

SUCCESS FACTORS IN SELF FINANCING LOCAL WATER MANAGEMENT



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A contribution to
the Third World Water Forum
in Japan 2003

Supported by the Dutch program Partners for Water



Preface

With a growing world population, the use of water as a renewable resource is increasing. The global need for sound water management has been recognised in various global events. At World Water Forum 3 (Japan, 2003) the issues water management and financing will be discussed, partly by looking at international and private funding, but also by looking at local and regional financing mechanisms.

In this booklet, attention is paid primarily to the self-organising and self-financing abilities of stakeholders. The focus is at the local level, because, as is stated in the Bonn Declaration: The local level is where national policy meets community needs. Local authorities can indeed provide for increased responsiveness and transparency in water management and increase the participation of stakeholders. But local authorities need instruments and capable institutions.

The authors of this booklet make use of Dutch experiences to identify success factors for self-financing local water management. They try to avoid generating blueprints, as it would be a denial of the social, geographical and cultural identity of water systems and communities. In order to assess the Dutch examples and to define key success factors of global importance, a comparison was made with the valuable examples of local water management in other countries. This booklet has been enriched with case studies from Egypt, India, Hungary, Mexico and South Africa.

Finally, I would like to express my thanks to the authors of these case studies for generously sharing their experiences and giving us the chance to learn from them. I hope that these and other experiences shared at the Third World Water Forum will provide inspiration for water managers and politicians worldwide. May this contribution mark the beginning of new initiatives and partnerships in the near future, which we have all been looking forward to.



Jan Jaap de Graeff

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Glossary

Charge	Levy for which an individual government service is provided.
Enabling environment	An environment which facilitates efficient private and public sector initiatives.
Functional democracy or stakeholder democracy	Democratic institution in which categories of stakeholders (citizens, landowners, etcetera) are distinguished; their interest in water management is balanced in the number of seats of the council. Within these limits, inhabitants belonging to the category of stakeholders elect their representatives.
Integrated Water Resources management (IWRM)	Process to promote the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems (GWP, 2000).
Levy	All mandatory payments to the government which are based on public regulations (and not on a private contract) applied primarily for financing government expenditures.
Purpose oriented tax	A tax which is related to specific expenditures; revenues are earmarked for these expenditures.
Rate	Tax tariff.
Tax	Levy without any individual service in return.
Water governance	The range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water systems, at different levels of society (GWP, 2000).

I Introduction

I.1 Global awareness for financing water management and water governance

AGENDA 21, the report of the 1992 Rio Conference on Environment and Development, indicated that to achieve global water security tremendous investment costs would be required. The need for strong global incentives to increase the investments in the water sector was addressed at the Second World Water Forum in The Hague (2000), the Bonn Freshwater Conference (2001) and the Johannesburg Summit for Sustainable Development (2002).

These major events have shown that the issues of water management, legislation and financing are being taken more and more seriously. In response to these calls, the World Water Council, the Third World Water Forum and the Global Water Partnership have come together to form a panel to consider solutions to the future global financial needs of the water sector. The panel will be presenting its report to the Third World Water Forum in Kyoto in March 2003. Mr. Michel Camdessus, until recently General Manager of the International Monetary Fund, will be chairing the panel.

In the World Water Vision and the associated Framework for Action, presented at the Second World Water Forum, the cost of required water services in developing countries in the period between 2000 and 2025 was estimated at around US \$180 billion per year. This estimate refers to investment in new infrastructure alone, and takes no account of the ongoing costs of maintenance, rehabilitation and replacement.

Broken down by sector, the required investments amount to about US \$30 billion for agriculture, US \$75 billion for the environment and industry, and US \$75 billion for water supply and sanitation (Cosgrove and Rijsberman, 2000; GWP, 2000). The annual shortfall between the demand and present resources is unimaginably huge: some US \$100 billion per year, only for new infrastructure. From this, it can be concluded that financing water infrastructure presents a major challenge.

The World Water Vision document suggested ways in which resources could be mobilised to meet the financial challenge facing the water sector (Box 1.1).

Box 1.1 Some ways to mobilise financial resources (selected from GWP, 2000)

Encourage new investments from the international private sector;
Develop pricing and charging schemes that will ensure the financial sustainability of water investments;
Facilitate poor countries' access to water funds and develop micro-credit mechanisms;
Encourage local development banks to invest in water;
Enable developing countries to attract and benefit from private sector funding.

A year after the Second World Water Forum, the Bonn Freshwater Conference concluded with the seven Bonn Keys stating actions for sustainable water management. One of these is: "Decentralisation: the local level is where national policy meets the community needs".

1.2 The scope of this booklet

A broad range of successful approaches to address *water governance* and *financing water infrastructure* is known and there are many books about this subject. This booklet is a mere compilation of experiences, from which building blocks and success factors are distilled. It therefore aims to present a practical document for those who wish to organise water management on a local level with a large amount of stakeholder involvement, financially as well as democratically. As organisation and finance are closely linked, both topics will be reviewed in close connection.

This booklet was not meant to be seen as a blueprint or a scientific publication. The application of the concepts present herein should always be tailored to the local context. The Dutch self-financing system in local water management is one approach, which is also still being developed.

The focus in this booklet lies on management of water resources and related activities, like flood protection, pollution prevention, wastewater treatment and, irrigation and drainage. Although no specific attention is paid to drinking water or sanitation the success factors in this booklet should be applicable to these services too.

This booklet should rather be seen as a result of preparatory activities for a session dedicated to *success factors of self-financing local water management* planned for the Third World Water Forum. One of these preparatory activities was a videoconference, held early in February 2003, which involved representatives from Egypt, Indonesia, the Netherlands and South Africa. The results of this videoconference and other activities have been added to this booklet.

1.3 Guide for the reader

In chapter 2, the choice for the involvement at the local level and the conditions of a stable, enabling environment is explained. From there the building blocks for successful local water management are identified.

In chapters 3, 4 and 5, the Dutch case is described. Since the Middle Ages, local water management has been organised on the basis of the democratic principle 'interest-pay-say'. The beneficiaries (stakeholders) pay for water management and have a say in the local water authority (water board assembly).

Chapter 3 treats the organisational structure and representation of stakeholders in water boards. In chapter 4 attention is paid to the self-financing mechanism of taxation and levies on stakeholders. Taxes provide a stable source of income directed as revenues for local investments and activities. This source of income is also a basis for seeking external funding.

A first step in the Dutch approaching the capital market was the cooperative initiative of a dedicated financing institution: a bank for local water authorities (Netherlands Water Boards Bank). This institution was founded at a time, when individual water authorities were not eligible to attract private funds for investments, because they were not creditworthy. The development of the bank will be outlined in chapter 5.

In chapter 6, conclusions will be drawn, involving experiences from elsewhere.

These experiences come from the selected case studies:

- Egypt: the description of agriculture-based water boards;
- Mexico: organising and financing water supply and sanitation in an urban context;
- South Africa: the need to organise water management on a smaller scale after the National Water Act;
- Hungary: local water management in a country in transition;
- India: large scale government initiatives versus a micro-scale initiative presented by local women.

Following the conclusions, these case studies are presented at the end of the booklet.

2 Building blocks for self-financing local water management

2.1 A stable, enabling environment for local water management

The main problems dealt with in water management are known: there is too much water, too little water or the quality is too poor. The causes can be found in external conditions, but a wider range of water management problems originate from the absence of adequate policies, instruments and institutions. Within these factors, indicated as an enabling environment, financing is a crucial element.



Water management has become an increasingly complex and capital demanding sector. Partnerships involving governments, society (stakeholders) and the private sector that occur in a stable, enabling environment for sustainable management, provide added value.

Organisation

Balancing of economic, social and ecological interests in water management is in principle a task of public authorities. But the challenges are too big to be handled by governments alone. This is clearly shown in *High Noon, twenty Global problems, twenty years to solve* (Rischard, 2003). The impacts associated with world demographics and the new global economy, are developing faster than the institutions that have to deal with them. Experience shows that most institutions fail to meet the growing demands. Neither the public sector nor the private sector will be able to solve the problems alone. New forms of cooperation between the actors in water management need to be found. Development of new co-operation models involving public, private and civil society appears to be the most promising way. This means new roles for the different partners.

The public sector has a stewardship-role: setting policies, providing a regulatory framework and financing mechanisms. It requires a coherent legal framework and a strong and autonomous regulatory regime, which allows clear transactions between stakeholders in a climate of trust. Within the public sector, the World Bank (1997) distinguishes five tasks of the state:

- 1 Establishing a foundation of law;
- 2 Maintaining a non distortionary policy environment, including macroeconomic stability;
- 3 Investing in basic social services and infrastructure;
- 4 Protecting the vulnerable;
- 5 Protecting the environment.

These tasks provide a minimum basis and leave sufficient space for the development of partnerships in water management.

A wide number of instruments are needed for this development. One such resource, which we will briefly mention, is the well-documented web-based Toolbox Integrated Water Resources Management (at <http://www.gwpforum.org>).

While recognising the key roles of public administrative bodies, dedicated water administrations can offer additional advantages, as:

- Geographical delimitation can easily be related to water management (basins);
- Water governance requires technical specialisation and/or specialised operation and maintenance tasks;
- Tasks relate to specific groups of stakeholders;
- Tasks require special attention on the short- or longer-term.

The local level

In a number of countries, the traditionally powerful role of the state government has undergone a reform. On the one hand global economic and technological developments have led to a shift towards the international dimension. On the other hand, democratisation, education and additional developments in society have stimulated decentralisation.

One of the main challenges in decentralisation is the allocation of roles and responsibilities between the different spheres of government and between government and community based, regional or local, organisations. This is often unclear, as decentralisation means quite different things to different people in different countries. The degree of independent decision-making exercised at the local level, can help distinguish these terms. Here, delegation refers to a situation in which local governments act as an agent for the central government and execute certain activities on its behalf. Delegation should not be confused with deconcentration and devolution. Deconcentration refers to the dispersion of responsibilities from a central government to regional branch offices, whereas devolution refers to a situation in which local governments have the authority to decide what is done.

Local governments often play an important role in providing water infrastructure and services. They oversee the integrated water resources management (IWRM) activities both within their boundaries and within the local and regional river basins. Stimulated by internationally recognised programmes such as Local Agenda 21 planning, local governments can be instrumental in supporting a dialogue between stakeholders, decision makers and the private sector.

The way local governments are financed may have large implications at the national level. Many local public services and much of the infrastructure are still financed, to a considerable extent, by transfer from the central government. Other local services may be provided directly by central agencies, such as NGO's or private firms. In most cases local governments have inadequate 'own resources' to finance their expenditures and are dependent upon financial transfers from a higher level of government to carry out their activities effectively. Decentralisation and own financial resources are clearly linked.

Financing

Water management has become an increasingly capital-intensive sector. Public financial means appear often to be insufficient. External financial resources can be of help. A precondition for attracting funds from international and private financing institutions is a guaranteed source of income and a stable organisation that takes care of operation and maintenance of the infrastructure that is financed.

In developing countries, funding used to be mainly focused on investments. Operation and maintenance were usually left to the (local) governments and stakeholders, without a

sufficient budget. Gradually budgets for operation and maintenance began increasing. So, focus is changing to the combination of investments and institutional reform. The provision of Adaptive Programme Loans of the World Bank is an indication of this changing policy, under the heading *asset management*. (Opdam, 2002).

Sustainable financing is dependent to improved *cost recovery*, including tariffs for water related services. Recovery of costs generates revenues for efficient operation, maintenance, modernisation and expansion, but also pays for depreciation of investments. Worldwide, the cost recovery principle is more advanced in drinking water supply sector than in irrigation.

There is a broad range in the scale and type of private sector involvement in financing. This range spans from the formal use of private sector investments, to contracts for full privatisation of corporate structures. Also in some countries the private sectors' investment in irrigation has traditionally been high.

2.2 Building blocks

As seen above, in order to create an enabling environment, several conditions must be met. In the Dutch example ways to meet these conditions can be found. With five building blocks, derived from these solutions, the structure of self-financing local water management can be constructed. Each building block is essential. The building blocks, which are also highly related to each other, are listed below.

- *Legislation* that gives local water boards the authority to carry out their duties, to raise money and to enforce their rights.
- *Representation* of stakeholders in the water authorities in order to create stakeholder commitment and to ensure democratic decision-making.
- *Taxation* of the people in the jurisdiction area of the water authority for generating income systematically.
- *Funding of large capital* for major investments, which is mainly found within the private sector.
- *Institutional development*, besides trained staff, accurate and up-to-date cadastral and financial administrations are needed to allow for effective and efficient operation.

Legislation

Local water administrations must be authorised to carry out their duties. Responsibilities and tasks must find their basis in national and regional legislation. With the granting of authority to the water authorities in matters of public administration and legislation, also financing becomes integrated into public law.

Taxation

Tax revenues are a source of income, that allow for relative independence from higher authorities. Taxation, if carried out effectively and efficiently, is therefore more reliable than a government allowance or donor money. A guaranteed source of income is the basis both for improving the service level and for attracting external funding. Specific tasks of water authorities can be related to specific levies or taxes, for instance flood prevention, water supply, irrigation and drainage.

The same is the case for water pollution control. In many countries polluters are levied for discharging. Charging for effluents can be an effective means both to improve water quality and to provide means for investments in wastewater treatment.

Representation

Commitment of stakeholders is related to their interests and involvement both in terms of financing and their say in decision-making.

Stakeholders involvement in decision making varies from passive, including the provision of information and awareness raising, to active. Active stakeholder involvement includes financial involvement, formal involvement in decision making, involvement in self financing economic instruments and the 'interest-pay-say' concept. Generally when stakeholder involvement increases, so does commitment and sustainable decision-making. This may result in structures where stakeholders form dedicated public authorities, unions, or cooperatives. These institutions are a result of the demands of society and the existing structures.

Funding of large capital

Loans for investments in the water sector may be provided by the private financing sector. In situations, where private financing institutions judge the risks for lending money too high, intermediate solutions can be found. In the Netherlands, for instance, water boards joined forces in creating their own bank, as a stepping-stone to the private capital market. Co-operation requires commitment and a defined role of the private and public sectors and an agreement on the division of the risks between them.

Institutional development

The water institutions themselves also need to be capable of their assignment. Capable institutions are empowered to do their job by a clear role as mentioned in the other building blocks, but they also need capacity building and transparent decision making procedures. Therefore, sufficient and well-trained staff is of great interest, as well as the development of relevant management instruments and the set-up of a reliable property registration and financial administration.

3 The Dutch water boards organise and finance local water management

3.1 Introduction

The Dutch have a long tradition of managing water. In this tradition the water boards play a prominent and unique role in water management at the local level. This applies both to the way in which the board organises its tasks and to the way it finances them. The history of the water boards is very much connected to the geographical situation of the Netherlands, with one third of the country below sea level. As local water management is a global issue, it is interesting to examine the foundations on which the Dutch water board model is built. We can ask ourselves to what extent the underlying principles do have universal applicability. The international dialogue on water seems to indicate that they do.

In the previous chapter, building blocks for the organisation and financing of local water management were introduced. Historically, there has been a strong connection between the organisation and financing of regional water management in the Netherlands. These two parameters have always been arranged on a functional and decentralised basis. This design stems from the capacity of the primary stakeholders in local water management to provide organisation themselves and to raise their own finances in protecting themselves against flooding.

The Dutch water board model is based on the guiding principle of ‘interest-pay-say’. After paying taxes in proportion to the interest one has in the execution of the water board activities, one has a say in the water board assembly. As shall be demonstrated, the following principles compose the foundation on which a Dutch water board is built:

- Democratic legitimacy;
- Financial independence guaranteed by the right to raise local taxes;
- Adequate integration into public law.

In this chapter and the following chapter we will see how these principles are firmly anchored in the administration and tax system of the water board. Here, we will first give a general overview of the historical development of the water boards and its contemporary place and role in Dutch water management. This frame makes it easier to assess the relevance of the way the Dutch water boards are organised and financed in comparison to the selected case studies from other parts of the world.

