1. Capacity needs assessment methodology and processes

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INTRODUCTION

In September 2003, a one-day workshop was organized on Capacity Building in Irrigation, Drainage and Flood Control as part of the 54th meeting of the International Commission on Irrigation and Drainage (ICID) in Montpellier. It brought together many of the important practitioners in the field and established a basic framework and principles for capacity development in the sector.

The consensus of the workshop was that a lack of capacity is constraining irrigation development in many developing countries and that capacity rather than infrastructure should be the central focus of future irrigation development strategies (FAO 2004). Capacity development is increasingly recognized as one of the most important keys to delivering and sustaining the benefits from irrigated agriculture worldwide. However, capacity development is more than a complementary component of interventions to improve the performance of irrigation and drainage systems. It is an integral part of a strategy for sustainable and integrated agricultural water management. In addition to the training of professionals, technicians and farmers, it must focus on developing effective organizations within which individuals work on establishing an enabling institutional environment in which organizations and individuals can flourish.

This comprehensive picture of capacity development is being increasingly accepted in many development sectors, though experience to date has shown that putting the concept into practice is fraught with difficulties. Many questions arise concerning identification of the critical issues: What is the best entry point for external support? The actions needed? How can the impact of critical issues be measured and how can we take advantage of the experience gained? What role should donors play and how can outside agencies help with what is essentially an internal or in-country process?

Capacity is not something that can be built through a series of carefully planned and executed activities that follow a clear and detailed plan or blueprint with specific timeframes and strict budgets. It is an organic process of growth and development involving experimentation and learning as it proceeds. Therefore, many people now speak of capacity development rather than capacity building, to emphasize that it is a process rather than a blueprint.

A weakness of technical assistance programmes and projects that focus on meeting capacity needs is the lack of analysis normally required to ensure that the solution is the most appropriate in the circumstances. This initial phase of capacity development, which is the least well developed or understood, is the focus of this paper. The paper builds on a capacity development framework for the irrigation and drainage sector that emerged from the ICID/FAO workshop and introduces the United Nations Development Programme guidelines (UNDP, 1997) as a model for assessing capacity needs in the sector. Brief explanations of some tools and processes are also provided that can be used during the capacity assessment process. The concluding sections discuss some key issues for successful capacity needs assessment and point the way ahead for future developments in this field.

DEFINING CAPACITY DEVELOPMENT

An essential feature of capacity assessment is a common understanding of what capacity and capacity development means. This is not as straightforward as it sounds. To some it is synonymous with workshops and training, to senior managers it can mean organizational development, to nongovernmental organizations (NGOs) it is associated with empowering individuals and grassroots organizations and to international agencies and donors it is about national institutions, governance and economic management (Horton 2002).
Clarifying the meaning of capacity development was one of the main issues addressed at the ICID/FAO workshop in Montpellier (FAO 2004). This workshop followed the work of UNDP and defined capacity development as “the sum of efforts needed to nurture, enhance and utilize the skills and capabilities of people and institutions at all levels – locally, nationally, regionally and internationally – so that they can better progress towards sustainable development…” at the basic conceptual level, building capacity involves empowering people and organizations to solve their problems, rather than attempting to solve problems directly. When capacity development is successful, the result is more effective people and institutions better able to provide products and services on a sustainable basis.

The definition encompasses an approach to development, which is now well accepted in the irrigation sector. Although satisfactory in itself it does little to explain what capacity development means in practice. Research on capacity development in other sectors (Morgan 1998) has significantly helped to make this step from theory into practice. This established three generic levels of capacity and the ICID/FAO workshop examined ways of applying these to irrigation and drainage.

Level I, the enabling environment, represents the broad national and international context within which irrigated agriculture can develop. It is concerned with policy at the highest levels in government, the socio-economic conditions that enable or constrain irrigation development and the legal framework that provides farmers with security of tenure for land and water and the power to seek legal redress when contracts are broken. This level can have immense influence over what happens at the lower levels. It is often given insufficient attention, particularly in project interventions, because it is seen as too difficult and diffuse to address.

Level II is the organizational level, which refers to the wide range of organizations involved in irrigation such as water user organizations, research groups, government extension agencies and private companies that share common objectives such as improved livelihoods at the farming level, improved water management or increased agricultural productivity at a national level. The capacity of an organization is embedded in the ability of its individuals to work together within established rules and values and to interact with other organizations.

Level III, the individual level, is the most structured and familiar part of capacity development and includes education and training of the various stakeholders, from farmers to local professionals.

The three levels provide a structure that allows capacity development to be examined and analysed. In addition, they provide possible entry points for support from donors and technical cooperation. However, they are clearly linked, for example, water user organizations are shaped as much by society (laws, regulations) as by individuals (skills, leadership, relationships).

THE PROCESS OF CAPACITY DEVELOPMENT

Five strategic phases of capacity development can be identified. The first phase is an assessment to define present capacity within the system. It establishes the baseline and addresses the basic question – where are we now? The second phase looks ahead to the future desired state, the vision of what capacity is required in the future and asks the question – where do we want to go? The third phase compares the present situation and future desired state, identifies the capacity gaps and plans strategies and actions designed to fill these gaps and achieve the desired goals – how do we get there? The fourth phase is the implementation phase, fulfilling the strategies and undertaking the planned capacity development activities in order to meet the defined objectives – what actions do we take? The final phase is monitoring and evaluation to feed back experiences into the planning phase – how do we stay there? This is not a linear process, the phases are interlinked and overlap, they form a continuing cycle of development and change according to the prevailing circumstances.

Of the five phases, assessment of capacity needs, that is, establishing the existing and required capacities as well as identifying the gaps between both, is perhaps the least well developed, at the same time it is the most vital. Without a proper understanding of what currently exists and what is needed, there is a good chance that inappropriate measures and actions will be initiated. Most technical assistance programmes and projects focus on meeting capacity needs, without undertaking the analysis required to ensure the solution is the most suitable in the circumstances.

CAPACITY NEEDS ASSESSMENT

A review of the literature and official publications indicates there is a considerable body of work available on capacity development, though very little has been published on approaches to assessing
capacity needs. UNDP has published extensively on capacity development and, in particular, on assessing capacity needs (UNDP 1997 and 1998). Their approach is simple in concept – first assess the existing capacity, then assess future capacity envisaged by answering the question – where do we want to go? – and from these two, identify the capacity gaps. Strategies can then be developed to fill the gaps.

The UNDP guidelines introduce a note of realism by suggesting that putting this concept into practice is not a simple process. The first step of assessing existing capacity can usually produce much useful information. The second step, of looking at future capacity, is less sure as it largely depends on policies and strategies for future development and these may not always be as clear as they should be. This has a knock-on effect on the third step of assessing the gaps and hence on developing strategies to fill the gaps.

UNDP makes the case for capacity assessment as a structured and analytical process, whereby the various dimensions of capacity are assessed within the broader socio-economic environment, as well as evaluated for specific organizations and individuals. They indicate how assessments might be undertaken in different situations and how programmes and projects might be better designed to ensure ownership, sustainability and ultimately success. Special emphasis is given to using existing capacities as the basis for capacity development. The guidelines indicate that, as no two situations are alike, they require common sense and flexibility in their application, as well as a good understanding of the particular context in which they are used. The UNDP model for needs assessment (1997) based on the three levels of capacity (Figure 1.1) provides the basis for the first three phases of capacity development. These are assessing existing capacities, identifying possible future capacity, estimating the gaps and defining possible strategies. The capacity levels are expanded to include a number of sub-levels or dimensions that need to be considered in the assessment.

**Figure 1.1**

**Matrix for assessing capacity (UNDP 1997)**

<table>
<thead>
<tr>
<th>Dimensions of capacity</th>
<th>Existing capacity</th>
<th>Possible future capacity</th>
<th>Estimated capacity gap</th>
<th>Possible strategies</th>
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<tr>
<td><strong>Environment – Level I</strong></td>
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<td>Policy framework</td>
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<td>Processes and relationships</td>
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<td><strong>Organization – Level II</strong></td>
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<td>Infrastructure</td>
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<td>Inter-relationships</td>
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<td><strong>Individual – Level III</strong></td>
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<td>Job skills and needs</td>
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<td>Professional development</td>
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<td>Access to information</td>
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<td>Values/attitudes/motivation</td>
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<td>Relationships/interdependence</td>
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Enabling environment
Assessments at this level include the dimensions of policy, legal and regulatory framework, management and accountability, resources and processes (the inter-relationships between organizations) and how resources and information flow both formally and informally. For development initiatives that are national in context (e.g. governance or environmental programmes), all the dimensions would need to be examined. However, for initiatives at a sectoral level, the analysis would include only the relevant components.

Organizations
Many different organizations influence irrigated agriculture. They may be government departments, private sector operations or informal community-based associations. Traditionally capacity development and organizational strengthening focused almost entirely on human resources, processes and organizational structuring. Nevertheless, this tends to be too narrow a focus and additional dimensions need to be assessed including mission and strategy, culture, structure and competencies, processes (both internal and external), human resources, financial resources, information resources and infrastructure. It is also important to include interactions with other organizations and stakeholders within the wider enabling environment. In an increasingly complex world, it is important to form partnerships and to network with other organizations for synergy and complementarity in delivering services.

Individuals
Many capacity initiatives ultimately concentrate on the individual, either because this level is considered the most critical, or because it is the easiest to address. It considers the individual’s capacity to function efficiently and effectively within an organization and within the broader environment. Often, capacity assessments of individuals are based on an established job description or some other format that lays out the performance/skills requirements of the position and the individual filling that position. This is combined with a skills assessment of the individual.

The assessment is designed to assess individual capacity gaps so training and development plans can then be prepared to address them. Increasingly, the dimensions of accountability and incentives, performance, values and ethics are becoming even more important at the level of individual capacity assessments. Strategies that stress continuous learning and professional development are also important.

Mapping capacity and finding the gaps
The rows represent the various dimensions of capacity. In most situations, an assessment will generate information on existing capacity. Moving to the next step of assessing future capacity may be less certain, information on this will only emerge gradually as answers to the question – where do we want to be? – emerge.

Existing capacity
A critical issue for undertaking an assessment is the entry point. Once an entry is made, movement can then take place from one level, enabling environment, organization or individual, to another according to needs. Some information, gathered from the assessment at a certain level, might indicate that another level should be assessed. This is why the levels are linked with arrows as shown in Figure 1.1.

