructure, demand and access (RIDA)

RIDA is not a specific set of activities, but an analytical framework that helps to structure water related information logically and transparently. RIDA's main purpose is to support development of a water resources assessment (WRA), considering both the supply side (resources and infrastructure) and effective demand for water (demand plus access).

Objectives

- To structure the collection and analysis of information about users demand for, and access to, water. This approach identifies barriers to meeting this demand and the potential to improve access within systems and institutions at the level of users, service providers, and water resource managers

The concept of RIDA is simple. Users have a demand for water, and to meet this they usually rely on a provider (who manages infrastructure, like pipes and reservoirs), while both user and provider rely on natural water resources (rivers, lakes or underground sources) which must be managed and kept clean. These users, water service providers and water resource managers have separate approaches and institutions, and so lack a common meeting point. Note that infrastructure comprises not only physical structures but also includes the organisational structures that keep them working.

Water users think in terms of households, villages or the irrigated area managed by a water-user association. Water service providers think in terms of large piped water systems or main irrigation canals. Water resource managers think in terms of catchments and aquifers and the regional level bodies that look after them. Many of the most intractable problems of water resource management come from the fact that the boundaries of these three groups of people do not match, and that the institutions involved are different.

The problems that a poor woman experiences in getting domestic water may be related to local issues to do with access within the village, or to poorly managed supply infrastructure, or to the fact that there is simply not enough water resource to meet everyone's needs. The most difficult and intractable problems relate to all three.

RIDA is used to structure the collection of information in the assessing phase. However, it should also inform all analyses of water related problems and potential solutions – from initial problem tree analyses, through stakeholder identification to strategy development.

For example, a problem tree exercise that considers resources, infrastructure, demand and access will not satisfy itself with problems only at village level but will follow supply lines of pipe networks and canals back to the water resource base; and will identify key stakeholders and problems at each level.

Methods

Step 1: The starting point for using RIDA to structure a water resource assessment is to gather the necessary information to answer key questions relating to each element of the analysis. These questions are about:

Demand and access

- What is the demand for water from different water users and societal groups (quantity, quality, reliability, location)?
- What existing access do users have to water now; to what extent is demand satisfied?
- What are the key water related institutions relevant to the various water-user groups?
- What barriers to access are experienced by different water user groups (high user fees; requirement to have membership of associations etc.)?

Infrastructure

- What are the main physical elements of the water supply infrastructure (reservoirs, canals, treatment plants, pipe networks etc.)?
- What is the capacity of this infrastructure (storage, treatment, supply) to meet demand?
- What institutions are related to water supply infrastructure?

Water resources

- What water resources are drawn on by the water supply infrastructure?
- What is the sustainable quantity of acceptable quality water that they can supply?
- What other demands are made upon them?
- What major institutions are involved in managing water resources? What are their roles and responsibilities? How effective are they?

Step 2: Information collected during the RIDA analysis should be stored in an information base, most likely consisting of spreadsheets and layers of information in a geographic information system (GIS layers). Ideally, the storage structure should reflect the RIDA elements, for example, by using different sheets within a spreadsheet to summarise each RIDA element and another to draw together key data onto a single sheet.

Step 3: In more complex situations a database may be required – but the expense of setting up such a system should be weighed against the likely benefits. Specialist advice should be sought before making major investments.

Tips and tricks

- The boundaries between elements of RIDA are not always clear. For example, a large irrigation canal can be seen as infrastructure for an area, or as a water resource for a single village. Defining them is something that is best done in a local context as part of the stakeholder dialogue process. Deciding how to treat and interpret different data may also call for expert involvement.
- A key part of the assessing phase is deciding what information can be collected from existing secondary sources and what will require primary data. Typically, user-related data (demand, access, local institutions) requires mostly primary data, often collected using a range of PRA tools; while water resource data is usually collected from secondary sources. Information about infrastructure typically requires a mix of both.

- A RIDA process is an important part of awareness raising. The key point is that people understand the full chain of resources, hardware and institutions involved in providing water services.
- RIDA does not take place on a single scale. The "area of interest" may start with the village where demand and access are being assessed – but it must follow the logic of the water system to identify problems and opportunities to meet that demand, which could lead to considering an entire district, looking at supply infrastructure and identifying potential water resources.
- Structuring analytical tools (such as models) and reports using RIDA helps to bring stakeholders from different levels and interested in different elements of RIDA together in a joint analysis.

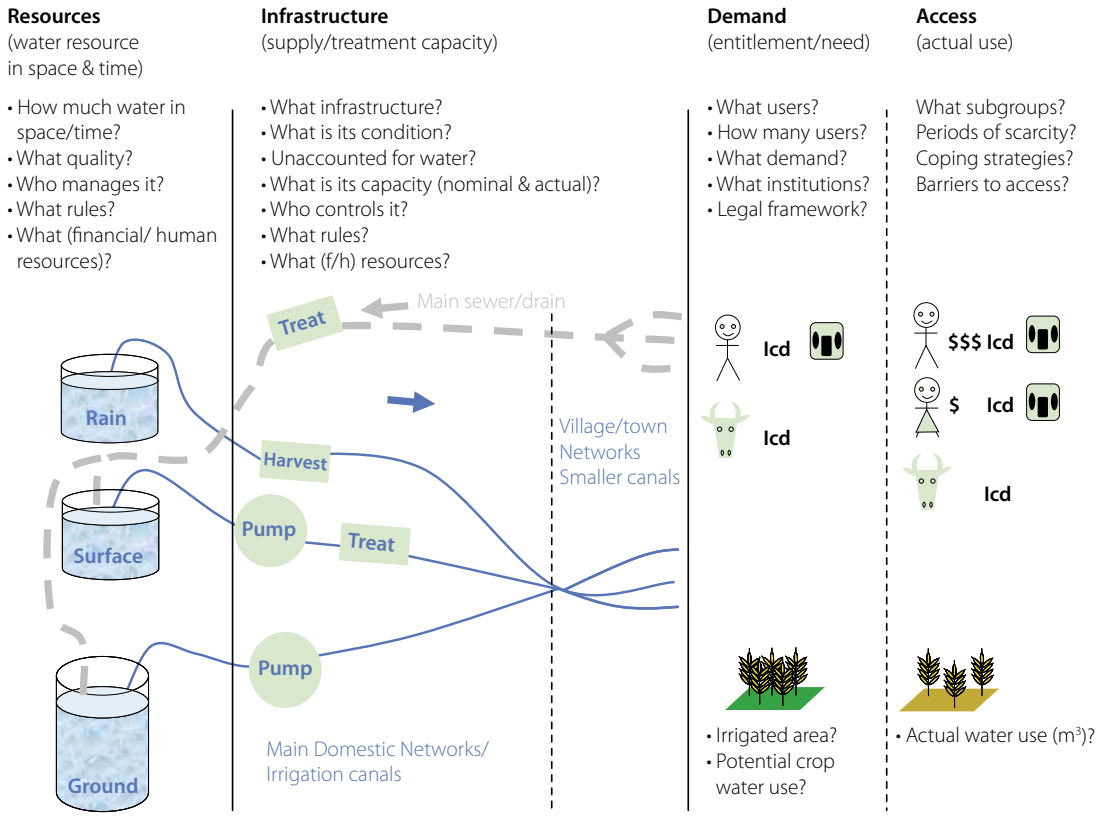


Figure 14: An illustration of a RIDA assessment preparation with relevant questions for each part of the assessment

Qualitative information system (QIS)

Participatory rural appraisals (PRA) can empower local people and help them identify the causes of water-related problems, improve services and/or develop better systems of water governance. However, participatory appraisals take time and often generate qualitative information which can be difficult to analyse and compare between different locations. The Qualitative Information System (QIS) helps to overcome these problems by using scoring scales to convert qualitative information into numbers so that results can be analysed statistically.

Objectives
- To elicit information from individuals or groups of stakeholders in a form that can easily be analysed and used to support stakeholder dialogue, planning processes and project management
- To add value to standard approaches to participatory rural appraisal

This is a fieldwork tool, used in communities to ascertain the views and concerns of a range of stakeholders, in a form that makes it possible to compare levels of satisfaction, dissatisfaction, concerns and strength of feeling.

Major strengths include:
- QIS provides a cost-effective semi-quantitative means of evaluating the aggregated view (or perceptions) of stakeholders regarding, for example, the status of a water supply system.
- QIS can be modified to collect information on a range of different issues or topics.
- QIS can be used to encourage stakeholder dialogue on the nature, severity and/or importance of water-related problems. It is a powerful tool for identifying possible discrepancies between official statistics and facts on the ground.
- The information obtained can be presented on geographical information system (GIS) layouts, for example to map the location and severity of water supply problems.
- QIS can be used to monitor the progress and outcomes of a project.

Whilst QIS has many potential benefits and uses, there are potential risks and constraints that need to be recognised and mitigated.
- The quality of QIS information is highly dependent on the diligence and skills of field staff.
- There is a risk that field staff can introduce bias as a result of the way in which they introduce and facilitate the ordinal scoring system.
- There is a risk that stakeholders will exaggerate or modify their responses to generate "better" numbers for their case. For example, farmers might exaggerate their water supply problems to justify demands for more water.
- As with all PRA methods, responses are sometimes influenced by transitory factors. For example, responses may differ before and after a period of rain.
- Unless specific steps are taken, the process can be dominated by more articulate stakeholders.

Materials and resources

Effective QIS assessments are heavily dependent on being facilitated by well trained and well-supervised field teams who have background knowledge of local customs, local politics and other factors that might relate to the assessment. A gender balance is also highly desirable. As with most PRA fieldwork, QIS fieldwork has to be organised to fit in with the availability of key informants. This often involves holding meetings during evenings or outside normal working hours. It is important that meetings are held at times when women are able to participate. Given the need for early starts and late finishes, adequate transport must be provided to get teams to and from villages or towns where the QIS takes place. In most cases, QIS teams need to have access to laptop computers so that data entry can take place during the fieldwork. Confusion is more easily avoided, if data quality problems are identified quickly and followed up immediately with key informants.

Methods

In the method described here, the first four steps are preparatory; data collection takes place during stage 5 and 6, while steps 7 and 8 make use of the data.

Step 1: Planning. Needs assessment is the starting point to decide whether QIS is the appropriate tool. What information is required? Who requires this information? At what temporal, spatial and/or societal scale should the information be collected? What resources are available? Who will take responsibility for the task? Is QIS the most cost-effective method of collecting this information?

Step 2: Mobilisation, capacity development and preparation of QIS field formats. The QIS team(s) is assembled and their knowledge and skills in using QIS techniques are checked and improved, so that team members are working in the same way. A "team" may range from one person to a larger team led by a supervisor with excellent PRA and facilitation skills, male and female field staff and someone to process and quality control the data. Preparatory discussions cover issues to be assessed, indicators being used, the ordinal scales, and the QIS field formats. Development of these formats usually involves role play and practice interviews involving team members.

Step 3: Field testing. Two rounds of field testing are needed, the first to identify the problems in the field formats, and the second to make sure that revised formats are suitable for the survey. At the end of each round, information from the pilot areas should be processed and reviewed.

Step 4: Informing local officials and key informants. QIS assessments in a village or a town should be planned in advance with the assistance of local officials and key informants.

Step 5: QIS assessments. A QIS assessment usually starts with a meeting with officials, elders, teachers and other key informants to discuss the purpose of the assessment, to get basic information about the village, and to plan the various focus group discussions. Thereafter, further information can be gathered through a transect walk, social mapping and a water system review. Subsequently, in the afternoon or evening, further focus groups can be held. Finally, a village meeting is held to provide feedback and to cross-check the main points.

Step 6: Scoring. Participants being asked about their experiences and assessments, score their answers against a pre-prepared standard. This can be individually or in peer groups.

Step 7: Data processing. Field data including scores and the reasons for giving them should be entered on to a computer within a day or two of being collected. Simple quality control procedures should be followed with cross-verification of data by field teams.

Step 8: Report writing and dissemination. Data analysis should focus on providing the information identified in Step 1 in formats that can be understood by those identified as needing it.

Who is involved?
All key stakeholders should be involved in identifying the need for using QIS and planning its use. Responsibility for carrying out QIS assessments is always likely to be delegated to an individual or organisations with good facilitation and PRA skills and experience. In some cases, members of QIS teams may be seconded from stakeholder organisations.

Tips and tricks

- It is often advantageous for the field team to include people who come from the area or know it very well.
- When planning a QIS, it may be necessary to provide an awareness raising session for officials and informants who will help in the process or whose permission is needed for it to go ahead.
- The duration of an assessment depends on the size of a village or town, the amount of information required and the size of the QIS team. Typically, a QIS team of three people can complete an assessment in a small village (50-100 households) in 1-3 days.

More information

A protocol for carrying out a Qualitative Information Appraisal (QIA) can be found at:
http://www.irc.nl/page/37607

Making Every Voice Count, a leaflet giving more information about the development of Qualitative Information Systems can be found at:
http://www.irc.nl/page/37607

Transect walks and other useful participatory information gathering tools in communities can be found in Keep It Working: a field manual to support community management of rural water supply.
http://www.irc.nl/page/1896

Quality assurance and control

Quality control of information is a crucial element of successful planning. Plans based on poor quality information have a high risk of failure. However, many planning processes stall or become unacceptably expensive because excessive time and resources are spent trying to improve precision to levels that are not appropriate or warranted.

The quality of water-related information can be highly variable. Information is often out of date and may also be completely inaccurate. Reasons for this include: use of poor sampling techniques; use of measuring and monitoring equipment that is inappropriate or not well maintained; outdated or false assumptions about who uses what water; involvement of people who are poorly trained and poorly motivated; manipulation of information by people with vested interests in showing situations that are better or worse than reality.

Objectives
- To ensure that information used in the planning process is of an appropriate, acceptable and consistent quality

The information on which planning decisions are based exists in a wide range of forms and formats. This range encompasses:
- Numerical and graphical data in books, electronic media or in PC-based spreadsheets or information bases;
- Qualitative information relating, for example, to water governance processes, gender issues and lessons learnt in earlier projects.

The wide range of forms and formats means that quality control procedures have to be tailored and adapted to the information.

Materials and resources

Quality control of information is often given low priority when resources or time are limited. It is important that responsibilities for quality control are allotted specifically to individuals or groups. Some quality control routines can be carried out mechanistically using computers (e.g. checking whether numerical information falls within acceptable ranges), and can be carried out with limited training. Most methods of quality control require a good knowledge of the subject area and the area from which the information has come. Experience and an enquiring mind adept at spotting inconsistencies in information from different sources are assets.

Methods

Quality control and quality assurance are broad topics that can only be outlined here. The methods and procedures will vary with the scale and complexity of the information bases. The following indicative steps can be used as a guide:

Step 1: Identify the information needed to support the planning process. Brainstorming sessions involving relevant stakeholders and specialists are a useful way to do this.

Step 2: Decide on the level of accuracy and precision that is required. This is relatively easy with experience. Concepts such as optimal ignorance (limit data gathering to what is needed), appropriate precision (measure only as accurately as necessary) and fit for purpose (information must be useful) are all relevant when making decisions on appropriate levels of accuracy and precision.

Step 3: Consolidate information into an information base. This can be computer based but could also be a simple card filing system

Step 4: Check for gaps and missing information. Decide whether these gaps need to be filled. Check whether time-dependent information is up to date and whether or not it needs to be brought up to date. Decide whether primary information collection is needed or whether gaps can be ignored or filled by extrapolation.