3.2 Background and activities

Since the 13th century the water boards have played a prominent role in the water sector in the Netherlands. The natural reason for the development of the Dutch water boards is that one third of the Netherlands is located below sea level (up to 6 metres). The water boards, which are considered to be the oldest democratic institutions in the Netherlands, are so-called 'functional decentralised government bodies'. This means they have a limited task regarding local and regional water management. They are operationally independent to a high degree and the provinces supervise them. The assignment of a water board may include (Water Boards Act 1992):

- Flood protection: providing protection against flooding from both the sea and rivers by means of dunes, dykes and canals;
- Surface water quantity: managing the amount of water and ensuring that it is kept at the right level (which includes drainage and irrigation);
- Water quality management:
 - Surface water quality: fighting water pollution and improving the quality of surface waters by planning, monitoring and licensing;
 - Treatment of urban wastewater;
- Additional related activities, such as management of inland waterways and roads.

Most water boards already undertake all these activities. However, some water boards only concern themselves with the management of water quantity. Others are only responsible for managing water quality (including wastewater treatment). The close relation between urban wastewater discharges and surface water quality was a consideration to bring both tasks under the responsibility of the water boards.

Since the last century there has been a progression from numerous small local boards to a series of larger, regional boards. Their numbers went down from 3,500 in 1850 and 2,500 in the late 1940s to the 48 water boards at present. Together they cover the whole of the 34,000 Mm² land area of the country (including local and regional waters). The current reorganisation process will lead to a total of 25 water boards in 2005, dealing with flood protection, water quality and quantity management.

Box 3.2 Index numbers in the Netherlands

Total surface area:	41,500 Mm ²
– land including local and regional waters	34,000 Mm ²
– water including estuaries, sea, main rivers and lakes	7,500 Mm ²
Inhabitants	16,000,000
Number of commercial companies	685,000
Number of water boards	48
Number of employees	10,000
Number of wastewater treatment plants	410
Main dikes	3,000 km
Waterways	55,000 km
Roads	7,000 km

3.3 Position in public administration

The responsibilities in the water sector are spread over the European Union, the central government, the provincial government, the municipal government, the water boards and the individual drinking water companies. Table 3.3 provides a general overview of these actors and their assignment in the administration of water management and water supply.

Table 3.3 Overview of administrative responsibilities concerning water issues

Organisation	Responsibility
European Union	EU Directives (for example: Water Framework Directive, Urban Wastewater Treatment, Drinking Water)
Central government	National framework Acts Strategic national policy Operational policy and management for the North Sea and national water systems
Provinces	General supervision over provinces and municipalities Strategic groundwater and surface water policy Operational groundwater policy and management General supervision over water boards Spatial planning and policy documents for the environment
Water boards	Surface water management (quantity and quality) Flood protection Wastewater treatment
Municipalities	Sewerage system
Drinking water companies	Production and distribution of drinking water



The provincial government is authorised to establish or dissolve water boards. On the establishment of the water board, the provincial government draws up a charter. In this charter, the provincial government defines the boundaries of the water system, the assignment of the water board and the water board assembly.

The province is also the water board's supervisor; it can approve or reject its decisions. It thereby ensures the integration of the water board into the Dutch public administration at the regional level. In turn, the provincial government is bound to a certain extent by policy objectives of the national government.

Through the required approval of the province for the annual budget of the water board, control on the rates of the water board taxes is assured. In the next chapter we will see how these taxes are essential for the financial independence of the water boards.

3.4 Organisational structure

In essence, the Dutch water board model is a mixture of government regulation, significant input from stakeholders and the use of private sector elements in matters of financing and organisation.

Interest-pay-say

The functioning of the water boards is based on *stakeholder participation* and on the *benefit principle*. Who benefits will pay, but also gets a say.

According to the benefit principle, stakeholders pay for the execution of certain activities and the associated infrastructure. Those who have an interest in the activities bear the costs and have influence on the running of the water board, via elected representatives.

Proportionate to his interest, a stakeholder pays a water board tax. For many years farmers were the only recognised stakeholders. Later, other categories were also recognised as having an interest in water management, e.g. owners of residential and business properties. And finally when the water quality task was assigned, dischargers of wastewater, like households and industries were introduced as stakeholders.

The Water Boards Act summarises five categories of stakeholders. All categories have a fixed number of seats in the assembly, which corresponds with the balance of interests (and tax payments) of the categories. One might call this political system an *stakeholder democracy* or *functional democracy*. The water board assembly is elected by:

- Households
- Land owners
- Tenants (optional)
- Proprietors of buildings
- Industry.

The water boards impose taxes on stakeholders in a specific local or regional catchment area. The tax revenues are earmarked and spent accordingly within the same area.

The water board assembly

The functional character of the water board is reflected in the constitution of the water board assembly. The Water Boards Act establishes the water board as a decentralised, functional authority. Every four years, the water boards hold elections in each stakeholder category for the water board assembly. The water board has a general assembly (about 30 seats), an executive assembly (about 5 seats), which is elected from the general assembly, and a chairman. This chairman is not elected, but appointed by the national government

Table 3.4 Categories of interests and specific stakeholders, as a basis for representation in the water board assembly

	Flood protection	Water quantity	Water quality
Buildings	+	+	-
Open land	+	+	-
Tenants	-	+	-
Households	+	+	+
Industry	-	-	+

Association of Water Boards

The Dutch Water boards are united since 1927 in the Association of Water Boards. The Association is counterpart for national government, parliament, international organisations and non-governmental organisations, on behalf of the Water Boards. The Association participates actively in a wide number of policymaking activities at national level: planning, management, legislation, financing. The Association is member of European organisations. One of them is EUREAU, the European Union of drinking water and wastewater treatment organisations. Another is EUWMA, the European Union of Water Management Authorities.

The Association of Water Boards' international policy is mainly directed to the European Union, transboundary river basins and to partner organisations abroad. In international cooperation, focus is put on institutional development. The Association supports individual water boards in international activities and serves as window for external institutions. It supports and advises as well in juridical and taxation affairs.

3.5 Success factors

The Dutch water board model is built on the following principles, which can be recognised as success factors in self-financing local water management:

- 1 The existence of a *democratic structure* that allows for the input and involvement of stakeholders; linking payment to input makes it possible to balance money against means at local level (no taxation without representation).
- 2 *Financial independence* and reliability guaranteed by the existence of the water board's own decentralised taxation area (see chapter 4). Having such local taxation areas is also of great significance for the functional relationship between the water boards and the Netherlands Water Boards Bank (see chapter 5).
- 3 *Integration into public law and administration*, as a guarantee of 'good governance' and the protection of cross-boundary interests.

These three principles are firmly anchored in the Dutch administration and tax system of the water boards. The next chapter will focus on the financial independence and the way this independence can be achieved by a system of local water board taxes.

4 Local water board taxes provide financial independence

4.1 Introduction

Time and again, the international discussion concerning the financing of local water management comes back to the precondition of a stable financial environment.

In this chapter the value of taxes for creating a stable financial environment is demonstrated by the experiences with the Dutch water board taxes. The way these taxes are imposed is described here.

Income and expenditures of the water board

Water boards finance their work almost entirely from two taxes: the water board charge (flood protection and water quantity management) and the pollution levy (water quality management). 95% of all costs are recovered by these taxes.

Next to these taxes approximately 5% of the annual costs are financed by subsidies from central and local governments. The collection of these two taxes led to an annual budget of approximately € 2.6 billion in 2000. Of this amount approximately 73% was spent on operating costs and the other 27% on investments. Of the operating costs close to 60% of the budget was allocated for the task of managing water quality (including wastewater treatment).

Table 4.1 Expenditure of water boards in 2000

Expenditures	Amount (in million €)
Total investments	690
Total operating costs:	1,870
• Water quality management	1,150
• Water quantity management	500
• Flood protection	140
• Management of inland roads	75
• Management of inland waterways	5
Total expenditure	2,600

The total annual expenditure of the Dutch water boards can be divided into investments and operating costs. In 2000 the investments amounted to approximately € 700 billion. In that year the annual costs were approximately € 1,900. Of these costs € 1,150 is allocated for the task of 'water quality management' (including wastewater treatment).

Box 4.1.1 Water board revenues in 2003 (in million €)

Households	204
Buildings	291
Land	183
These revenues are related to the following categories of costs:	
Flood protection	115
Water quantity	515
Roads (inland)	45
Waterways	3

Box 4.1.2 Water pollution levy revenues in 2003 (in million €)

Pollution levy	1,097
This revenue is related to:	
Water quality (incl. wastewater treatment)	1,097

Tax principles

The form and content of the water board taxes are determined by a number of principles. These involve:

- The benefit principle;
- The cost-recovery principle;
- 'The polluter-pays' principle;
- The solidarity principle.

The *water board charge* is based on the idea those who that benefit from the activities, contribute financially to those activities (taxation). These benefits are connected to the extent that one makes use of the existing physical infrastructure and the costs concerned. There is no link whatsoever with harvest yields or production for this would make the water board taxes highly unreliable.

In addition every polluter in the Netherlands pays a *water pollution levy*, according to the Surface Water Pollution Act. Every household or industrial discharger of wastewater pays this levy in accordance with the amount of wastewater one discharges to the sewerage or the surface water. For households there is a fixed rate, for industries the pollution is measured more precisely, depending on the scale of pollution.

Both taxes are in accordance with the principle of 'cost recovery', which is stated in the Water Framework Directive (EC2000/64) of the European Union. This means that the costs related to water services should be recovered in the (sub)catchment area where these costs are made. The boundaries of the water boards represent the (sub)catchment areas in the Netherlands, although the water systems and the management areas are to a high extend manmade in the polder areas below sea level. The Directive distinguishes households, agriculture and industry as stakeholders. This corresponds with the taxed categories of the water boards.

The water board charges and the pollution levy are both real taxes, which implies that there are not individual services provided in return of this financial contribution. The physical infrastructure is a result of a democratic balance of all interests involved. This is what one might call the solidarity-principle.

Legal framework

The water board taxes occupy a special place in the Dutch tax system. In general government levies can be distinguished in taxes and charges. Both are levied by virtue of law (legality principle) and both can be enforced. The distinction between these government levies can be found in the presence of a specific individual service (which is performed by the government in return for the levy).

For a charge, such individual service is delivered. These service charges may not be greater than the cost of providing the service. This is not necessarily the case for a tax, because it is levied without the expectation of any individual service in return.

Strictly speaking, the water board charges and the pollution levy are taxes. These taxes are legally based on the Water Boards Act and the Surface Water Pollution Act, which stipulate how the water boards are to draw up their tax ordinances. In these ordinances is precisely formulated who is liable to pay taxes and how high these taxes shall be. In addition, the same formal tax laws that apply to national taxes also apply here (rules of levying and collection, complaint and appeal procedures, protection of rights etcetera). What typifies the water board charges and the pollution levy is that these taxes also embody some *characteristics of charges*. In a strict sense, there is no question of a direct, individual service performed in return by the water board, but there is a clear relationship between the level of the individual assessment and the interest that the individual tax payer has in the performance of the water board activities. This relationship can be clearly indicated, particularly in the water board charges on open land, and contributes to the justice of the water board taxes.

The role of the private sector

The water board makes extensive use of private sector financing for its investment in physical infrastructure. The Water Boards Bank plays an important role in this (Chapter 5). In addition, implementation tasks are often outsourced, and efforts have been made recently to seek forms of public-private partnership.

4.2 The water board charges

History

As an institution, the water board originally came into existence when farmers combined and organised at local level to construct and maintain dikes and polders. This was carried out and financed using local resources (self-financing). Initially, these resources consisted of payment in kind (maintenance work on dikes, quays and water courses), but were later replaced by self-imposed financial contributions. Originally, the costs were shared among the stakeholders on a private basis, which also conferred individual rights. The disadvantage of payment in kind was that there was really no adequate guarantee that maintenance work would be carried out effectively and/or on time. Because this interest was one that affected the entire community, the need arose for a management organisation that was better integrated into public law. The landowners exchanged the duty to carry out maintenance for the duty to pay for the associated costs. The costs were apportioned according to the amount of land held by the stakeholders; in this sense, their interest was 'rated'.

By granting authority to the water board in matters of public administration and legislation (even dispensation of justice for a period), the financing aspect became more integrated into public law. Despite this integration, the functional and decentralised character of the financing continued to determine the nature of the water board charges. Evidently, the charges were based on the stake that one had in the water board performing its tasks. This is also expressed in the aforementioned guiding principle: 'interest-pay-say'.

From the 1920s onwards, increasing numbers of building owners from urban areas that had a bigger stake in flood protection and good drainage, became subject to the levy of water board charges (the buildings charge) and involved in the management of the water board. In 1995, as general stakeholder involvement became more important (stakes in homes, work and recreation), households also became subject to water board charges and thereby involved in the water board assembly. A separate 'residential charge' was then collected for this category.

Purpose of the charge

The water board charge is primarily used for expenditures associated with flood prevention and water quantity management. The water board charge uses a limited number of tax categories, which are determined by law. Each household pays a fixed amount, landowners pay a charge in proportion of the surface area of the land, and owners of houses and/or commercial properties pay a charge in proportion to the economic value of their property.

In contrast to most of the national, provincial and local governmental taxes, the water board charges are linked to the costs of the activities of the water board. They can be characterised *as functional purpose-oriented levies*, meaning that the revenue from this levy is used entirely for cost recovery according to the tasks of the water board (flood protection and water quantity). The costs are distributed among the separate categories on a task-by-task basis, based on the stake they have in these tasks (cost allocation).

Justification and charging basis

The justification for the water board charges lay in the interest that property owners (land and buildings) have in the tasks that the water board performs. One may also consider it from the point of view of the stake they have in maintaining this property, and in the benefit they derive from its use. As far as residents are concerned (in fact households), they have a general stake in the tasks insofar as they live, work and spend their leisure hours within the water board's area. This general stake is mainly related to the population density and ranges between 15 and 35% of the total costs. The remaining costs are divided between owners of buildings and open land.

The basis for the levy is the *interest* that one has in the water board performing its tasks. This is connected to the extent that one makes objective use of the existing facilities for

water management. After all, such facilities are not created and maintained without cost recovery. This interest is the justification for the Buildings and Open land charges.

The interest of the different categories is measured according to the appropriate standards:

Open land charge: the area of land that one owns.

Buildings charge: the economic value of the buildings that one owns.

Households charge: fixed rate per household.

Dependent on the location the tax burden can vary strongly. The average tax burden for a household is approximately € 44 for the Buildings charge and € 30 for the Households charge. A landowner pays on average € 65 for 1 hectare of land.

Between land owners (and sometimes building owners), one may distinguish varying degrees of interesting water quantity management (i.e. costs) due to differences in the nature and location of a property. Therefore, there is the possibility of making subcategories (classification) associated with the differences in soil type, land use, elevation, etcetera. In these cases, there is essentially a link made to the water system, and classification of land types can be done by applying a corrective cost factor to the surface area. This regards for instance protected nature areas.

The Water Boards Act provides the framework within which these classifications may be determined to be appropriate or not.

The economic value of the buildings needed for the Buildings charge is all-ready known from the municipality-property-taxes. The municipalities provide the water boards (as well as the national tax-administration) by law all the necessary information.

4.3 The water pollution levy

Generally, many parallels exist between water pollution levies and water board charges.

For example, the pollution levy is a *functional purpose-oriented tax* with characteristics of a charge. In addition, functional and decentralised financing with stakeholder representation are also key concepts to the levy. For the purposes of this report, the following description of the levy will be kept brief due to the many similarities with the water board charges.

History

In the 1950s, the pollution of our surface water took on increasingly alarming forms. Since then, provincial governments have largely entrusted the care of surface water and the purification of urban wastewater to the water boards (which were hitherto only responsible for the flood protection and the water quantity). With the requirement for heavy investment in treatment plants, the water boards needed a solid basis of financing. With this in mind, they introduced local environmental levies that were later (1970) given legal substance in the Pollution of Surface Waters Act. In principle, the revenues from these

levies were to cover all of the expenditures associated with those measures used to combat pollution of surface waters. These measures provide for the treatment of urban wastewater (a task currently performed exclusively by the water boards), monitoring, planning and the granting of licences with respect to regional waters.