The entry point for national assessments will need to be at the level of enabling environment. An example might be a major initiative to improve the role and functioning of the legal framework (laws, legislation) as part of a water governance reform programme. Following an assessment of the broader dimensions of capacity, this could enable the assessment to ‘zoom in’ and examine the dimensions of specific organizations, such as the judiciary or the role of the Ministry of Water Resources and, as a result, also the role of individuals with organizations.

UNDP, in their guidelines, suggests the most typical entry point is at the organizational level and usually on a narrow front. For example, the perceived need may be to reform subsidies to farmers within the Ministry of Agriculture. This initial, rather narrow examination could then provide an opportunity to ‘zoom out’, to look at the broader issue of farmer support services within the Ministry and to the broader implications of farmer support as part of national policy. It can also provide a way into the wider performance issues within the Ministry.
**Future capacity**
Assessing future capacity can be a difficult and time consuming step, as stakeholders may not always have a clear vision of what they would like to achieve. A realistic assessment of development objectives, resources and timing is required. A general consensus among all the stakeholders involved is also needed if the goals are to be achieved.

A common vision of the future enabling environment is an essential step to a more detailed assessment of the various dimensions at this level and of assessments at the lower levels of organizations and individuals. In practice, however, it may not always be possible to follow such a logical pathway. A process of iteration over an extended period is more likely as policy is developed and changed over time. Capacity is not static; it is a lengthy and continually developing and changing process.

**TOOLS FOR ASSESSMENT – ESTABLISHING THE BASELINE**
A range of tools and approaches exist for assessing capacity at the different levels.

**The enabling environment**
At the level of the enabling environment, the two fundamental needs are to map and understand the policy environment and to assess the legal and regulatory framework. Once these are understood, the other issues to be considered at this level, such as accountability, resources, processes and relationships, can usually be identified and mapped with relative ease.

A number of approaches are possible for mapping the policy environment (Brinkerhoff 2002) such as policy characteristics analysis, political mapping, or policy network mapping. All are based on simple unifying themes and can be presented as models or matrices.

- **Policy characteristics analysis**: assists in identifying the driving forces, decision-makers, costs and benefits, and those who bear the costs and benefits of policy-making in particular sectors.
- **Political mapping**: identifies stakeholders in policy-making, differentiating between external stakeholders, social groups, political parties and pressure groups, and distinguishing their different levels of support and influence, and
- **Policy network maps**: try to graphically present the linkages between different aspects and sectors in policy-making, in order to identify inconsistencies and constraints and to support so-called ‘joined-up government’.

The legal and regulatory framework must also be assessed to see if it helps or hinders agricultural water management and to identify the gaps and inconsistencies. This requires an examination of existing laws, their extent and coverage and the accompanying regulations or regulatory systems, as well as attempts to assess their impacts through some form of regulatory impact assessment. Currently, a growing area of interest is water rights and their relationship with water laws. These also need to be considered within this general framework.

Both the policy processes and legal framework must take account of the management of water for agriculture within its wider context. For example, the Global Water Partnership has developed a ‘toolbox’ for integrated water resources management. The toolbox comprises brief references to many relevant issues at each level of the matrix. It is also useful for ensuring that the irrigation and drainage sector is considered within the wider framework of water resources, of which it plays such an important part.

**The organizational level**
Assessment of existing capacity at the organizational level must take account of these organizations within their institutional context and consider their linkages and relationships with other relevant organizations. A first step in capacity assessment at the organizational level is therefore some form of stakeholder analysis.

The full participation of all those who have a stake in the outcomes of the assessment (the stakeholders) is now well recognized as an essential part of the process. These are the farmers and their organizations who are the principal beneficiaries of irrigation, the wider local community, local and national government organizations and private sector organizations, such as NGOs and commercial companies. Stakeholder analysis can be used to determine who is and should be involved,
the nature of their involvement (role, responsibilities, accountabilities; direct or indirect involvement), and magnitude of involvement (e.g. full or part-time, specific activities only). For example, a capacity development initiative on land and water governance could include virtually everyone connected with irrigated agriculture (individuals, groups, formal organizations). Only very few need be involved in capacity assessments in the initial policy/concept development stages. There are a number of techniques, tools and methods that can support the stakeholder analysis such as surveys, workshops and conferences. The mechanism for stakeholder involvement is another key area. They may be represented through formal management/steering committees. Others may be represented through advisory or consultative councils/boards, surveys, workshops and conferences.

In relation to organizational capacity, the United Kingdom’s Department for International Development has done a considerable amount of work and produced a useful document *Organizational sourcebook* (DFID 2003). This suggests a number of different possible approaches to assessing organizational capacity, including the:

- open system model, which considers the strategic and institutional environment, the organizations inputs and resources, its strategy, culture, human resource management policies, systems, structure, outputs and performance;
- the 7-S model – strategy, structure, systems, shared values, skills, style and staff; and the
- organizational elements model covering inputs, processes, products, outputs, and outcomes.

It can be seen that all cover approximately the same ground, including most of the components itemized in the sublevels of the assessment matrix. All can be presented in the form of a table or matrix, making for easier visual understanding.

In the irrigation and drainage sector, specific aspects of organizational capacity may need to be considered, such as asset management policies and systems, quality management systems, financing mechanisms and accountability systems. A paper presented at the 2003 Montpellier workshop discusses these issues in relation to the specific context of the irrigation and drainage sector in Indonesia (van Hofwegen, 2004).

Assessing organizations within their institutional framework is of particular importance in the irrigation and drainage sector. This is because of the complex nature of irrigated agriculture and its linkage with so many other sectors of the economy and the social and cultural environment. A significant amount of work has been carried out in this regard by institutionalists such as Ms Ostrom. Working with others in areas of the humid tropics such as Sri Lanka, she has devised a set of ‘institutional design principles’ for irrigation organizations (Ostrom, 1992).

These design principles, which could also form the basis of assessing the capacity of existing organizations, are often liked by practitioners because of their relative simplicity and the clear-cut nature of the recommendations that flow from them. There is, however, a body of theory that is critical of the design principles, precisely because of their simplicity, suggesting that it is necessary to focus more on existing organizations and institutions and to take account of peoples’ propensity to adapt existing institutions to address new and emerging issues (so-called ‘institutional bricolage’). The complexity of the linkages between existing organizational mandates is a further factor to be taken into account, particularly in relation to the problem of the lack of fit between hydrological boundaries and other types, such as administrative boundaries.

**Individual level**

Techniques for assessing capacity at the individual level are now well established. Indeed much of the criticism of capacity development programmes in the past is that they have been focused solely at the individual level, without paying sufficient attention to the organizational framework within which the individual operates. Individual capacities are often assessed in relation to the need for training and lead to some form of assessment of training needs.

In the past, these were developed through a comparison of competencies and responsibilities and the need to try to match these two more closely for the organization’s human resources. Now there is a move to assess an individual’s capabilities across a wider spectrum of criteria, such as attitudes and values, as well as the traditional focus on technical skills and competencies. These additional capabilities are summarized in the sub-levels of the individual capacity assessment matrix presented in Figure 1.1. There is increasing use of various types of psychometric testing (such as the Myers Briggs
test), particularly in the corporate sector in industrialized nations, to assess capacities in this regard. However, as yet there are few references to the application of these techniques in the irrigation and drainage sector, particularly in developing countries.

**General assessment tools**

Certain assessment tools can be used at all three levels of capacity assessment. These include:

- **Problem tree analysis**, which is used to identify causes and effects of identified problems, and helps to look beyond visible symptoms to reach an understanding of underlying causes. The problem tree analysis may also be turned into an **objective tree analysis**, which forms the basis of a strategy to deal with the identified problems (in this case, lack of capacity).
- **Strengths, weaknesses, opportunities, threats (SWOT) analysis** can be used by stakeholders to assess the enabling environment, the institutional framework and the specific organization; and
- **Benchmarking** is increasingly used in the irrigation and drainage sector as a way of comparing performance and output over time, or with other organizations. It is a specific and structured method of performance assessment, which in its more general form can be used as a basis of assessing existing capacity without making comparisons with others or over time.

**SOME GUIDING PRINCIPLES**


**Being realistic when assessing capacity**

The feasibility and success of a strategy depends very much on assessing existing and future capacity. In most cases, existing capacity can provide a useful starting point to design future capacity. Experience suggests that it is better to build from existing strengths rather than inventing something new from scratch. Therefore, making appropriate use of existing capacities and being realistic when assessing the future, from a financial and human resource point of view, will help to achieve a more successful strategy.

**Capacity assessment must follow policy – but policy must be in place**

Capacity assessment should follow policy or programme goals. Therefore, the nature of the assessment needs to vary according to the nature of these goals. Furthermore, effective policy reform is an essential prerequisite. Experience in the health sector (Milen 2001) highlighted capacity constraints at this level and suggests it is a common problem in many developing countries. Constraints were identified, including a lack of capacity to identify a clear policy framework and lack of capacity to generate commitment to the policy, both from internal actors. In this case these were health staff, external actors such as politicians and capacity to design and implement strategy. In several instances failure to perform effectively, even one of these tasks, has hampered implementation of the reform. In some cases, a lack of legal skills impeded progression from policy intention to detailed policy framework. Political support was limited in others, where there had been no attempt to communicate the policy to other interested groups to gain their support.

Such circumstances may well prevail in the irrigation sector; and it is evident that constraints at this level can produce a logjam that stops progress downstream. Addressing these capacity constraints is critical to the success of the entire process of reform and will need to be addressed before useful and practical assessments can be made at levels II and III.

**A continuous process**

Capacity is not static, it is continually developing and changing – a dynamic process. It is a lengthy process requiring continuous attention and investment and the recognition that the capacity of an individual or organization is never complete or in a steady state. As strategies need to be flexible so too must capacity assessment so that it supports decision-making and becomes an internal cycle of review and updating, rather than being a one-off, externally driven event.

**Involving all levels**

Initial capacity assessment activities may focus on a particular area; although it is important to find ways of involving all levels at some stage. The initial focus may be on strengthening an organization
such as a local government office providing irrigation advisory services. However, it is essential to examine the levels of capacity in the broader environment: clients of the service and role and relationships with the higher levels of government. The logic of this is to seek the root causes of poor performance, which may not lie solely in the local government office.

Extending beyond the immediate focus can be a difficult step. This requires extensive knowledge and understanding of the organization, or system in question and of its links with other levels of capacity. Experience shows the value of local experts and local community groups for this kind of assessment.

**Perform in stages**
Capacity assessment needs to be accomplished in stages, because the nature and detail of the process depends on the state of the organization or system. For example, an organization with a strong management capacity will proceed at a faster pace than one that lacks a strategic core management capacity.