Step 5: Use quality control methods that include:

- Computer-based techniques for checking for errors in numerical data (filtering, simple correlations, scatter diagrams etc);
- Triangulation by comparing different independent sources (ideally three or more) to establish accuracy and reliability of information;
- Benchmarking - structured comparison with information from other settings;
- Checking secondary information by collecting new data from a representative sample.

Who is involved?
Almost everyone becomes involved in some aspects of quality control when awareness is raised of the value of good quality information. Specific responsibility for computer-based quality control should be given to specialists who have a good knowledge of the area in which the information originated.

Tips and tricks

- Risks, including potential social, political and financial losses associated with failure, should be taken into account when reaching a decision on accuracy and precision.
- It rarely makes sense to have a high level of accuracy and precision for some information if other information that is part of the same information base is not of equal accuracy.
- If the findings of societal or physical analysis for one location are radically different to similar areas, further quality control checks may be needed.

Water balance estimation

In the natural environment, water is in almost constant motion and is able to change state from liquid to a solid or a vapour under appropriate conditions. Conservation of mass requires that, within a specific area over a specified period of time, water inflows are equal to water outflows, plus or minus any change of storage within the area of interest. Put more simply, the water entering an area has to leave the area or be stored within the area. The simplest form of the water balance equation is as follows:

$$\mathbf{P = Q + E \pm \Delta S}$$

Where, P is precipitation, Q is runoff, E is evaporation and ΔS is the change in storage in the soil, aquifers or reservoirs.

In water balance analysis, it is often useful to partition water flows and storage into "green" and "blue" water. "Blue" water is the surface and groundwater that is available for irrigation, urban and industrial use and environmental flows. "Green" water is water that has been stored in the soil and that evaporates into the atmosphere. The source of "green" water is rainfall or "blue" water that has been used for irrigation.

Objectives
Water balance analysis can be used to:
- Assess the current status and trends in water resource availability in an area over a specified period of time
- Strengthen water management decision-making, by assessing and improving the validity of visions, scenarios and strategies

Water balance estimates are often presented as being precise. In fact, there is always uncertainty, arising from inadequate data capture networks, measurement errors and the complex spatial and temporal heterogeneity that characterises hydrological processes. Consequently, uncertainty analysis is an important part of water balance estimation as is quality control of information before it is used.

Some common problems that occur when water balance estimations are made include:
- Temporal and spatial boundaries are not defined;
- The quality of input data is poor;
- Double counting of water flows when water flows within an area are added to water flows exiting the area;
- Inappropriate extrapolation of field level information to a larger scale. Many hydrological relationships are scale dependent (e.g. runoff as a proportion of rainfall is almost always higher at smaller spatial and temporal scales);
- Intuition (often based on popular myths) is used rather than good quality information;

- The storage term(s) of the water balance is omitted;
- Political or other pressures result in unreliable estimates that have been manipulated.

Materials and resources

Techniques for carrying out water balance estimation range from very simple "back of the envelope" estimates to highly complex computer-based models. A sound knowledge of hydrological processes is a pre-requisite of water balance estimation. A high level of numeracy and good knowledge of the area of interest is also very helpful. It is often advisable for a project or programme to employ the services of a specialist to produce water balance estimates or, at the very least, to provide specialist advice as and when it is needed. Access to a quality-controlled information base is a good starting point for water balance estimates.

Methods

Step 1: Define the boundaries of the area of interest and period over which a water balance is to be made.

Step 2: Undertake a needs assessment of the water balance information that is required. This should be used as a starting point for listing and defining the water balance components that are of particular interest.

Step 3: Produce a simple schematic diagram that shows storage, and inflows and outflows from the area of interest. Use the diagram as a basis for drafting a water balance equation. Check that no components are missing and that there is no double counting of flows or storage.

Step 4: Identify a source(s) of quality-controlled information. Ensure that the information is relevant to the area and time period you are interested in.

Step 5: Carry out uncertainty and sensitivity analysis on this information. If there are inadequacies in the information (almost always the case), redefine the boundaries of the water balance and/or modify the water balance equation.

Step 6: Produce water balance estimates in a format that is useful for visioning, scenario building and strategising (e.g. a time series).

Step 7: Quality control these estimates before they are disseminated, using quality control methods described in this chapter.

Step 8: Disseminate findings to stakeholders in a form that they can understand.

Who is involved?
Almost everyone is influenced by water balance estimates because they are often central elements of awareness raising campaigns. Stakeholders directly involved in decision making may require more detailed information. Given that water balance analysis should be based on a needs assessment, everyone is involved in determining the outputs that are needed. The process of producing water estimates is best undertaken by experienced specialists or by staff who have undergone training and have access to specialist support.

Tips and tricks

- Be aware that published water balance estimates are often incorrect for the many reasons listed above.
- Too often, minimal or no account is taken of uncertainty when estimates are made and presented. Quality assurance and control of the estimates should always be built in to a water balance estimation procedure.
- When data are uncertain, it is often possible to omit components that do not affect changes. For example, it is possible to omit storage from an annual water balance if year-on-year changes in storage (such as a reservoir) are negligible.

Time series analysis

Some factors that influence future water supply and demand are more predictable (e.g. population increase) than others (e.g. climate change). Time series analysis can be used to predict rates of change or the probability of future events based on an analysis of past trends and events. Time series analysis is an important tool that can be used to support and improve scenario building, strategy development and planning.

Objectives

- To forecast or predict the probability of future changes or events, using knowledge of historic trends and events

In statistics, a time series is a sequence of data points measured at successive times. Time series analysis attempts to understand this data and to make forecasts or predictions. Various methods are used. Some are very simple requiring limited specialist knowledge others require a sound understanding of statistics and modelling techniques.

Outside a rigorous scientific framework, predictions based on historic information are often synonymous with informed guesswork. Predictions of this kind may be valid and useful if the predictor is knowledgeable and is using sound reasoning and quality-controlled information. Large corporations invest heavily to focus attention on possible events, risks and business opportunities. This approach uses all available time series information as a basis for developing reasonable expectations about the future.

Materials and resources

Resources required for time series analysis include:

- Access to appropriate quality-controlled information;
- Access to people with a good knowledge of the information used as a basis for predictions or forecasts. Key informants can be specialists or non-specialists who have long experience of living and working in the area;
- Specialists and/or facilitators who have a sound knowledge and experience of using time series analysis.

Methods

Numerical time series methods use historical data as the basis for estimating future outcomes. They include:

- Moving average analysis. Moving averages are used to smooth out short-term fluctuations, thus highlighting longer-term trends or cycles.
- Extrapolation. Extrapolation can be carried out by making a "best-fit" line through a data set and extending it into the future. In the case of simple non-linear relationships, extrapolation can be carried out by drawing in a curve by eye.
- Modelling. Assuming the underlying process is reasonably well understood, one may construct a mathematical model of this process, using spreadsheets or commercially-

available modelling software. Such models can be used for relatively sophisticated trend estimation.

Judgmental forecasting methods are, as the name suggests, based on judgement rather than numbers. Such methods include:

- Scenario building as described earlier in this chapter.
- Delphi technique – a method for obtaining forecasts from a panel of independent experts. Experts are asked to make predictions of particular future outcomes. An administrator provides an anonymous summary of the experts' forecasts and their reasons for them. The experts then adjust their forecasts. When their forecasts have changed little between rounds, the process is stopped and the final round forecasts are combined by averaging. The technique can be adapted for use in face-to-face meetings, and is then called mini-Delphi or Estimate-Talk-Estimate (ETE).

Who is involved?
Time series analysis will usually be carried out by relevant specialists who have a particular interest in particular forecasts or predictions. However, depending on the context and the availability of trained facilitators, non-specialists can also become involved.

Tips and tricks

- Spreadsheet software or commercially available statistical software can be used for fitting lines to data sets.
- Delphi is based on well-researched principles and provides forecasts that are more accurate than those from unstructured groups.
- Outputs from time series analysis should be disseminated widely as part of targeted awareness raising campaigns.
- Great care must be used when extrapolating from existing data. This is where most analysis goes seriously wrong.

Modelling

In the water management context, a model is a mathematical representation of a dynamic system or process which may be biophysical, societal or – as in the case of a water supply system– some combination of the two. A model comprises a number of variables which are defined to represent the inputs, outputs and internal states of the system or process, and a set of equations and inequalities describing interactions between these variables.

Models can be hugely complex or they can be very simple. Complex models are often characterised by the fact that they take a long time to develop, are based on complicated maths, require a lot in input data and can only be run on powerful computers. In contrast, a simple model can be set up quickly by someone with a basic knowledge of maths using, for example, spreadsheet software and readily available information.

Objectives

- To create a better understanding of the causes and effects of water-related problems as an aid to identifying viable solutions
- To support visioning processes by making well-informed predictions of trends that relate to water supply and demand

Models have two major functions. Firstly, they can be used to investigate relationships between variables in a system and, secondly, they can be used to make predictions concerning the future behaviour of that system or individual variables that are part of the system. If a model is to be used to make predictions then it must provide a representation of the process or system within acceptable levels of uncertainty. Models invariably simplify systems or processes and inevitably prove inadequate in some respects. Moreover, almost all models are based to some extent on empirical relationships and their accuracy is dependent on the quality of information that was used to derive the relationships. A great deal of care and attention is needed in setting up, using and calibrating models. When used correctly and judiciously, models provide benefits that would otherwise be unobtainable.

An effective model meets the purpose for which has been designed and is developed within an agreed timescale and cost. Many effective models can also be adapted to take account of new information or to meet unanticipated requirements.

Materials and resources

Effective modelling is only possible if those doing the modelling have access to a quality-controlled information base. Individuals or groups with responsibility for modelling require good computing and mathematical skills. The level of skills required depends on factors that include:

- Whether modelling includes the development of new models or adaptation of existing models; and
- The complexity of the model and whether or not it is being developed using commercially available modelling packages.

It is crucial that those developing and using models have an excellent understanding of the system or process that they are modelling.

Methods

Step 1: Needs assessment: The starting point is a needs assessment of the purpose and/or specific needs for outputs, and a review of existing modelling and/or data analysis procedures.

Step 2: Model specification: Using the needs assessment as a starting point, a model specification should be drawn up specifying a description of the process or system to be modelled; the spatial scale and time intervals at which the model is to function; the main input and output variables and relationships; the type of model and required levels of accuracy or precision of outputs.

Step 3: Knowledge assessment: It is sensible to assess the current state of knowledge and understanding of the system or process. In most cases, it is possible to make use of or learn from previous attempts to model the system or process.

Step 4: Availability of information: Assess whether the information identified in Steps 1-3 is readily available or can be collected within an acceptable timescale and cost.

Step 5: Develop, test and validate a prototype model: As there is a high risk that modelling will take longer than anticipated or fail to produce useful outputs, it is sensible to produce a prototype model quickly. The prototype is validated by comparing model predictions (or simulations) to information independently obtained. To be acceptable the model must achieve desired levels of accuracy or precision.

Step 6: Convert the prototype into the final model: Once the prototype is working acceptably well, it should be upgraded to meet all the specifications. It may be necessary to revalidate the model. Users may need training in how to use the model.

Step 7: Predictions and simulations: Use the model to produce predictions and simulations required to support visioning, scenario building or strategising.

Who is involved?
Almost everyone will be involved in identifying the information required from modelling and in using the outputs from modelling. However, in most cases, responsibility for the actual modelling will be delegated to specialists with good computing and numerical skills and modelling experience.

Tips and tricks

- The key to effective model building and use of models is to ensure that the modelling fits a clearly defined purpose and produces outputs that support specific needs such as conflict resolution.
- If models are being developed by people who are not going to be the long-term users, the developers must work very closely with the users.
- It is often necessary to repeat steps 1-4 several times before a viable and cost-effective specification is produced.
- A prototype is a functioning model that does not yet meet all specified requirements or achieve desired levels of user friendliness.
- It is recommended that users maintain a healthy scepticism about model outputs. Modelling is useful to support decisions but should not be used as a means of reaching decisions.

Information management

Information management helps to ensure that decision making is legitimate, transparent, effective and efficient. It is about handling information from different sources in a way that optimises access by all who have a share in or a right to access that information. It is about knowing what information to gather, knowing what to do with information when you get it, knowing what information to pass on, and knowing how to value the resultant use of the information.

Historically, information management was largely limited to the management of libraries and documents (books, files, maps etc.) and retrieval of information was based predominantly on filing or cataloguing systems. Although such systems continue to be used, computers, other electronic devices and the Internet have revolutionised access. This technology enables large amounts of information to be stored and shared effectively, efficiently and rapidly. The key challenge for the water sector is to ensure that these ever more powerful and sophisticated systems are designed and managed for the ultimate benefit of all stakeholders, especially the marginalised. Millions of people lack access to computer and the Internet and as with most technologies, there is a high risk that the benefits will be captured by powerful and dominant elites. Effective information management involves the establishment and management of an information base, whether PC based or as a paper-based filing system.

The challenge of water management over large areas has resulted in an increasing use of geographical information systems (GIS) which bring enormous benefits in terms of accuracy and comprehensiveness, even though they also introduce new human and financial resource challenges.

Objectives
To ensure that:
- Good quality information is available to all stakeholders as and when it is needed
- Information is made available in a format that can be used to underpin decision making
- All stakeholders have confidence in the contents of an information base
- Stakeholders have access to and use the same information during stakeholder dialogue
- To reduce risks of information mismanagement by powerful elites

The many impediments to effective information management include political interference, ineffective quality control of information, insufficient funding for capital and/or recurrent costs and insufficient attention to the need for continuous updating of information. Cost recovery mechanisms can overcome problems of financial sustainability, but may give an unfair advantage to richer users, who will be able to dominate decision making as part of a process of stakeholder dialogue.

Materials and resources

Factors in place for effective information management, should include:

- Tools for collecting and/or updating information and the resources for using these tools. In addition to human resources, this may include vehicles, PCs and equipment for capturing good quality information (e.g. rain gauge networks, satellites, river flow gauges).
- Human resources for collecting information and managing information bases. Ideally, information bases will be designed so that capacity development in basic computing skills will be sufficient.
- Software for managing PC-based information bases. Software should be menu driven, commercially available, and able to handle a wide range of information formats, including numerical data, graphical data, text, hand-drawn PRA diagrams and photographs.

Methods

Step 1: Undertake a needs assessment. Needs will vary between different stakeholders and perceived needs will usually be very different to actual needs.

Step 2: Evaluate and seek to understand existing formal, informal and traditional information management systems. Expenses and resistance can be minimised by building on existing approaches or by using software that is already familiar to users.

Step 3: Design and evaluate different approaches for making information available to users in printed formats or electronically (e.g. open access, access by password). Ensure plenty of scope for adaptation and refinement.

Step 4: Pilot the approach and scale up if appropriate.

Who is involved?
In this process everyone has to deal with new information and everyone should be involved to some extent in managing it. However, the management of a complex information base requires dedicated staff with adequate skills and experience in the field of informatics.

Tips and tricks

- An information base can be set up to be shared so that many stakeholders or users have open-access.
- The information base and its management can be centralised or be distributed amongst linked PCs.
- The information base can be bibliographic, numerical, geographical or some combination of all of these.
- End-user involvement is needed during the development of information systems so that they are focused on ease of use and not technical wizardry.
- There is often a trade-off between capital cost and sustainability and/or ease of use. A cheap PC may be less reliable and cheap software may be less easy to use. However, the rise of open access software has made very low cost and even free software of high quality available to all those with an Internet connection.