Purpose of the levy

The pollution levy is a true purpose-oriented tax; all revenues raised benefit water quality management. The levy has a solid foundation in the Pollution of Surface Waters Act and in the tax ordinances of the water boards concerned. It also conforms to every aspect of the tax concept (see section 4.2), while maintaining some of the characteristics of a charge. While there is no individual service being performed by the government in return (treatment of wastewater), there is a clear relationship between individual assessment and the individual pollution that the stakeholder causes.

The guiding principle of the pollution levy is 'the polluter pays'. The tax assessment is determined annually on an individual basis and depends on the volume and degree of pollution of the discharge. This also corresponds well with the 'cost recovery principle'.

The 'stakeholdership, taxation and representation' trinity also applies to water quality management. The pollution levy is imposed on direct dischargers in the service area of the water board, which include:

- Households; and
- Industry discharging waste water into surface water or the sewer system.

Based on their share of the pollution levy, both households and industry are represented in the water board assembly.

Waste water treatment in the Netherlands is a task handled exclusively by the water boards, and one should emphasize that the wastewater treatment plants were installed without *any* government subsidies. This is entirely due to the consistent inflow of revenue from the pollution levies.

Calculation of pollution units

The pollution level is assessed on the basis of the oxygen consumption of the discharged materials (and, to a very limited extent, the quantity of certain heavy metals and salts). The pollution levy is based on the 'pollution equivalent', which is equivalent to the amount of wastewater one person produces per year. In 2002, the average pollution levy was € 48 per 'pollution unit'. A family on average pays for 3 pollution loads, or € 144 per year. The amount levied per pollution load ranges between different water boards from almost € 40 to almost € 62. The difference in levy is closely linked to the costs for treating wastewater. For industries, more tailor-made approaches are used (depending on the scale of pollution). Eighty percent of the income generated by the pollution levy is spent on

possible. A further decrease of discharges in later years has been achieved only against much higher costs (and logically, higher rates of pollution levies).

Table 4.3 The production of pollution units (million) by industry and households and the total discharge on surface waters in the Netherlands

Year	1970	1980	1990	1995
Industry	33,3	13,7	9,8	10,2
Households	12,5	14,3	14,9	15,3
Dissolved in treatment plants	5,5	12,6	17,0	18,6
Discharge on surface waters	40,0	15,4	7,7	6,9

4.4 Success factors

The following few notions for implementing a tax-system like the water boards should be kept in mind:

- A system of water board charges requires its own tax administration which is based on cadastral land and building registries;
- The water board elections are primarily based on this tax-administration; For the election of the seats for the category of landowners in the water board assembly every landowner has one vote, regardless of the extent of his property (one person, one vote);
- Differentiation in rates can be made to distinguish different degrees of interest within a category of stakeholders (classification). Applying a differentiation involves a higher level of administration. However, if the differentiation is too detailed, the costs will be disproportionate to the costs of the services provided;
- The water board has a claim on the payment of taxes and can retrieve these claims through the property taxes (In the Dutch situation even with priority to the state);
- A national legal framework is needed as a legal basis for local taxes and local tax-ordinances (legality-principle).

Tax legislations for water boards need to be of a high quality as the entire income of water board is based on this legislation. For this reason, the Dutch Association of Water Boards provides model-tax ordinances to all Dutch water boards. Special attention in this tax-ordinance is paid to adequate definition of taxable facts, tax criteria, rates and assignment of the taxpayers.

4.5 Recent developments

A challenge comes from the European Union where in recent years legislation has been passed requiring stringent standards to wastewater treatment. The Urban Wastewater Treatment Directive was developed to protect the environment from adverse effects of sewerage discharges and to ensure that all significant discharges are treated prior to being released into receiving waters. The directive sets standards for phosphate and nitrate and dates by which those standards are to be met. As a result, nitrogen removal in particular is expected to lead to large investments in the coming years. Financing these additional investments is likely to follow the same 'rules' that have been implemented for many decades in the water sector in the Netherlands.

The tax system of the water boards is relatively complex. Therefore the Dutch Association of Water Boards recently made a proposal to the national government, to simplify the tax system while preserving the trinity 'interest-pay-say'. The future system would consist of two levies: the water system tax and the pollution levy. In the water system tax flood protection, surface water quantity and quality management are combined. These costs will be recovered by the owners of land and buildings, and households.

The costs for wastewater treatment are still to be recovered by households and industry, in the pollution levy. This will increase efficiency and transparency in the perspective of the European Water Framework Directive, according to the Dutch Association of Water Boards. The national government still has to define its position.

The Dutch government has decided to consider water management as a public responsibility, but encourages water organisations to go for private financing for certain water-related activities (e.g. with the assistance of Public Private Partnership [PPP] in the Ministry of Finance). The government is also trying to increase the efficiency of the water sector by promoting benchmarking, the achievement of economies of scale and the outsourcing of certain tasks. The Dutch Association of Water Boards carries out benchmarks on the effectiveness and efficiency of wastewater treatment of its members.

The Dutch water boards keep pace with developments in society. Organisation structures, financial structures and the legislative framework are polished continuously, whereas the basic principles remain intact.

5 A dedicated financial institution – the Netherlands Water Boards Bank (NWB)

5.1 Combining strengths

A recurring issue that arises when carrying out local water management projects is financing. Often, the best way to resolve a recurring problem that affects more than one party is to join forces in finding a solution under the motto 'Strength in numbers'. Joining forces can also be applied in seeking solutions to financing problems. Depending on the particular circumstances, solutions may be found at a local, regional or national level. The following example illustrates how forces can be combined to achieve a joint goal and fulfil an important role in successful local water management.

5.2 Brief account of the Dutch situation

The Dutch water boards are 'government' bodies. As the water management system became more extensive, more and more water boards were established. Some of these boards were extremely small, as shown by the fact that there were still roughly 2,500 water boards in a country as small as the Netherlands in the 1950s.

After the end of World War II, these tiny organisations were at times faced with the enormous task of repairing dikes and pumping stations that had been destroyed and poorly maintained during that period. An important obstacle to be overcome was to attract the required funding sources as the major investments could not be financed through tax revenue methods at the time. The investments required a substantial amount of capital, which was a very scarce commodity in the post-war reconstruction period. All too often, the water boards appealed to the general banks in vain, who themselves were faced with a post-war capital shortage. In addition, the loans granted by the banks were generally short-term, and could not meet the long-term loan requirements (as much as 20 years or more) that were needed in this case. Further, many of the small water boards lacked the financial expertise to properly approach the problem or find alternative solutions.

At the time, most water boards were organised in regional unions that were represented at a national level by the Association of Water Boards. One of the purposes of the Association was to discuss common problems. The alarming financial situation the water boards found themselves in was just such a problem.

There was no point in appealing to central government. Unlike the Province and Municipality Funds, there was no Water Board Fund, nor is there one today. Throughout the centuries, water boards provided their own funds through the levy of taxes.

The Association of Water Boards assumed the role of intermediary between the water boards and investors to obtain the funds required and save the high costs associated with taking out many small loans.

Under guarantee of the water boards, the Association issued two debenture loans and several private loans. Soon, it became apparent that:

- The Association could not guarantee the continuity of these actions;
- These activities were beyond the scope of the Association's operations;
- The Association did not have the knowledge or experience to establish a more systematic set-up for the long term; and
- The water boards' capital requirements were expected to rise.

Adding to these issues, the disastrous floods of February 1953 that took the lives of many and caused terrible damages put an increased stress on the available capital for repairs. In short, the situation was critical.

In consultation with the Ministries of Finance and Transport, Public Works and Water Management and the boards of a number of commercial banks, the Association of Water Boards decided to transfer the financial interests of the water boards to a separate legal entity.

5.3 The concept of a bank

Meetings with the regional Associations and individual water boards were organised throughout the country to convince them of the importance and major advantages of having their own financial institution.

Not all boards were enthusiastic from the start, as several believed that they would be taking on additional risks with their participation. Others saw participation purely as an investment, which was not considered to be their duty.

Many more were cautious and preferred to wait before deciding whether or not to participate at a later stage.

If such an organisation is to be launched successfully, it must have a strong and widespread backing. This is essential not only for attracting enough initial capital, but also to ensure sufficient business in the future to warrant its existence. Accordingly, a certain degree of consensus is required. Despite the Netherlands' national characteristic to drive towards

consensus, it is much more difficult to achieve this in practice. In the end, sufficient support was available to create their own financial institution.

Collaboration can take many shapes, e.g. a 'mutual fund', a partnership, a cooperative or public limited liability company. In this case, the latter possibility was opted for. The water boards, which are public sector organisations, decided to incorporate a company under private law: Nederlandse Waterschapsbank N.V. (Netherlands Water Boards Bank, NWB).

Significant efforts were made to obtain support from the individual water boards by persuading them to become shareholders. The response was not uniform, some large water boards merely took a small share, while several small water boards bought considerable numbers of shares. In addition, various provinces wished to participate.

The problem of a possible deficit in venture capital was resolved by creating two types of shares:

A shares: these are fully paid-up and carry one vote in the Annual General Meeting;

B shares: only 25% is paid up on these, subject to the obligation (and therefore the risk) to pay the remaining 75% at the company's request. Thus, security could be created with little capital.

Pending incorporation of the Bank, major transactions could be conducted on behalf of the water boards as a result of the high level of trust. Short-term financing was provided by the commercial banks. As a result of their legal framework and sound payment system, the water boards were, and are still, regarded as risk-free as far as credit risk is concerned. The same applies to the other local authorities and the State of the Netherlands. The Bank therefore did not need to set up an organisation to assess the credit risks of local authorities and was able to devote its full attention to providing financial services.

At a later stage, the State of the Netherlands participated in the share capital, thus clearly accepting its responsibility for an orderly financing of local authorities.

Eventually, the Bank was successfully launched. However, without consensus, the situation would likely have been quite different. For example, in Hungary, following the reopening of its borders between 1992 and 1996 there was a shortage (and need) of capital that was reminiscent of the situation in the Netherlands in 1950s. NWB was asked to advise the Hungarian Water Board Union how it could set up its own financial institution, using the Dutch model as a basis. In the end, the project never got started, due to the dissimilarity of the Union's member organisations and the inability to form a consensus. Another key reason for the failure of the project was that the tax regime of the water boards had not been properly structured by that time.



Result I: Security

The intended and realised result is to guarantee the provision of the following essential services to the participants, partners and shareholders:

- Long-term loans;
- Up-to-date financial services;
- A central treasury function; and
- A financial expertise centralised in one place.

Result II: Cost savings

Combining forces in this way can lead to major cost savings:

- It is no longer necessary for each individual water board to build up its own specialised financial expertise;
- Economies of scale also mean lower financing costs;
- Any profit remaining at the end of the year belongs to the collaborating parties and can be distributed or reinvested in new activities.

Result III: Learning factor

The Bank's financial expertise and resulting advisory services contribute to financial management of the water boards that are capable of continuous renewal.

5.4 Form

At the time, NWB opted for shareholders in a public limited liability company. The collaborative organisation can take many legal forms. The key criterion for selecting a particular form should be that it is the one best suited to the local situation. Costs must be kept as low as possible, and the organisation must be small, flexible and transparent. If necessary, therefore, external advisers can be engaged, or the organisation can work together with other outside parties.

The Bank's Articles of Association explicitly state that loans can only be granted to the public sector. In the Dutch situation, this would mean that the credit risk is minimal.

Start-up problems

- 1 Finding a sufficiently large group of like-minded parties.
- 2 Complying with the requirements as prescribed by national laws.
- 3 Seeking and finding support from existing banks in the initial stage.
- 4 After getting underway, increasing the number of participants.
- 5 Building up financial resources.
- 6 Finding qualified people.
- 7 Becoming a trusted bank.

Up and running

Once the organisation starts to operate properly, it may have a self-perpetuating effect. This could mean that it takes on the role of financier of other sectors in the local government, which in turn could lead to additional advantages for the original participants. Aspects that should be considered include:

- From the outset, the financial institution must project an image of respectability and reliability, which can match, or exceed, that of its founders and clients.
- There must be a point in the development of the financial institution when its involvement with its shareholders/participants and vice versa is marked by a healthy distance; meaning in this case that the institution may, and must have, an in-depth knowledge of its shareholders' industry, but that it should otherwise focus entirely on developing and offering financial expertise. That is its core task.
- It is generally believed that there are too many banks in the world today. However, there still is room for more specialised banks and financial institutions, as long as their objective does not encroach, or at least does not encroach too much, on the field of the general banks. Their activities should be limited to just a few products, for example, in the case of NWB, long-term financing of infrastructure work.
- If in due course the organisation succeeds in meeting international standards, this would further increase the opportunities to work together with the supranational development banks and to attract funds on the international capital market.

5.5 The Nederlandse Waterschapsbank N.V. (NWB) in a nutshell

The Dutch government sector is regarded internationally as extremely creditworthy, with a credit risk weighting of 0% and an AAA credit rating. It is therefore essential that NWB has the same status, otherwise it would not be able to act as financier to its clients (shareholders, etc.). NWB has been awarded AAA ratings by the credit rating agencies Standard & Poor's and Moody's.

That NWB is considered a highly reliable bank is confirmed by the fact that for three consecutive years Global Finance has commended it 'for being one of the top ten safest banks in the world'. Additional proof of how successful the concept of a highly specialised bank can be is furnished by the key figures of NWB as presented in box 5.5.

Box 5.5 Key figures of NWB at 31 December 2001

Total assets	€ 22.6 billion
1 Shareholders' equity	€ 894 million
2 BIS ratio	81% (Ranked no. 2 worldwide)
3 Shareholders' equity / total assets	4%
4 Net profit	€ 117 million
5 Operating expenses/ income ratio	6.7% (Ranked no. 1 worldwide)
6 Credit ratings	AAA/Aaa
7 New loans granted annually	€ 3-5 billion
8 Number of staff	35

The success of NWB is largely attributable to its low cost base, made possible by the small size of the organisation. And this in turn is possible because, given their legal structure, their own tax regime and the requirement to maintain a balanced budget, the water boards have a credit risk rating of 0. As a result, there is no need for NWB to employ credit analysts or project assessors.

Apart from being important to the public at large, this low cost base also benefits the competitive position of the Bank. Local authorities are free to choose the source of their borrowed funds. Accordingly, when taking out a loan, they always ask for several quotes from lending institutions (including private parties), with the purpose of selecting the cheapest offer.

The Bank's success has ultimately meant that it is now able to and does provide financing to all other sectors of local government.

The solid status and special characteristics of the NWB are considered necessary in order to be able to operate effectively within the Dutch setting. It should be noted that the figures provided herein were not intended in any way whatsoever to represent a blueprint for situations in other countries. What is important to note is that the form of collaboration opted for and the status of the financial institution fits in well with the setting in which it operates.

NWB was not a solid bank from the start, nor was the expertise of the government sector as well-developed then as it is today. For example, there are approximately just 50 water boards comprised of large professional organisations with financial departments and expert staff. In this respect, NWB's development has really kept pace with that of the government over the years. Or, put differently, starting up a financial institution is highly suited to a situation in which the problems are substantial, and the required structures still need to be developed.

6 Conclusions

In this booklet, major building blocks for self-financing local water management have been identified and reviewed. They are based upon different case studies (Egypt, Hungary, India, Mexico, the Netherlands, South Africa) or on discussions during a videoconference held in February 2003. Based on these experiences this chapter presents the main conclusions for self-financing local water management. In addition, building blocks that can lead to success will be discussed, and a way forward will be proposed.

6.1 Creation of a stable, enabling environment

Water governance at the local level

It is obvious that the term 'local government' covers a wide range of realities all over the world. Human settlements range from large cities to small villages, from huge river basin authorities to small-scale water boards, all organised in one form or another of the local government. Some are rich, others are poor, some are run by capable and honest people, others by incompetent and corrupt officials. Central government rules never match this diversity. Successful decentralisation has to recognise the diversity and heterogeneity of local government. This underlines previous statements that there is no blueprint in self-financing local water management.

A functionally decentralised government/organisation can be an excellent guarantee of a stable financial environment. If this organisation has legitimacy in regard to its financial and administrative aspects, and can perform its tasks with a reasonable degree of autonomy, it appears to be an example of good local governance and creates confidence for financing organisations. From the financial point it is of major importance that relevant tools have to be developed taking into account the local context (tax policy, etcetera).

