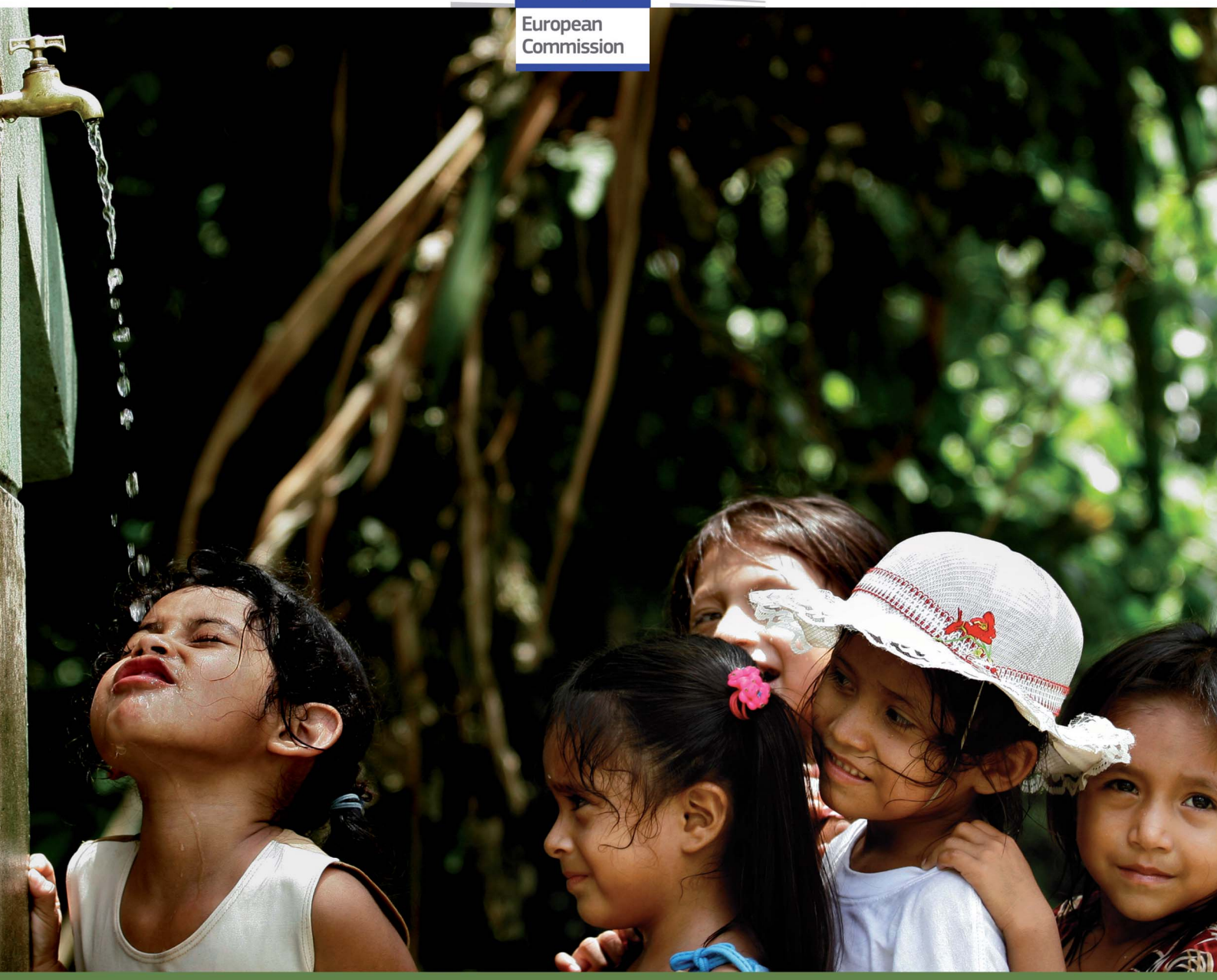
European Commission



WATER PROJECT TOOLKIT

Water resources management
for sustainable development

INTERACTIVE INDEX

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www.aquaknow.net/watertoolkit