Cost-benefit analysis

Being able to identify clearly and objectively the costs of undertaking an activity and the benefits expected from it is a crucial part of good decision making. This remains true, even when financial criteria are not paramount (if, for example, reaching the poor is seen as more important).

At its simplest, the process of cost-benefit analysis involves monetary calculation of initial and ongoing expenses against expected returns or benefits. Constructing plausible measures of costs and benefits is often very difficult, and calls for specialist support. Monetary values may also be assigned to less tangible effects such as increased social capital of the poorest, or environmental protection. The accuracy of the outcome is dependent on how accurately costs and benefits can be estimated. It is a challenge to decide which costs should be included, especially as different interest groups may want to include or exclude different costs or activities.

In the health sector, the concept of Quality Adjusted Life Years (QALYs) is used to assess the cost-benefits of certain treatments or drugs. However, it is very difficult to reach agreement on the "value" of an extra month of life, and similar problems arise when trying to put an economic value (for example) on reducing the burden of work on women, or improving sanitation, hygiene and health.

Studies indicate that cost-benefit analysis is highly inaccurate and should not be the only tool used for decision making. When projects are motivated by equity concerns, or the provision of basic infrastructure for vulnerable groups, cost-benefit analysis is not always useful. Nevertheless, the approach can focus at least part of a debate on trade-offs, alternatives, and opportunity costs.

For water supply and sanitation interventions, cost-benefit analysis is used mainly for project assessment. Measuring the monetary (or other) benefits which result from each dollar invested is also useful for advocacy purposes. However, this approach has not been widely used for quantifying impacts, resulting in a lack of reliable data for planning in the sector.

Objectives

- Objectively and transparently, to identify and quantify the costs of a given intervention, together with the likely benefits
- To use this understanding as an aid to decision making

Materials and resources

The most important resource is a skilled expert, especially if cost-benefit approaches include the non-financial costs or benefits. A good knowledge of the likely costs of local resources and inputs is essential to complete the process with accuracy.

Methods

A full cost-benefit analysis is very complex and is not described in detail here. In essence, all the costs of a given activity need to be gathered and expressed as a monetary value ("monetised") and compared to all the benefits (which are also monetised). The complexity comes in giving current monetary values to long-term costs and benefits such as maintenance costs or future income from tariffs, and to non-financial costs and benefits, such as the opportunity cost of one water use versus another, or the improved social harmony that improved access to water can bring. This needs the skills of an economist, and even then results can be open to argument. Cost-benefit analysis should therefore be treated with caution – as one important and useful input into decision-making processes.

Who is involved?

All but the most simple cost-benefit analysis should be carried out by a specialised economist. Stakeholders should have an input in deciding what values are given to different benefits. All stakeholders can benefit from the increased objectivity and transparency brought to complex decision-making processes by a good process of cost-benefit analysis.

Tips and tricks

- The process and outputs from cost-benefit analysis should be agreed by stakeholders, and closely supervised. Cost-benefit analysis has sometimes been misused (and therefore discredited). It is easy to manipulate the analysis to justify support for (or opposition to) a particular project or course of action.
- Even when the process is undertaken by a skilled economist, stakeholders need to be aware of the underlying assumptions, since different stakeholders give different values to the same benefits.

More information

Cost-benefit analysis is a broad subject, and there are many resources available on the Internet. Useful starting points include: http://en.wikipedia.org/wiki/Cost-benefit_analysis, and the Mindtools business strategy site (mindtools.com) has an article with an example at: http://www.mindtools.com/pages/article/newTED_08.htm

Tools for working with stakeholders

The tools in this group are all related to working with stakeholders. They are therefore relevant at every stage in the EMPOWERS approach, since real stakeholder dialogue and interaction is at the heart of this process. They encapsulate some of the key skills needed by facilitators. The section begins with a series of tools related to the identification of stakeholders and their roles and relationships (stakeholder identification, actor and task analysis, identifying key stakeholders, institutional analysis, visual models of leadership and coordination, and involving the poor and marginalised). It also includes tools for facilitating the establishment of stakeholder platforms (capacity development, awareness raising and facilitation).

Stakeholder identification

Effective stakeholder dialogue depends on having all the appropriate stakeholders involved in the stakeholder platform – i.e. the people and institutions who need to become engaged if water governance is to improve. It is essential to identify these stakeholders, and to discover their stake in water management. The end users of water and some of the most significant institutions (such as the water providers, local government or key devolved bodies) can be thought of as key stakeholders who must be involved in the process if it is to be successful. They are not "more important" than other groups or individuals but without them the process will not work. They must remain involved, while other stakeholders need to become involved sometimes. It is important to identify institutional stakeholders (e.g. a water users' association - WUA) and whether they have the capacity to become involved in stakeholder dialogue.

Because of water's nature as both a social good to which people have a right and an economic good which has a value, stakeholder analysis needs to look at three broad groupings:

- Main social groups (men, women; poorer, better off) who may have a right to water
- Main water-user groups (farmers; domestic users, industrial users, etc.)
- Main institutional stakeholders including private sector water providers, local NGOs/CBOs, local government and politicians.

The environment is sometimes considered as a fourth stakeholder with its own needs and roles. This tool describes a simple participatory way of identifying stakeholders. It can be carried out as part of a workshop or within a less formal setting. It focuses on identifying stakeholders in a particular area of interest, which could be a village, town or a wider area or region.

Objectives

- Identify the main social and water-user groups within a village/town
- Determine their role/stake and function in water development and management

The picture of stakeholders and their roles to keep in mind is not a static snapshot, but a dynamic and changing film-clip, in which new stakeholders arrive, old ones leave and roles change. The analysis itself should be updated at regular intervals particularly if a capacity development programme is being carried out. Good facilitation is required to minimise the risks of individuals or institutions dominating the process of stakeholder analysis and manipulating the outputs.

Materials needed

- Flip chart holder or pin-board
- Flip chart paper
- Flip chart markers
- Scotch tape (or pins) for displaying charts

Methods

The method set out here is designed for a formal stakeholder analysis workshop. However, stakeholder analysis of course starts from the first contact that the facilitation team has with water users and other stakeholders.

Methodology for workshop

Step 1: Prepare one or more flip charts with the column headings as shown in the stakeholder and role matrix illustrated in (figure 15).

Step 2: Within the group, carry out a brainstorming exercise to identify all the different stakeholders involved in water resources or water services at each appropriate institutional level.

Step 3: Fill the stakeholders into the stakeholder column in the matrix (deciding for each stakeholder whether they are a local or intermediate level actor).

Step 4: Once the group is relatively happy with the list of stakeholders, move on to discuss their role with respect to water. Are they a water user or provider? Are they involved in regulation or management of water?

Step 5: Finally decide who is a key stakeholder, by which we mean those stakeholders who must become centrally involved in the process if water governance is to produce better results. This involvement can be direct or through representatives.

Stakeholder	Role	Key Stakeholder?
Intermediate (meso) level		
1		
2		
...		
Local (micro) level		
1		
2		
...		

Figure 15: Stakeholder and stakeholder-role matrix

Who is involved?
Deciding who to involve in stakeholder analysis can be difficult. In practice a first list of key stakeholders can be prepared by the facilitation and capacity development team based on informal discussions. This list should include representatives of any relevant village institutions; women and the poor as a minimum. Once this core group has been through an initial exercise, additional stakeholders (and their representatives) will be identified and need to become involved in subsequent activities.

Tips and tricks

- It may be more productive to break a large workshop into smaller groups. This is particularly important if, for example, women are shy to speak in front of men. This can also give an insight into who are seen as key stakeholders by different groups.
- The written matrix is important, but not the sole or even most important objective, which is to get different water stakeholders to start to identify who else has a stake, what their role is, and how to involve them. It is therefore essential not to rush this exercise or to focus on filling in the matrix too quickly, but rather to facilitate a rich discussion.
- It is crucial to distinguish between stakeholders at different institutional levels – particularly those at local and intermediate level (such as local government).
- Not everyone can participate in every activity. Identifying representatives of key-stakeholder groups is an important activity in itself. Obvious "representatives" include democratically elected representatives (local politicians) and CBO personnel. However, it may also be necessary to create representative structures for marginalised groups including women and the poorest.

More information

This tool is adapted from one in the RAAKS (rapid appraisal of agricultural knowledge systems) toolkit http://www.kit.nl/smartsite.shtml?ch=FAB&id=4616&Part=Resources

Actor and task analysis

A wide range of stakeholders is involved in complex systems related to the management of water resources and the provision of water services. Understanding who these stakeholders are and their different roles and responsibilities is a crucial starting point in understanding where improvements can be made in water governance. This is particularly true of information collection, management and sharing – where it is common to find a great deal of overlap and inefficiency. This tool helps stakeholders to identify the most important roles and linkages. It aids them in identifying and visualising tasks within the water system allowing the key coordinating linkages to be seen in relations between the different stakeholders and their tasks.

The quality of the outputs in this exercise is highly dependent on good quality facilitation and access to up-to-date knowledge, for example, on the roles and responsibilities of government departments. The roles and responsibilities of departments often reflect the policies of political parties and are therefore subject to change.

Actor and task analysis can be carried out both in workshops and by using other approaches such as semi-structured interviews. However, at some point it is important that relevant stakeholders are able to see the totality of the analysis being developed – and to understand and discuss their roles within it.

Objectives

- To have a clear understanding of the different stakeholders involved in local water management – and their roles and responsibilities
- To identify potential gaps or overlaps in the roles of different stakeholders
- To understand the links between different stakeholders, especially those related to the sharing and use of information

Materials and resources

The main material used in this exercise is the matrix of actors and tasks. This can be developed during a workshop into a large wall-chart to which the different actors and tasks can be added.

Tasks / Actors	Maintaining infrastructure	Ensuring water quality	Permits for abstraction	Planning new services
Ministry of water resources			***	*
Department of domestic water	***		*	***
Ministry of health		***		*
Water user association	**	*		**

Figure 16: Actors and tasks matrix, used to identify where stakeholders should put their main efforts, to avoid gaps or duplication. Stars represent the relative importance of the role.

Methods

The main framework used for the analysis is the actors and tasks matrix. Each row represents a different actor involved in the water system, while each column identifies a key task and role. The matrix is filled in based on discussions with stakeholders in workshops or interviews. The matrix then reveals information about gaps and overlaps in relation to essential tasks and the actors who perform them.

A number of guiding questions can be used in either workshops or interviews to prompt stakeholders, these include:

- Which tasks/functions are performed by which actors?
- What activities do the actors carry out in performing these tasks? How effective are they?
- What gaps are there between tasks?
- What overlap is there between different actors/tasks?
- Is there a coordinated effort by relevant actors to integrate their tasks?
- What factors within the system have a positive or negative influence on task performance?
- What information is held by which stakeholders that helps them to perform their tasks? Is it shared? If so, how?

Who is involved?
Actor and task analysis is facilitated by the facilitation team. However, it is important that the main work of analysing the different tasks and the gaps and overlaps is carried out by stakeholders themselves.

More information

This tool is adapted from the RAAKS (rapid appraisal of agricultural knowledge systems) toolbox (tool B5). See: http://www.kit.nl/smartsite.shtml?ch=FAB&id=4616&Part=Resources

Identifying key stakeholders

Key stakeholders are those who must become and remain involved in the process of dialogue and concerted action if water governance is to improve. They usually include water users (or their representatives), key governance bodies such as local government, important water providers, and the institutions that make the system work. How do you know who is a key stakeholder? To some extent this question is answered when identifying stakeholders in the first place and when identifying actors and tasks (see tools), since they will be identified by other stakeholders as the most central to success and influential in making it happen.

All stakeholders influence interactions within complex systems of water supply and water resources management in a number of different ways. For example, ministries of water resource concentrate on higher level water resource policy and regulation, while departments of domestic water supply focus on service provision, or the regulation of private sector service providers. Departments of finance, driven by wider government policy, may favour certain types of investment. Water user associations relating to different types of water use may prefer different service levels and relate to different government and non-government actors.

Each stakeholder has an influence on the relations within the system as a whole, with some exerting more influence than others. We can think of those who exert the greatest influence, around whom coalitions of other stakeholders may form, as "key stakeholders". These stakeholders may exert strong leadership on the way that the overall system functions, and hence on the type of outputs and impact the system achieves.

This tool focuses on identifying key stakeholders and clarifies the degree to which they steer the system in a given direction.

Whilst this is a very useful tool, it should be noted that the role and influence of key stakeholders vary with time and with such factors as the leadership qualities or political links of the individuals in charge of different institutions. Informal mechanisms, as well as formal ones, can influence and/or distort power relationships and levels of influence.

Materials and resources

This exercise is most useful if carried out within a workshop, as this allows all stakeholders to discuss the issue of key stakeholders and to share their different perceptions about who these key stakeholders are, and about their degree of influence. Typically therefore the exercise will be carried out on one (or several) large pieces of flip chart paper, using cards to identify key stakeholders. The workshop needs to be well facilitated, allowing different perceptions to be shared. This may be easier when working in sub-groups.

Methods

Step 1: Brainstorm to identify actors: Each main group of stakeholders (for example different water users; or different government actors) is asked to identify other main stakeholders within the system, and the results are noted on cards.

Step 2: Identify the influence of different actors: Working with the list of key stakeholders, develop a radar diagram (see figure 17) with one axis devoted to each actor. Score the relevant strength (influence) of each actor from 0 (weakest) to 5 (strongest) along each axis of the diagram.

Step 3: Consolidate: If relevant, take the diagram of different stakeholders and compare and contrast them. Then, work to develop a single agreed diagram summing up the entire system. Guide the discussions by asking questions such as:

- Who do different stakeholders identify as key stakeholders in the system?
- Which of these key stakeholders exert (relatively) more and less influence?
- Who could change the situation and would be interested in doing so? Why?

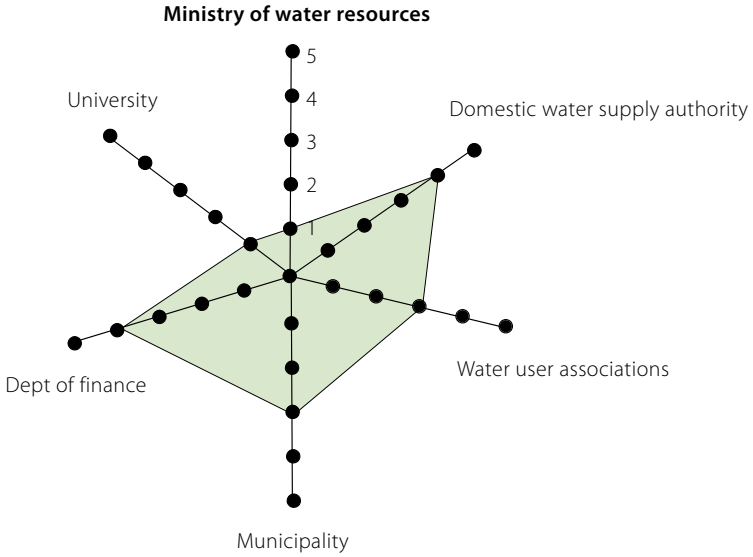


Figure 17: Radar diagram of key stakeholders affecting domestic water supply

Who is involved?
The identification of key stakeholders is an important part of the work of establishing stakeholder platforms. All stakeholders should, at some time, take part in this exercise, led by the facilitation team.

Tips and tricks

- This is a relatively simple tool but one that can give great insight into relative power between stakeholders – or of perceptions of power.
- While it is most often used within a workshop setting, it can also be used with small groups or even individuals. Particularly when working with the poorest and most marginalised this is a useful way to clarify their perceptions of their own role within the system – and to bring this to the table.