Financing water infrastructure and financing operation and maintenance are not always in harmony. External institutions financing infrastructure, however, take more and more operation and management into account, as part of their risk equation (*asset management*). Many local/regional public services and infrastructure are still financed to a considerable extent by transfer, from central government. Other local services may be provided directly by central and/or regional agencies, by NGO's, and by private firms.

Organisation and financing need to go hand in hand

In many countries the decentralisation process and the improvement of financial capacities are not in balance. It is obvious that creating an enabling institutional environment for self-financing local water management cannot be successful without providing at the same time adequate financial means. An enabling environment has everything to do with institutional and financial aspects.

6.2 A sound legislative framework

All cases show obviously that an adequate legislative framework is a necessity to improve water management, from national to local, and in different nuances.

In South Africa, the National Water Act is the main legal instrument that ensures equitable, efficient and effective management of water resources.

In Egypt, a nationally embedded legal framework is required, within which local water boards can operate. Only with this framework, water boards can receive finances, be delegated any responsibilities, or be considered legally accountable.

In Mexico it appears that an organisation that provides water supply and sanitation needs to work in a related institutional context in which it operates. It needs (and gets) the support from the *government* to ensure that policies (for example tariffs) necessary for the sustainable provision of water services are implemented. It also gets the involvement of the *consumers*, who must use water efficiently and must be willing to pay for the water services provided. Water pricing appears to be effective.

In the Netherlands, the water board concept is fully embedded into public law and administration. This is a guarantee of 'good governance' and the protection of cross-boundary interests. In chapter 3, it is explained that this legal embedding is a powerful tool, and a financial asset. For example, it prevents water boards from running into deficits.

6.3 Active stakeholder involvement

Involvement of the stakeholders is a major success factor for local water management. The role of civil society, and in particular the role of women (as shown in the India case) is becoming increasingly important. Without financial and management powers no tool or method can mainstream poor women in natural resource management. In many of the developing countries, involving the users creates a new culture for water usage, i.e. learning to value it and consume it more wisely, is absolutely necessary (see Mexico and Egypt cases). But this is not enough.

Stakeholder representation

Institutional settings at the local level that avoid some risks of a parliamentary democracy while taking care of the interests of stakeholders are available. These are the so-called functional democracies. Functional democracies offer more stable conditions for longer-term activities in the field of water management. Chapter 3 has shown how in the Netherlands functional democratic water management bodies are embedded in a parliamentary democratic system.

Stability in the Mexican context has been elaborated by installing a neutral management board. In a country where political forces are so strong, this has been one of the major success factors for the stability and continuity in drinking water supply and sanitation in Guajuato.

In South Africa, the Catchment committees are an interesting feature. In conjunction to the abilities of the council, tasks can be delegated by the Catchment Management Agencies. However, this promising concept still has to prove its value in the coming future.

Interest-pay-say

As decentralisation and own financial resources are clearly linked, the challenge is to find the balance.

Local water management in the Netherlands has been organised on the basis of the principle 'interest -pay-say': those who have interest (stakeholders) pay for water management and have a say in the local water authority (water board assembly).

Attention is paid to self financing mechanisms: taxation, levies on stakeholders and how the revenues are directed to local investments and activities.

6.4 Taxation

Recovery of costs

In many countries, local governments are often not able bear the costs of operation and maintenance, even when they have been involved in the selection and the implementation of the infrastructure.

If the infrastructure is well-defined and the beneficiaries are well identified, the local government can expect that the beneficiaries take care of the operation and maintenance. In other cases financial resources will have to be found to take care of recurrent costs. Taxes and charges are often a promising alternative.

In the case of Egypt, local water management responsibilities have been transferred to water boards created a few years ago. As 85% of water use in Egypt is dedicated to irrigation, the water users represented in the water boards are mostly farmers. But at present 60% of the operation and maintenances costs are financed by water users that pay for water.

In Indonesia, water councils are managing water at the district (kabupaten) level. As in Egypt about 80% of the users are farmers, growing crops by irrigation. But at present irrigation fees paid by water users represent a small 10% of the operation and maintenance cost.

In the case of South Africa a distinction is made between poor rural areas and richer areas. In poor areas farmers do not pay for water and financing water infrastructure (including operation and maintenance) relies on international aid agencies and grants from the central government to local governments. In richer areas, commercial farmers pay to water user associations for the operation and maintenance of the infrastructure. In some case rich farmers have financed their own infrastructure though lending from national private banks.

The Dutch case shows an example of 95% cost recovery by local taxes.

In Mexico experience shows that tariffs need to be moved little by little to a price that really reflects the cost of bringing water to the users.

These examples reflect the diversity of realities in the world today from no cost recovery to full cost recovery. Most of these approaches are still the result of historical and cultural habits. Developing self-financing for local water management implicate that choices have to be made, looking at the kind of local government and the way water infrastructure and operation and maintenance are financed.

Taxes

In many countries local governments have often limited tax and charges powers. Few countries permit local governments to levy taxes capable of yielding sufficient revenues to meet expanding local needs and the revenues under direct local control are less than their spending. Central governments need to make conscious choices when deciding the size of local governments or to which extend local activities are financed by local revenues and the type of taxes levied by local governments.

Apart from taxes, users charges are the only other significant source of local financing in most developing countries. In some countries 'benefit-related' charges are also significantly used.

The taxes levied by the Dutch water boards bear some of the characteristics of charges. At the individual level, there is a clear relationship between the water board taxes that one pays and the stake that one has in the water board's performance. This increases stakeholder involvement.

In the Netherlands, financial independence and reliability of the water boards are guaranteed by the right to raise local taxes in their own decentralised taxation area. Having such local taxation areas is also of great significance for the functional relationship between the water boards and the Dutch Water Boards Bank.

The functional and decentralised character of the water board taxes is explained by the historical development of these taxes and the special position they occupy within the government tax system. Both are purpose-oriented taxes, the revenues from which are wholly directed towards financing the specific water board tasks that they are associated with.

Ownership and property registration

In many developing countries, it is common for people to have no formal title to prove their ownership of the assets they undoubtedly possess. Further they cannot use those assets as collateral to raise loans to finance their own infrastructure. In South Africa only rich commercial farmers are able to do so.

Even when local institutions are authorised to levy taxes it appears that an insufficient parcel registration system makes it difficult, even impossible, to collect money as shown by the Hungarian case. Conditions for a system of Dutch water board charges are a local tax administration and a land and building registry. Successful local water management appears to be dependent on this necessity.

Due to this constraint the involvement of the local private sector in particular in water is limited to small-scale activities. Money can only be raised from the local private sector on a larger scale if all citizens have secure property rights, allowing them to use their assets as collateral. This means secure property laws.

6.5 Financing capital

When the benefits from infrastructure projects are enjoyed over a period of time, borrowing is an option. Local government access to capital markets is, however, often limited. The interest of (inter)national financing organisations in the water sector are limited and the role of central governments can be restrictive.

In many cases, local capital finance (through borrowing) takes place mainly from government sponsored and financed agencies such as (municipal/environmental/water) development funds. Some of them seem to have positive results.

In other situations local governments can go to commercial banks. But 'young' local governments are not always skilled enough to deal with such a financial 'freedom' and the results are poor. In the framework of decentralisation, developing appropriate modalities for local government capital financing and borrowing (e.g. through centrally controlled sources) is very useful.

A dedicated bank as cooperative initiative

In chapter 4 specific attention has been paid to a dedicated financing institution: the Netherlands Water Boards Bank (NWB), a bank for local water authorities. This institution was founded in a time frame (60 years ago), when individual water authorities were not eligible to attract funds for investments. The bottom-up process of this cooperative institution has been described.

The solid status and special characteristics are considered necessary in order to operate effectively within the Dutch setting. The form of collaboration opted for and the status of the financial institution fits in well with the setting in which it operates.

NWB was not this solid a bank from the start. Starting up a financial institution is highly suited to a situation in which the problems are substantial, and the required structures must still be developed. This is likely the case for some developing countries.

As previously mentioned, the NWB was asked to advise the Hungarian Water Board Union during a period where they wanted to set up their own financial institution. Dissimilarities between the member organisations prevented the realisation of such an institution, as no consensus could be formed. Besides, the tax regime of the water boards needed improvement by that time.

6.6 Institutional development

Irrespective of the tasks given to local water management authorities, their success depends on the quality of services they deliver. This addresses the need for investment in human capital, as stressed for instance in the Mexican case. Capability in management of organisations, in executing tasks and in finances. But there is more: a stakeholder-oriented attitude is a guarantee for a continuous exchange of information, demands, and possibilities. It is the basis for innovations.

More and more, water organisations share their knowledge by partnerships, twinnings, training programmes at education centres. This is a necessity. One of the start-up problems of the Dutch Water Boards Bank was to find qualified staff. This is the case in all young organisations. In the Dutch case, this was solved by supervision of existing institutions.

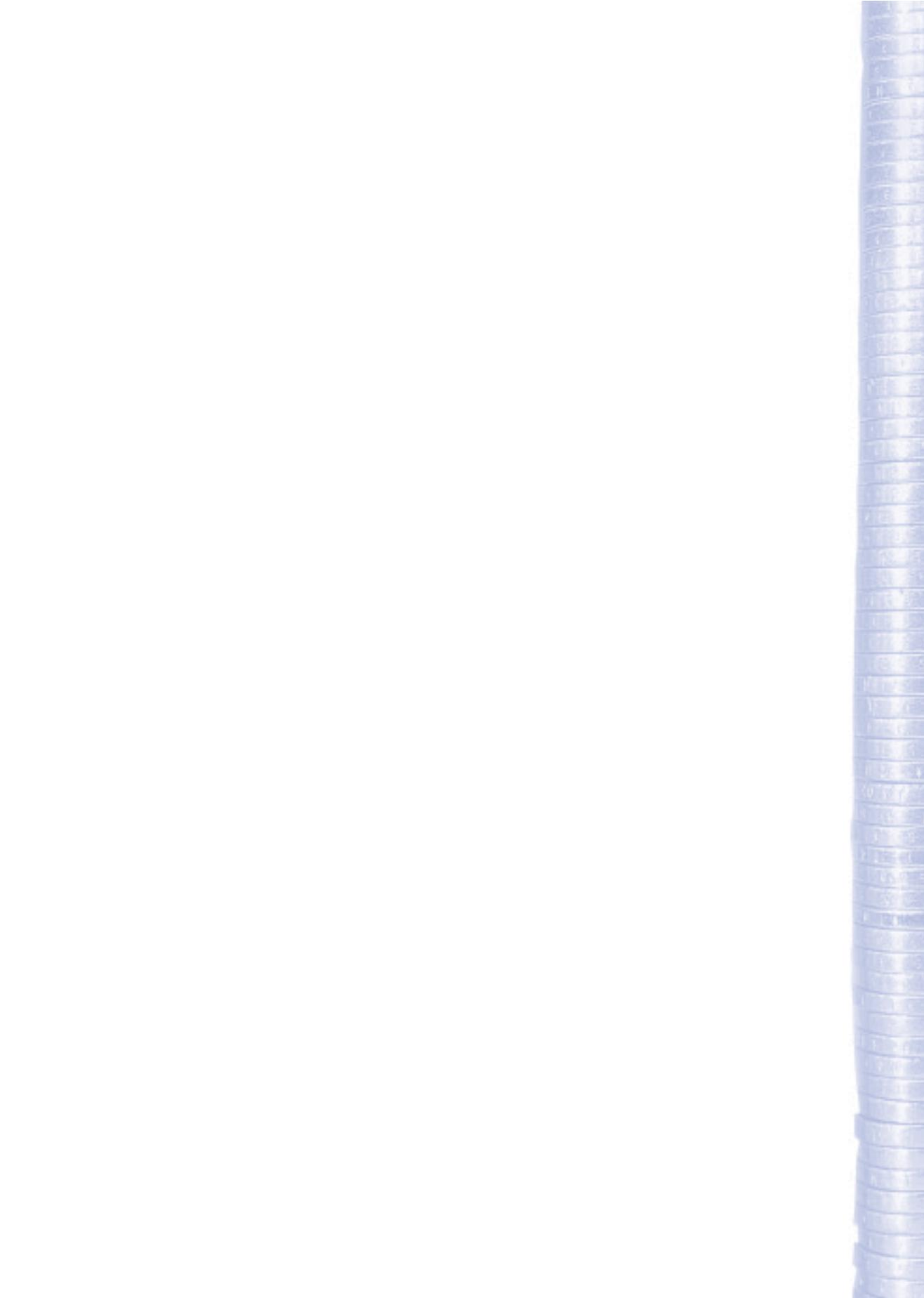
Especially at the local level these expertises need attention, as they often tend to run behind capabilities at the regional and national level. The need for educated capable and reliable institutions are critical success-factors for local authorities.

6.7 Applying building blocks

As previously mentioned, this booklet is not meant to be a blueprint for situations elsewhere. It aims at providing inspiration for local initiatives, by presenting a number of success factors. Within a given context, the application can be a tailor-made. The case studies have shown that each country has found its own way to build capacity, new relationships between actors and financial instruments. Learning from other experiences is fundamental to improve local water management.

Selected Case Studies





In order to put the Dutch experience in an international context, some valuable case studies from other countries were selected. These case studies each present their own success factors. They also show different stages in the organisation of local water management and different approaches in the implementation of the building blocks mentioned in chapter 2.

In the cases a link is made to the GWP ToolBox IWRM and the tools that have been used are listed. For more cases on financing and organising local water management a search on the GWP ToolBox website (www.gwpforum.org) is recommended.

Financing local water management in Egypt 42

This case describes several examples of financing irrigation and drainage facilities by farmers in Egypt. This is implemented while decentralisation of national tasks regarding water supply for irrigation is in operation.

Financial management of the drinking water and sewage company in Guanajuato, Mexico 49

The municipality of Guanajuato has established a utility that provides drinking water and sewage services through reform. The success of this organisation is reflected in a healthy financial situation and high service level.

The role of local authorities in South Africa after the National Water Act 58

This case paints the picture of the South African social landscape and the requirements of the National Water Act. It highlights the issues and challenges in the development of deconcentrated and decentralised water resources management institutions.

Hungarian water management at the local level 70

Short description of the history and the present situation of the water boards, the union of water boards and an attempt to create a dedicated bank for water authorities.

Financing water management for agricultural purposes in India, government versus NGO initiatives 73

In this case study two approaches for water management in Gujarat are presented. One is the top-down approach by the government; the second one is the cooperative approach by the Self Employed Women's Association.

Financing local water management in Egypt

This case describes several examples of financing irrigation and drainage facilities by farmers in Egypt. This is implemented in a movement of decentralisation of the water supply for irrigation.

Abstract

The Nile provides Egypt with 90% of its direct water needs and 97% of its agricultural irrigation requirements. The Ministry of Water Resources and Irrigation (MWRI) is the main responsible body for managing the distribution and drainage of water, the protection and preservation of quality, the operation and maintenance, rehabilitation and improvement of the infrastructure.

MWRI responsibility extends through the distribution network to the tertiary level and similarly on the drainage network. The farmers own and manage the field delivery ditches, field drains and secondary drains. They operate and maintain the waterways under the supervision of the MWRI. Above the tertiary level, the farmers receive their services from MWRI in return for a set land tax, levied on irrigated lands. The tax goes to the general treasury and stands as a small fraction of the total ministerial budget and even of the operation and maintenance budget.

The past 15 years have witnessed several efforts to veer the centralised management more towards participatory water management as well as some privatisation efforts. The water boards on the secondary canal level are a recent addition to the decentralisation efforts. These water boards have proven to be successful. Water boards are envisioned to be partners to the ministry, gradually assuming responsibilities of operation and maintenance, which the MWRI would delegate. The water boards are set up on a three-tier representation structure, rising from a division of the command area based on shared hydrological interests (irrigation and drainage combined). The interests are agricultural, residential and industrial or other special interests.

There are about 55 such organisations now established in Egypt. Despite their differences they share an unaccommodating environment for their operation that obstructs full utilisation of their potential. The most significant of these factors in the context here is the lack of legal framework within which these organisations can operate; they therefore cannot receive finance, be delegated any monetary responsibilities or be considered legally accountable.