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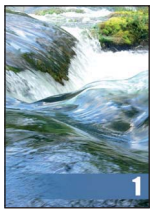

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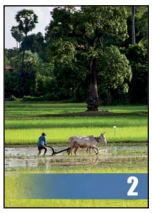

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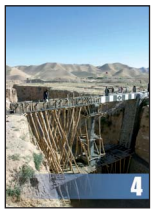

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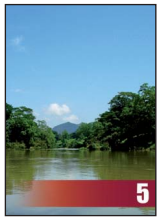

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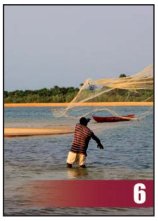

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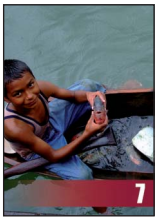

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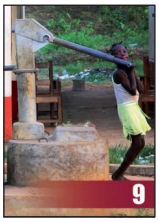

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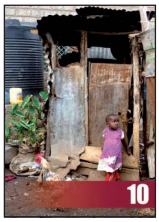

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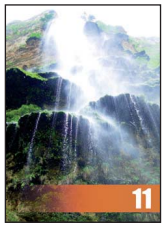

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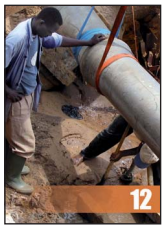

Tools for sustainable development cooperation

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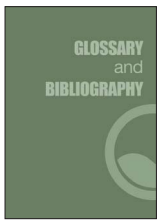

Abstract

The Water Project Toolkit addresses the sustainable development of the water sector and contributes to translating the international development policies on freshwater resources management into actual development cooperation activities. The Water Project Toolkit is intended to be used by sector stakeholders such as governments, private sector, civil society, development partners, Universities and other training institutions, international organisations and all other practitioners involved in the water sector.

The Toolkit provides a comprehensive framework for all activities relating to water resources development; its application involves a radical change from previous attitudes towards water management, and the introduction of good practices for fostering a sustainable and inclusive approach.

The first part of the Toolkit introduces the rationale, the challenges and the key concepts behind international development policies and practices of the water sector. It identifies policy principles and translates them into practical actions to support the sustainable management and implementation of water resources development. It clusters programme activity into six Focus Areas, within which the policy principles are to be applied.

The second part of the Water Project Toolkit is the core practical material of the book. It consists of step-by-step suggestions for the planning, identification, formulation, implementation and evaluation of water development activities.

The third and final part of the Toolkit provides a brief summary of the latest policies and tools for development cooperation in the water sector.

EUWI
EU WATER INITIATIVE

The Water Project Toolkit has been reviewed by the members of the European Union Water Initiative (www.euwi.net).

FOREWORD

"Water: a precious resource…and a right for all"

Access to clean water is vital for the health and survival of people all over the world - a human right too often taken for granted in rich countries. Water is a precious natural resource which flows across borders entailing cooperation of nations and the need for resource-sharing agreements. Water also traverses all the UN Millennium Development Goals: health, food, sustainable environmental management and education cannot be ensured without it.

Global numbers are staggering: more than one billion people still do not have access to safe drinking water and more than two and half billion people lack proper sanitary installations. Furthermore, water resources are increasingly under pressure due to climate change, migration of people, population growth, agricultural expansion, industrialisation and energy production, as well as the mismanagement of ecosystems.

The European Commission (EC) is deeply committed to fostering the development of the water sector in partner countries. In the period 2005-2009, the EC committed more than 2.5 billion Euros with objectives ranging from providing water and basic sanitation to the poor, to improving water management governance and policies. The Water Project Toolkit is part of this major effort. It addresses the need to protect ecosystems and to extend all the benefits of freshwater resources equitably, efficiently and sustainably, with special emphasis on poorer and underserved populations.

As we acknowledge that we are facing a new era characterised by freshwater scarcity and vulnerability, we must continue to develop our innovative thinking and approaches in order to lay the foundations for successfully coping with the increasingly complex challenges that our future generations will face.