More information

This tool is based on the "Prime Mover Septagram" of the RAAKS toolkit (Tool A5/B6)
http://www.kit.nl/smartsite.shtml?ch=FAB&id=4616&Part=Resources

Institutional analysis

The changes required for improved water governance require that key actors have the necessary capacity to play their role in the new/improved system.

This tool uses a simple checklist to analyse the potential of institutional stakeholders to play a role in improved water governance. It can be used together with other tools (such as stakeholder analysis or semi-structured interviews) to help guide a process of discussion and analysis of required knowledge, attitudes, practices and capacities around desired changes.

Objectives
- Agree a clear understanding of the potential of stakeholders to achieve positive change within the system
- Identify resources that different stakeholders have that could help to achieve positive changes

Materials and resources
The materials and resources required for this tool are similar to those for other workshop tools (flip charts, pens, cards etc.). The support of a facilitator with insight into the system being analysed is very useful in deepening discussion and information exchange.

Methods
There is no specific methodology for this tool, as it is primarily a checklist of guiding questions for use with other tools or within workshops aimed at discussing the potential for change: who should be involved; who can offer what.

Guiding questions
- Do the proposed (changed) activities fall within the scope of the current activities of the actors?
- Does a relative consensus exist concerning the need for change – and to carry out proposed interventions?
- Do relevant key stakeholders see the interventions as being in their interests?
- Whose perceived interests might be negatively affected by the intervention(s)?
- Which of the key actors share a need for the perceived interventions?
- If they work alone, could they make changes?
- Do the relevant key actors have the resources needed to implement the proposed interventions (financial, human, knowledge base, leadership, organisational capacities)?
- Which of the key actors has actually expressed willingness to implement some or all of the proposed interventions?

Who is involved?
The institutional potential tool is primarily aimed at institutional stakeholders (rather than individuals). As with other tools it relies on good facilitation.

More information
This tools is based on the "Actor potential checklist" of the RAAKS toolkit (Tool C2)
http://www.kit.nl/smartsite.shtml?ch=FAB&id=4616&Part=Resources

Visual models of leadership and coordination

Relations between stakeholders in a complex system can be very difficult to summarise effectively. However, an underlying understanding of these relationships does need to be captured to develop strong stakeholder platforms. One method, is to build up diagrams or models of the systems, showing the main actors, the main links between them (for example reporting or information sharing), and the relative strength or weakness of the actors in relationship to each other. Such diagrams may be complex but are often better at catching the relationships than written descriptions.There are no hard and fast rules for developing models – different approaches work for different facilitators and different groups. The main aim is to capture the dynamic web of relationships in a way recognisable to all stakeholders.

Materials and resources

The process needs a facilitator experienced at conceptualising complex relationships and expressing them in diagrammatic models. Diagrams can be developed on paper (the preferred method for most stakeholder groups) or by using a computer, where diagrams can be easily altered and saved, using software packages such as MS PowerPoint, or brainstorming or mind mapping software. Diagrams can be captured by digital camera for inclusion in process documentation. The final objective is to develop a diagram such as figure 18.

Objectives

- To develop a clear understanding of the dynamics of existing relationships between stakeholders within the system
- To establish a baseline understanding of whom to involve in what roles within a stakeholder platform

Methods

Diagrammatic models should be used throughout this process by the facilitation team and by stakeholders to map their changing understanding of the systems they are investigating. Such models are not "right" or "wrong", but simply a way of illustrating understanding. The question is therefore whether they accurately and clearly illustrate that understanding.

Ideally the facilitation team should look at and discuss their preferred model(s) on a regular basis to see if their understanding is changing. Different models should also be developed and shared regularly with stakeholders.

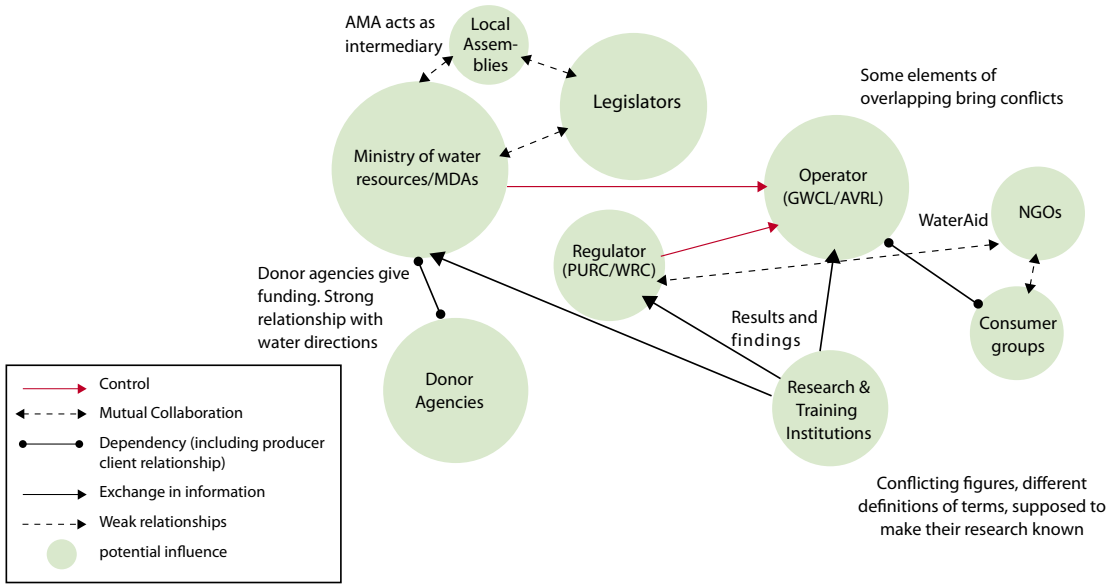


Figure 18: A diagrammatic model of the main actors and relationships in the water sector in Accra, Ghana, from the point of view of the Public Utilities Regulatory Commission (PURC)

The simple steps and questions set out below are guides to this process.

Step 1: Actor identification. All stakeholders, especially key stakeholders should be identified within the model. The first step is to identify actors and their links with each other (using tools outlined earlier in this chapter).

Step 2: Developing model(s). Start to work out the linkages between different actors – in terms of information sharing, reporting, lines of responsibility and permission etc. Use different means to identify the relative strength/importance of actors (larger symbols, stars, underlining etc). Use different types of lines to identify different relationships between them, and arrows to reflect the direction of such relationships or information flows. It is important to maintain clarity as to what part of the system the model represents – for example a model of relations around domestic water supply may be very different to a model around irrigation.

Step 3: Share and discuss models. Models are useful in as much as they capture perceptions and understanding and allow these to be shared and discussed. The single criterion for judging such models is: does it advance our understanding of what needs to be done to achieve our objectives?" If the answer is no, the model needs further development.

Step 4: Capture and document. Models should be captured – for example by taking a digital photograph – and stored as part of process documentation.

Who is involved?
Developing visual models of leadership and coordination is a task for the whole team as an exercise in developing and clarifying its own understanding, and should include all stakeholders.

Tips and tricks

- Developing good conceptual models of the sort shown in figure18 requires practice and a certain way of thinking about the world. Developing, or facilitating the development of such models calls for specialist input from within or outside the facilitation team.
- Although a potentially valuable tool, visual models can increase confusion, particularly when teams or groups have different levels of skills with models. Modelling can be dominated by team members with aptitude while others become confused and lose interest. Good facilitation will make a difference between rich and clarifying outputs and those that compound confusion.

More information

This tool has been developed based largely on the RAAKS "Leadership and coordination" tool (Tool A5/B8) See: http://www.kit.nl/smartsite.shtml?ch=FAB&id=4616&Part=Resources

Involving the poor and marginalised

Poor and marginalised people are by their nature not well represented in existing management structures or other platforms. They often lack the time or resources to play an active role in processes. Poor women are often too busy in the house to attend meetings. In some cases there is active resistance to including marginalised people who may be seen by other groups as "outsiders" or as not having a legitimate stake in the process. Identifying the poorest and most marginalised people in a community is often the single most important step that can be taken towards inclusion and presents special challenges. A feature of exclusion is that the marginalised tend to be invisible – overlooked and ignored in development processes.

Objectives

- To enable poorer and more marginalised members of the community (especially poor women) to play a full part in the EMPOWERS approach
- To identify the poorer and more marginalised water users and to understand their specific needs and resources

Methods and resources

Much of the methodology discussed here deals with the identification of the poor and marginalised within a community as a first step to including them and to identifying their access to resources and any special problems. One of the most powerful tools for identifying poor and marginalised water users is wealth ranking. This tool helps to classify the population into socio-economic strata, based on locally specific criteria and using culturally appropriate terms. The main steps of wealth ranking are:

Step 1: Identification of criteria. Criteria for identifying the poorest and most marginalise need to be identified. These can be formal indicators (such as household income), but should ideally also include qualitative indicators based on people's own perceptions.

Step 2: Identification of the poorest. Once an agreed set of criteria has been identified these should be used to identify where the poorest and most marginalised live, and how many people are in this category. In situations where the poor and marginalised live in particular areas, mapping can be a useful tool to identify and illustrate this.

Step 3: Mapping access to resources. Group discussions and semi-structured interviews with poor and marginalised people, and with other wealth groups, service providers and other stakeholders can be used to map access to resources by the poorest and most marginalised, with a particular focus on actual and potential barriers to access. This should include mapping access to water resources and services, as part of assessing and a RIDA analysis, and also mapping access to other resources and services such as income, education, employment and healthcare.

Step 4: Involvement. Based on the identification of the poorest and most marginalised, identify a strategy for their involvement in the process. This strategy must tackle issues such as: representation in meetings and workshops; ensuring that such representation is legitimate and appropriate; tailoring materials to the needs of less educated people; working separately with the most marginalised (particularly poor women) so that they are not intimidated; developing specific programmes for capacity development; and identifying suitable financing mechanisms such as subsidised loans, micro-credit etc.

Who is involved?
A facilitation team should have at least one designated expert on poverty and gender whose role is to develop a strategy for the identification and involvement of the poorest and most marginalised. Staff employed by some stakeholders will be appropriate for involvement in this work, e.g. ministries of social development, women, etc.

Tips and tricks

- The biggest challenges to involving the poor and marginalised are making them visible and persuading other stakeholders that it is legitimate to give them specific attention.
- It is important that members of the facilitation team have a good understanding themselves of the poor and marginalised, who they are and what problems they face, so they can act as effective advocates on their behalf.
- Adequate resources are needed to make progress, for capacity development and to support involvement in the process. This may be as simple as paying public transport fares for poor women to attend meetings.
- Identifying criteria for wealth ranking can take place within village, town or governorate level, depending on the scale of the intervention.
- In some circumstances, there are ultra-poor social groups who do not show up in wealth ranking based on household surveys. These groups include itinerants, migrant workers, refugees and displaced people, without formal homes. In such cases, alternative surveying techniques are needed.

More information

There is a lively debate about how to include the poor in development activities, over both concepts and approaches. Useful starting points to find out more include:

The ELDIS poverty portal: http://www.eldis.org/go/topics/resource-guides/poverty/measuring-poverty, and the Chronic Poverty Research Centre: http://www.chronicpoverty.org/

Capacity development

Capacity is the ability of individuals, organisations and societies to perform functions, solve problems, and set and achieve goals. Capacity development is the process of developing (or engendering) capacity and enabling stakeholders to use and retain it. The importance of personnel at the intermediate level (local government, NGOs, INGOs and UN agencies) in the water, sanitation and hygiene sector is increasingly recognised. They function at the interface between the national level and end users and are frequently key staff in organisations directly responsible for providing services.

Decentralisation makes this intermediate level particularly critical in the functioning and sustainability of the sector. Any lack of capacity at this level can severely hamper sustained performance.

Capacity development efforts since the Water Decade (1980-90) have largely concentrated on training, to the neglect of institutional capacity and sector performance issues. A new strategy for capacity development is required to reflect issues such as local ownership of activities, the importance of partnerships and demand responsiveness. Capacity development should be a long-term, continuous process, involving the application of a number of specific techniques to strengthen the performance of relevant organisations. Capacity development includes recognising and using existing skills, since organisations frequently under-utilise the skills they have.

Capacity development is much more than training and includes the following:

- Human resource development: the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively.

- Organisational development: the elaboration of management structures, processes and procedures, not only within organisations but also in the management of relationships between the different organisations and sectors (public, private and community).

- Institutional and legal framework development: making legal and regulatory changes to enable organisations, institutions and agencies at all levels in all sectors to enhance their capacities.

Objectives

- To help stakeholders to develop the necessary mix of human, organisational and institutional knowledge and ability to enable them to fulfil their roles and responsibilities

Methods

Many methods of capacity development are available, suited to different countries, circumstances and types of capacity. Detailed guidelines on capacity development will be found elsewhere (see more information, below). However, a number of key activities linked to the different components of capacity development can be identified in broad terms.

Needs assessments

Studies are required to decide what form and mix of capacity development will be the most effective in different circumstances. Surveys and assessments of future needs will help to determine the best interventions.

Institutional development

Capacity development can be defined as the development of institutions, their managerial systems and their human resources. Studies need to be undertaken to identify where there are weaknesses, how institutional, legal, regulatory and other constraints can be removed, and how communities can benefit from institutional strengthening.

Training

Training programmes should be seen as an investment in individuals. A training needs assessment will identify priority areas for training, either on-the-job, or by using technology transfer activities, workshops, role plays, networking, seminars and short courses. Training should identify and upgrade under-utilised skills as well as provide new skills.

Awareness raising and information management

Improving access to information is integral to capacity development. This involves improving communications channels and raising awareness of the need to share information. Information management is also integral to capacity development. Systems need to be kept up to date to permit an easier and more effective flow of knowledge. A special focus is needed to build the skills to ensure community participation with particular attention to the involvement of women.

Provision of resources

Well-trained, educated and aware staff members need adequate resources to carry out their responsibilities. Typical resource shortages include transport, inadequate budgets for running costs, computers, software and communications equipment. Capacity development without the provision of resources will be ineffective.

Who is involved?

All stakeholders will need to have their capacity developed to engage in the approach. Ensuring the sustainability of the approach in the longer term will require the identification of organisations and individuals with the mandate and interest to carry the work forward, and the creation of the necessary human, institutional and organisational capacities. National or intermediate level organisations such as universities or adult education centres will provide a valuable resource, particularly for training.

Tips and tricks

- Some capacity development, particularly at community level, is carried out by the facilitation team.
- This is an ideal opportunity for "on the job" training of staff from a range of stakeholders.
- It is unrealistic to assume that the benefits of project related capacity development will last indefinitely, however thorough.
- For institutional change to be firmly anchored and to become fully sustainable, a framework for ongoing capacity development may need to be developed in partnership with specialist organisations.
- Capacity development must be explicitly identified and supported in budgeting and resource allocation. Under-funding of capacity development – during or post-project – is commonly cited as a reason for longer-term failure.

More information

- Capacity Development portal: http://www.capacity.org/
- UNDP Capacity Development Site: http://www.capacity.undp.org/

Awareness raising

Awareness raising is a broad topic, which takes place in almost every aspect of improving water governance, as issues are brought to the attention of new people, and new ways of understanding water issues become accepted and acted on. This tool outlines some general methodological approaches. Awareness raising is essential to the success of stakeholder dialogue as fostered by the EMPOWERS approach.