Despite the environment of limited user and government cooperation, there are several examples in Egypt that have valuable insights to offer.

Main tools used

Cost recovery and charging policies	(GWP ToolBox) A3.4
Civil society institutions and community based organisations	B1.6
Local authorities	B1.7
Broadening participation in water resources	C4.6
Pricing of water and water services	C7.1

Background and problems

The Nile provides Egypt with 90% of its direct water needs and 97% of its agricultural irrigation requirements. The near monopoly the Nile has on Egypt's waters has, throughout history, shed a level of centralisation on its water management. The Ministry of Water Resources and Irrigation (MWRI) is the main responsible body for managing the distribution and drainage of water, the protection and preservation of quality, the operation and maintenance, rehabilitation and improvement of the infrastructure. Basically, the MWRI is vested with application and enforcement of the laws governing water use in Egypt. Other ministries, those of Agriculture, Environment, Housing (drinking water and sanitation), Industry, Tourism and Transport are all direct users of water and waterways and thus indirect managers. Agricultural irrigation consumes approximately 87% of all water resources in Egypt. It is the focus of this brief country case as it has the highest impact on consumed amounts.

The MWRI responsibility (stewardship of public resources) starts at Lake Nasser and even upstream of that. It extends through the distribution network to the tertiary level and similarly on the drainage network. The farmers own and manage the field delivery ditches, field drains and secondary drains. They operate and maintain these waterways under the supervision of the MWRI for the public benefit. Above the tertiary level, the farmers are service recipients and the MWRI is the service provider. The relation is framed with constraints, a setting similar to a supply dominated market where there is a ceiling on prices. The farmers receive their services from MWRI in return for a land tax set between US \$10–16.7/hectare/year, levied on irrigated lands. The tax does not directly finance MWRI activities; it goes to the general treasury. In total the tax revenue stands as a small fraction of the total ministry budget and even of the operation and maintenance budget. The degree of centralisation in water management has grown over the past 50 years to a very high level. Even though the irrigation system's overall efficiency operates at reported 78%, the application efficiency is less than 40%. This is mainly due to the repeated reuse of drainage water throughout the system as it moves downstream. The MWRI's tasks and responsibilities have grown in its provision of the services, to verge beyond such an institution's efficient operating size and present management infrastructure and tools efficient performance capability. As a result of this, farmers have been alienated from

operation and maintenance and water related decision-making processes. There was also a degree of alienation within the ministry's bottom hierarchies.

Actions taken and outcome

Decentralisation

The past 15 years have witnessed several efforts to veer the centralised management more towards participatory water management as well as some privatisation efforts, in line with government policy to decentralise and privatise and with the aims to effect more efficient water management and more efficient water use. These efforts have produced different forms of public-private cooperation in water management and finance of operation and maintenance activities as well as infrastructure. The Water User Unions and Water User Associations are such successful participatory water management organisations, established on the tertiary level. These are organisations that operate within a legally recognised framework and clear responsibilities on the tertiary level. The finance for operation and maintenance comes from the user payments.

The water boards on the secondary canal level (covering a command area range of 380–6,300 hectares) are a recent addition to the decentralisation efforts. These water boards have proven success and are now being considered at the more functional district level (12,600–21,000 hectares). Water boards are envisioned to be partners to the ministry, gradually assuming responsibilities of operation and maintenance, which the MWRI would delegate.

Representation

The water boards are set up on a three-tier representation structure rising from a division of the command area based on shared hydrological interests (irrigation and drainage combined). The interests are (i) agricultural, (ii) residential and (iii) industrial or other special interests. Within each further hydrological interest based division formulate the building blocks of the water board – Agricultural Base Units and Residential Base Units. Once a base level of introductions and awareness of the role and function of the water board and the projected modus of cooperation with the MWRI is achieved between the users, elections are held so the users can fill the different tiers of representation. First, the Representative Assembly, which is the collection of representatives of the Base units, is chosen. Then, an executive body is elected out of the Representative Assembly, the Water Board Committee. To preside the Water Board Committee, a Water Board Chairman is elected directly by the Representative Assembly.

In Egypt there are now about 55 such organisations established in different forms. Despite their differences they share an unaccommodating environment for their operation, that obstructs full utilisation of their potential. Most significant in the given context is the

absence of a legal framework, in which these organisations can operate; they therefore cannot receive finance, be delegated any monetary responsibilities or be considered legally accountable.

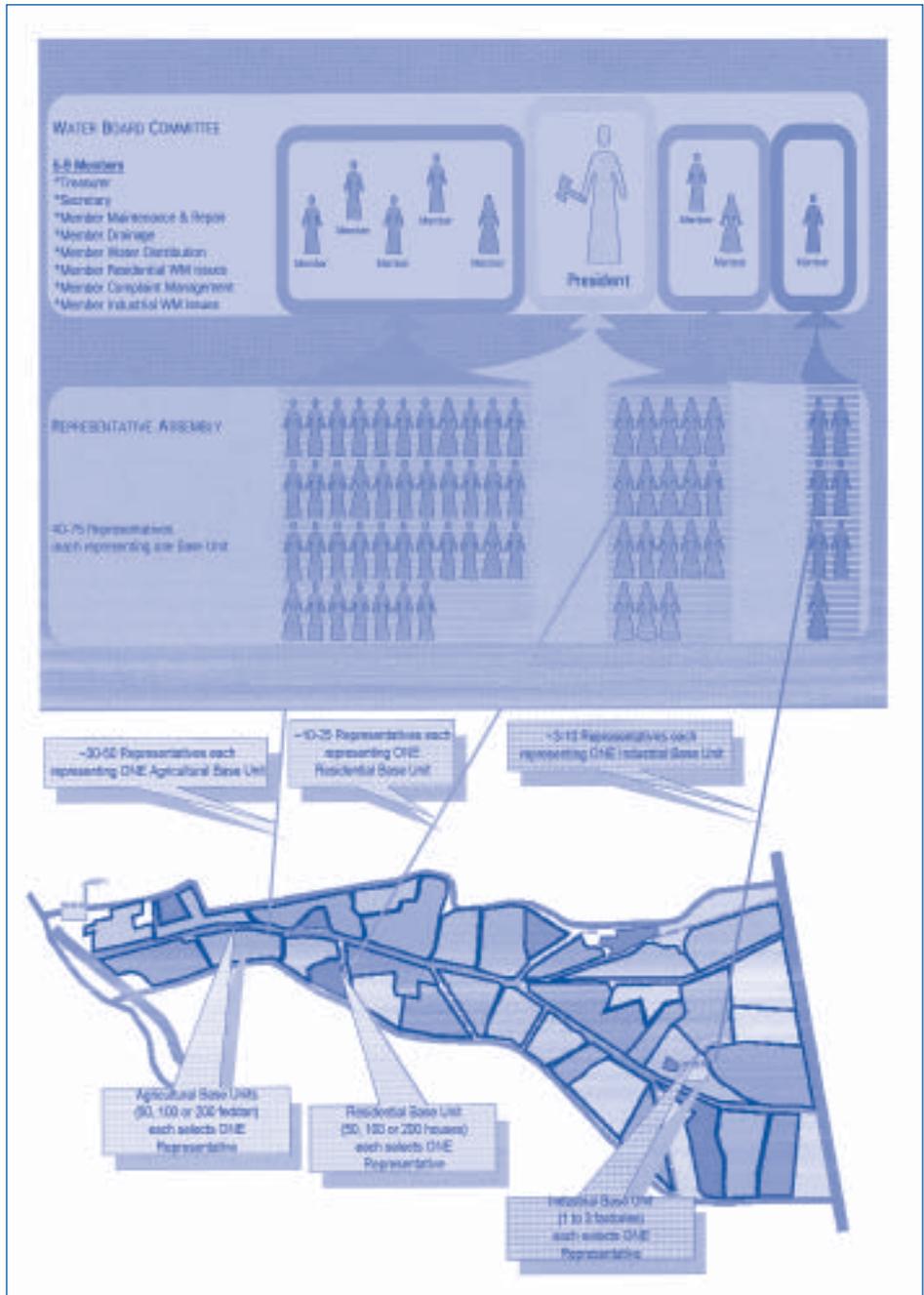


Figure 1 Water board structure for representation

Cooperatives

To maintain the tertiary levels and secondary drains the farmers have been able to employ the services of the agricultural cooperatives. These are cooperatives that were set up to supply farmers with agricultural input, purchase produce and to generally support the farmers. Every farmer, therefore, has an account with the cooperative. The farmers' accounts are debited each a respective share relative to their land holdings. On their behalf the cooperatives weed and dredge the tertiary levels and secondary drains on regular basis and upon the request of the MWRI local engineers if required. The role of the cooperatives has however been reduced lately with the liberalisation of agricultural policy and with the opening the inputs and produce markets to the private sector and free market forces.

Because there are no other farmer based water management organisations that could organise operation and maintenance of the farmer-owned waterways, the cooperatives offer a practical alternative, with an already established collection system. This however is an activity that a water board could carry out, through contracting, under the technical supervision of the MWRI.

Cost recovery

Egypt has been engaged in implementing a national program of subsurface drainage system since the early 1970s. The World Bank has funded this program with a system of cost recovery from the users to plough back to the program. The cost of putting in the system stands at \$475–835/hectare. The repayment terms are over a 20-year period after one grace year. Collection is carried out through the land tax collection mechanism, which has proven results in the order of 90% collection rate. The farmers realise the impacts of a properly operating tile drainage system from the following harvest to implementation. The success of the cost recovery program hinges on the repayment schedule and thus the repayment instalments being of acceptable amounts to a small farmer's cash flow. Secondly it requires a collection system that is free of effort and fail safe; the farmer's land stands as collateral to defaulting on payments which acts as a strong deterrent.

A similar arrangement is being employed to finance yet another national program, the Irrigation Improvement Program. This program is mainly implemented at the tertiary level and is supported by other hydrological control structures on the higher distribution canals. It aims to change water lifting from a multiple source system to a single source lifting station on the tertiary level and the water delivery from a rotation based system to a continuous flow system. The program involves large investments in infrastructure. The farmers are to bear that investment in the tertiary level. To manage this new investment water user associations are being set up on the tertiary level. They manage the operation and maintenance of the system on the farmer operated level and are envisioned to play a role in facilitating repayment and collection from the farmers. These organisations have a legal framework that backs their assignment. They have proven success in operating and maintaining the investment.

Other

Some of the water boards in Egypt have also shown other examples of financial cooperation between farmers and the MWRI. Although these examples are not within an institutionalised set up, they are a promise of the potential that lies. On several occasions farmers (members of the water board committees) have pooled donations and resources from themselves and others in the board to share costs with the MWRI and at times completely financed activities of operation and maintenance and rehabilitation of infrastructure. The structure and organisation of water boards facilitated these voluntary efforts.

Conclusions

It is evident from the experience in Egypt that even though the farmer has been alienated – at times pampered and at times excluded – of water management concerns and costs, investment in water management is not a foreign concept. Government policy is supporting participatory water management and is looking to expand on it. The next phase is to define how water boards could be established on district level. That is seen as the more functional level, as it is the smallest administrative unit within the MWRI as far as budgetary delegation goes.

A revision of the law is approaching the term of procedures for its approval that will resolve the obstacle of legality and accountability for water management farmer organisations. The next step is to define the financing mechanism. Operation of the water boards could be fee-based, but the way of financing their activity still remains to be defined.

Success factors

- A legal framework within which local water boards can operate is required. Otherwise they cannot receive finance, be delegated any monetary responsibilities or be considered legally accountable. This obstructs full utilisation of their potential.
- It appears that there are several mechanisms that need to be institutionalised before farmer participation in water management costs can be effected:
 - The benefit that will arise from the investment to the farmer has to be communicated and publicised and it should be proportionate to the individual investment made;
 - Payments expected from the farmers should be scheduled to fit the cash flow for the farmers in time and amount;
 - Mechanisms of collection should employ existing systems that have proven credibility. The farmers should be guarded from the technical liability of the investment and should be equally advised on it.

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Financial management of the drinking water and sewage company in Guanajuato, Mexico

The municipality of Guanajuato has established a utility that provides drinking water and sewage services through reform. The success of this organisation is reflected in a healthy financial situation and high service level.

Abstract

In 1980, the Federal Government decided to decentralise the responsibility of providing water supply and sanitation services to the state governments. From that date the government provided subsidies to allow the establishment and solidification of the organisations that took over the responsibility of service provision in every state for a period of 10 years.

When the subsidy was withdrawn, only a few organisations were able to keep running on their own. The municipality of Guanajuato established SIMAPAG – Municipal System of Drinking Water and Sewage of Guanajuato. There are 31 water-supply agencies like SIMAPAG in the state of Guanajuato. Only ten of these have a healthy financial status. SIMAPAG has demonstrated that it is possible to provide quality water supply and sanitation services at the municipal level without subsidies.

SIMAPAG had to implement several changes in its management structure and systems as well as adjust its orientation towards the users. SIMAPAG's board of directors is selected by the municipality and not linked to any specific (political) party. In a country where political forces are so strong, having a neutral body has been one of the major strengths of the organisation.

It also undertook several changes in its management system. One of the main changes was the introduction of an automated billing and collection system that greatly improved the billing-collection ratio. Besides, there was a review of the water meters in the households as well as a review of the entire distribution system. After these reviews improvements were implemented for more efficient use of resources, like electricity, which lead to lower costs for general maintenance.

The tariffs in Mexico are far from reflecting the real price of service provision. Being aware of this, SIMAPAG implemented one of the highest tariff fares in the country. Although initially there was some resistance, users are currently aware that this tariff setting is necessary to provide a high quality service.

Training programmes on leadership, total quality management and effective teamwork contributed substantially to the improvement of the services SIMAPAG provides. SIMAPAG has also done work in creating a new culture for water usage.

Main tools used

Public sector institutional reform	(GWP ToolBox) A3.2
Cost recovery and charging policies	A3.4
Service providers and IWRM	B1.5
Improved efficiency of water supply	C3.3
Water campaigns and awareness raising	C4.5
Regulations for water quantity	C6.3
Pricing of water and water services	C7.1
Information management systems	C8.1

Background and problems

Decentralisation of drinking water and sewage services

In Mexico, the Federal government has historically been responsible for drinking water and sewage services by different service providers. All these operated under the responsibility of the Secretary of Hydraulic Resources, a National entity. Most of these service providers were only staffed by a cashier. The revenues collected from the users were all deposited into the same “account”. If there was any surplus-revenue, it was meant to be used for rehabilitation and improvement of the drinking water and sewage systems. However, there was a great discrepancy in the management of these organisations. While some states provided a surplus-revenue for the Federal Government, others constantly needed extra resources to cover their costs. As cities kept growing and demand for water services grew, it became more and more obvious that the service providers needed to operate more efficiently. In 1976, the Secretary of Hydraulic Resources was dissolved and its responsibilities were distributed to other Secretaries. In 1980, it was decided to decentralise service provision and to give full responsibility to the states to run the drinking water and sewerage organisations.

The World Bank provided funds to support the decentralisation process and to support the establishment and consolidation of the new service providers. These funds had a time limit. At the end of that limit, the service providers should have been in a stable situation and capable of functioning without subsidies. This situation was not achieved in most municipalities, but Guanajuato is one of the exceptions.

General characteristics of service provision in Guanajuato

The city of Guanajuato consumes an average of 22 thousand m³ of water daily. On average 27.7 m³ of water is supplied per connection per month. The water comes mainly from two reservoirs (La Soledad and La Esperanza), as well as from wells located mostly in Puentecillas.

The water service is provided to approximately 130,000 people, mainly in the urban settlements of the state capital, the city of Guanajuato. In addition service to about 20 communities situated close to the state capital is provided. Coverage for water supply is 95%, and coverage for sewerage stands at 82%. Domestic connections represent almost 94% of the total number. There are only few commercial and industrial connections. The mountainous topography of the city is one of the main challenges, because any strategy that is considered, requires enormous public works and huge investments.