Based on internationally agreed upon principles, this Toolkit is a guide for supporting water sector practitioners in applying sound environmentally sustainable practices to the key elements of sector development: institutional management, socio-economic and public governance, financial, environmental, and educational as well as capacity building, communications and technology.

A first edition of this guide was published by the EC in 1998 proposing a strategic approach. This was already a turning point in water-related development cooperation. In this second edition, the focus has been reoriented towards the evolution in international development cooperation and water sector policies over the last ten years. The Toolkit is a living document available online at www.aquaknow.net.

The Water Project Toolkit represents a strong collaborative effort between EU Member States, partner countries and international agencies coordinated by the EC's services for development cooperation and for scientific research. It shows the EC commitment to providing sound operational guidance to support the improvement of the quality and effectiveness of projects for the sustainable development of the water sector.

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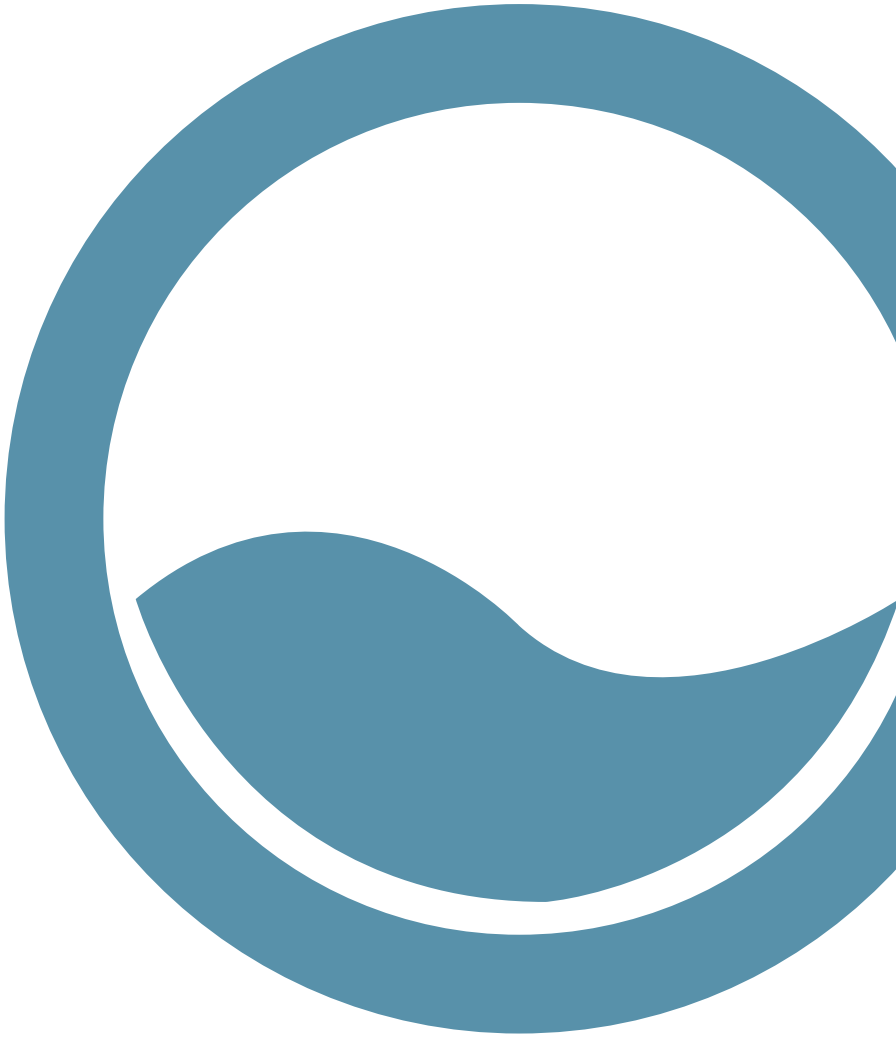

Interactive version on

www.aquaknow.net/watertoolkit

Aim and scope

The management of freshwater resources and related services is of critical importance to healthy social, economic and political well-being of a society. Stresses exerted on the world's water resources by the increasing demand from growing populations with changing consumption patterns and the destruction of water quality from pollution as a result of poor environmental management, are placing water increasingly higher on the international agenda, including that of climate change. Effective water resource management and developments impacting on water resources are recognised as key components of environmentally sustainable development. The negative consequences of poor water resource management on socio-economic development are more frequently arising. This is clearly apparent in the agricultural and other water-sensitive industries. However industries where water is less evident in the supply chain, and even other sectors such as energy, are becoming increasingly aware of the risks and consequences associated with a potentially unreliable water resource.