Different levels of awareness about different aspects of water resources, water services and water governance are needed by different stakeholders, depending upon their area of responsibility. The following areas of knowledge can be identified:

- Rights, roles and responsibilities of actors involved in water resource management and water service delivery. This should include basic knowledge of the legal framework governing water resources and water services.
- Fundamentals of water resources and water services – how they work, what are the important linkages, what is the potential for, and limits to, water development.

Objectives

- To increase knowledge of key water related issues amongst stakeholders so that they can play a productive role in stakeholder dialogue
- To raise stakeholder awareness (particularly among water users) of their rights with regard to water
- To raise the ability of all stakeholders ability to make effective use of water related information

Materials and resources

Many materials can be useful for awareness raising, including (but not limited to):

- Video and TV
- Radio
- Popular theatre
- Formal education and training
- Books and pamphlets
- Exchange visits
- Workshops

Training materials are costly to develop and call for specialist knowledge. Where possible use existing materials. Training also calls for specialist skills, especially when working with adults.

Methods

Much awareness raising will be provided by the facilitation team, and by stakeholders working as a team. However, some awareness raising requires the use of outside specialists or institutions. This is more likely when the team has identified specific areas where awareness needs to be raised. Stakeholders themselves may identify areas where they feel their knowledge is weak and this is affecting their ability to act. For example, the way that poor sanitation or lack of hygiene affects groundwater quality may be little known or understood. Awareness raising, particularly

at community level, could be through a combination of targeted education (highlighting for example, levels of child diarrhoea), media campaigns and the development of community champions to pioneer change.

Some elements of education and awareness are generic, but some are specific to the particular context of each location and are identified during the process of the EMPOWERS approach. Generic elements should be included within the structure of the formal and informal activities that form the basis of the management cycle. Ad-hoc elements rely on the facilitation team having good overview of knowledge and information resources as well as the financial resources to meet specific areas of need.

Who is involved?
Almost everyone should be involved in some aspect of awareness raising. Stakeholders should be involved in choosing topic areas where awareness raising is needed, and in awareness raising exercises.

Tips and tricks

- It is advisable to quality control information before embarking on an awareness raising campaign to avoid the risk that the campaign will perpetuate myths or spread propaganda.
- Learning calls for an input of time and effort. People make this only when the benefits outweigh the costs.
- The use of awareness raising and education materials should be carefully tailored to the needs of specific individuals and groups among the stakeholders.

More information

There are many resources online relating to water, ranging from educational materials to advocacy packs. The IRC Thematic Overview Paper on Advocacy gives a good entry point for general advocacy related themes:
http://www.irc.nl/content/download/2630/27835/file/advocacy.pdf

Tearfund has published advocacy guidelines Advocacy and Water: A practical Guide, in 2001. It can be accessed at:
http://tilz.tearfund.org/webdocs/Tilz/Topics/Other%20advocacy%20training%20materials/AdvwaterENG_full%20doc.pdf

WaterAid has an advocacy sourcebook that includes some useful tools for example for analysing power relationships, and for problem analysis. Download from:
http://www.wateraid.org/uk/what_we_do/policy_and_research/advocacy/default.asp

Facilitation

Facilitation is the process of supporting and guiding group processes, to help the group and individuals who join it to achieve their group goals.

Workshop facilitation is designed to help those involved in a meeting or series of meetings, meet their objectives. The facilitator will focus on ensuring that all those attending feel able to contribute, that all points of view are heard and noted and that conclusions are drawn and recorded.

Process facilitation ensures that a whole process (that itself includes workshops and meetings) functions. The facilitator's job here is more challenging, involving stakeholder identification, team building, conflict resolution, documenting the process, and helping stakeholders to act on outcomes. Without high quality process facilitation, the EMPOWERS approach is unlikely to succeed, since the facilitator helps stakeholders to address and overcome inevitable challenges, without trying to substitute themselves for stakeholders (who own the process).

In the EMPOWERS context, facilitation refers in particular to the group of skills and activities required to maintain the dialogue process, and individual components of it – particularly meetings and workshops.

Skilled facilitators are individuals who are able by their actions to draw stakeholders into a productive process, and to maintain their interest and participation.

While there are tools and methods to help in facilitation, good facilitation is also an art, requiring the human qualities of sensitivity, creativity and flexibility. A facilitator needs the ability to be patient, to listen, to be diplomatic, and to mediate conflict, as well as being a good organiser. For the wider process to be successful, it is crucial that stakeholders feel that they own the process and the decisions that they take. It is not, therefore, a facilitator's role to make decisions, but to guide stakeholders to make well informed decisions for themselves.

Facilitation is particularly important in mediating differences between stakeholders whether rich and poor, women and men, educated and illiterate, powerful and less so.

Objectives

- To ensure that the overall process is implemented in an effective and participatory manner
- To ensure that dialogue is maintained and that conflict and disagreement do not obstruct progress
- To ensure that all stakeholders are able to take part in a meaningful way

A facilitator for the EMPOWERS approach needs access to a wide range of specialist technical knowledge, and at the same time an ability to encourage people to discuss issues without the process being derailed by conflict, and to help people look at issues from various angles and to weigh different solutions. One essential facilitator skill is to help each stakeholder to see how issues appear to other stakeholders, and at least to understand this perspective, even if they do not agree or approve of it.

This chapter contains several tools to structure and support facilitation. The effectiveness of the tools depends to a large extent on a facilitator's ability to understand stakeholder concerns and to create an atmosphere that is conducive to mutual exchanges of experience, and that leads to flexibility.

Methods

The steps described here are not listed in order, as they are not necessarily sequential. Breaking the ice might be the first thing that a facilitator does, but there may be a preparatory period of building up relationships with those who are seen as key stakeholders in the process. Documenting the process probably takes place at every stage.

Building a relationship

Mutual trust and respect with stakeholders is a first requirement. This calls for the ability to communicate openly and effectively, and to remain independent and not take sides. Sincere curiosity, in the sense of wanting to know more about stakeholders and the issues that are important to them, helps to build a relationship.

Facilitating dialogue

People open up when they feel trust, and when they feel other people are listening. Encouraging people to talk and listen to each other is a skill that pays dividends, when people start to communicate. Facilitating dialogue means building feelings of respect, and this includes everything from the way that stakeholders are introduced to each other, to the way that face-to-face meetings are organised, the way that actors are treated between meetings, and of course the way in which dialogue is actually conducted.

Summarising a process of dialogue

At regular intervals summaries showing where the dialogue has reached will help people to keep track of what has been said and to prepare for decision making. Stakeholders need time during and between meetings to discuss issues among themselves.

Documenting the process

Maintaining good records of key steps in the process (minutes of meetings, etc.) and regularly sharing these with stakeholders helps to maintain a sense of progress and confidence in the process. Clear reporting helps to prevent confusion and ensure that dialogue goes forward rather than going back over old ground.

Breaking the ice

People who don't know each other well, or who have issues of hierarchy, conflict or potential conflict may find it difficult to start to communicate effectively with each other in workshops or other settings. Ice-breakers are short games or activities that help to break down people's reserve and help communication to start. Although they may seem "childish", they help people who do not know each other well to see the others as human beings, and to share something that is unthreatening. It is a mark of confident and mature facilitators that they know how to use ice-breakers effectively and without embarrassment.

Tips and tricks

- Open questions encourage stakeholders to give information, while closed or leading questions invite predictable responses. "What happens when you approach the district council?" is an open question. "Do you find the district council unhelpful?" is a closed question that suggests only the answer, yes or no. It is tempting to ask closed or leading questions, to obtain quick answers or to encourage people to say the "right" thing. Usually, open questions are more productive.
- In meetings and workshops there may be differences in the confidence and ability of rich and poor people, women and men, officials and lay people to speak out. Facilitators need sensitivity to prevent talkative people from dominating a discussion without offending them, and to encourage less talkative people to speak up without embarrassing themselves. Talkative people may be given a role as an advisor. For less talkative people, a pre-meeting can be organised, or they may be invited to put forward an opinion in writing. During meetings, various techniques exist to ensure that everyone has time and space to speak.

More information

Facilitation is a huge field, and there are a many different types of tools that can help the facilitator. The Wageningen University Multi-Stakeholder Platform Portal has materials directly available for download, as well as links to many other facilitator resources:
http://portals.wi.wur.nl/msp/

Conflict management

Conflict is more than a disagreement – it arises when people perceive a threat to their well-being (physical, emotional, power, status, etc.). Conflict can be understood as having its roots in disagreement where parties perceive a threat to their needs, interests or concerns. Water management and water service delivery are complex and often politicised systems involving a great many stakeholders with different, often conflicting, agendas. In addition, the change processes involved in improving governance are themselves frequently a source of resistance and conflict, as people and institutions feel that their interests are threatened.

Conflict is often seen as a purely negative element in a change process – or at least one with a strong negative potential. However, with good facilitation, and some luck, potential conflict can be channelled or transformed to become a powerful agent for change. The same emotions and feelings of threat that can lead to conflict can also help people and groups to clarify their thoughts and lead to a greater understanding of other viewpoints and interests.

Participants in conflict tend to respond on the basis of their perceptions, rather than a more objective review of the situation. People also filter their perceptions (and reactions) through their values, culture, beliefs, information, experience, gender, and other variables. Conflict responses are therefore filled with ideas and feelings that can become strong and powerful guides to our sense of possible solutions.

Conflict is a normal experience within negotiation and change processes. To a large degree, conflict is predictable and natural when we significantly invest in complex and stressful projects. If stakeholders and facilitators together develop procedures for anticipating likely conflicts, and systems by which they can be constructively managed, they may discover opportunities to transform conflict into productive learning experiences.

Creative problem-solving strategies are essential to positive approaches to conflict management – to entertain new possibilities that have been elusive.

Objectives

- To identify and understand the potential for conflict, and to use it for positive rather than negative ends
- To resolve conflicts between stakeholders and, where appropriate, reach a consensus or at least a position agreeable to the majority of stakeholders

Materials and resources

The key resource for conflict resolution is a high quality facilitator who understands conflict management, and develops a thorough knowledge of the interests and perceptions of stakeholders.

Methods

Conflict management and mediation is a broad area that cannot be described simply as a "tool". However, a number of key steps can be identified in many approaches to conflict resolution.

Step 1: Define the disagreement or conflict. If defined objectively, conflict can lead people to agree: "We need a new way of doing things, the old way has failed."If two sides can define what they are fighting about, the chances increase of clarifying any misperceptions.

Step 2: Depersonalise the conflict. Try to move "you against me", towards "you and me against the problem". For example, not irrigators versus livestock keepers; but water users facing a problem of lack of water. Often win-win solutions can be identified through re-examining the problem. Even if there are no perfect solutions, understanding that "it is the problem that is the problem" can lead to a greater acceptance of relative losses and gains.

Step 3: Focus on commonalities – not differences. Identify shared concerns of parties to the conflict – rather than focusing on the disagreements.

Step 4: Use dialogue rather than argument. Conflicts escalate when parties talk more than listen, and listen only as time-out for verbal rearming. Listening well is a skill. Entering into dialogue means asking questions to deepen your understanding of another point of view – rather than showing the "other" the error of their ways.

Step 5: Identify neutral spaces and mediators. When conflict has occurred, particularly linked to a specific environment (office, district etc), it is important that mediation takes place somewhere that is felt to be neutral by both sides and away from the environment of conflict. It is important that mediation is overseen by someone seen to have no stake in the original disagreement. You cannot expect a member of local government staff to mediate a conflict between villagers and local government!

Step 6: Start with what's doable. Ending conflict cannot always be done quickly. If it took a long time for the dispute to begin, it will take time to end it. Work on one small doable problem rather than on many large currently irresolvable issues.

More information

This approach has been adapted from Conflict resolution in nine easy steps. See the Global Development Research Center website at:
http://www.gdrc.org/decision/conflict-resol.html

We have also used material from the conflict resolution pages of the office of human resource development of the University of Wisconsin-Madison:
http://www.ohrd.wisc.edu/onlinetraining/resolution/aboutwhatisit.htm#whatisconflict

Other sources on conflict resolution include:
The Conflict Resolution Information Source: a list of links to further materials
http://www.crinfo.org/

The Conflict Research Consortium of the University of Colorado:
http://conflict.colorado.edu

Waternet is a website on the role of water in conflict and cooperation, with emphasis on the Israeli-Palestinian water conflict and the Jordan river basin, with considerable material online:
http://www.waternet.be/

Tools for monitoring

Monitoring and evaluation

Monitoring is the process whereby information about water resources and water supply services is collected, checked and analysed in order to ensure that they are functioning as intended and being used sustainably. Monitoring is an ongoing process. Evaluation is a more periodic exercise which assesses whether objectives are being met, often against criteria of effectiveness and efficiency. Monitoring is also the basis of learning and adaptation – as lessons learnt from effective monitoring allow future changes to be identified. Monitoring can collect both hard data (whether or not systems are working) and/or qualitative data (whether people are satisfied; whether behaviour is changing).

Monitoring has a crucial role in the EMPOWERS cycle. When stakeholders take certain actions to achieve their vision, it is essential to monitor and assess the impact. Are the desired impacts being achieved? If so, can the approach be replicated elsewhere? If not, can remedial actions be taken – or should the activity be stopped.

The identification of the right "indicators" is central to monitoring whether an action is having a desired effect. The monthly household water bill is an indicator for how much water is being used; incidence of diarrhoeal diseases is a good indicator for the impact of a hygiene behaviour change programme. A monitoring framework should be designed for each significant action to allow progress and success to be monitored.

Problems beset many monitoring and evaluation programmes which are under-resourced or not well set up.

Objectives

- To ensure that actions undertaken are having the intended results
- To allow for a continuous process of learning and adaptation based on experience
- To gather the necessary information to ensure that services and resources are used sustainably

Methods

Monitoring may be formal or informal, qualitative or quantitative. All approaches have a number of key elements in common:

Step 1: Identify indicators. Probably the single most important aspect of monitoring – and possibly the most difficult. Indicators must be sufficiently robust to allow impact to be identified and analysed. Good indicators should be simple to collect, cost-effective to monitor, unambiguous, and clearly linked to either learning or action. The golden rule is never to collect information if there is no clear use for it!

Step 2: Identify collecting and reporting mechanisms. A clear set of mechanisms is required to collect, record, quality control and communicate the results. Who should collect information

about key indicators? How often? What should they do with the information? Who should receive the information and how? How will the results be discussed and acted on?

Step 3: Link monitoring to action. Monitoring should be clearly linked to action. When end-users are asked to collect and report information, they must see action resulting from their efforts. This can take the form of technicians coming to repair faulty water supply systems, or changes in project or programme design.

Who is involved?
Involving stakeholders in the development of a monitoring framework can be an important part of developing the overall vision for an intervention. The formal language of monitoring, and the identification of indicators help to focus on key desired impacts. Analysis of monitoring outcomes and decision making based on the results should involve all stakeholders.

Tips and tricks

- Monitoring and evaluation (M&E) programmes should be well-resourced with adequately paid and well motivated staff.
- M&E programmes need quality control procedures and data management systems to ensure that information is shared between stakeholders.
- M&E programmes must demonstrate independence, otherwise information may be manipulated to indicate a level of performance that has not been achieved.
- Involving service end-users in collecting and analysing data ensures ownership and can be an important part of capacity development.
- Indicators may be quantitative or qualitative, but need to be standardised to allow comparisons before and after interventions or between locations. The QIS tool described earlier in this chapter can convert qualitative information into numbers for comparison.