Defining future capacities for large organizations can take time to develop whereas for small organizations it should be possible to do this over a much shorter period.

**Finding the appropriate entry point**
Finding the most appropriate entry point for assessing capacity is critical to a successful outcome. Logically assessment should start with the big picture at the level of the enabling environment and then proceed to the lower levels. In reality, there may be many reasons why this is not only impractical but also impossible. UNDP suggests the most common entry point is at the organization level. It is important to recognize this is not only about assessing the particular organization, but about looking for opportunities to ‘zoom in’ and ‘zoom out’ to provide a broader and more realistic assessment of capacity needs.

**CONCLUSIONS**
This paper has reviewed the work of others and built on the output of the ICID/FAO workshop in Montpellier to define capacity development and to develop the three levels of capacity: the enabling environment, the organization within its institutional framework and the individual.

Various tools have been described that can be used to develop an assessment of capacity at these various levels, thus establishing a baseline from which future capacity and capacity gaps can then be identified. The paper has summarized some of the tools that are currently in use or being developed, both in the irrigation and drainage sector and in other sectors. However, more examples and experiences from actual case studies are needed to provide a fuller range of applicable approaches and methodologies.

Along with the increasing dissemination of practical real-life examples is the need for further consideration of the processes involved in defining future capacity needs and capacity gaps, and the appropriate strategies and plans to address these gaps. The important point in this respect is to focus sufficient attention on the more difficult processes of enhancing capacity at the level of the enabling environment and the organization within its institutional framework, rather than restricting attention to the easier processes of enhancing individual capability through training and education.

Factors that contribute to the success of a capacity assessment include: visible commitment and leadership at senior levels; participatory, open and transparent processes with the meaningful involvement of all impacted stakeholders; awareness and understanding of the process by all parties; appropriate methodologies’ a clear set of objectives and priorities, clear management accountabilities and sufficient time and resources to plan, develop and implement the capacity initiative.

**REFERENCES**


2. Strategic options for capacity assessment in agricultural water management design and management of the process

By Wilfried Hundertmark

INTRODUCTION

In a paper presented by (Kay et al. 2004) an overview was given of the principal steps involved in capacity needs assessment from the viewpoint of the irrigation and drainage sector. Methodologies and tools available from the broader development community were examined in the context of the needs of agricultural water management. It became clear that needs assessment is a process that evolves in stages. Broadly the process can be described as a step-by-step exercise, which first involves the assessment of existing capacity, then future capacity needs, followed by mapping capacity gaps, identifying opportunities for capacity development and defining objectives and targets as the basis for the formulation of a strategic plan of action.

The proposed approach adopts a framework that is based on the principles of subsidiarity and participation. It analyses the capacity at three levels, of which the highest – the enabling environment – appears to be instrumental for a number of aspects including policy, legislation, socio-economic conditions and constraints to irrigation development. The middle layer addresses capacity needs of organizations involved in irrigation and the bottom layer aims to assess the needs of individuals.

Altogether, it is suggested that the three levels provide a preliminary structure for capacity assessment and as an entry point for donors and technical assistance. Unfortunately, the framework remains somewhat general and idealized with little solid country experience that could support it, or assist in the development of a more sector-specific approach suited to the needs of a variety of systems, such as smallholder-based systems in Africa and large-scale canal-based irrigation in Asia.

In this paper, an attempt is made to touch on issues related to the capacity assessment process and to provide strategic options to overcome them. This is to move away from an idealistic situation, in which stakeholders are collaborative and motivated and budgetary constraints do not exist, towards a world of restricted motivation and incentives on the part of individuals, as well as substantial resistance against institutional and organizational change at all levels of the society. Strategic options will be presented, which may help to make capacity assessment a useful exercise for the development of capacity development interventions.

Following this introduction, the paper is organized into six chapters. First, a brief overview is given of the context in which many smallholders, particularly in Africa and part of Asia, struggle with insufficient access to irrigation services. Second, there is the initiation phase of a capacity assessment initiative; third attention is drawn to the process design options, including identification of stakeholders and their involvement. Options for the identification of issues and their prioritization will be discussed and the concept of capacity gap analysis critically analysed. In the section on Managing the process (below) focus is placed on process management aspects that mainly relate to identified constraints and resistance to change. Finally, conclusions are drawn and strategic implications on the determination of effective capacity interventions highlighted.

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THE SETTING IN AFRICA AND MUCH OF ASIA

Countries in sub-Saharan Africa and in Southeast Asia are probably among the most needy in terms of capacity assessment and development in agricultural water management. In sub-Saharan Africa, the irrigation sector is largely based on smallholdings of less than 1 ha, informally developed schemes, which are scattered over vast areas of land and around urban centres. Smallholders have no guaranteed access to water or to support services and training. Where still operational, official irrigation schemes are in need of rehabilitation and modernization with not much hope that the investment costs will pay off.

Official government irrigation services and extension units have largely fallen into a state of dysfunction with no access to sufficient funds for transport or any irrigation related training materials. Government employees are subject to frozen salaries and/or stiff public entrenchment schemes. There is only little incentive and motivation to perform, as expected, these ambitious human resource development plans date back to the days of structural adjustment. Because of tight budgetary restrictions, these plans are now obsolete. This situation has created a substantial gap in public service provision to the sector. Partly the capacity gaps have been filled by national and international non-governmental organizations (NGOs) and an emerging private sector. However, NGOs often find themselves operating in a void being largely ignored by official policy-makers. Moreover, ambitious development projects are found that operate successfully over the project cycle. However, their impact on the capacity of their beneficiaries to manage irrigation systems is doubtful since long-term support of the beneficiaries is not guaranteed.

In several African countries, donors have encouraged governments to shift from state controlled to farmer-controlled irrigation management. Progress has been slow so far: there are serious doubts that irrigation management transfer (IMT) in Africa and much of Asia will succeed. The International Water Management Institute (IWMI) believes that it would be surprising if, even with all necessary stress on ‘process’ and capacity building, IMT programmes will meet even moderate expectations of success. No amount of process and organizational savvy will get a group of rural poor – in Africa or Asia – to accept a deal that does not make any economic sense to them (IWMI 2003). Important questions, concerning the viability of irrigated agriculture, must be addressed in conjunction with a change of management in irrigation.

The conclusion is that capacity assessment, in the context of the African and Indian sub-continent, must be based on a broader conceptual framework, based on a deep appreciation of the prevailing irrigated farming systems. The conceptual framework must take into account the capacity for improved market integration, linkages with commercial institutions, access to credit, as well as improved on-farm water management practices.

INITIATING THE PROCESS

Before governments consider engaging in the process of capacity needs assessment there are a number of fundamental questions that need to be addressed and clarified. These include:

1. Is capacity a binding constraint to the development of the irrigation sector?
2. Does the sector have an irrigation strategy?
3. Who drives the process (external versus self-assessment)?
4. Is high-level commitment assured?

Is capacity a binding constraint to the development of the irrigation sector?

This first, and probably most important, question concerns capacity as a binding constraint to the development of the sector. Is it binding, or are there constraints, other than capacity, that are as important or even more important to be addressed? Examples include access to markets, credit or affordable irrigation technology, etc. It is assumed that capacity assessment will not begin unless the need for it has been identified and subsequently been expressed. Ideally, such an expression of the need to initiate a capacity assessment process should be articulated by the irrigated farming community – the ultimate stakeholders. It should be supported through the strongest political commitment possible, reaching from the highest central levels to regional and district levels (GTZ 2003).
**Does the sector have an irrigation strategy?**

The second question concerns the importance of irrigated agriculture in the context of the overall development of the country’s irrigated sector, particularly in rural areas. Has government established an irrigation sector strategy that outlines the sector’s long-term goals, defines clear objectives as to how the sector and its segments are to develop? Is the strategy well integrated into a country’s water and agricultural sector policy and strategy? Such questions are of particular importance as many countries are now moving forward with the reform of the water sector taking an integrated water resource management approach. Donor-funded water sector reform initiatives are underway, which attract substantial funds. The irrigated sector, as the principal water user, is clearly a stakeholder in such initiatives and capacity assessment in irrigation must be streamlined with the broader planning in the water and agricultural sectors.

**Who drives the process (external versus self-assessment)?**

Over many years, development agencies took the lead in the development of investment projects including capacity development components. Thereby critical steps such as the identification, formulation and design of projects were executed and driven by external experts, mostly consultants, assisted by national experts. The role and the involvement of developing countries were passive and largely reduced to that of recipients. Important opportunities for capacity development in project planning and management were wasted, since the process of preparing development projects or programme forms an important capacity development tool (Schacter 2000).

Increasingly donors move away from the concept of external capacity needs assessment towards the concept of self-assessment of capacity needs. The Global Environment Facility produced a guide for self-assessment of country capacity needs in global environmental management (GEF 2001a), in collaboration with multi-lateral donors including United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), the World Bank and FAO. In this guide, the national self-assessment process is intended to be entirely country-driven, undertaken in accordance with country priorities and situations. Countries are given the option to use any approach they feel will enable them to accomplish the goals and objectives for undertaking their national self-assessment.

The National Global Environment Facility (GEF) Focal Point plays an important role in the initiation and facilitation of the self-assessment process. Focal points arrange meetings with high-level committees and with other national coordinating bodies to conduct preliminary discussions. Other actors may include high-ranking ministry policy decision-makers and representatives of key non-governmental organizations. The purpose of the initial self-assessment is to identify key capacity constraints, which can be used to determine interventions and activities to overcome these constraints (see Figure 2.1).

![Figure 2.1](source: GEF (2001))

Assuming a government decides to give preference to a country-driven process, an important step would be to decide how the process can be successfully steered, effectively coordinated and efficiently administered, possibly with the assistance of an international facilitating body.

Usually, the options include the setting up of a steering committee of high-ranking ministry and stakeholder representatives, a coordinating (apex) body, which can be established inside the leading
ministry and with a clear mandate to drive the process, maintain the flow of information and communication with stakeholders. In addition, there is a need for a facilitating stakeholder platform for stakeholders to express and articulate their interests and views precisely and without pressure. Preferably, such a platform would be established outside the ministerial structure in order to keep the balance of power between the disadvantaged and advantaged stakeholders. To drive the process successfully, a team of qualified individuals should be nominated, who are capable of organizing and coordinating the process effectively and efficiently.