Table I General characteristics of SIMAPAG, year 1995–2000

Indicator	Units	Year					
		1995	1996	1997	1998	1999	2000
Potable water supply coverage	%	90	90	95	95	95	95
Sewer coverage	%	85	85	80	80	80	82
Number of connections							
Domestic		17,840	18,223	18,656	19,525	20,384	20,988
Commercial		1,054	1,045	952	1,014	1,094	1,134
Industrial*		0	0	167	211	214	225
Total		18,894	19,268	19,775	20,750	21,692	22,347
Unaccounted for water	%	40	40	37	36	32	32
Average production per connection	m ³ /mnth.	31.9	30.4	28.7	28.9	28.0	27.7
Average fee	USD/m ³	0.69	0.55	0.59	0.56	0.55	0.59
* Prior to 1996, industrial use was considered as commercial use. In 1997, these sectors were separated, producing the large increase in industrial fees in 1997.							
<i>Source: CEAG, 2001</i>							

Drinking water and sewage service provider in Guanajuato

After the decentralisation process, the municipality took the responsibility for service provision. But it only had one small office where people could go to pay their fees and the service provided by this office was very weak. There were constant complaints and people

had to stand for long hours to make their payment. Also, because many water meters were malfunctioning, the fees charged were not always accurate and people were not necessarily paying for what they used.

In 1992, the municipality created SIMAPAG – Sistema Municipal de Agua Potable y Alcantarillado de Guanajuato (Municipal System of Drinking Water and Sewage of Guanajuato) – as a decentralised public organisation with its own budget and governance structure. Their objective was to:

- Produce and distribute potable water;
- Construct and maintain networks to provide water services;
- Maintain the sewage system.

So far, SIMAPAG has achieved strong financial stability, which has not only allowed them to provide drinking water and sewage services but also to rehabilitate and expand the facilities to provide better services.

Decisions and actions taken

Several strategies were taken to improve the management and financial stability of SIMAPAG. In 2002, SIMAPAG was recognised by the banks as an entity that is creditworthy because of its healthy finances. The main strategies were:

- Automation of the charging system;
- Installation of water meters in all households;
- Implementation of new tariffs;
- Technical improvement for efficient use of resources;
- Wastewater management;
- Training of staff;
- Creating a new culture of water;
- Establishment of a non-political board of directors.

Automation of the charging system

The establishment of an automated system to charge for water services represented a big improvement in increasing the income of the organisation. It became easier for users to pay their bills and registration and control on payments improved income generation considerably. In 1996, the total invoice for users was for MXP* 1,417,791 (approx. US \$141,791) whereas by 2001 the total invoice was for MXP 4,005,800 (approx. US \$400,580).

* MXP – Mexican pesos

Together with the implementation of the automated system, there was a need to restructure and improve the services provided to customers, to make it easier for users to pay. A good tracking system allowed SIMAPAG to make proper charges for new contracts and charge interest fees for late payment. This resulted in an additional income of about 10% of the total yearly budget.

Installation of water meters in all households

One of the biggest weaknesses of the whole system was that a large percentage of the water meters was not working properly. So one of the first tasks for SIMAPAG was to re-install or repair the water meters. Currently, 100% of the users has a functional water meter and every month SIMAPAG charges the appropriate amount to each user.

Implementation of new tariff

The tariffs in Mexico are far from reflecting the accurate cost of bringing water to the users. Being aware of this, SIMAPAG proposed a higher tariff, which had to be approved by Guanajuato City Council. There was some initial resistance, but with time people became aware that this measure would allow for better services.

Currently, the average fee is US \$0.59/m³. Water tariffs vary by type of user. Domestic and commercial price structures are quite similar, both with a minimum charge followed by eleven increasing rates by volume blocks (0–13, 14–20 m³/month etcetera). The industrial price structure has a fixed or base fee and only two increasing block rates. In Table 2 the domestic usage fees are presented for 2003. The tariff for domestic usage is the tariff fare used by 94% of the users.

Technical improvement for efficient use of resources

There were several malfunctioning components in the general system that had to be repaired, reinstalled or replaced. One of the main problems was the amount of leaks in the system. In Guanajuato, corrosion in tubes is very common because the net system is very old. Each month, SIMAPAG repairs about 194 leaks and the response time has decreased considerably over the past years. This has been possible because a new system for measuring and controlling was installed and the system is now managed in sectors. Another major investment was done in the Operations and Electromechanical Systems Department. Improvements were aimed at saving energy in the pumping systems through installation of new pumping equipment with a lower power factor. Tariff paid to the National Energy Commission was renegotiated.

Table 2 Domestic usage fees

Consumption Ranking M ³	Fee in MXP per M ³											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
0–13	52.70	52.70	52.70	52.72	52.73	52.72	52.74	52.74	52.75	52.75	52.76	52.76
14–20	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.45
21–30	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.94	4.94
31–40	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.25	6.25	6.25	6.25
41–50	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.01	7.01	7.01	7.01	7.01
51–70	7.82	7.82	7.82	7.82	7.82	7.82	7.83	7.83	7.83	7.83	7.83	7.83
71–90	9.03	9.03	9.03	9.03	9.03	9.04	9.04	9.04	9.04	9.04	9.04	9.04
91–110	9.75	9.75	9.75	9.75	9.75	9.76	9.76	9.76	9.76	9.76	9.76	9.76
111–130	10.30	10.30	10.30	10.39	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40
131–160	11.20	11.20	11.20	11.22	11.23	11.23	11.23	11.23	11.23	11.23	11.23	11.23
161–190	11.70	11.70	11.70	11.76	11.77	11.77	11.77	11.77	11.77	11.77	11.77	11.77
191–9999	12.50	12.50	12.50	12.52	12.52	12.52	12.52	12.52	12.52	12.52	12.52	12.53

Source: Official Newspaper of the Government of the State of Guanajuato. December 24th, 2002

Wastewater management

In 1996, Regulation NOM-001-ECOL established environmental standards that wastewater must meet prior to being discharged in public water bodies. A fine of US \$0.25 is charged for every cubic meter of wastewater that does not meet these standards. In response to this regulation, SIMAPAG constructed a wastewater treatment plant. The federal government contributed 24% of the required investment, the local government 40%, and SIMAPAG the remaining 36%. Until the treatment plant started to operate, wastewater was discharged directly into the Guanajuato River; nowadays 70% of it is treated.

The cost of treating one cubic meter of wastewater is US \$0.11. By means of a 10% charge for sanitation services, SIMAPAG recovers US \$0.04/m³ for treatment from the domestic users and US \$0.08/m³ from industrial and commercial users. In addition, SIMAPAG has explored reuse of treated wastewater. In order to be profitable, the price for the treated wastewater should be at least US \$0.07/m³. Industrial customers have shown interest to pay up to US \$0.50/m³.

Training of staff

SIMAPAG is aware of the fact that the growth of the organisation is based on the development of the staff as human beings and as professionals. Based on that belief, it has promoted a culture based on its values. It keeps working on cultivating the growth of the organisation in such a way that it is reflected in the quality of the service as well as in the self-esteem of its staff.

Creating a new culture of water

SIMAPAG has heavily promoted activities to create a change in the behaviour of the people when it comes to water usage. It has developed communication campaigns to spread messages about building a new culture of water. The main target group has been the primary schools of the municipality. This allowed SIMAPAG to reach about 12,500 children in Guanajuato.

For the general public, there have been some workshops and campaigns with brochures and posters promoting the importance of this valuable resource.

There has been considerable progress in the education of people about the use of water, but there is still much to do to increase awareness and make it part of the daily behaviour of people.

Establishment of a neutral board of directors

The Board of Directors of SIMAPAG is elected by the municipality, as it should represent and look after the interest of the municipality. Since the creation of SIMAPAG, this board of directors is independent from any political organisation, which has helped to give continuity to the work that is done by SIMAPAG. In Mexico, political forces are very strong and continuity at the end of government terms is one of the major challenges for most institutions. However, the SIMAPAG board of directors has been established independently of the government in charge at the moment, allowing for better continuity.

Outcomes

Results

The results of the primary actions have been really positive. In summary, the results are:

- A better tracking of user's consumption leading to the possibility to invoice properly;
- A better billing-collection ratio;
- Financial savings due to appropriate investments like leakage control and in energy-consuming devices;
- A better awareness of the general public about the usage of water;
- A better service provision due to well-trained and motivated staff;
- As of 2002, SIMAPAG is recognised as creditworthy by financial institutions.

However, all these changes lead to new (second-generation) challenges that will have to be addressed properly to keep up with a high quality service.

Challenges

The current, secondary challenges are:

- People are now paying a higher fee than the rest of the State for the service. Because this has allowed SIMAPAG to have a higher income, people are becoming much more demanding with regard to the service level;
- As SIMAPAG needs to expand its operations and do major repairs, the income will not increase as much as the need for investment will. This means that tariffs will not reflect the actual price of water provision and maintenance any time soon;
- The growth of the populations will increase the demand of water. Most likely external resources will be needed to satisfy these demands. An option will be to get loans from banks, federal support or international support;
- Because SIMAPAG has been recognised as a successful organisation, there is a risk that it becomes 'politicised'. If this happens, SIMAPAG can become vulnerable in its continuity.

To meet these challenges, SIMAPAG has developed a long-term plan 2002–2005 where the following strategic objectives have been developed:

- Increase of the positioning of the New Culture of Water;
- Increase of the coverage level of sewage to be equal to the coverage for drinking water;
- Increase of the quality of the water;
- Increase of the physical efficiency;
- Decrease of the time response to leaks;
- Reduction of the rotation of staff.

Success factors

- An organisation that provides water supply and sanitation cannot work independently from the institutional context in which it operates. It needs the support from the *government* to ensure that policies (for example tariffs) for the sustainable provision of water services are implemented. It also needs the involvement of the *consumers*, who must use water efficiently and must be willing to pay for the water services provided.
- User-based financing of water services requires an accurate system to measure the water usage, a good system to charge for the water consumed and an effective and efficient way for the users to pay for it.
- Implementing a non-political board of directors, in a country where political forces are so strong, has been one of the major factors for the stability and continuity of the organisation.

- Involving the users in creating a new culture for water usage, i.e. learning to value it and to consume it more wisely, is absolutely necessary.
- Tariffs need to be moved little by little to a price that really reflects the cost of bringing water to the users. Also, expenses have to be consciously revised to ensure that the financial resources are spent in the most efficient way.

Reference

SIMAPAG in the development of Guanajuato 1998–2000, October 2000 (in Spanish). This is a magazine published by SIMAPAG to inform users and authorities of the progress and the achievements of this period.

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The role of local authorities in South Africa after the National Water Act

This case paints the picture of the South African social landscape and the requirements of the National Water Act. It highlights the issues and challenges in the development of water resources management institutions.

Abstract

The National Water Act (NWA) is the main legal instrument that ensures equitable, efficient and effective management of water resources. The act also encompasses the subsidiarity principle under which water resources management is to be devolved to the lowest appropriate level.

On the one hand the institutional reform implementation as per NWA necessitated is the development of various policy clarifications, guidelines and regulations. On the other, it is the actual development of institutions.

At a Water Management Area (WMA) level, of which there are 19, *catchment management agencies* (CMAs) are responsible for managing, using, conserving, protecting, controlling and developing water resources in each of the water management areas. Their role is to ensure the equitable access to water resources for all stakeholders especially the historically disadvantaged individuals while maintaining efficiency and sustainability of the resources. The ultimate future desired state of catchment management agencies is to be equally representative of all users interests, bringing about social and economic prosperity to the water management area where they operate. *Catchment management committees* may be established by the catchment management agencies, to advise it or to perform specified functions.

All efforts are made to overcome the challenges on essential imperatives such as capacity, empowerment, social justice, cooperative governance, information sharing, etc. Certain checks and balances are being developed to ensure that the future desired state becomes achievable over time.

Main tools used

Reform of existing legislation	(GWP ToolBox) A2.3
River basin organisations	B1.3
Civil society institutions and community based organisations	B1.6
Communication with stakeholders	C4.4
Broadening participation in water resources management	C4.6

Background and Problems

South Africa has a total area of 1,219 million square kilometres. The country is inhabited by 40.5 million people (Census, 1996), of which 89,1% are from the designated groups (African/blacks, Coloureds and Indians). Eight million South Africans still do not have access to safe drinking water. About 40% of households are poor, and some 25% of 'African' South African adults are illiterate (SA Country report 1998). Living standards are closely correlated with race. While poverty is not confined to any one racial group, it is concentrated among the designated groups, particularly Africans. The poor live in the old Homelands- Bophutatswana (North West), Ciskei and Transkei (Eastern Cape), KwaZulu Natal, Lebowa and Venda (Limpopo) Provinces.

National Water Act

The South African Vision for managing its water resources is presented in the National Water Act (NWA) of 1998: the purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled. For achieving this purpose, it is needed to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation.

Box 1 Elements included in the National Water Act

- 1 Meeting the basic human needs of present and future generations.
- 2 Promoting equitable access to water.
- 3 Redressing the results of past racial and gender discrimination.
- 4 Promoting the efficient, sustainable and beneficial use of water in the public interest.
- 5 Facilitating social and economic development.
- 6 Providing for growing demand for water use.
- 7 Protecting aquatic and associated ecosystems and their biological diversity.
- 8 Reducing and preventing pollution and degradation of water resources.
- 9 Meeting international obligations.
- 10 Promoting dam safety.
- 11 Managing floods and droughts.

Institutions for the management of water resources

The National Water Act is the main legal instrument that ensures equitable, efficient and effective management of water resources. As reviewed above, the Act also encompasses the subsidiarity principle in the water resources management. Under the principle of subsidiarity, water resources management is to be devolved to the lowest appropriate level. The success in the implementation of the Act heavily depends upon the establishment of stakeholders dialogue platforms at different scales of hydrological boundaries. Generally abiding by the hydrological boundaries, the country has been divided into 19 Water Management Areas (WMAs). Numerous new institutions are being established, ranging from creation of several organisations at different levels to necessary and complementing rules and regulations. A schematic representation of the institutional linkages is depicted below.

The challenging institutional reform implementation as per National Water Act necessitated, is on the one hand, the development of various policy clarifications, guidelines and regulations that are at progressive stages of development. On the other, it is the actual implementation with regard to institutional development that is progressing at different rates.

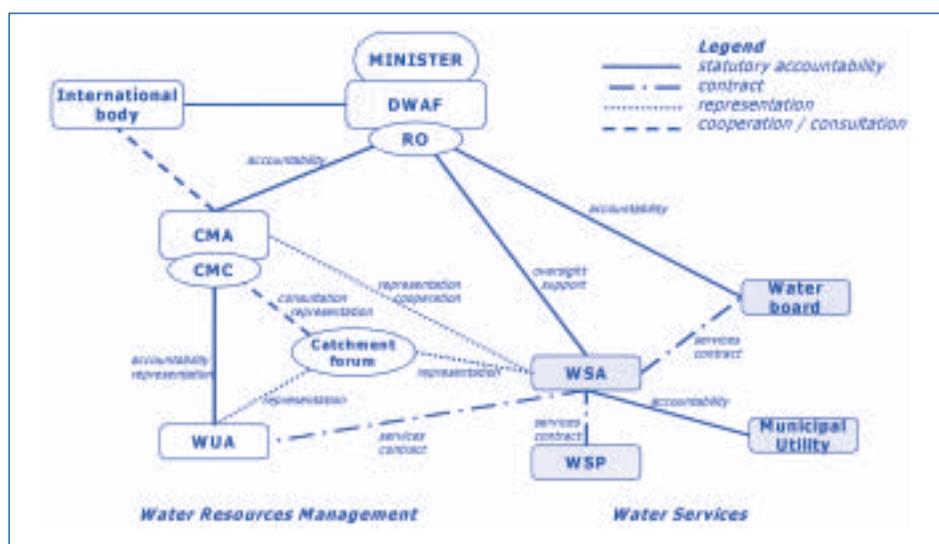


Figure 1 Primary institutional relationships between various water sector institutions

At a Water User Association (WUA) level, which is mostly of an agricultural scheme scale, the commitment and sustained involvement is a function of the services/benefits derived from being part of the association.