More Information

World Bank Monitoring and Evaluation Pages:
http://www.worldbank.org/html/fpd/water/topics/m&e.html

Action Monitoring for Effectiveness – toolkit for monitoring in the Water and Sanitation sector:
http://www.irc.nl/page/1895

Benchmarking

Benchmarking is the process by which individuals and/or organisations identify, compare, adapt and adopt best practices and processes from other projects or organisations anywhere in the world. Benchmarks are numbers, ratios, and performance indicators that help answer the question, "What aspects of my organisation's performance needs improvement?" The aim is for the individual and/or organisation to improve their own performance to reach the standards that others have achieved.

Benchmarking is a powerful management tool because it overcomes "paradigm blindness", best summed up as: "The way we do it is best, because this is the way we've always done things." Benchmarking exposes individuals and organisations to new methods, processes, ideas and tools that have the potential to improve their effectiveness. It helps crack through resistance to change by demonstrating that there are methods of solving problems other than the one currently employed, and by demonstrating that these work and are being used successfully by others. Benchmarking is about learning to establish priorities and target process improvements to improve performance, effectiveness and outcomes for projects and programmes.

Objectives

- For people and organisations to systematically learn from the experiences of others and, if appropriate, to instigate change processes in their own organisations or projects

Materials and resources

The key to good benchmarking is to involve people with a high level of knowledge and experience of the processes, methods and successes and shortcomings of their organisation and projects. They should also have a good understanding of informal mechanisms, processes and interactions (such as how and why priority might be given to allocating water to one municipal area rather than another despite operating rules stating that there should be no prioritisation of allocations). Benchmarking requires capture and careful analysis of good quality information. This often takes time and resources.

Good quality, quantitative and qualitative information is crucial to benchmarking, based on a high-level of honesty, openness and transparency amongst all involved. Given the highly political nature of water management, this can be a major challenge.

Methods

Step 1: Set aims and scope. Define the reasons for considering a benchmarking exercise, the possible scope of the process, the responsibilities of those involved and available resources. This will help to determine whether a comprehensive benchmark initiative is required or whether the information or learning process could be achieved by other means.

Step 2: Identify partner(s). One possibility is to join a benchmarking network. Another is to establish a group of similar organisations with an interest in using the benchmarking technique.

Step 3: Identify an approach. Working with partners, identify and plan an approach to benchmarking including a work plan, a schedule, information requirements, indicators to be used and roles and responsibilities. Organisations working together can agree benchmarks and indicators to which they are all committed.

Step 4: Implement the plan. Monitor the indicators against an agreed benchmark to see if desired standards have been achieved. For example, the indicator may be to respond promptly to complaints about services. The benchmark might be that 90% of complaints have been satisfactorily addressed within one day. Progress and outputs should be monitored continuously and, if necessary, modifications should be made to the work plan and indicators or benchmarks.

Step 5: Disseminate and discuss results. Make decisions on whether the results can be used and or adapted to improve your organisation or project. Make sure that the discussion is open and honest.

Who is involved?
In most cases, responsibility for benchmarking will be confined to a few experienced individuals. However, it is likely that almost everyone will be involved as the benchmarking gets under way.

Tips and tricks

- Benchmarking can be used to overcome resistance to change within an organisation.
- It makes good sense to benchmark against organisations or projects in other sectors, as individuals and organisations probably already know what works and does not work in their own sector.
- Don't allow benchmarking to become a substitute for creative thinking and problem solving. Copying ideas and solutions inappropriately may prevent a better original idea from being developed.
- A healthy level of scepticism is sensible. Processes that appear to be highly successful often turn out to be flawed after detailed analysis, while successes may depend on factors that are not easily copied or adapted, or that are very expensive.
- Benchmarking requires time and effort. People will only make this commitment when the benefits outweigh the costs.

- Honesty is very important. Organisations sometimes find it difficult to admit that they are failing to meet their standards, so they change the fine print of the indicator. "Progress" that looks good in an annual report but is not seen on the ground will breed cynicism.

More information

There are many websites about benchmarking. The Quality Network has a good introduction to some of the issues at: http://www.quality.co.uk/benchadv.htm

Process documentation

Many projects, programmes and developmental processes accumulate documentation that focuses on factual and measurable outcomes and accentuates the positive impacts of an intervention for an outside audience. By contrast, process documentation records and supports the process itself. In particular, it looks at the change process through the eyes of those involved in it, reflecting their diverging points of view. It is not about "selling" a success story, but about monitoring a process of change and development. Process documentation is more about capturing the "how" of implementation processes than the "what" of process impact. In particular it aims at:

- Capturing the perceptions of stakeholders, and the changes in these perceptions as the process develops;
- Using this information to support reflection and learning so as to improve the process;
- Helping those looking at the process from outside to understand the changes in knowledge, attitudes and behaviours that were necessary to achieve results.

Process documentation is particularly necessary in projects that have aspirations for social change.

Process documentation values the perceptions of different stakeholders equally – farmers needing different quantities of water in different seasons; women in need of water for household chores; catchment or irrigation scheme managers balancing the needs of different water user groups; scientists studying water needs for crops, livestock and people.

Materials and resources

Adequate financial and human resources must be set aside for process documentation (capture, analysis, dissemination), and time must be allowed for reflection and discussion. Where possible a skilled documenter (typically with a journalistic background) will be involved. Resource requirements vary, but tools will probably include a video camera, still camera and sound recorder.

Methods

Process documentation is a broad area. A number of steps are identified here, with broad groups of tools, and further resources are identified in "More information".

Basic steps for how to document process include the following (the steps are numbered but the order of these steps may vary):

Step 1: Go to stakeholders and discover their perspectives.

Step 2: Go to events where project objectives meet traditional beliefs, relationships and attitudes in water management and observe interactions and frictions.

Step 3: Go to the beneficiaries and give them a voice and faces by interviewing them and taking photographs or using video.

Step 4: Study and describe the context of the initiative for change. Read articles and books and talk to wise people (professors, teachers, older people, mayors etc.).

Step 5: Organise moments, systems and ways of working in the project to step back from daily project business to reflect and analyse on trends and patterns. These sessions should take place far enough apart for change to have occurred but not so far apart that the sense of being in a process is lost – perhaps every 3-4 months.

Step 6: Disseminate and share findings, reflections, interviews, photographs and use them to stimulate debate. Unlike the pattern in conventional projects where results are disseminated at the end, process documentation requires rapid dissemination of less finalised products.

NB: Steps 5 & 6 in particular imply commitments of time and resources.

Tools

Tools for process documentation can be divided into four broad groups. These are:

- Tools for capturing the process using a range of methods including individual interviews, focus group discussions, minutes of meetings, field worker diaries, other documents, observations at meetings, photography and video.
- Tools for organising the information (and initial dissemination). Some simple filing is needed to avoid chaos while information from interviews, observations, photographs and videos needs organising into articles, photo books, video bites, case studies, columns, written portraits etc. For quick dissemination, these products should not be complicated to produce.
- Tools for analysing information. Methods and structures must be created in the project for reflection and analysis of the captured information. Several tools exist – see for example the most significant change (MSC) and outcome mapping (OM) tools referenced under "more information".
- Tools for disseminating information include channels or media for dissemination. Where will case studies, memos, video bites, photo books and columns be published? Which channels should be created by the project and which outside channels could the project try to mobilise (local TV, radio, newspapers, etc.)? Some new technology channels (such as e-mail and Internet) can be managed by project staff.

Who is involved?
Process documentation should be led by a dedicated professional with a relevant background, and should involve all stakeholders as a central part of joint learning within stakeholder dialogue. In most cases, responsibility for benchmarking will be confined to a few experienced individuals. However, it is likely that almost everyone will be involved as the benchmarking gets under way.

Tips and tricks

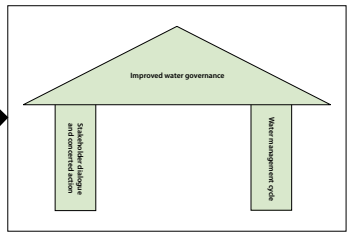
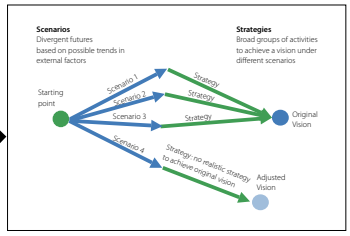
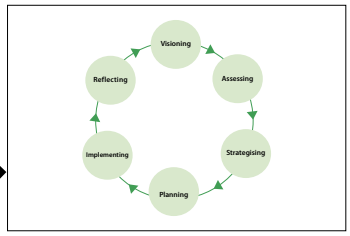
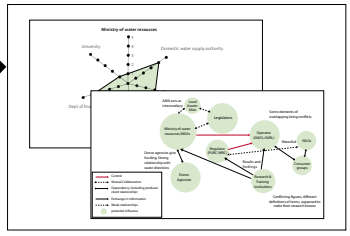
Process documentation is a powerful tool but there is a need to guard against some dangers:

- Process documentation focuses entirely on positive aspects of change.
- Stakeholders behave significantly differently when they know that process documentation is taking place.
- Those responsible for process documentation do not understand the processes they are documenting and analysing.
- Effort and resources put into process documentation slows the project or reduces its economic viability.
- Special interest groups use process documentation to stir up conflict and, in the extreme, to bring work to a halt.

More information

The background, principles and tools described here are set out in a companion document, The Inside Story – Process Documentation Experience from EMPOWERS available at:
http://www.empowers.info/page/3287
The "most significant change (MSC) technique" is a form of participatory monitoring and evaluation used for assessing change in social processes. See:
http://www.mande.co.uk/docs/MSCGuide.htm
Also useful for structuring and analysing information from change processes is the "outcome mapping" tool from the International Development Research Centre (IDRC) see:
http://www.idrc.ca/en/ev-26586-201-1-DO_TOPIC.html

Overview of the EMPOWERS Approach

Source Documents	Description	Concepts, methods and tools
 Background and key concepts	**Overall Objective** • To improve local water governance and the access of the poor to water and water services	
 Guidelines, methods and tools: Chapters 1-3	**Fundamental building blocks** • Participatory processes and stakeholder dialogue that encourage communication both horizontally between stakeholders at same level and vertically between, stakeholders at different levels. • Strategic management that is based upon agreed information and decision making that is transparent and open to public scrutiny.	
 Guidelines, methods and tools: Chapter 4	**A strategic approach** • A framework for stakeholder dialogue based on programme cycle management. • A strategic approach to improved planning based on combined visioning, scenario building and strategy development.	
 Guidelines, methods and tools: Chapter 5	**A water governance toolbox** • A comprehensive set of tools and methods for use in the EMPOWERS approach • With practical tips and tricks, as well as pointers for further information sources	
	Outputs and outcomes: • Agreed SMART Visions and Strategies • Achievable Plans that take implicit account of uncertainty • A shared base of agreed information • Improved pro-poor water management and service delivery based on better relations and communications between stakeholders	

Appendices

Appendix 1. Examples from Meithaloun village, Palestine

The following series of brief fact sheets, drawn from the work of the EMPOWERS project, illustrates typical outputs from a process of participatory planning. These fact sheets make up part of the strategic plan from Meithaloun village, Palestine.

The sheets are as follows:

Sheet 1: Background information about Meithaloun village
Sheet 2: Key data from a water resource assessment carried out in Meithaloun and structured according to the RIDA framework
Sheet 3: A summary of socio-economic data relating to access to water in Meithaloun
Sheet 4: Visions, scenarios and strategies developed by the villagers of Meithaloun
Sheet 5: Ranking of the main activities identified to implement the Meithaloun strategy
Sheet 6: Some pilot projects undertaken by the EMPOWERS project in Meithaloun

Water Information Summary Sheet 1 : Narrative information

Community: Meithaloun **Date: November 2004**

Background information

Meithaloun is situated 20 km south of Jenin City with a population of slightly over 6,500. It is the centre of the southern villages in Jenin Governorate. From its northern side, Meithaloun is bounded by the famous plain of 'Marj Sanour', which is one of the most important agricultural areas in the Governorate. More than two thirds of Marj Sanour area is owned by Meithaloun inhabitants.

Jenin Governorate. Meithaloun's location in red circle

Water–related time line

For their water needs and over thousands of years, inhabitants of Meithaloun town depended on rainwater harvested from rooftops and stored in cisterns during rainy months. Additional quantities were also transported from Al Fawar spring to the southwest, near Jaba'a town. In the sixties, two private agricultural wells were drilled in the area from which people used tankers to transport the water to their homes and cover some of their water needs. In 1999, a municipal well was drilled for domestic purposes. However, due to its low discharge, people had to rely only on what was stored in cisterns, or were forced to purchase tanker water from private agricultural wells.

Institutions

The Municipality forms the main institution in Meithaloun. This institution has a track record of implementing work in the village. Due to the absence of a water network, only two technicians are working as operators of the municipal well and regulating water distribution. At present, other village-level institutions include; a women's centre a charitable society; and a farmers' union, all of which have limited roles in water related activities.

Main sources of employment

Agriculture is the main economic activity in Meithaloun. Due to the current political situation, the unemployment rate has risen significantly among the inhabitants of Meithaloun.

General livelihood information.

Based on the Social Affairs Department data, 11% of the Meithaloun's inhabitants are considered to be living below the poverty line. This 11% includes the unemployed and/or those with a low irregular income.

Box 1: Economic Activities in Meithaloun

Economic Activity	(%)
Agriculture (Farming, Raising Animals)	25
Mining and Quarrying	1
Manufacturing, Construction	14
Wholesale and retail trade	5
Employed	10
Unemployed	40
Not stated	5
Total	100

Water Information Summary Sheet 2: Numerical Information

Community: Meithaloun **Date: November 2004**

			Year 2003	Year 2010
Demand and Access	Domestic	Population	6,619	8,757
		Average per-capita actual use (l/c/d)	52	----
		Range of per-capita actual water use (l/c/d)	30-108	------
		Actual use, total (m^3/yr)	125,715	-----
		Average demand (l/c/d)*	70*	100
		Demand, total (m^3/yr)	169,231	319,849
		% households on network	0	100
		% households not served by network	100	0
		Acceptability	Difficult	Good
	Agricultural	Total cultivated area (dunum)	13,710	
		Gross irrigated area (dunum)	?	
		Net irrigated area (dunum)	1,415	2,757
		Potential water requirements(m^3/yr)	884,375	1,723,125
		Actual irrigation water use (m^3/yr)	731,785	----
		Livestock water use (m^3/yr)	9,085	11,173
		Actual use, total (m^3/yr)	740,870	----
		Demand, total (m^3/yr)	893,460	1,734,298
	Industrial	**Actual use total (m^3/yr)**	**	---------
		Demand total (m^3/yr)	**	**
	Other	**Actual use total (m^3/yr)**	0	0
		Demand total (m^3/yr)	0	0
	Total actual use	**(m^3/yr)**	**866,585**	**0**
	Total demand	**(m^3/yr)**	**1,062,691**	**2,054,147**

			Year 2003	Year 2010
Infrastructure	**Domestic**	Design supply capacity (l/c/d)	*	
		Design supply capacity (m^3/yr)	*	
		Av. % losses	~5	
	Sanitation	Type	Cesspits	
		% access or coverage	100	
	Agricultural	Design supply capacity (m^3/yr)	?	
		Av. % losses	~10	
	Industrial	Design supply capacity (m^3/yr)	?	
		Av. % losses	?	
	Other	Design supply capacity (m^3/yr)	0	
		Av. % losses	0	
	Storage	Volume surface water storage (m^3)	0	
	Total (actual)	**(m^3/yr)**	**?**	**0**
	Total (design)	**(m^3/yr)**	**0**	**0**

Remarks:

- Tankers form the water distribution system, due to absence of public water network.
- Yearly rate of increase in irrigated area, and livestock, was estimated at 10%, and 3% respectively.
- Industrial water was estimated to be about 7% of the domestic use.