**Is high-level commitment assured?**
Capacity assessment is not a static exercise. It involves a continuous process, which requires commitment to and ‘ownership of change’ on the part of high-ranking government officials, decision-makers and stakeholders as well as staying power and patience on the part of the actors. Commitment and ownership among senior management are regarded as essential, which can only be achieved if they are deeply involved and convinced that change is the ultimate alternative to stagnation. Moreover, commitment to change is a political statement that relies on the awareness, the active participation and the motivation of all stakeholders concerned.

**Designing the process**
Once fundamental questions are clear, and the capacity assessment process is initiated, important strategic decisions relate to the design of the process. This involves a number of critical decisions concerning clarity over the principles of stakeholder participation and involvement, and agreement on the objectives, a timeframe, proposed activities and mechanisms and finally the allocated budget.

**STAKEHOLDER IDENTIFICATION**

There is a practical reason for promoting stakeholder participation in the process: to make more effective and efficient use of available and often limited resources. If stakeholders from the public, private sector, NGOs and civil society are involved, and adequately coordinated, it is likely that complementary qualities and synergies in experiences can be captured that otherwise may be overlooked (Dietvorst 2001).

Despite considerable stress on the involvement of non-governmental and private organizations in the process of capacity assessment, there appears to be little evidence that this is actually practiced, at least not in agricultural sector reform efforts (Dietvorts 2001). Even where irrigation management responsibilities were transferred to water user organizations, government bodies appear to remain the principal beneficiary of capacity investments (OED 1999). However, NGOs do offer important services to both formal and informal smallholder water management systems. If strengthened and integrated into an overall strategy, their impact on systems performance and food security could probably be enhanced and expanded to other areas. In addition, capacity in participatory irrigation project development and support, used by NGOs, could possibly be adopted as a model for more formalized extension and support services. As a consequence, NGOs and the private sector must be given due attention for capacity assessment in order to exploit best practices and approaches and identify their capacity needs more clearly.

### Table 2.1

<table>
<thead>
<tr>
<th>Categories of stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>By level</td>
</tr>
<tr>
<td>By status</td>
</tr>
<tr>
<td>By location</td>
</tr>
<tr>
<td>By function</td>
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</tbody>
</table>

Sources: adapted from Dietvorts (2001)

The list of possible stakeholder and partners for capacity assessment in irrigation may differ from country to country depending on sector organization and structure and on the administrative and institutional landscape. The overriding principle of participation implies that all stakeholders, who
wish to be involved, get a fair chance to do so. However, too often a narrow sector view on irrigation results in little recognition of the fact that irrigation is part of a broader water resource management system. As many countries are now moving towards the concept of integrated water resource management, other water sector stakeholders must be included in the process.

In order to identify the stakeholders in irrigation it is useful to categorize stakeholders according to broad criteria and use these denominators to narrow the list of potential candidates involved in the process (see Annex 2.1). The assumption is either their interests and positions are affected by poor performance of an organization, e.g. irrigation services or that the organization, individual or institution itself are in need of improved capacity. It is important to understand how irrigation systems are managed in which domain decisions are taken that can affect, or be affected, by stakeholders. Within the framework of irrigation, three broad areas may be identified (see Figure 2.2):

1. Water resource management domain, which may include the basin, sub-basins, command areas, farms, fields and even crops;
2. Political administrative domain from the national to the local level;
3. International domain, which cuts across the previously mentioned domains.

Within each domain stakeholders can be identified and their interests in and needs for capacity assessed. The following examples may illustrate the significance of this categorization. At the national level, capacity is needed to prepare amendments for water laws, to establish policies on water tariffs and cost recovery mechanisms or to register water user associations. At the basin level, capacity is required to make water allocation decisions, or to impose restrictions on irrigation development within the basin. Similarly, the responsibility to administer irrigation schemes is usually vested at provincial levels and, therefore, officers need capacity to fulfil this function.

Within the domain of command areas, farmers need the capacity to make cropping and irrigation scheduling decisions, scheme operators need the capacity to provide water services and water user associations need management capacity in technical and financial matters. The distinction between administrative and water management domains is significant where boundaries of provinces or districts and command area do not match and an irrigation system falls under the responsibility of two or more administrative areas.

Almost all countries that share rivers with riparian neighbours are involved to some extent in regional cooperation and international initiatives on shared water resources. A country’s capacity in irrigation planning and management is likely to be affected by such cooperation through the formulation of standards and directives. Effective cooperation may require in-country capacity in order to fulfil such requirements. Because of its crosscutting nature, all levels of the administrative and water management domains may be affected.

Other important stakeholders belonging to the international domain include unilateral and multilateral donors and international NGOs. Their interest in capacity development is justified through their desire to eliminate risks associated with the poor performance of irrigation projects. The analysis must further include the global environment that increasingly impinges on the capacity of a country from national to local level. An example is the way the Internet has created opportunities for information exchange; it also divides those with, from those without access (Brown 2002).
Identification of stakeholders does not necessarily imply that all stakeholders are subject to rigorous assessment of current and future capacity needs. Probably, it will be necessary to limit the number involved to stakeholders from key domains including governmental, non-governmental organizations and the private sector. In a preliminary assessment, stakeholders may be categorized according to their possible future role in the process.

A preliminary stakeholder assessment grid is given in Figure 2.3. Accordingly, group A includes all those stakeholders who wish to be fully involved in the process and who will determine the creditability of the exercise. Possible candidates would include ministerial departments for irrigation and water, water user associations, water districts, extension services, NGOs, public-private partnerships, etc. Group B could include those who are likely to play a more passive and limited role such as commercial farmers, private firms. Those who are interested but wish to be kept informed are captured in Group C. All who do not wish to be involved are listed in group C.
OPTIONS FOR EFFECTIVE STAKEHOLDER INVOLVEMENT

An important design decision concerns the stakeholders’ future mode of involvement in the capacity assessment process. Options for stakeholder involvement can be categorized into three types (adapted from GEF 2001a):

1. **Advisory bodies**: Short-term body of national and international experts with a mandate to gather expert opinions on thematic issues. Such bodies may be composed of scientific boards and expert panels. The advantage of advisory bodies is the provision of informed views and recommendation on specific issues of mutual interest.

2. **Stakeholder inquiries**: Stakeholder inquiries intend to collect basic information on the institutional and organizational mandates, functions, performance and impact. Available tools include surveys, panel discussions and workshops. Stakeholder inquiries offer the opportunity to interact closely with the participants and address specific issues and concerns.

3. **Stakeholder forums**: This is a platform for a various group of stakeholders to engage in a facilitated consultation process, which permits open discussion and exchange of opinions, issues and concerns. The advantage of stakeholder consultation through such a forum is that it is arranged outside the usual ministerial bureaucracy. It may also offer a more conducive atmosphere for those stakeholders who are less confident and who feel intimidated by the presence of government representatives on the panel, even when the latter are in a minority. Nonetheless, the success of public consultation platforms certainly depends on the quality of the facilitator who must be independent, communicative and articulate.

IDENTIFYING PRIORITY ISSUES

An important step in the process of capacity needs assessment is to identify key capacity issues that need immediate attention and inclusion. Depending on the composition, structure and ability of stakeholders to articulate their perception of issues and problems, the list may be imprecisely formulated and long. However, being precise in the analysis of a problem is probably the most important step towards identifying priority issues.

The GEF guides for self-assessment of country capacity needs (GEF 2001) suggest a practical tool for the preliminary prioritization of issues. In an issue prioritization matrix, the identified and precisely formulated problems are listed and ranked against four criteria: the scale of the problem (local, provincial, national, international) its level of concern (low, medium high), the ability to adequately address the issue (low, medium and high) and finally priority ranking (one to five with one being most severe). For each priority issue, a focal problem needs to be identified and its root causes understood. Another step in the analysis is to clarify the effects and impact value systems have on the stakeholder.

IDENTIFYING CAPACITY GAPS

There seems to be some confusion concerning the assessment of existing and future capacity needs. The proposed approach takes the existing capacity at the level of individuals, organizations and the enabling environment as a reference (situation A) and compares it with future needs at the respective levels (situation B). The gap between the two situations A and B determines the capacity needs. However, the step from A to B poses a serious conceptual and methodological challenge and problem, especially in a multi-stakeholder and multi service-provider context.

The significance can best be described with an example: The identified issue shall be that smallholders in rural areas wish to adopt irrigation technology, but have no access to irrigation advisory and extension services. The causes of the problem may be identified as ‘absence of official field staff, their restricted mobility and funding’. Another cause may be the inability of NGOs to expand to remote areas and to involve farmers there in their development approach. By applying the proposed approach, we would begin by assessing the existing capacity of each stakeholder. They would first be separately assessed and thereby their current constraints and limitations identified.
This would involve a number of questions concerning the organization’s mandate and its current performance in terms of effectiveness and efficiency. The next step would then involve the assessment of the future situation of each organization. We would ask what the future mandate and vision shall be and what capacity is required to meet the future challenge. The comparison between the existing and future situation would then determine the capacity gaps in terms of resources and skills needed. Eventually, we would probably realize that no attention has been given to the needs of the farming community, the ultimate beneficiary or client.

However, the clients’ needs determine the spectrum of services required to make smallholders’ irrigation a viable enterprise. Equally important, it is assumed that service providers can offer the same range of services at comparable quality, which may not be the case. As a result, we may risk overestimating the capacity needs of each service provider and overlook synergies and comparative advantages.

Common sense suggests a different approach: To identify the needs of the clients, i.e. the irrigation farming community or the scheme operators first. Then assess the capacity of the identified service providers and their ability to meet the needs based on their assessed comparative advantages and capacity constraints. Once the services, rules and regulations needed are clarified, from the clients’ perspective, the assessment of the service providers becomes more focused. Taking a multi-stakeholder perspective, it is no more the difference between an organization and individual’s existing and future circumstances. Rather, a capacity gap is defined as the difference between the existing and future demand for a variety of services of multiple irrigation clients and the difference between the existing and future supply capacity of all service providers. The difference between existing capacity and futures capacity needs is referred to as the ‘incremental capacity’ and ‘incremental service needs’ respectively. Both are related to each other and determine the capacity gap (see Figure 2.4).

In the context of a multi-cultural society, it is appropriate to begin the capacity assessment with the local and indigenous knowledge of an organization and its members and enhance its understanding and appreciation. The concept of developing existing capacity rather than importing it is
conventionally known as ‘organic capacity development’. It is based on sharing knowledge and coaching (Lopes and Theisohn 2003).