Several challenges surround the transformation of irrigation boards into water user associations. These are mainly information sharing and awareness creation of defined

beneficiaries from marginalized individuals, limited access to productive water by the same target group, etc. Better coordination has been achieved between several government departments; Agriculture, Water Affairs, Land Affairs and Public Works for the revitalization of the Old Homeland Schemes. The target for the Limpopo Province is the revitalisation and transfer of ownership of 150 schemes in the coming four years.

IWRM Institutional Hierarchy

At the national level, the general requirement is transparent and accountable public administration in all spheres of government. The NWA requires the Minister to ensure that all aspects of water resource management, which will affect users and the public, are drawn up with their involvement. This is done through the gazetting of a National Water Resources Strategy (NWRS) as a legally binding document where all interested and affected parties are provided an opportunity to have input. As custodians of the national water resources, the Minister has the responsibility to define how the resources will be managed for the national benefit in consultation with the stakeholders.

Catchment management agencies

At a Water Management Area (WMA) level, of which there are 19, Catchment Management Agencies (CMAs) are responsible for managing, using, conserving, protecting, controlling and developing water resources in each of the water management areas. Their role is to ensure the equitable access to water resources to all stakeholders especially the historically disadvantaged individuals while maintaining efficiency and sustainability of the resources.

A catchment management agency manages water resources and coordinates functions of other institutions involved in water related matters within water management areas. A catchment management agency begins to be functional once a governing board has been appointed and is then responsible for specified initial functions, as well as any other functions delegated or assigned to it. This governing board is representative of all the sectoral interests and will lead each catchment management agency. The catchment management agency governing board must represent the relevant interests in a water management area and must have appropriate community, racial and gender representation.

Box 2 Typical issues that could be handled by Catchment Management Agencies

- 1 Development of a Catchment Management Strategy (CMS) which defines the how, where, when, by who, for whom and the how much of resources can be managed, used, developed, protected, conserved and controlled.
- 2 Water allocation principles to existing and prospective users.
- 3 Coordination of related activities of water users and other relevant institutions.
- 4 Promotion of community participation in protecting, using, developing conserving, managing and controlling water resources.
- 5 Promotion of coordination of its activities with the relevant water services authorities responsible for water services and sanitation delivery targets.
- 6 Setting up Resource Directive Measures aimed at sustainable water use.
- 7 The principles for determining the reserve (basic human needs, environmental and international requirements).

There are a number of success factors for institutions at the level of catchment management agencies, such as:

- 1 Identification of the appropriate mechanisms and structures for sharing information and reaching people on the ground within resources limitations. The spin offs could be:
 - a Adequate participation;
 - b Equally empowered stakeholders co-managing resources;
 - c Powerful watch-dog/whistle blower role played by stakeholders/civil society organisations;
 - d Ensured adequate services delivered by Water Management Institutions.
- 2 Identification of the current lowest appropriate level of management while promoting the slogan 'devolve as it evolves'.
- 3 Fostering of cooperative governance where good working relationship are developed for the benefit of the people.
- 4 Agreement on well defined performance criteria for achieving pro poor service delivery.
- 5 Effecting the right composition and balance of the governing board to represent all sectoral interests, including the environment and especially the historically disadvantaged groups, racial and gender demographics in their respective areas.
- 6 Adequate monitoring and evaluation of their performance by an impartial body, the state, to ensure fair dialogues and the creation of adequate performance criteria. The role of the referee is essential in the South African context because of the vast disparities between the different user sectors in terms of power. The mechanism used to play this role is through the submission of an annual and a 3-year strategic plan as well as an annual report of achievements. Although the accountability of these board

members should lie first and foremost to their constituencies, the current social and economic environment does not allow for a fair play.

The catchment management agency establishment is in process. The Inkomati CMA is currently gazetted for wider comment and is envisaged to be formally established by the beginning of 2003. One other formal submission has been received for the Breede CMA in the Western Cape whose establishment should be finalized by the end of 2003. Other runner-ups are the Mvoti to Mzimkhulu in the KwaZulu Natal Province and the Crocodile (west) and Marico CMA in Gauteng Province, which are expected for establishment by 2003 and 2004, respectively.

Catchment management committees

Catchment management committees (CMCs) may be established by the catchment management agency, to advise it or to perform specified functions. A catchment management committee is geographically based, focusing on a specified sub-catchment area of the water management areas and may be advisory or technical in nature. This is particularly appropriate where there are critical local water resources issues that require management attention.

Area-based catchment management committees provide a mechanism for communication, cooperation and decision-making between stakeholders and the catchment management agency governing board. The catchment management agency executive performs the associated functions or implements any required actions.

Catchment management committees should only be delegated functions where this has clear advantages, particularly where rapid decisions should be made that are not appropriate for the staff of the catchment management agency executive. Where this establishment is deemed necessary, the Minister must approve the delegation of functions to a committee consisting of non-catchment management agency board or staff members. Catchment management committees could act as coordinating structures for a number of water user associations.

Typical issues for a catchment management committee would be those entailed in the catchment management strategy such as setting up water quality objectives for water resources to define the balance between the development aspired for in the area and the subsequent environmental tradeoffs that need to be made. Identifying and prioritising water resources related issues that need to be addressed by the catchment management agency would be another aspect.

The commitment of the stakeholders for sustained involvement at this scale is proportionate to the level of interest in water resources from the protection, use, control, management, development and conservation perspectives.

At this catchment scale, the challenge would be to ensure that the playing fields are levelled to minimise the dominance of the stakeholders with strong vested interests. This responsibility would mainly reside with the catchment management agency, which has to demonstrate that adequate efforts have been exerted to build the needed capacity in marginalised groups especially women to relate to water resources management issues eventually contributing to the betterment of their lives.

Water User Associations

At a Water User Association (WUA) level, which is mostly of an agricultural scheme scale, the commitment and sustained involvement is a function of the services/benefits derived from being part of the association. The water user association would cease to exist without its members. The intrinsic need to belong to a user association is because of the overlapping needs amongst the members.

The goals of the government in encouraging water user association formation are to:

- Improve the access of citizens to water in an egalitarian way;
- Reduce long-term government subsidy to irrigators;
- Foster a culture of proactive associations;
- Promote self-determination in local water management;
- Stimulate economic development, especially among the poor;
- Utilize existing water management capacity to the benefit of the population (DWAF 2002).

The transformation of irrigation boards into water user associations has progressed very slowly. This is beside initial policy guidelines that have been developed to guide the process. As it stands, 43 irrigation boards have been transformed into 20 water user associations while one irrigation board has been disestablished. This is because some of them have decided to merge. Besides, three water boards have been transformed into water user associations too.

The challenges facing the establishment of water user associations could be the following:

- Equitable representation in its membership and management structures of all current and potential water users affected by the activities of the water user association;
- Sustainable and efficient service provision in response to the collective need of its membership (usually this entails fair and reliable water supply to its members);
- Effective interaction with other water management institutions and representation of the needs of its members at higher level decision-making structures;
- Performance of ancillary functions without jeopardizing its own sustainability and its basic relevance to its membership;
- Facilitation of support from other institutions to the benefit of its members, especially historically disadvantaged farmers;

- Encouragement and brokering of mentorship arrangements for historically disadvantaged farmers with established commercial farmer members of the water user association.

Catchment management fora

At a micro-catchment level, although not statutory organisations, Catchment Management Fora (CMF) have made significant contributions to water resources management at a local level by, among other things, providing essential local knowledge, expertise and information. In this respect they may eventually be expected to play an important role in the operation of catchment management agency when they are established. The Department will continue to support existing forums, and encourage the creation of new ones where the necessity arises. (Extract from NWRS Summary, August 2002)

Catchment management fora have already been established in many areas to involve stakeholders in decisions about water resources management. These fora have now become important bodies representing stakeholders in the establishment of catchment management agencies and are envisaged to play an active role in assisting these catchment management agencies after their establishment. Catchment Management Fora are particularly important in the development of the Catchment Management Strategy to address local priority water resource management issues, but also provide a vehicle to facilitate the coordination and/or integration of water resources management with spatial planning and land use management.

The focus for initiating a forum is most often driven by a water resources management agenda. However, where adequate water supply and sanitation do not exist, they, understandably, dominate the discussions and unless they have been satisfactorily addressed, the involvement of the poor in water resources management would be marginal. In bridging this gap, attempts to create a liaison between the different grass roots institutions such as Community Development Committees, Water Committees, NGOs and other community based organisations proved to provide a reasonable mechanism for sharing information demanded by the stakeholders.

The role that can be played by NGOs in this instance for continued facilitation and communication cannot be emphasised enough. However, building a partnership with NGOs is not always easy. The capacities of these organisations particularly black dominated, are often weak. Their accountability and their complex internal politics, as well as the fact that they sometimes view government as adversary rather than an ally, pose considerable challenge in sustaining long-term capacity building and community development programmes in rural areas (UNDP website).

Forum experience to date has shown that some stakeholders become frustrated with fora that are simply consultative. In many cases, there is considerable pressure for the forum to secure more 'power' and to become more influential in the water resource management domain (DWAF, 2001). Commonly, the route to 'power' is seen to be that of legislation, where the forum aspires to become a statutory structure (normally a Committee or a water user association) to have more 'teeth'.

International level

At the international level, where rivers straddle international boundaries, a number of agreements have been drawn up between the respective countries. For example: The interim IncoMaputo Agreement between Mozambique, Swaziland and South Africa was signed at Ministerial level at the WSSD on 29th of August, 2002. An associated Resolution is already signed at the Director General level on 13th of August, 2002 in Maputo. Both agreements now are in effect. The IncoMaputo Task Teams affiliated to the Tripartite Permanent Technical Committee (TPTC)*, representative of three countries provided the platform for dialogue.

The agreements represent the planning level of management of the Incomati and Maputo River systems. The agreements impact on areas and activities like operating rules, monitoring, protection, information exchange, as well as capacity building and institutional development.

Box 3 Issues covered under international agreements

- Industrial installation for energy production or mining activities which can impact significantly on water quality and quantity.
- Pipelines carrying oil or chemical products.
- Installations (facilities) for storage of dangerous products.
- Reservoirs for river water regulation and storage with a capacity above 250,000 m³.
- River training and canalisation of river beds.
- Surface water abstraction facilities.
- Ground water abstraction facilities.
- Artificial recharging of aquifers.
- Wastewater treatment.
- Wastewater discharges, of urban, industrial, cattle raising or other origin.
- Use of water causing the cross border water temperature to change.
- Deforestation and reforestation works that have the potential to increase the sediment production or to increase flood peaks or to decrease the river flow.

This international level poses numerous challenges and is governed by external factors that need not be in synergy with national imperatives. Keeping politics out of the equation remains a challenge that needs more focus on resource integrity, which sometimes is hampered by the level of trust being built between the partners. Streamlining local cross border issues through local delegations to be addressed by locally based institutions more focused on operational efficiency.

Success factors

Despite the political will to devolve the management of water resources to the local level, numerous challenges are forcing the state to play the role of initiator, facilitator, referee and regulator, at the same time. Although this is not conducive for effective dialogue, it is a realistic outcome within the given constraints. The trade-off is when the state talks on behalf of the disadvantaged masses with the assumption that it knows what they aspire for and that it knows 'better'. Comparing this to the disadvantage that the deprived would find themselves in if engaging in dialogue with some of the powerful role players, it's a fair trade-off.

This should not imply that South Africa is compromising its vision but discovering that it would be realized in a phased and progressive manner. All efforts are made to overcome the reviewed challenges on essential imperatives such as capacity, empowerment, social justice, cooperative governance, information sharing, etc. Checks and balances are being developed to ensure that the future desired state becomes achievable over time.

The development of appropriate mechanisms for creating effective dialogue environment is work in progress and includes the following:

- Creating partnerships with civil society;
- Developing customized information packages and training programmes on water resources management targeting local government;
- Developing participatory decision making methodologies;
- Prescribing minimum requirements for public participation needed for the implementation of different components in the NWA;
- Coaching and mentoring local champions to lead local initiatives;
- Creating institutional memory of progressive implementation;

* Established by the Agreement between the Government of the Republic of South Africa, the Government of the Kingdom of Swaziland and the Government of the People's Republic of Mozambique for the establishment of the Tripartite Permanent Technical Committee, signed in Pretoria on 17 February 1983.

- Researching international best practices by inducing more synergy with local research institutions such as the Water Research Commission, tertiary institutions, etc. special emphasis is made on gender mainstreaming and economic values of different water uses;
- Regular dialogue with stakeholders to inform policy from implementation;
- Building good and complementary working relationships with collaborating role players.

This approach/conclusion is not static and should be viewed as work in progress, which will be monitored and reviewed on a regular basis. There is an element of pre-emption regarding the establishment of catchment management agency that are not established yet.

Questions that still need to be explored, researched and answered include:

- 1 The creation of incentives for the rural poor to engage in dialogue by providing a reasonable answer to the question 'what's in it for you?'. The developmental nature of water resources management institutions will contribute to social and economic development mainly canalised through local government initiatives. The recent transformation of local government and their new composition can delay the operationalisation and realisation of the catchment management agency developmental contributions. Both institutions striving to fulfil their respective legal mandates under different Acts where there is no accountability from one to the other;
- 2 The long term vision for water resources management where equitable access to water is implemented, representative institutions are established, etc might not be 'good enough' for those who are still waiting to feel the positive impact of the government they elected seven years ago on their lives;
- 3 In this hierarchy of governance structures in South Africa, 'what is the most appropriate level for decision making, now and in the future?'. This varies with the geographic scale of operation, as discussed earlier but appropriate methods for its identification are still to be developed;
- 4 The monitoring and evaluation tools for capacity building programmes aimed at ensuring the right impact is made through achieving the time-bound targets of the vision, need to be designed;
- 5 Attracting businesses and international developers to invest in old homeland areas to ensure the financial viability of dialogue platforms such as catchment management agencies where they have been earmarked as development nodes;
- 6 Instituting the right checks and balances to ensure adequate compliance, at all levels, over time can be cumbersome both on the side of the complier and the regulator. Performance indicators and auditing regulations need to be simplified enough for consistent implementation for timely and accurate interventions.

One of the lessons learnt in stakeholder involvement at a basin level is that financial compensation as incentive for continued participation fulfils this expectation as long as the incentive is there. This is not perceived as being sustainable where internalisation of the

issues discussed is not demonstrated. A longer term and probably resource intensive approach for sustained participation can be possible through:

- Information sharing using suitable media and in the relevant language at an appropriate level;
- Identifying and mapping out overlapping needs and aspirations;
- Conducting catchment tours;
- Developing a catchment vision using participatory methodologies.

References

Census Report No. 03-01-11 (1996). Statistics South Africa, 1996. The People of South Africa Population.

SA Country Report (1998). African Charter on Human and People's Rights, DWAF (Sept 2002). Government policy on support to Water User Associations. Draft. *UNDP and civil society organisations, building alliance for development:* (<http://www.undp.org/csopp/csobroch.htm>).

DWAF, 2001. Guidelines on the Establishment and Management of Catchment Forums, in support of Integrated Water Resources Management.

Abbreviations

RO=DWAF Regional Office

DWAF=Directorate of Water Affairs and Forestry

CMA=Catchment Management Agency

CMC=Catchment Management Committee

WUA=Water User Association

WSA=Water Services Authority

WSP=Water Services Provider

Source: Mazibuko, G and Pegram, G (2002)

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Hungarian water management at the local level

Short description of the history and the present situation of the water boards, the union of water boards and an attempt to create a dedicated bank for water boards.

Main tools used

Public sector and institutional reform	(GWP ToolBox) A3.2
Service providers and IWRM	B1.7

History

The history of Hungarian water boards lasts for a period of almost 200 years. The first water board of Hungary was established in the year 1810. During the nineteenth century the main tasks of the water boards were river regulation and flood control (mostly along the river Tisza). Since the 1870s the construction of drainage works on the plains of Hungary started: construction of networks of canals and pumping stations. Around the turn of the century the irrigation works started.