Available Resource	**Rainfall**	Av. Annual rainfall (mm)	619			
			Domestic	**Agricultural**	**Industrial**	**Other (Unused)**
	Springs	Av. Annual yield (m^3/yr)	0	0	0	0
		% acceptable water quality	0	0	0	0
	Groundwater wells	Av. Annual sustainable yield (m^3/yr)	82,120	731,785	0	0
		% acceptable water quality	95	100	0	0
	Water harvesting	Av. Annual availability (m^3/yr)	43,595	9085	0	0
		% acceptable water quality	90	100	0	0
	Wastewater	Av. Annual availability (m^3/yr)	0	0	0	83,600***
		% acceptable water quality	0	0	0	0
	Flood water	Av. Annual availability (m^3/yr)	0	0	0	1,500,000****
		% acceptable water quality	0	0	0	~ 80
	Total	Annual availability all sources (m^3/yr)	125,715	740,870	0	1,583,600
		Annual availability – acceptable quality-.	117,249	740,870	0	1,200,000
	Total	**Annual availability all sources (m^3/yr)**	**2,450,185**			
		Acceptable quality all sources (m^3/yr)	**2,058,119**			

*: Related to the vision.
**: Included within the domestic use.
***: wastewater was estimated to be 70% of domestic water
****: Estimated average flood of Marj Sanour

Water Information Summary Sheet 3: Problem Analysis

Community: Meithaloun **Date: November 2004**

Societal water problems

Type	Typology of main social groups	Domestic Water	Agricultural Water Use
I	Poor, with high levels of unemployment and low irregular income.	- Water use with the 30 - 45 l/c/d range. - Main water resource is cistern water. - Due to their bad financial situation, people's needs are met by using water stored in cisterns built for agricultural purposes. This water is usually of bad quality	Not applicable
II	Poor but with regular low-level income	- Water use within the 45 - 60 l/c/d range. - Depend mainly on cistern water. - Face water quantity and quality problems during the summer months. - Resort to buying tanker-water at raised prices for the unit water	- Shortages in water needed for livestock. - Work in irrigated lands as paid labour, or co-partner with other land and well owners. - Problems with landowners on water allocation issues (distribution, quantity, etc.)
III	Employed with moderate regular income.	- Water use in the 60 - 80 l/c/d range. - Needs are met from water stored in large cisterns, and/or purchasing from large water tankers. - No problems with water supply or water quality	- Problems with well-owners in supplying enough quantities of water to irrigate their lands. - Problems with the high unit price of water bought from tankers.
IV	Relatively richer, landowners and/or diversified sources of income.	- Water use within the 70 -100 l/c/d range. - No water supply or water quality problems.	- No water shortages. - Planted areas are limited to those inundated during the winter season.

With the absence of a public water network in Meithaloun, young girls have to travel long distances to carry water to cover their family's daily needs. Also, many poor and low-income families are forced to buy water from private vendors at higher prices especially during the summer season when water shortages are high.

Water Information Summary Sheet 4: Problem Analysis

Community: Meithaloun **Date: November 2004**

Societal water problems

Vision [1]

By 2010, the average domestic water supply would increase from the current 52 l/c/d to 100 l/c/d. Furthermore, through land reclamation, and an increase in the irrigated areas agricultural activities would expand from the current 1,415 dunums to 5,000 dunums (out of a total of 13,710 dunums available arable land). Moreover, sources of underground water contamination would be limited and put under control, especially those arising from the absence of a wastewater network, and the infiltration of polluted water from neglected and un-maintained cesspits into nearby water cisterns.

Scenarios

Based on a 'Factors Analysis' exercise, the local stakeholders in Meithaloun collectively agreed on the two factors that were most important and most uncertain, and which were key for realising their vision.

These two factors were: Availability of funding sources; and obtaining licences from Israeli authorities to drill an artesian well within village boundaries, or build water and wastewater networks. However, these activities are usually faced with many difficulties, and often fail in obtaining licences.
Based on the above factors the stakeholders developed the following four possible scenarios:

More Important & Less Uncertain - Capacity of municipal Staff to follow up and maintain pilots - Presence of a permanent water source	**More Important & More Uncertain** - Funding - Licensing
Less Important & Less Uncertain - Quality of awareness programmes	**Less Important & More Uncertain** - Poor quality of awareness programmes

Box 1: Internal and external factors identified during the factor analysis exercise

Scenario1: Funding and licences are available.

Although it is considered as the best-case scenario to achieve Meithaloun's vision quickly, it is also believed to be the least likely to happen in the near future (2010), as this scenario assumes that a solution to the current political situation would have been reached, and consequently, availability and access to funding sources would become easier.

Strategy for scenario 1:

- Rehabilitate and maintain existing water sources, as well as locating new ones.
- Training workshops, and capacity building campaigns to raise the awareness of both the consumers and the suppliers about water, and their ability to maintain the systems or household-level units.

[1] All visions developed at village level were agreed upon by all the relevant stakeholders (governorate employees and villagers), and were modified to be SMART (specific, measurable, acceptable, realistic and time-bound). Meithaloun's vision also took into account the different water users and uses (domestic, sanitation, irrigation).

Scenario 2: Funding is unavailable, but licences are available.
Bearing in mind that, in Meithaloun, access to funds is usually easier than obtaining licences from the Israeli authorities, this scenario can then be considered as second best, since it would allow the implementation of projects/activities that would radically solve Meithaloun's water supply and wastewater-related problems. However, as with scenario 1, it is unlikely that scenario 2 would happen in near the future.

Strategy for scenario 2:

- Rehabilitate the existing water resources in coordination with municipality staff, local council and clients (end-users), as well as with related public and non-governmental organisations.

Scenario 3: Funding is available, but licences are unavailable.
This scenario is a very important to consider since it is the most likely to happen despite the current hard economic and political environment of the Intifada. When funds are available, many actions and activities, which do not require licensing, can be implemented, and whose impact would help alleviate Meithaloun's water-related problems

Strategy for scenario 3:

- Rehabilitate the existing water resources;
- Promote the use of water harvesting techniques;
- Seek external water resources;
- Increase people's awareness on the rational and efficient use of water, strengthen capacity of the local field teams;
- Conduct feasibility studies and plan for implementing projects that promote the use of modern techniques in agriculture and irrigation.

Scenario 4: Neither funding, nor licences are available.
Although regarded as the worst-case scenario, it is still a very important one to consider. Not only because it reflects the current reality on the ground, but also because it needs to be taken into account while Meithaloun's strategies and plan-of-action are being developed.

Strategy for scenario 4:

- Increase the awareness at all levels of the need for better use of existing water resources, together with strengthening and training of local field teams.

Based on the visions, scenarios, and strategies that were developed by the community in Meithaloun, several interventions or pilots were proposed that would help the community in realising their vision. Two of the proposed pilots were selected for implementation in Meithaloun. For the list of proposed and selected pilots kindly, refer to summary sheets 5 and 6.

Water Information Summary Sheet 5: Proposed Pilots

Community: Meithaloun **Date: November 2004**

List of proposed activities to realise Meithaloun's vision

	Proposed Activity	Notes	Scenario	Requires	
				Funding	License
1	Construction of a water network	- Provides adequate quantities of water that is regularly monitored for quality.	1 and 2	high	hard
2	Construction of a wastewater network and treatment plant	- Reduces underground water contamination caused by leakage from cesspits.	1 and 2	high	hard
3[2]	Building a water cistern in the boys' school	- Provides 500 students with access to adequate amounts of potable water.	1, 2, 3, and 4	med-ium	NA
4	Digging of agricultural cisterns	- Increases water available for farming. - Consequently, reduces reliance on the use domestic water for irrigation.	1, 2, 3, and 4	low	Yes
5	Assembling household-level greywater treatment units	- Reduces amount of water going to cesspits, by using the treated grey water in irrigation.	3 and 4	med	
6	Expanding irrigated agricultural areas	- Implementing activities 3, 4, and 5 would help lower the cost of expansion.	1, 2,3 and, 4		NA
7	Establishing a local water resources management committee (LWMC)[3]	- To act as a reference point, and a link with other local community organisations. - To act as base for concerted action, planning, and management of the local water sources in the village. - Manage the pilot projects. - Exchange of experiences and help search for external funding. - Develop a sense of responsibility and ownership of the water resources in the village. - To act as the long term host of EMPOWERS' approaches and methodologies.	1, 2, 3, and 4	low	easy
8	Awareness campaigns and training on water demand management	- To change attitudes / habits, and reduce water consumption at farm and household level (water demand management).	1, 2, 3 and 4	low	NA
9	Awareness campaigns on pesticides use		1, 2, 3, and 4	low	NA

[2] This proposed activity was selected as the pilot to be implemented in Meithaloun (See Summary Sheet 6).

[3] Establish local water committee, either within an existing cooperative/community based organization (CBO), or by establishing a new one.

Water Information Summary Sheet 6: Pilot Project

Community: Meithaloun **Date: November 2004**

Pilot project description

In September 2004 during the Stakeholder Consultation workshop - and working under the premise of the most likely scenario (Scenario 3)[4]. the community decided on the first two pilots to be implemented in Meithaloun. The first integrated pilot was to build a water cistern, and a grey water treatment unit to serve the boys' school in the village. This would provide its 500 students with access to adequate amounts of potable water, and reuse the treated water in irrigating the land around the school. For the second pilot, the community decided to construct a culvert to divert the extra drainage from rainfall. This will allow the primary school girls (6-11yrs old) and their teachers to safely cross, and reach school during the wintertime.

Justifications

- During the school year, the boys' school suffers from continuous water shortages, especially with a rising student population.
- The water in the two cisterns that are currently present at the boys' school is contaminated by seepage from nearby cesspits.
- The presence of unutilised and neglected land around the school area, which could be planted, and irrigated by the treated wastewater.
- The safety of young primary schoolgirls and teachers is threatened during wintertime as they walk on and cross the only road to their school, through drainage during heavy rainfall.

Identification and criteria for pilot project selection:

- Pilot costs do not exceed 12,500 €
- Pilot to serve the general public, and not specific individuals
- Pilot to contribute to the realisation of the vision, and agrees with the existing local scenarios. Execution time is short
- Sustainability is guaranteed
- The project is very useful with clear benefits

The community understands that the pilot projects will be owned by the village, but under the local water committee's management and the society's responsibility. It is also understood that any revenues from the pilots, if any, will be used in other projects for the local community's benefit.

The community is required to provide in-kind contributions (and sometimes, cash contributions) to strengthen its sense of ownership for the pilot.



Current situation

[4] See summary sheet 4.

Water Information Summary Sheet 6: Pilot Project

Community: Meithaloun **Date: November 2004**

Pilot project stakeholders

Stakeholder	Role/ Responsibility
EMPOWERS	Provide funding, Monitor the achievement and progress of pilot(s); Technical assistance; Guidance and capacity strengthening of local committee on long-term management of the Pilots
Municipality	Issue construction licences; Provide engineering follow up and supervision; facilitate execution
Ministry of Education	Determine the location and provides approval to construct cistern
Ministry of Agriculture	Provide guidance, and expertise
Pilot committee [5]	Establish a committee to follow up on the overall programme execution, long-term management of the pilots, tendering process, etc.
School representative (Principal)	Follow up with workers (Member of the pilot committee)
Local community (Parents' committee)	Fund-raising; follow up of pilot implementation (Represented Members in Pilot committee)

Sustainability considerations

Factor	Impact on community/ pilot	How to deal with it (precautionary measures)
Absence of funding	Project incomplete	- Detailed study for project - Fund raising and seeking alternative sources of funding
Security problems with occupation authorities	Obstruct implementation of the pilot	- Sign with local contractor
Municipality uncooperative	Obstruct implementation of the pilot	- Form a committee from representatives of local institutions in addition to municipality
EMPOWERS withdraws	Hinder project	- Project cancellation
Contractor not working to plan	Project delay	- Find an alternative - Negotiate with contractor

[5] Representation in the pilot committee took into consideration gender and socio-economic background aspects of the members.

Appendix 2. Acronyms and glossary of terms

Acronyms

AM	Adaptive management
BN	Bayesian networks
CBO	Community based organisation
EMPOWERS	Euro-Med Participatory Water Resources Scenarios
EU	European Union
GPS	Global positioning system
IWRM	Integrated water resources management
INGO	International non-governmental organisation
IT	Information technology
IRC	IRC International Water and Sanitation Centre
M&E	Monitoring and evaluation
NGO	Non-governmental organisation
PRA	Participatory rural appraisal
PTD	Participatory technology development
QIS	Qualitative information system
RAAKS	Rapid appraisal of agricultural knowledge system
RIDA	Resources, infrastructure, demand and access
SDCA	Stakeholder dialogue and concerted action
SMART	Specific, measurable, achievable, realistic, time-bound
SWOT	Strengths, weaknesses, opportunities, threats
TOR	Terms of reference
WRA	Water resources assessment
WUA	Water users' association

Glossary of terms

Terms used in EMPOWERS materials – and how they are used in the EMPOWERS context.

Access
The right, entitlement and ability of an individual or a group to obtain or make use of water resources or of services that provide water for different uses.

Accountability
Giving an account how you have carried out your responsibilities and being answerable for your actions. Often used synonymously with answerability, responsibility or liability. Accountability is an important factor in securing good governance and in the legitimacy of public power. It is important not only that someone is accountable, but to whom they are accountable. See also "transparency".

Adaptive management
A type of flexible management in which actions, strategies and plans are continually adjusted in the light of new information.

Aquifer
A geological formation that can yield a useful water supply in wells and springs. Aquifers have two fundamental characteristics: a capacity for groundwater storage and an ability to support groundwater flow.

Awareness raising
The process by which the importance of an issue, problem or opportunity is brought to the attention of individuals or organisations, so that they give it a higher priority in their thinking and actions. Often a component in capacity development.

Bayesian networks
Bayesian Networks (also known as Belief Networks) provide a method of representing and analysing cause and effect relationships between variables and therefore analysing uncertainty. More information on the method can be found at www.norsys.com.

Capacity development
A long-term continuing process by which individuals or institutions develop and/or improve their knowledge, skills, competencies and abilities in areas that are important to them. It goes beyond training and includes organisational development, resource allocation and activities aimed at creating a favourable enabling environment.

Catchment area
Area drained by a river system. Also referred to as a watershed.

Civil society
Legal organisations or groupings that are not part of the state but are capable of influencing public policy. Civil society exercises collective action around shared interests, purposes and values.

Civil works
Infrastructure created or constructed for the benefit or use of the general public (e.g. water supply systems).

Concerted action
See Stakeholder dialogue and concerted action (SDCA), below.

Demand management
The use of price, quantitative restrictions, and other devices to manage demand for water, ideally by reducing less essential or valuable use.

Demand
In economic terms, demand is an expression of willingness to pay for goods or services. Non-economists often understand it as being the same as needs or requirements. In these guidelines it is used somewhere between the two – as an expression of need based on an understanding and acceptance of the monetary and other costs that a given level of service entails.

Demographics
The characteristics of a population such as age, sex, marital status, family size, education, geographic location and occupation. Demographic analysis involves analysing trends such as population growth rates.

Effectiveness
Extent to which actual performance succeeds in meeting targeted performance or aims.