**CAPACITY OPPORTUNITIES INFLUENCE NEEDS**

Assessment of the future situation becomes more complicated when considering that the future performance of an organization and/or individual is partly influenced by the external environment (see Figure 2.6). Exposure to the outside world can create opportunities for the organization to enhance its capacity to take an opportunity onboard. For example, it is now well established that with the arrival of the Internet, organizations involved in irrigation research and extension have the opportunity to access relevant information and to communicate more easily with networks of experts and colleagues.

Makin et al. (2003) rightly point out that developing advanced tools, such as remote sensing data and tools and geographic information systems (GIS), and the capability to apply them in the management of water resources will offer new opportunities to resource managers. Thus, they become more responsive to the needs and aspirations of the user communities they service. The adoption of the information tools is challenging conventional notions of how government and non-governmental agencies should work and relate to each other.

**UNDERSTANDING CAPACITY NEEDS OF COMPLEX WATER SERVICE SYSTEMS**

Larger irrigation and drainage systems are complex socio-technical water service systems with a full array of different stakeholders, institutions and players. Ideally, the purpose of service provision is to meet the water service needs of the irrigated crop production system and keep the farmers – the ultimate clients – happy. To do so, service providers need to have the capacity to provide the services as demanded and to the client’s satisfaction.

Huppert et al. (2003) suggest that key services, roles or functions directly involved in irrigation management service provision could be categorized into primary, secondary and other services.

1. Primary services include the provision of the hydraulic infrastructure, the water delivery service (water capture, water conveyance, water distribution, water allocation etc.).

2. Secondary services comprise those that are integral to the primary services such as operation and maintenance), supporting services (information provision, coordination, representation, etc.).

3. Other services include the arrangement for primary, secondary and supporting services (i.e. to select providers, to define terms of reference, conclude agreements or contracts, monitor provisions etc.).

Relations between service providers and clients are not always clear. Many players and actors are involved who make transactions without formal recognition of their importance in the overall performance of the irrigation system. Huppert et al. (2001) provide a comprehensive set of tools for analysing the service relations in the provision of maintenance services in irrigation and drainage. An example for a visualized analysis of the institutional arrangements for service provision is given in Figure 2.5.

According to their conceptual framework, the provision of any irrigation service involves interactions between service providers, service recipients, service payers, government policy-makers and regulators. Typical irrigation services include adjusting gates, measuring and distributing water, or maintaining canals and hydraulic facilities. In return, water users (clients) make compensations in the form of cash payments and in-kind transfers. The capacity of the service provider to fulfil the client’s needs depends on their ability to interact with the client effectively and to respond to the needs in a professional, flexible and reliable manner.

Briefly, the assessment of capacity needs of service organizations in irrigation must devote special attention to both the ‘provider system’ as a conglomerate of many players and to the ‘client system’, which is heterogeneous and divers. The capacity to communicate effectively plays an important role in order to make irrigation service provision a success.
CLARITY OF PURPOSE AND IMPACT (LOGICAL FRAMEWORK CONDITION)

A critical design condition for the design of capacity needs assessment in agricultural water management is the need for a logical framework. Only if an identified lack of capacity can be clearly linked to a well-defined purpose such as a strategic sector goal, an objective or a development target, can the full support of stakeholders and donors be assumed. For example, if the capacity development objective for a comprehensive capacity assessment of the official irrigation service system is to improve the quality of service provision, the purpose should be improved client satisfaction and eventually improved productivity of water use. A positive impact of improved capacity in irrigation service provision on client satisfaction and increased water productivity must be supported by a logical framework approach in which needs are linked to a possible increase in suitable performance indicators.

Clarity of impact is a concept that requires the anticipation of possible changes that the improved capacity would have on the performance of individuals, organizations and on society. This is to be linked to the economic, social and environmental changes of individuals and organizations. Indicators are required at all levels to be able to quantify and demonstrate that the identified capacity gap is the root cause for the poor performance at the level of the ultimate beneficiaries (target group level). They are the ones who are intended to benefit from the improved performance, resources and framework conditions (GTZ 2003).

A worked example of a logical framework is given by the International Fund for Agricultural Development (IFAD) in which specific needs of capacity development are taken into account. It is explained that capacity intervention require a different set of performance questions, target indicators and monitoring mechanisms as compared to infrastructure development projects (see www.IFAD.org).

MANAGING THE PROCESS

Coping with the geographical magnitude?

When looking at the geographical map of many countries in Africa and elsewhere, it becomes apparent that actually irrigated and potentially irrigable areas are scattered over vast land areas, with long distances between and insufficient infrastructure in place. Obviously, not all areas can be
included in capacity assessment and development programmes. A full coverage of remote areas would simply reach beyond the scope and resources available for capacity assessment initiatives. It is therefore obligatory to match the scope of the assessment with available time, qualified staff and funds. A restriction of areas implies that to establish and agree on criteria that exclude certain areas and domains from the exercise, the following options may be taken into consideration: high potential versus low potential areas, isolated versus well connected areas.

By restricting the area covered by the capacity assessment there is a substantial risk that the important role of irrigation and agricultural extension field staff in the development of rural areas may be overlooked. Capacity assessment of field staff may be crucial where mobilizing and facilitation of communities is crucial for the successful adoption of grassroots programmes such as farmer field schools.

DEALING WITH INSUFFICIENT MOTIVATION AND INCENTIVES

It is now widely recognized that insufficient payment of civil servants and insufficient funding for operations and service provision are the most significant constraints to high performance and job satisfaction. Very often highly skilled and educated individuals in the public sector find themselves trapped in a system that barely pays for subsistence needs. Funds for operations and day-to-day works have dried up and there is often little hope for a change for the better. As a result, the time at work is used for non-professional business, or it is used unproductively.

Donors tend to offer incentives in the form of salary supplements and travel allowances, which may result in a drain of the qualified ministry personnel, create inequity in pay, jealousy and may further reduce the motivation of those who are left behind.

Figure 2.6
Relationship between an organization’s environment, motivation, capacity and performance

The implication of a loss of motivation has a direct influence on the performance of an organization. The latter is determined by its internal capacity in conjunction with its internal motivation. Performance is also determined by external factors such as the legal, social and economic context. According to Horton (2002), organizational capacity refers to the staff complement or human resource capital, as well as to its structure, management system and linkages with other organizations. Organizational motivation refers to the organizational cultures and incentives that influence the use of
capacities in pursuit of the organization’s goals. The principal relations between performance, internal capacity and motivation and external effects of and on the environment are given in Figure 2.6, above.

The implication for capacity assessment is that it must not overlook the importance of the organization’s motivation and incentive system for effective and efficient job fulfillment of its members. In a comprehensive assessment, the human development system must be made subject to a rigorous review and reform. Otherwise, it cannot be assumed that identified capacity needs are the root cause of bad performance. Lopes and Theisohn (2003) suggest there is need for a locally led, harmonized reform of the way public incentives are structured and integrated into the national budget.

An example for identified incentive deficiencies in irrigation and drainage maintenance service provision adopted from Huppert et al. (2003) shows they play an important role in the way irrigation and drainage system maintenance is performed (see Annex 2.2). The deficiencies cut across the entire spectrum of stakeholder from senior irrigation officials, who regard benefits of maintenance as too little, to water users who see maintenance as a responsibility of the owner of the property, which, in this case, is the government.

MANAGING RESISTANCE AGAINST CHANGE

Resistance to change is widely recognized as a sector-crosscutting problem in the domain of development and, in particular, in capacity development. Within complex organizations such as ministries and irrigation agencies, individuals and lobby groups can always be found that actively oppose change and pursue a hidden agenda. Such behaviour is human and as such recognized as intangible.

Vested interest and power differentials may have the greatest influence on the progress made in capacity development. Lopes and Theisohn (2003) note that the mindset and the personalities, informed by language and culture; dictate the course of communication and collaboration. They create virtual realities that influence how people, institutions and societies behave. In addition, they indicate that any intervention involving a transfer of resources is potentially subject to numerous influences and corruption. The strategies to manage resistance proposed by DFID (2003) entail a number of measures at different levels. Grouped into three categories, each requires different activities: ‘unwilling’ (activities will include negotiation, persuasion, introduction of positive and negative sanctions); ‘unable’ (this will require training, skills transfer, support and coaching); and ‘unknowing’ (activities will focus on communication and involvement).

Moreover, probably one of the most important strategies in capacity needs assessment is attaining transparency of the process and accountability of the actors involved. Transparency implies clarity of the process at each step taken, close communication with all stakeholders and effective facilitation of the process. The DFID resource book Tools for Development (DFID 2002) defines effective facilitation as a broad range of knowledge, attitudes and skills in working with diverse groups in development settings. These skills provide the basis for more effective interventions to strengthen each stage of the activity cycle. Good facilitation work builds ownership and commitment to results and increases the likelihood that activities will respond to participants’ actual needs. A good communications plan should consider the audience, message, media, frequency, goals, responsibility, feedback mechanisms and measures of communication effectiveness.

CONCLUSIONS

Right from the beginning, a lack of capacity must be identified as a binding constraint to the development of productive and viable irrigated systems in a country. Capacity assessment must be linked to the overall goal of the sector and serve the purpose of the ultimate beneficiaries – the irrigation community.

The initiation of capacity assessment initiatives is the responsibility of a country’s high-ranking political representatives and decision-makers. A clear direction is required whether the process should be externally or fully country-driven and executed. Self-assessment, as recommended by the Global Environment Facility, is a promising option for the irrigation sector as it can add a sense of ownership, confidence and planning capacity to a country. The self-assessment process must, however, be facilitated by experienced and independent international and national bodies. This is where IPTRID can play an important role. Key to the success of a capacity needs assessment is an effective mode of stakeholder identification categorized by level, domain, status, location and function. Administrative,
water management and international domains are of particular importance in order to take account of the complexity and diversity of stakeholders and their needs.

A preliminary assessment of the stakeholders’ positions, their possible inclusion and role in the process should lead to a down-sized and well-balanced shortlist of key stakeholders from governmental, non-government and private organizations. Key issues should be clearly identified and their impact understood and formulated as precisely as possible, before the future role of each key stakeholder is determined. In order to identify meaningful capacity gaps in a multi-stakeholder context, the concept of capacity gap analysis needs to be expanded taking a service-oriented perspective and linking it to the specific needs of the irrigated farming community as the ultimate beneficiary of capacity development. The incremental capacity needs of multiple service providers are to be assessed against the incremental service needs of the clients.