After the First World War there was a big change in the life of water boards. The number of water boards decreased and through redefinition of borders division in water systems took place. The most important tasks of the water boards in the inter-bellum were drainage and irrigation in agriculture. A start was made in the regulation of small rivers. The period after the Second World War was a very dark one for the Hungarian water boards. In the year 1948 the nationalisation was carried out and until 1957 the Hungarian water boards did not exist. At the end of 1957, water boards in Hungary reappeared. The next 35 years gave stability to the water boards. Their tasks were closely related to extended national and cooperative agricultural enterprises. The most important tasks of the water boards during this period were drainage, irrigation and land reclamation. The number of the water boards stabilised after several merges to 67, in the 1990s.

The next big change in the life of Hungarian water boards took place in the period 1992–1996. Reprivatisation in agriculture increased the number of agricultural enterprises. Their number increased from 1,500 in the time of cooperatives and state farms, to about 1 million nowadays.

Present position of the water boards

After this change, local water management received new incentives. In 1995, a new Hungarian Water Act was ratified. The position of water boards was founded in 11 articles of this Water Act.

Since 1998 the Hungarian water boards act under the umbrella of the Ministry of Agriculture. Their number is 75; the average size is 110,000 hectares. Some of the main tasks of the water boards during the last 4 years period are:

- The operation of canal networks (38,000 km) and pumping stations (300 stations);
- The protection against excess water;
- Flood control of small rivers and streams;
- Operation of irrigation channels and pumps;
- Construction and operation of small reservoirs;
- Drainage of small settlements;
- Construction and maintenance of drainage canals.

Water board income

The Hungarian water boards execute public tasks in the field of water quantity management. Public tasks are being financed by the Ministry of Agriculture and by local stakeholders. Stakeholders are: farmers, cooperatives, cities and municipalities. Besides, semi-commercial tasks are being executed, which can contribute substantial to the total budget of water boards.

The financial situation of Hungarian water boards is still sub-optimal. The insufficient income from local taxations and fees is partly due to a lack of a well-functioning cadastral system for property registration.

The necessary income would be 3.000 Hungarian Forint/hectare. The reality shows an average of 300 Hungarian Forint/hectare. The support from the government is 900 Hungarian Forint/hectare

In the year 2002 the income for water boards in the whole country came from:

- Local taxations and fees: 1,400,000,000 Hungarian Forint;
- Support of government: 4,200,000,000 Hungarian Forint;
- Other activity of water board (income): 6,000,000,000 Hungarian Forint (construction works).

A bank of water boards

In Hungary in the period 1992 to 1996, following the reopening of its borders, the need for and shortage of capital was reminiscent of the situation in the Netherlands around 1950. The Netherlands bank of water boards was asked to advise the Hungarian Water Board Union during that period on how it could set up its own financial institution, using the Dutch model as a basis. In the end this initiative never got started, primarily because the Union's member organisations were dissimilar in nature, but also because of the before

mentioned lack of sound cost recovery in those days. Another key reason for the failure of the project was that the tax regime of the water boards was not yet properly structured. As a result, no consensus could be reached on the form and substance of the collaboration and several individual water boards found their own way to commercial banks.

The union of water boards

The Hungarian Union of water boards (VTOSZ=National Union of Water Management Associations) was established in year 1992. The first union of Hungarian water boards was already established in year 1846 and reorganised in year 1878.

The tasks of the Hungarian Union:

- Spokesman for the members;
- Service provider for the members;
- Employer's federation.

In 12 regional unions there are 75 water boards, 60 water management associations for water supply and wastewater canalisation and 8–10 service companies. The board of the Union has 13 members: one chairman, 12 delegates from the 12 regions (two deputy chairmen from the delegates). The Union bureau consists of three employees.

Success factors

- A well-functioning cadastral system for property registration is essential for income from local taxations and fees.
- Future member organisations of a cooperative bank should not be too dissimilar in nature. On the form and substance of the collaboration consensus has to be reached. This will be more difficult in a very heterogeneous group with different interests.
- Another key success factor for a cooperative bank is a proper and adequate tax regime of the water boards.

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Financing water management for agricultural purposes in India, government versus NGO initiatives

In this case study two approaches for water management in Gujarat are presented. One is the top-down approach by the government; the other is the cooperative approach by the Self Employed Women's Association.

Abstract

India's policy in the water sector includes the requirement for partial capital cost recovery and full operations and maintenance financing by users and the promotion of groundwater conservation and rainwater harvesting.

At the state level different development strategies are pursued. An agreement with the national government has been reached on priorities. The water sector also receives international support by bi-lateral and multi-lateral donors and non-governmental organisations (NGOs). The support plays strategic but so far not much mainstreamed roles in developing and testing more community-managed approaches with attention to social and gender equity.

It is noted that one of the main problems in achieving effective and sustainable community management of water supply and sanitation is the lack of effective and equitable financing systems. The private sector has shied away from investment in the water sector. This is due to the low expectations concerning the returns on these investments.

Already in the 1960s the government introduced multi-annual programmes for investments in dams, water reservoirs and irrigation networks. Usually a project approach was chosen to increase the access to irrigation and safe drinking water.

The Self Employed Women's Association, a trade union formed in 1972, organises women to enter the mainstream of the economy through the twin strategies of struggle and development.

Development takes firstly the form of helping members to form their own co-operatives and groups. The co-operatives move towards early self-reliance, thereby offering an alternative, non-exploitative method of employment to the producer.

The lessons learned by SEWA are that, unless women water users own organisations come

up to manage water resources, the water sector will remain unbalanced in favour of men and exploitative over use or over consumption.

Main tools used

Cost recovery and charging policies	(GWP ToolBox) A3.4
Civil society and community based organisations	B1.6
Broadening participation in water resources management	C4.6

Background

The problems in the water sector in India are extensive and vary widely from state to state. Water management has a long tradition in India. Water management issues in this country concern in particular its use for agricultural purposes. Because of recurrent famine in the 1960s, India has tried to achieve food self-sufficiency for years. Increasing local fertilizer production and extending irrigation were two instruments to achieve this goal. The latter required heavy investments in irrigation infrastructure, which was always achieved with government financing. It was also a reason to provide free or heavily subsidised electricity to the farmers, which they used to pump up ground water below cost price and without considering replenishment of the soil. In this case study we present a gender initiative for water management in Gujarat: poor women working together to get better access to water under the umbrella of SEWA.

Government policy

A large number of institutions are involved in water management at the national and state level, for example different ministries and departments. The National Drinking Water Mission (since 1991 the Rajiv Gandhi National Drinking Water Mission) was launched to improve drinking water and related water management. At that time the objective was already to supply 40 litres per capita per day in all of India and 30 litres per capita per day in desert areas for cattle.

India's water policy includes the requirement for partial capital cost recovery, full operations and maintenance financing by users and the promotion of groundwater conservation, rainwater, harvesting (Naidu, 2002). One might argue to which extent this is fully implemented. The 73rd and 74th constitutional amendments passed in the early 1990s. Subsequently state level legislation and regulation involved the decentralisation of different functions to local governments, including water supply and poverty eradication. The reforms in the water sector are praised because of the community-oriented and participative approach (Jal Manthan, 2002). However, the pace of the decentralisation process is generally considered to be slow. Resistance can be observed from vested public

and private interests in centralised and subsidised water and sewerage services, and in the face of poorly developed capacities in the Panchayats. Some States, such as Kerala, Madhya Pradesh and West Bengal have made substantial advances in decentralisation. They reallocated development budgets to Panchayats and the started public participation, Panchayat-based planning and development.

At the state level different development strategies are pursued. An agreement with the national government has been reached on priorities. The water sector also receives international support by bi-lateral and multi-lateral donors and non-governmental organisations (NGOs). The support plays strategic but so far not much mainstreamed roles in developing and testing more community-managed approaches with attention to social and gender equity. The private sector has shied away from investment in the water sector. This is due to the low expectations concerning the returns on these investments.

A number of issues remain important in water management in India. Van Wijk (2002) mentions for example that newly constructed systems are not well maintained and non-use is high. Secondly the lack of integrated water management means that yields and water quality are declining. Naidu (2000) formulates it as water shortages in summer months, sources drying up mainly due to depletion of ground water levels; increasing incidence of water quality problems, damages due to recurring floods and droughts or other natural calamities and increasing aspirations. Also one notes the virtual absence of institutions for water management at the lower level, including NGOs and the private sector. Finally it is noted that one of the main problems in achieving effective and sustainable water supply and sanitation is the lack of effective and equitable financing systems. Even in a successful World Bank project in Bihar the topic of finance is not mentioned (World Bank, 1999).

Government initiatives

Already in the 1960s the government introduced multi-annual programmes for investments in dams, water reservoirs and irrigation networks. Usually a project approach was chosen to increase the access to irrigation and safe drinking water (for example World Bank, 1998). By connecting villages to the electricity grid farmers were allowed to pump up water for irrigation purposes (Put and Van Dijk, 1989). Electric power supply for agriculture is free in certain States and heavily subsidised in others. This has led to an excessive exploitation of ground water. Naidu (2002) concludes that unregulated and overexploited ground water extraction has resulted in groundwater depletion and the resultant decline in water quality

In 1987 the Ministry of Water Resources drafted for example a new water policy to guide the planning and development of water resources throughout India. The recommendations focussed on the need for introducing water resource management. Standards were designed for groundwater structure to protect ground water sources.

Ground water regulation and management became an important topic, but one may wonder the effectiveness of the policy. A number of states, like Maharashtra, developed legislation for the regulation and management of groundwater resources. Other states, like West Bengal, have chosen to involve user committees in regulation and management of water.

Women and water organised by SEWA

Self Employed Women's Association-is a trade union formed in 1972. It is both an organisation and a movement with each strengthening and carrying forward the other. SEWA organises women to enter the mainstream of the economy through the twin strategies of struggle and development. SEWA struggles against the many constraints and limitations imposed on women by society and the economy, while development activities strengthen their bargaining power and offer them new alternatives.

Any self-employed woman in India can become a member of SEWA by paying a membership fee of minimum Rs. 5 per year. Every three years the members elect their representatives to the Trade Council, who in turn elect the highest decision making body, the twenty five member Executive Committee. Four committed and experienced SEWA organisers are also elected to the Executive Committee. This body represents all the major trades and occupations of SEWA members.

Water campaign

The womenfolk of landowners with irrigation pumps are able to use this water also for domestic purposes. Poor women found that their domestic shallow wells fell dry (Baldwin and Bhatnagar, 1996; Rao, 1991) and they have become dependent on better-off farmers to use more distant irrigation wells for domestic purposes.

For SEWA's rural members in particular, lack of drinking water, fuel and fodder are issues which have a direct bearing on their employment, well-being and very survival. This is especially so because most of our rural members live in areas with little or no rainfall and hence perennial drought and desert conditions. In many districts the water table is as low as 900 feet, sometimes even more. In some districts like Kheda, there is severe water logging. SEWA's rural members have been leading a campaign for water since 1995.

In the philosophy of SEWA women are considered central to any decisions related to the use, management and ownership of water. Water is a basic need, access to water is a basic right and money is the only one way to value water. Hence water management must combine both market and planned approach. From 1995, the start of the water campaign, to the end of 1999, their activities in Gujarat included:

- 1 Integrated watershed development project with Gujarat Land development corporation in Sabarkantha;
- 2 National Watershed management project in Banaskantha;
- 3 Building rain water harvesting structures in Banaskantha;
- 4 Augmenting local water resources in cluster of villages;
- 5 Water campaigns in 8 districts;
- 6 Provision of water as basic service in slums in Ahmedabad Municipal Corporation area slums;
- 7 Financing water loans to urban and rural members;
- 8 Special focus groups actions, such as slat workers, gum collectors, slum dwellers women farmers, etc.

Cooperative bank

One of the services SEWA operates is a cooperative bank, which was started in 1974 with an initial membership of 4,000 (11,000 in 1987–88). The main features of SEWA Bank are:

- Membership is open only to poor women on payment of Rs. 10 (32 dollarscents) as share capital;
- Help women become financially independent and start their own economic activity;
- Cut red-tape/procedures to help illiterate women get small loans without difficulty (In view of the fact that many women could not even sign their names, photographs were used for identification).

The objectives of the Bank are:

- To provide facilities for savings and fixed deposits accounts, thus inculcating thrift in women managing their savings and ensuring safe custody of cash;
- To provide credit to further the productive, economic and income generating activities of the poor and self-employed;
- To extend technical and management assistance in production, storage, processing, designing and sale of goods and services;
- To provide facilities to redeem jewellery from pawn brokers and money lenders;
- To adopt procedures and designs schemes suitable for self-employed women, like collecting daily savings from their place of business or home, or providing savings boxes and giving training in banking procedures.

SEWA Bank also provides legal and productivity training, education, maternity, protection, social security and nursery facilities.

Outcomes

Typically, the government has launched most schemes in the water sector. Usually these projects were considered gifts for which the population did not feel responsible. They

made little or no contribution to the realisation of the project in kind nor in cash and hence did not feel responsible for repair and maintenance. Until the reforms started in the 1990s India has a tradition of providing services for free, with the subsidies for rural electricity as an extreme case of which the negative effects have become very clear. In recent year NGOs have also dealt with water management and opt for a more bottom-up and participatory approach, where also attention is paid to self-financing.

Lessons learned

- There is a need to introduce an appropriate tariff to act as a disincentive to over exploitation of ground water.
- Although the importance of community participation in watershed management is recognised it is not always practiced, particularly not in the large-scale capital-intensive projects. Community participation is necessary right from the planning to the maintenance stage.
- There is a need to base water pricing not only on recovering the operation and maintenance costs, but also to allow recovery of part of the capital cost. The concept of cost recovery is not taken seriously by the different agencies. There is a need to introduce water management systems that are self-financing. Ultimately India will have to go to full water charges according to the Deputy chairman of the Planning commission, Mr. K.C. Plant (Hindu Business Line, 11-12-2002).
- The lessons learned by SEWA are that, unless women water users own organisations come up to manage water resources, the water sector will remain unbalanced in favour of men and exploitative over use or over consumption. Simultaneously the existing water institutions, the Gujarat Land Development Corporation, Gujarat Water Supply and Sewerage Board, etc. must refocus on poor women's water needs and train them. They learned that where men owned land, ownership of water by women has provided counterbalancing economic and gender power. The key to success is through a range of water management initiatives: private, public, joint and others. The focus should be on the watershed users, the poor women among them, and to make it integrated. This means addressing credit, market, social and other needs of the users. The most important tool for mainstreaming is parting with financial and management powers. Without financial and management powers no tool or method can mainstream poor women in natural resource management.

References

Baldwin, J.A. and Bhatnagar, S.N. (1996): 'Sustainability through training'. In: Pickford, J. et al. (eds.) *Reaching the unreached, challenges for the 21st century*: proceedings of the 22nd WEDC Conference, New Delhi, India, 9–13 September, Loughborough.

- Dahn Foundation (2002): A conference on tanks. Maduari: Dahn Foundation.
- Jal Manthan (2002): A rural think tank. New Delhi: Watsan programme South Asia.
- Naidu, V. (2002): Indian reforms initiatives in the water sector. Washington: World Bank water forum.
- Put, M. and van Dijk M.P. (1989): Semi-arid Indian agriculture, Land, water and crop management in Southern India, Bulletin 316, Royal Tropical Institute, Amsterdam.
- Put, M. and van Dijk M.P. (2000, eds): Government and NGOs interventions in dry land agriculture, A study of two projects in Andhra Pradesh. New Delhi: Manohar, pp.1–419.
- Rao, B. (1991): 'Women and water in rural Maharashtra'. In: Environment and Urbanization, vol. 3, no. 2, p. 57–65.
- SEWA (1999): Women and water organised by SEWA. Ahmedabad.
<http://www.sewa.org/search/index.htm>
- Sunshine Spartel, T.(2002): Influence of socio-cultural norms on the sustainability of rural water supply and sanitation, A case study of Tamil Nadu. Guelph: University, Msc. Theis.
- Wijk, C. van (2000): Water supply, sanitation and rural poverty reduction in Gujarat and Kerala states. Delft: IRC, draft paper.
- World Bank (1998): Water and work for India's poorest rural region. Washington: IBRD Project brief.

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Colofon

Published by

Dutch Association of Water Boards

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Order number 10046

ISBN 90 6904 114 6

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Illustrations

Len Munnik

Layout and print

GBS prepress, Rijswijk

Print run

2,500 copies