Efficiency
The ratio of the effective or useful output to the total input in any system. Efficiency (e.g. irrigation efficiency) is usually defined so that it can be measurable and often expressed as a percentage.

Enabling environment
The policies and legislation (international, national, district and local) that constitute the "rules of the game" and enable (or otherwise) stakeholders to participate in governance.

Equity
The degree to which different individuals or groups within a community or society have an equal opportunity to benefit from a relevant good or service. An equity-based approach requires special attention to meeting the needs of the most marginalised members of society who may otherwise be excluded from benefits. Equity of access to water does not necessarily mean that everybody has the same access, since irrigators, producers and households have different needs. Equity does mean that different interests are determined in a fair and reasonable way.

Externality
An economic term for the effect of one party's actions on another party, often ignored in financial assessments and in decision making by the party causing the effects (which may be unintended and non-monetary).

Facilitator/Facilitation
A facilitator uses his or her skills to help a group understand their common and different problems, reach a consensus on objectives and plan to achieve them. The facilitator helps to ensure that all interests are taken into account but does not personally taking sides. The facilitator assists the group in achieving a consensus on any pre-existing disagreements or those that emerge during the process, creating a strong basis for future action. Note that process facilitation is an ongoing long-term process, much deeper than meeting facilitation, which is related to the smooth running of a single meeting.

Gender
Gender relates to the different roles played by men and women, boys and girls because of societal and cultural expectations or power relationships. A gender based approach means recognising and dealing explicitly with these differences. Because gender roles are often taken for granted, a gender approach implies an element of empowerment of women. However, a gender approach is about the roles of women and men, not only about women. Gender is closely related to issues of equity (see above).

Gender mainstreaming
Gender mainstreaming ensures that gender inequities are addressed in all decision-making processes.

Geographical information system (GIS)
A computer system for storage, analysis and retrieval of information, in which all the data are spatially referenced by geographic coordinates. GIS tends to store similar data in "layers" – for instance information about wells in one layer, roads in another, and economic activities in another. Different layers can be coded and superimposed on one another to create visual displays (maps) and analysed in different ways. Many GIS also contain modelling elements – for instance hydrological models that generate stream flows from information on soils, topography, and rainfall.

Governance
Water governance relates to the range of political, social, economic and administrative systems in place to develop and manage water resources and the delivery of water services at different levels of society. These guidelines focus particularly on local and intermediate level water governance – that is governance ranging from community to district or governorate levels.

Global positioning system (GPS)
A system of 24 satellites which circle the earth twice a day and transmit information to earth. If GPS handsets are able to receive signals from three or more satellites, they are able to calculate the coordinates of their current location.

Groundwater
Underground water that can be abstracted from boreholes or wells using pumps or buckets. Groundwater exists in aquifers (see above), in the spaces between soil (pores) and rocks, in cracks and fissures. Unlike soil moisture, it is not bound to the soil/rock and is free to flow under the force of gravity – for instance into a well or into rivers, or can be forced to the surface as a spring.

Indicator
Something measurable that acts as a surrogate marker for a condition that you cannot easily measure directly. For example, levels of diarrhoeal disease in a community can be an indicator of the quality of water and of hygiene practices. The proportion of a population with sustainable access to an improved water source is an official indicator of the Millennium Development Goal target to halve by 2015 the proportion of people without sustainable access to safe drinking water and sanitation. Finding the right indicators to measure is an important part of monitoring and evaluation.

Information
Data that is captured and stored – typically in written form, but also as audio or video recordings, in diagrams and pictures etc. It is sometimes referred to as explicit knowledge. Information can be (relatively) easily transferred from one person to another. See also knowledge below.

Information management
Process of gathering, storing, analysing and disseminating information needed for a specific purpose, such as planning or making management decisions.

Infrastructure
In the context of these guidelines and the RIDA framework (see below), infrastructure refers to the systems (hardware and software) that are needed for abstracting, treating and conveying water for different purposes and the institutions required to manage these activities.

Institutional level
Stakeholder dialogue takes place at different institutional levels, referring to where, and at what scale, institutions function, from local level to intermediate, national and international levels.

Integrated water resources management (IWRM)
A process which promotes the coordinated development and management of water, land and related resources, in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

Intermediate level and local level
In the context of these guidelines, the local level comprises towns, villages, hamlets etc., while the intermediate level is considered to be districts and governorates.

Key stakeholders
See "Stakeholders", below.

Knowledge
Information that has been internalised and can be used. Tacit knowledge is what people know and take for granted. The knowledge of people in communities is deep and often under-estimated by those who bring new information.

Management
The decision-making and overseeing process whereby a plan or a course of action is agreed on and implemented. Planning is a management function as are the allocation of resources and resolutions of conflicts of interest. Effective management is only possible when managers have access to reliable information.

Marginalised
Marginalisation is the overt or covert process whereby sub-groups tend to be excluded by wider society. Marginalised social groups tend to be poor and have limited access to water for both domestic and productive purposes. They also tend to be excluded from and/or unable to influence decision-making processes that influence their access to safe water. Marginalised groups often have low status and are perceived by others as lacking desirable traits or being outside "normal society".

Mesqa
The third level of irrigation canals in Egypt. Primary and secondary canals are large, lined, and managed by the state. Tertiary canals or mesqas are field level, typically unlined, and managed by farmer (water user) groups.

Modelling
Computer-based systems that use mathematical formulas to represent systems and processes. A model that is an acceptable representation of a given system or process, can be used to answer hypothetical "what if" questions and/or to assess the sensitivity of a system or change process.

Monitoring and evaluation
Monitoring is the continuous assessment of project (or programme) implementation in relation to agreed schedules and the use of inputs, infrastructure and services by beneficiaries. Evaluation is the periodic assessment of a project (or programme) with respect to relevance, performance, efficiency, and impact relative to stated objectives. Monitoring is about keeping a flow of relevant information about a programme, while evaluation is more about making a judgement on how far aims have been met.

Ownership
Possession of or control over an object, land, water, intellectual property or similar. Ownership may be exclusive or shared. In relation to a programme or intervention, it is to do with being in the driving seat with a significant influence on decisions, rather than simply being a beneficiary.

Participation
Participation in water governance means having a stake or share in decision-making processes. Participatory processes actively attempt to involve the public or stakeholders in dialogues and decision-making processes to ensure that decisions match needs and aspirations.

Partnership
In the context of these guidelines, partnerships refer to agreements and arrangements between organisations to work cooperatively to achieve a public policy objective for which there is: 1) Shared authority and responsibility for results; 2) Joint investment of resources (time, funding, expertise); 3) Shared risk-taking; and 4) Mutual benefit.

Plan
A coherent set of decisions about the use of resources, translated into activities with the potential to achieve agreed objectives. A plan includes an explicit statement of methods, costs, responsibilities, schedule of activities and targets. Planning is the process of creating and refining a plan, or integrating it with other plans

Policy
An overarching statement of aims or principles to guide decisions and actions. Policies may be adopted by government, private sector organisations and groups, or individuals. A policy process identifies alternative programme or spending priorities and chooses among them on the basis of their impact. Policies can be understood as political, management, financial, and administrative mechanisms arranged to reach explicit goals. Policy alignment is the process by which consistency is achieved across a number of policies that have the potential to interfere with each other. Policies and legislation together create the enabling environment (see above) and supports (or, when lacking, hinders) good governance.

Participatory rural appraisal (PRA) tools
A range of participatory tools designed to involve stakeholders in the collection and analysis of information, and therefore to involve them actively in processes of improvement and change. Originally devised in rural settings, they are now widely used and usually known simply as PRA tools. Sometimes referred to by other acronyms such as Participatory Learning and Action (PLA) or Rapid Rural Appraisal (RRA).

Problem focused
An approach to planning that starts with an analysis of problems and matches solutions to these problems. It contrasts with approaches which assume that solutions to problems are universally applicable and that "one size fits all".

Problem tree
A visual problem-analysis tool that can be used to specify and investigate in a structured way the causes and effects of a problem, to highlight relationships between them and to promote stakeholder dialogue. The use of a problem tree deepens analysis and achieves a better understanding of underlying problems, thus helping to identify root causes.

Process documentation
In the context of these guidelines, process documentation focuses on monitoring and documenting processes by which water-related decisions are made. It allows reflection on processes of change through the eyes of those taking part.

Process facilitation
See "facilitation".

Management cycle
A project or programme proceeds through evolutionary stages from visioning to planning to implementation and evaluation, as part of an identifiable, rational cycle of development. The need to manage the cycle through all its various stages is central, and this should be understood as managing a process, rather than a series of one-off events.

RAAKS
RAAKS (rapid appraisal of agricultural knowledge systems) is a participatory action research methodology that provides ways for those involved in complex situations to understand what is happening and to begin to find answers for themselves.
For more information see: http://www.kit.nl/smartsite.shtml?ch=FAB&id=4616&Part=Resources

Resistance to change
Resistance to change is action taken by individuals or groups to frustrate or slow down a process or change that they perceive as a threat. It can be either conscious or unconscious.

RIDA framework
The resources-infrastructure-demand-access (RIDA) framework is an analytical framework that helps to structure water related information logically and transparently. It is used to develop water resource assessments (WRAs –see below). A RIDA framework takes into account users' demand for water, provider concerns as managers of infrastructure, and the natural resources on which they all rely and which must be managed and protected.

Rights-based approach
An approach which regards access to water (for example) as a right, can be contrasted to an approach which sees communities as beneficiaries of aid or charity. A rights-based approach focuses on building people's awareness of their rights (and responsibilities) and empowers them to demand their rights from those who are accountable for providing them.

Risk
A combination of the inherent uncertainty about whether a strategy and/or plan will achieve an agreed end and the adverse effects of failure. Risks may be high because the outcome is uncertain or because the consequences of an adverse outcome would be severe, or both. In many cases, risks can be mitigated by carrying out a risk assessment and by modifying strategies and/or plans accordingly.

Scale
In these guidelines, scale refers to temporal and spatial boundaries within which decisions are made or relevant events occur. Water management objectives and governance issues are usually scale-dependent.

Scenario building
A scenario is a description of a possible future situation, drawn up by considering factors that are both important and uncertain. Scenarios are stories about the way the world might turn out tomorrow. Scenario building involves stakeholders in jointly developing a set of narrative scenarios as a basis for identifying possible strategies towards reaching a shared vision of the future. Narrative scenarios are based on extensions of current trends and knowledge about uncertainty, and typically relate to factors, such as population growth or the economic climate, that are outside the direct control of stakeholders. They include both qualitative and quantitative information.

Semi-structured interview
Allows for focused, conversational, two-way communication, to give or receive information. The interviewer starts with a framework of broad questions, but allows the person being interviewed to diverge into areas of interest. (In contrast to a formal structured interview, where detailed questions are prepared and followed in strict order.)

Stakeholders
In the context of EMPOWERS, stakeholders are institutions and individuals with an interest in water resources, who are potentially affected by decisions relating to water resource management.
Key stakeholders are the stakeholders most important to the process or most strongly affected by the outcome. Note that this does not refer to their status but to their significance in the process. Government agencies and community based organisations may both be key stakeholders. Key stakeholders must be brought into the process, and kept involved.

Stakeholder dialogue
See "stakeholder dialogue and concerted action", below.

Stakeholder dialogue and concerted action (SDCA)
A formalised process of interactions and discussions between stakeholders aimed at analysing competing interests and views on the nature and severity of water supply problems, resolving differences and reaching a consensus on how best to tackle these problems in a way that is efficient, equitable and sustainable. Action or activity is agreed through stakeholder dialogue and planned and adjusted jointly. The action or activity is carried out by stakeholders or under the supervision of stakeholders with the aim of achieving a common vision. SDCA is mediated by one or more facilitators.

Stakeholder platform
The forum where groups of stakeholders with a common interest, or problem discuss and make decisions about actions together. Stakeholder dialogue, conflict resolution and integrated planning all happen here. A stakeholder platform can take the form of a regular committee meeting or a series of village meetings or workshops. It usually involves a planned series of meetings and activities that bring different stakeholders together. A key aspect is mediation (by a facilitator or facilitators) using a range of tools and methods, leading to constructive dialogue.

Strategy
A strategy is a medium to long-term planning framework within which specific activities are described and plans implemented. Over time, an effective strategy should lead to a vision being achieved.

Strategic planning
Strategic planning consists of the process of defining objectives and developing strategies to reach an agreed vision. Strategic planning is expected to operate on a larger scale (in time or space) to take in "the big picture" in contrast to tactical planning, which focuses on individual detailed activities.

Subsidiarity
The notion that decision-making should occur at the level where the people most directly concerned can take responsibility. Usually, this means that decisions should be taken at the lowest possible relevant level.

Summary sheets
In these guidelines, summary sheets provide a concise summary of the outputs from dialogue and management processes, built up using outputs from different activities and phases, and used to ensure that the outcomes of stakeholder dialogue are disseminated to all those affected.

Sustainability
Sustainability relates to the ability of a system or service to continue indefinitely. It often has the connotation that this can be achieved without outside interference. Sustainable development refers to a development path that maximises well-being for today's generation without damaging prospects for future generations. Sustainability implies that humanity and natural resources are in harmony, so that current use can continue without destroying, using up or polluting resources for the future.

SWOT
Strengths, weaknesses, opportunities and threats. SWOT analysis is used to promote stakeholder dialogue and to identify positive and negative factors so that potential solutions can be found to water-related problems.

Trade-off
The balance between what is gained and what must be given up, when an (economic) decision is made.

Transparency
Openness in decision making and resource allocation so that those affected know who took decisions, when, and according to what criteria and rules. Transparency allows those affected by decisions to scrutinise the process and to challenge what they believe to be unfair or corrupt decisions. A transparent process means that everyone is involved in upholding standards of fairness and equity. See also accountability.

Triangulation
A method of corroborating the accuracy of information by comparing different sources or viewpoints.

Uncertainty
Uncertainty indicates a range within which a measured quantity could be in error. It gives an answer to the question, how well does the result represent the true value of the quantity being measured? Uncertainty is inevitable when assessing knowledge, and leads to an element of risk (see above) in decision-making.

Up-scaling
The process by which programmes in pilot studies are increased in size or replicated to cover new and larger areas and more people, addressing challenges relating to sustainability, cost and institutional capacity.

Variability
A measure of statistical dispersion, indicating how values are spread around the average or expected value. In many cases, higher levels of variability are linked to higher levels of uncertainty and risk (see above).

Vision
A concise description of a desired future state. Visions provide a picture of how we would like the world to be at some future time. Consensus on a water resources and services vision is required before a strategy is developed.

Water balance
An equation that brings together the inflow and outflow of water in a given area over a given time frame, taking into account net changes of storage.

Water resource assessments (WRAs)
Knowledge about the current status of water resources, trends in demand and water use is essential to successful water management. Water resource assessments, under various names (such as water accounting and water resource audit), are promoted as a key component of integrated water resources management. WRAs involve collating, quality controlling and analysing secondary information from a wide range of sources, where necessary complementing it with (limited) primary data collection. The design of a WRA, in terms of complexity, duration and outputs should be determined through a needs assessment involving all key stakeholders.

Water service delivery
The process of meeting the wide variety of water needs and expectations of users and customers. Water services can be described in terms of access, reliability, quantity and quality of water received.

Water users
There are many different uses for water, and many different users. The EMPOWERS approach considers the needs of all potential users and all potential use – domestic, agricultural, industrial, commercial and municipal – as well as the needs of the environment.

Watershed
An area drained by a river system. Also referred to as a catchment area.

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