The concept of ‘organic’ capacity development implies that the assessment of existing capacity must include traditional and existing knowledge in irrigation and water management. Future capacity needs of irrigation organizations are to be viewed in the light of their comparative advantage, effectiveness and efficiency in service provision. Opportunities for capacity such as modern information technology and networking should be taken into account. Altogether, capacity needs must be balanced against the long-term sustainability and tangible short-term results.

Managing the assessment process involves being able to cope with a number of risks, constraints and resistance to change at all levels. It requires transparency and actors who are accountable to their clients. Managing resistance requires a number of important qualities and strengths on the part of actors, which include good insight into the cultural and social context of organizations and individuals, coupled with the ability to anticipate the ‘unwilling’, ‘unable’ and ‘unknowing’. The required qualities of actors in capacity assessment include a strong profile in facilitation, excellent communication skills and finesse in order to assure and sustain the full support of all involved.

REFERENCES


### Annex 2.1

**List of possible stakeholders involved in capacity assessment in agricultural water management**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Individuals</th>
<th>Organizations</th>
<th>Institutions and policies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Administrative</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>Policy-makers, researchers, water scientists, ministers</td>
<td>Ministries public/private utilities, universities, colleges, NGOs</td>
<td>Water and land legislations, irrigation policies, water tariffs</td>
</tr>
<tr>
<td>Province/district</td>
<td>Subject matter specialists, extension workers, administrators, water bureaucrats</td>
<td>Agricultural and irrigation research stations, demonstration farms, private firms, public/private partnerships, NGOs</td>
<td>Irrigation master plans</td>
</tr>
<tr>
<td>Community</td>
<td>Development agents, community leaders, vulnerable minority groups and poor people</td>
<td>Village councils, farmers organizations</td>
<td>Development programmes, water supply systems, development projects</td>
</tr>
<tr>
<td><strong>Water management</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basin</td>
<td>Executive members of WUAs, and basin authorities and irrigation districts</td>
<td>Basin authorities, water user federations, irrigation districts</td>
<td>Water allocation policy, distributions rules</td>
</tr>
<tr>
<td>Command area (formal and informal)</td>
<td>Scheme managers, system operators, technicians; service providers</td>
<td>Agencies, water user associations, farmers cooperatives, service providers</td>
<td>Extension workers; members of water committees</td>
</tr>
<tr>
<td>Farm/field</td>
<td>Farmers including women and other household members</td>
<td>Farm households, village groups, saving groups</td>
<td>Training facilities, farmers field schools</td>
</tr>
</tbody>
</table>
### Incentive deficiencies in irrigation and drainage maintenance service provision

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Incentive deficiency</th>
</tr>
</thead>
</table>
| Senior irrigation officials        | Low political benefits, high opportunity costs  
                                     | Low, delayed visibility of benefits of maintenance  
                                     | Low budget priority  
                                     | Rehabilitation projects create political support |
| Irrigation management agency       | Budget allocations unrelated to fee collection rates  
                                     | Total control over O&M* funds requires less accountability to users than cost-sharing arrangements  
                                     | Accountability to internal hierarchy, not water users |
| Operational staff of irrigation agency | Maintenance lacks professional appeal  
                                     | Deterioration is rewarded by rehabilitation projects  
                                     | Accountability to internal hierarchy, not water users |
| Water users                        | Irrigation infrastructure seen as government property and responsibility of government to maintain  
                                     | No relation between payment of water fees and quantity or quality of maintenance  
                                     | No clear water rights  
                                     | Not involved in priority setting for maintenance works |
| Donors                             | Difficulty monitoring use of resources for maintenance  
                                     | Difficulty monitoring benefits of effective maintenance  
                                     | Pressures to perpetuate financing of capital intensive projects, such as rehabilitation, modernization and expansion |

Source: Huppert et al., 2003

* Operation and maintenance
3. Institutional mapping to assess capacity needs for the development of water boards at district level in Egypt

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ABSTRACT
The purpose of this paper is to provide a background description of the policy of the Ministry of Water Resources and Irrigation (MWRI) to increase water user participation in water management at different levels. This means that several pilot activities to increase farmers’ participation are ongoing at all levels of the irrigation and drainage systems. Farmers’ participation at the tertiary level (Mesqa), branch canal drains (water boards) and districts (district water boards) is considered in the implementation of several projects and programmes.

Regarding the remaining policy goals, since 1995 experiments have been carried out under different projects that promote farmer’s participation at the secondary level through the establishment of water boards and branch canal water user associations.

Based on initial experiments carried out under various projects, since 1999, the water boards project has studied the possibility of participatory water management at the secondary level in support of the formulation of new laws and amendments to existing legislation. These experiments all encountered serious legal limitations in making these organizations functional as desired. Nevertheless, it is considered national policy that they be applied nationwide.

Water boards were successfully established at the branch canal level, canal water boards (CWBs), which represent the different conditions in the Egyptian irrigation system from Upper Egypt to the Delta area. The water boards project as a result perceives the establishment of district water boards as a necessary and immediate next step towards participatory water management in Egypt at the district level (see Annex 3.1). If set-up correctly, the district water boards could well fill the identified gaps found during institutional mapping and the related stakeholder consultations analysis, which recently has been carried out by the water boards project.

INTRODUCTION
The Ministry of Water Resources and Irrigation is the governmental agency in Egypt that is responsible for water resources management. As such, it is mandated to plan, construct, operate, manage and maintain irrigation and drainage networks. The MWRI distributes irrigation water to Egypt’s ‘old lands’ by diverting water at various points from the Nile River to main canals, which in turn feed a complex network below ground surrounding farms. Here farmers are required to lift water (using pumping devices) from the watercourse supplying their farms.

Increasing population growth, a desire for agricultural expansion and higher demand for potable water, together with Egypt’s fixed water share from the discharge of the River Nile, warrants the need for improved water management.

Over the years, various activities and tasks were added to the existing activities of the Ministry of Water Resources and Irrigation to improve water management. For example, the Drainage Authority started as a project. Irrigation improvement evolved from a project to a sector within the Irrigation Department, then a Central Department for Telemetry was established for remote collection and processing of data from water levels throughout the irrigation and drainage networks. Not all new tasks and functions added were brought into line with those that were already in existence. Currently, some tasks and responsibilities within the MWRI are overlapping or contradicting. Hence, the notion of ‘who is doing what’ is difficult to understand.
To ensure the most effective management of water resources, the MWRI has adopted a policy to increase the participation of water users in water management and operation and maintenance of the irrigation and drainage systems.

The success of water user participation depends on establishing the appropriate institutional structure, clarifying relations with existing authorities and other user organizations and issuing the necessary legal regulations. MWRI realized the importance of adopting the privatization process in water management, where several initiatives were implemented to pave the way for this approach.

The concept of improving water management through (increased) user participation is considered a major step forward. At the tertiary and (branch) canal level, user participation is currently being implemented through CWBs. A comprehensive picture is needed of the actual situation of water resources management in order to develop a structure for user participation at a higher level.

To introduce the concept of district water boards, the water board project (WBP) entered a new phase. Briefly, the institutional piloting of district water boards, in the initial phase includes the following activities/tasks:

- inventory and analysis of the institutional set-up and legal provisions;
- stakeholder consultations at the ministry level;
- stakeholder consultations in the selected pilot areas; the districts Abu-Homens and Bustan in the governorate of Beheira; and
- design a structure for the district water board.

Therefore, the project has, as a first step, embarked on an institutional mapping of the water resources and irrigation sector in Egypt. This is to provide an overall view of the functioning and relationships of institutions (ministerial and other public institutions) and non-government organizations (WUAs and CWBs) in order to know ‘who is doing what’ in the water resources and irrigation sector.

Institutional mapping was carried out mainly to establish the appropriate structure for the district water boards and to review the efforts of MWRI towards development of user participation in water management.

DEVELOPMENT OF WATER USER INSTITUTIONS IN EGYPT

Traditional forms of user participation

Given the long history of irrigated agriculture in Egypt, the different methods of farmer participation provide a good background for formal private water user associations.

Traditional modes of participation include the munawaba and mtarafs system, the saqia ring for collective pumping of water, the concept of Haq ul Arab and the important fact that for many years the mesqa, or micro delivery system is a farmer’s private property by law.

Water use and management project (Egypt Water Use Project (WUP) 1977–1984)

In 1981 the MWRI initiated the irrigation management systems project (IMS), which was amended in 1984. The recommendations of that project relate to farmers’ participation in irrigation management and state that farmers should be:

- involved in improvements to the water delivery system;
- should play a role in ensuring more efficient operations, improved maintenance and protection of physical works; and
- become involved in water management.

The recommendations also state that there is a need for a special well-trained cadre of the Irrigation Advisory Service (IAS) professionals to generate new farmer responsibilities related to water delivery, water use and to organize farmers to train others in these skills. In addition, continued farmer involvement is essential to ensure improved operations, water scheduling, mesqa improvements and renovations of branch canals.
Irrigation Improvement Project

In Egypt, the Irrigation Improvement Project (IIP) was another landmark in water participation. Under the IIP, 6,000 water user associations have been established. These serve as an excellent example of the effect of user involvement and cooperation in system management. The concept of stakeholder involvement in decision-making is emphasized during the various stages of planning and implementation. When the user is involved at an early stage, it is obvious that they will accept the proposed improvements and be able to operate and maintain them easily afterwards. Moreover, conflicts are automatically resolved between themselves because they share a common resource.

The main functions of water user associations can be summarized:

- participation in planning, design and construction of improved mesqas;
- operation, maintenance and follow-up of improved mesqas;
- improvement of water use activities on the mesqa level;
- identification of roles and responsibilities of the head of the mesqa and establishment of rules to resolve conflicts;
- establishment of linkages for coordination with other agriculture and irrigation concerned agencies and other water user associations;
- development of financial resources of the association in order to improve operation and maintenance; and
- participation with higher-level organizations of the branch canal and cooperation with the district engineer.

Irrigation Advisory Services

In order to achieve the user involvement objective, a department for water advisory services was established under the irrigation improvement sector. The main functions of this department are to:

- help farmers and irrigators through provision of information and illustration in setting up the association;
- help at all stages of planning, design, construction, operation and maintenance of the improved mesqa;
- help transfer the management of the mesqa to farmers and help them resolve conflicts and problems;
- provide farmers with new technologies such as laser-levelling of fields and new water distribution gates; and
- encourage farmers to develop better links with agricultural production agencies such as the agricultural extension service, the agricultural investment bank, agricultural cooperatives, irrigation and drainage districts, pump maintenance companies and local authorities.

Branch canal water boards

Since 1995 water user participation at the branch canal level has been developed through different projects and programmes. These have been included in the policy of the ministry, starting with two pilot branch canal water boards. In Fayoum governorate around 200 water boards had been established by 2004.

The water boards project was formulated to develop an approach that would be generally valid throughout the diverse irrigation and drainage systems in Egypt. The project capitalized on existing experience both in Egypt and internationally to develop a structured and participatory step-by-step approach for the selection, planning, design, implementation, handing-over, guidance and monitoring of user controlled water management.

This approach has been tested in a few areas (ten pilots representing five governorates from Upper Egypt to the Delta region). The pilots represent a fair cross-section of water management conditions and types of organization. These will be promoted by regular feedback from policy-makers through to stakeholders’ consultation workshops, ‘look and learn’, field visits, training sessions and concise reporting to facilitate the formulation of a nationwide programme to decentralize water management in Egypt. The first element of the process of preparing a national policy on water management is the
development of a sustainable approach for the establishment of water boards at the branch canal level, which includes:

- development of participatory water management (PWM) process;
- development and testing of legislation; and
- establishment of water boards in selected pilot areas.

This approach will take into account:

- socio-economic issues;
- gender perspective; and
- environmental issues.

The above will be supported by the following activities to encourage public support:

- development of a training strategy for the MWRI staff and water boards committees;
- development of a strategy for monitoring the establishment of water boards; and
- development of a strategy for monitoring the functioning of water boards.

Through the Water Board Project, Government staff and staff of collaborating projects will increase their skills in guiding and monitoring the establishment of users’ organizations on an expanded scale. In addition, users will be empowered and trained to take on management responsibilities and monitor performances.

The project developed a step-by-step methodology to facilitate the establishment of a sustainable water board at the branch level. However, these steps are only in the pilot phase and were developed by the Central Department of Irrigation Advisory Service (CDIAS) for application during the establishment of branch canal water boards.

FIGURE 3.1

Step-by-step methodology for the establishment of water boards

A water board is an organization comprised of, and led by, the users of irrigation and drainage water (farmers, residents and others) in a defined command area that works for the benefit of the users. The water board operates in close cooperation with the MWRI and other institutions to represent the interests of the water users within its area. To do this effectively, the water board is mandated by the MWRI to perform major water management functions and is based on a structure that ensures comprehensive representation of the water users in its command area.

The water boards are mandated by Ministerial Decree No. 33/2001 to:

- manage irrigation and drainage functions and infrastructure at the branch level within the water board command area;
- represent all water users within the command area vis-à-vis outside parties;
- build up and maintain itself as a sustainable organization; and
- enhance participation and equity among its members.
INSTITUTIONAL MAPPING

Background
After success with the pilot water boards at the canal level, through various projects and programmes, the ministry decided that the immediate next step would be to develop the concept of district water boards.

In August 2003, in response to the assignment to introduce the concept of district water boards, the Water Boards Project (WBP) entered a new phase. Briefly, the institutional piloting of the district water boards, which, in the initial phase, included the following activities:

- inventory and analysis of the institutional establishment and legal provisions;
- stakeholder consultations at the ministry level;
- stakeholder consultations in the selected pilot areas; the districts Abu-Homos and Bustan in the Governorate of Beheira, and
- design of a structure for the district water board.

Because a comprehensive picture is lacking, of the functioning and relationships of institutions (ministerial and other public institutions) and non-government organizations (WUAs and CWBs), little insight exists with regard to the question ‘who is doing what’ in the water resources and irrigation sector. The project has, therefore, as a first step, embarked on an institutional mapping of the water resources and irrigation sector in Egypt.

Objectives
The immediate objectives of institutional mapping are to:

- gain insight into the activities, responsibilities, functions and relationships between all public institutions – where relevant, farmer’s organizations – currently playing a role in the management of Egypt’s water resources and irrigation sector;
- identify overlaps, gaps or voids with regard to the activities, responsibilities and functions of the public institutions – where relevant, farmer’s organizations – in the management of Egypt’s water resources and irrigation sector at the relevant administrative levels; and
- derive ideas or concepts on how to fill the gaps to arrive at an improved management of the sector especially at those levels where participatory water management could lead to:
  - building of coalitions or partnerships between providers and users;
  - enhanced awareness of (future) water scarcity and water quality; and
  - improved efficiency in water allocation and water use.

Approach
To provide an insight into the allocations and distribution of the tasks and responsibilities, along with actual performance in the execution of tasks and responsibilities at the various administrative levels in the water management sector, an institutional map was drawn to provide a complete overview of all relevant institutions involved in water management in Egypt. The mapping identified all relevant institutions involved and described their formal mandate and actual performance. For this purpose the tasks and responsibilities were identified in the fields of policy-making, planning and implementation. These were broken down into expansion, water distribution and operation, rehabilitation, water allocation, maintenance, water quality, standard setting and enforcement.

The mapping exercise concentrated on irrigation, drainage, groundwater, water quality, agriculture and user participation (Branch canal water board, water user associations). An assessment of the strengths and weaknesses were carried out to indicate possible improvements.

The result of the institutional mapping is a clear and structured overview of the institutions, mandates and actual performance at the relevant administrative levels and will reveal strengths and weaknesses in actual (integrated) water management in Egypt. The results presented in a structured database indicate tasks and responsibilities per institution at the relevant administrative levels and revealed strengths and weaknesses (illustrated by graphs). Schematically the work approach used is portrayed in Figure 3.2:
Methodology
The methodology applied for the institutional mapping of water management in Egypt comprises a number of logical steps:

1. Identification of all ministerial and public institutions involved, including farmers’ organizations. This required obtaining and reviewing all ministerial decrees related to the establishment of farmers’ organizations at the different levels.

2. An identification of main fields of activities (irrigation, drainage, groundwater and water quality management) was achieved through complete scanning of all institutions belonging to MWRI and drawing the up-to-date organizational structure of every institution.

3. An identification and classification of 18 functions performed (e.g. policy-making, planning, water allocation, expansion, rehabilitation, communication, participation, etc. (Figure 3.3).
## FUNCTIONS, ACTIVITIES AND LEVEL OF ADMINISTRATION

The functions and relationships obtained are recorded based on four main fields of activities and the 18 identified functions. The important subjects of agriculture and water user participation were also included.

For each main field of activity, the involved institutions and their functions are ordered and displayed.

4. An identification of mandates (tasks and responsibilities and functions performed); job description sheets for all positions inside MWRI starting with recently recruited engineers up to Under-secretary of State to Head of Sectors, Chairs of the Irrigation Department, M&E D, Egyptian Public Authority for Drainage Projects (EPADP) to identify the role of each person involved in water management so as to understand the responsibilities of the different institutions within and exterior to the Ministry.

5. A systematic analysis of the institutions involved their respective mandates and functions in combination with the levels of operation, e.g. levels of administration at which these tasks and responsibilities are carried out;

6. Graphics of institutions involved, tasks and responsibilities, functions performed and levels at which these functions are executed are displayed to provide a comprehensive overview of ‘who is doing what’ in water resources and irrigation management in Egypt (see Figure 3.5).

**Surveys to collect the required information for institutional mapping include:**

1. **Interviews**
A ‘checklist’ of questions and important points were developed before conducting the interviews to enable a structured gathering of information.
2. Studies
To complement the information obtained through the interviews, a desk study was carried out. However, the available written information was very limited. Some information was extracted from laws and documents collected from other projects executed within the Ministry of Water Resources and Irrigation.

3. Crosschecking of data
The data was entered in a database, designed in Microsoft Access. This made a structural recording and processing of the data possible (see Annex 3.2, Database form).

As data were collected during interviews crosschecking was essential with other sources. During this process it was found that the information obtained from the respondents did not always reflect the actual situation, or only expressed a personal view. For this reason, all information was checked against other interviews and any available written information (see Annex 3.3).

Domains of Irrigation Districts
In Egypt, many definitions of ‘District Level’ are used in water resources management. The boundaries and size of a ‘district’ differ between the departments within the Ministry. Irrigation districts, drainage districts, groundwater districts and mechanical and electrical districts vary greatly in command area and boundaries. Apart from this, the public administration district is totally different from each one within the MWRI. The districts may differ greatly in size and the boundaries may only partly coincide. The following Table in Figure 3.4, below compares the different districts. The district level agreed upon is the irrigation district.

FIGURE 3.4
Boundaries of districts drawn by water management projects

<table>
<thead>
<tr>
<th>Public Administration</th>
<th>Irrigation</th>
<th>Drainage</th>
<th>Groundwater</th>
<th>Mechanical &amp; Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>National</td>
<td>National</td>
<td>National</td>
<td>National</td>
</tr>
<tr>
<td>Governorate</td>
<td>General Directorate</td>
<td>General Directorate</td>
<td>General Directorate</td>
<td>General Directorate</td>
</tr>
<tr>
<td>District</td>
<td>Inspectorate</td>
<td>District</td>
<td>District</td>
<td>District</td>
</tr>
<tr>
<td>Local Unit</td>
<td>District</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hamlet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FINDINGS

- Communication (within the MWRI and between other ministries) is reactive and mostly for problem solving.
- Responsibilities and lines of command may differ from one geographical area to the next, within the main boundaries of definition.
- Informal contacts/powers seem to be predominating over formal.
- Influence of ‘projects’ is, or has been, significant for the administrative organization of various departments within the Ministry.
- Division of responsibilities is not always clear.
- The main functions in water resources and irrigation management (planning, coordination, expansion, rehabilitation, O&M and water allocation) are only being carried out by MWRI down to the Irrigation District level.
- The main functions in water resources and irrigation management are not undertaken by MWRI in an institutionalized manner from the district (public administration) level down to village level; and
- Crucial components/elements of participatory water resources and irrigation management, e.g. coordination, communication, data collection and dissemination, dispute resolution and research and training, are not undertaken in an institutionalized manner from the village level up to irrigation district level.

Institutional mapping can then be graphically displayed along the lines of main fields of activities, institutional responsibilities and functions performed at the various levels. Institutional maps have been drawn for all the predefined activities: Irrigation in old lands; irrigation in reclaimed lands; drainage in old lands; drainage in reclaimed lands; groundwater in old lands; groundwater in reclaimed lands; water quality and agriculture. This kind of visualization facilitates (i) the identification of existing overlaps and possible gaps in the execution of responsibilities and functions between the various institutions involved and (ii) identification of administrative/operational levels where overlaps and/or gaps occur.

From the institutional mapping, as well as from insights derived from stakeholder consultations, it appears that crucially important elements of participatory water management such as (i) coordination and participation, (ii) dispute resolution, (iii) data collection and dissemination, (iv) research and training, are not yet institutionally embedded in the management of water resources and irrigation infrastructure from the village level up to the irrigation district level.

With the creation of water user associations (WUAs) and canal water boards (CWBS), the latter being implemented on a pilot basis, previously existing gaps are now being closed, up to the canal level, e.g. through demand and conflict management. However, it is crucial to bring these elements of participatory water management up to the level where ministerial representation ends, which is the irrigation district level. Therefore, the creation of the following is recommended:

A body, organization or institution at the irrigation district level to plan, coordinate and manage irrigation infrastructure and related water resources in such a manner as to functionally attune the interests of both water service providers and water users (participatory water management) and to be able to better coordinate activities to be carried out by providers and users at the lower levels.

Based on the findings of the institutional mapping and because of incremental understanding or insight, a preliminary concept or structure has been developed for the district water boards.
FIGURE 3.5
Map of institutions and responsibilities in irrigation management

<table>
<thead>
<tr>
<th>Irrigation</th>
<th>Policy Making</th>
<th>Planning</th>
<th>Water Allocation</th>
<th>Expansion</th>
<th>Rehabilitation</th>
<th>Maintenance</th>
<th>Operation</th>
<th>Coordination</th>
<th>Communication</th>
<th>Dispute Resolution</th>
<th>Participation</th>
<th>Research &amp; Training</th>
<th>Enforcement</th>
<th>Service Provision</th>
<th>Cropping Pattern</th>
<th>Standard Setting</th>
<th>Licensing</th>
</tr>
</thead>
<tbody>
<tr>
<td>MWRI</td>
<td>Inspectorate</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
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<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
</tr>
<tr>
<td>MWRI</td>
<td>District</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
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<tr>
<td>City /</td>
<td>Districts</td>
<td>GW Irrigation</td>
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<tr>
<td>Local Unit</td>
<td>Local Unit</td>
<td>GW Irrigation</td>
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<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
</tr>
<tr>
<td>Village /</td>
<td>user</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
<td>GW Irrigation</td>
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<td>GW Irrigation</td>
</tr>
</tbody>
</table>

Note: The diagram illustrates the flow of responsibilities and interactions among various institutions and levels of government in the context of irrigation management. Each level and institution is connected to its corresponding functions and stakeholders.
CONCLUSIONS

Institutional mapping

Institutional mapping revealed that there is a strong need to functionally attune the interests of the water service provider with those of the water users and to better coordinate water management activities at the irrigation district level and below. It may be seen that there are specific gaps in coordination, communication and participation in water resources management, particularly at the irrigation district level.

Institutional mapping, together with other sources, such as (i) field visits and (ii) experience gathered during the piloting of the water boards, show that ‘planning’ is an appropriate place to start when implementing participatory water resources management. The ‘platform’ at the irrigation district level could begin by jointly drawing the annual plan for each irrigation district. Since the platform consists of, and provides the link between, Ministry officials and user representatives it could be called the ‘Joint Water Management Board’ (JWMB).

The fact that district water boards could fill existing gaps, e.g. attune the interests and needs of water service providers and water users and, at the same time, improve the management of water resources and water infrastructure is a possible option. However, if indeed such district water boards could fill existing gaps, a number of questions are raised:

- How would such a body, organization or institution be structured?
- What would its mandate be (legal basis, roles, responsibilities and tasks)?
- What working arrangements and procedures (statutes and internal regulations) would have to be applied? and
- How would a fair representation of stakeholders and fair division of decision-making powers be arranged?

Given the pilot nature of the project, there is a strong need for further development of the above-mentioned issues through systematic field-testing of the most suitable approaches. To begin, preliminary district water boards would have to be structured as portrayed and explained in Figure 3.1.

WATER BOARDS

The following recommendations represent a major policy and conceptual shift toward empowering and developing the capacity of water users. It is anticipated that the Water Boards Project will facilitate increasing public appreciation of water management by the end users.

The district water board will be a permanent body with a permanent seat (e.g. an office within the district engineer’s premises) but will not carry out its tasks on a daily basis.

- Taking the specific situation of Egypt into account, the following principles in the further development of preliminary district water boards would have to be applied. The preliminary structuring and mandate of the district water board begins with the recognition that to pilot district water boards towards enhanced participatory water management, gaps need to be filled in coordination, communication and dispute resolution. These elements are incorporated in the proposed structure.

- The ‘mandate’ for a joint management board as part of a district water board, would initially focus on (i) planning, coordination, communication and dispute resolution. Only in later phases, based on experience on the ground, other roles, responsibilities and tasks should be considered, e.g. cost recovery aspects such as levying, tariff setting, enforcement, sanctioning, etc.

The Government of Egypt’s overall policy is aimed at sustainable economic growth through enhancing the role of the private sector in production and public services. The obvious and most logical scenario for the government is to gradually withdraw higher up the system. This means that the Government should be responsible for providing and supplying agreed quantities of water (and other defined services) to ‘User Management Units’, which will, over time, increase in coverage.
Currently, the government’s responsibility ends at the inlet of the *mesqa*. Hereon farmers irrigating from that *mesqa* bear the full responsibility for the water and maintenance of the infrastructure. The next hydraulic level is the branch canal, where the Government’s responsibility would stop at the branch canal inlet.

Water boards should operate at the district level or above. Water boards at the branch canal level are not a viable option for performing the required water management tasks. However, they are a necessary step in gaining experience for water boards at the district level and will continue to be required as branch organizations of district water boards and have an implementation and communication role.

Water boards may function adequately within the context of a law. However, such a law should be enabling rather than a prescribing, otherwise the law and legal framework for water boards will constrain and prohibit their responding adequately to the ever-evolving demands of society.

The increasing ‘water squeeze’ is likely to accelerate the urgency of transferring water management tasks to user organizations. The institutional reforms necessary for this needs to be supported by the Peoples’ Assembly, while those directly involved and affected by such reforms (various ministries) urgently need to be ready to take up the tasks of institutional reform. water boards at the district level having full responsibility, formal organization and professional staff, must be a realistic option in Egypt in the future.

Water boards need to be placed in, not alongside, the formal water management institutional structure and be the unique responsible organization for water management in the area. The Ministry should have a regulatory role and there should be a clearly defined relationship between water boards and the MWRI.

Water boards (on the basis of a legal mandate) need to assume tasks and control budgets that are now controlled by the MWRI. Hence, action is required by the MWRI to transfer operations and maintenance tasks, so that it can become the supervisory and regulatory body and retain specific tasks.

Duplication of tasks and responsibilities should be avoided at all costs. Water boards and district engineers should have a clear separation of tasks without overlap. In order to facilitate the transfer of tasks the ministry needs to modify tender procedures, allow for government funds to be handled by water boards and clearly redefine the tasks of district engineers.

Willingness on the part of users to assume part of the operation and maintenance, in the form of time, labour and finances, will reduce government costs and will affirm that eventual management transfer can be successfully negotiated.

As a matter of high priority for policy, MWRI will take steps to amend law 213/1994 to allow for the formation and registration of water user associations on all categories of land and among primary, secondary and tertiary levels of the irrigation system.
ANNEX 3.1

Proposed structure of district water boards in Egypt

1,000 - 15,000 feddan

1,000 –10,000 farmers
Annex 3.2

Database form for the Irrigation Department (ID)
Annex 3.3

Job description sheet and interview guide for Irrigation Inspector

Grade: 1  
Group Category: Engineering.

Position: Irrigation Inspector in Regions.

General description:  
The position is located in one of the irrigation general directorate in regions, irrigation department. 
Responsible for irrigation and drainage works and water distribution in regions.

Duties and responsibilities:

- The occupant is free to act according to laws and regulations.
- Supervise all the irrigation and drainage works in his inspectorate.
- Supervise the irrigation water distribution among districts.
- Supervision of the activity of monitoring the budgets and discharge of the barrage and weirs located between irrigation districts.
- Supervise and review the water level on a daily basis.
- Supervise the preparation of the rotation schedule.
- Supervise the preparation of the programs and measurements of the cleanings, improvements and recent works.
- Review the complaints regarding the irrigation compensation and settle the complaints.
- Supervise the preparation of constructions maintenance programme and supervise the required improvements.
- Approve the judgment committee decisions in bids and tenders.
- Approve staff annual vacations and also approve the performance appraisals reports.

Conditions:

- Bachelor degree in Civil Engineering.
- No less than 14 years experience in related field.
- Have spent a transit period of at least 6 years in an immediately lower position.

INTERVIEW GUIDE

General issues

Describe your position regarding the MWRI at the Directorate Level as well as District Engineers.

In which fields are you involved?
- Irrigation, drainage, groundwater, water quality, agriculture and/or user participation?
- What activities are you involved in?
  (Try to find out whether the activities are based on law, by-law, decree or other basis).

Policy-making: What is your role in policy-making, how are you involved in policy discussions?

Planning: Describe the process of budgeting/annual planning and your role in it?

Expansion: Describe the application process for new projects?

Water distribution/Operation: What is your role and responsibilities (conflict resolution)?

Water allocation: Describe your involvement in water allocation?

Rehabilitation: Describe the application process for new projects?

Maintenance: Describe your involvement in contracting, controlling, checking of work?

(Water quality) Standard Setting: What is your involvement in standard setting/water quality?

Law enforcement: Tasks and roles?
- How are you involved with other departments at the same level as the MWRI?/EPADP

Groundwater (which office/GW district)?
- (Finance? For planning)

What is your relationship with the Head of Central Department (HOCD)?
- In which fields do you encounter the HOCD?
- Who takes the initiative?

External contacts

Describe your external contacts

Agriculture

Public Administration

Solid Waste

If this gives too little information continue with:

Agriculture

Describe your relationship with the agricultural sector?

Extension

Cropping patterns

Describe your relationship with the Ministry of Agriculture?

What information is obtained/required from it?

(And is this relationship officially documented?)

Public Administration

Describe contacts with public administration at higher level (e.g. governor or assistants (secretary))?

What are the subjects of these contacts?

Describe frequency and basis of these contacts?

Who takes the initiative for the meetings?

What kind of contacts do you or your organization have with the public administration (city council, local units?)

What are, formally speaking, the subjects of meetings between the MWRI organization and public administration?

User participation

Do you have experience with user participation?

What is the role of user organizations at this time?

What possibilities for user organizations (in water management) do you see in the future?