The European Union (EU), through the European Commission (EC) and the EU Member States, has made a significant contribution to the international debate on the impending world water crisis and the measures needed to address it. Their support has contributed to efforts at the international level with other state actors, through the UN system and in inter-ministerial councils, to promote new initiatives in water resource management.

The content of this Toolkit addresses the sustainable development of the Water Resources sector and contributes by translating the international consensus on sustainable water resources management into applicable development cooperation activities. The Water Project Toolkit is intended to be used by a wide range of stakeholders such as governments, members of the private sector including service providers, stakeholders in civil society, research, academia, other higher education institutions, and international organisations involved in development of water resources management.

The centrepiece of the Toolkit is a **'strategic approach for the equitable, efficient and sustainable management of water resources'**. The approach is based on internationally agreed-upon core principles concerning the need to protect the environment and ecosystems, to provide access to the health-giving and productive properties of freshwater resources equitably, efficiently and sustainably among populations, with special attention to poorer and under-served beneficiaries. It provides a comprehensive framework for all activities relating to water resources development. Its application involves a holistic attitude towards water management, and the introduction of best practices consistent with the internationally agreed-upon core principles. The strategy covers the full cycle of the water resource management activity, from national policy-making through to implementation of programmes and projects and includes the subsequent operation and maintenance of services.

The application of the strategic approach facilitates an open and flexible programme process in which sensitivity to changing trends and local economic, social and environmental circumstances can be reflected. At each stage of the programming process, the Toolkit provides a set of practical checklists to enable the policy principles at the heart of the strategic approach to be put into effect in different programming contexts, to identify problem areas likely to be encountered and potential responses to these problems.

A number of common core activities emerge from the checklists, stressing the importance and attention which needs to be given to what are known as 'software' or sometimes non-technical issues. The priority attached to software activities within the overall approach can be seen as part of a strategy which integrates the software component and raises its importance to the same level as the 'hardware' issues (such as infrastructures).

Almost all these activities relate to a certain degree to management and institutional strengthening.

They have been grouped under priority themes for action as follows: institutional development and capacity-building; participatory structures and gender equity; natural resource management; expansion of the knowledge base; demand management and sustainable cost-recovery; awareness-raising and communications. The application of such activities will contribute to making the design and management of water resources interventions more cost-effective, efficient and sustainable.

Structure of the Water Project Toolkit

The Water Project Toolkit opens with a presentation of the rationale for the elaboration of the strategic approach. The strategic approach itself first identifies policy principles for policy development and practical action; it then clusters programme activity into six Focus Areas, within which the policy principles are to be applied; and finally it provides an overview of priority themes for action implied by use of these frameworks.

The Water Project Toolkit's core practical material (Part 2) consists of step-by-step suggestions for the planning and implementation of activities. The approach is progressive, entailing the raising and resolving of issues throughout the different phases of the programme process by systematic application of the principles. The overall intention is to equip those involved in water-related decisions with a framework of principles and operational philosophy to facilitate informed decision-making on water-related development.

In relation to water resources, as in other areas of development activity, policy and practice are constantly evolving. The practical suggestions contained in this Toolkit do not provide exhaustive instructions on how to proceed in every project planning and implementation situation, nor do they offer answers to every problem likely to be encountered. Rather, they articulate a holistic perspective and strategic approach whose accompanying practical 'what', 'why' and 'how to' suggestions illustrate policy and programme directions consistent with this approach. The suggestions are an aid to achieve effective problem-solving within the Project Cycle Management process, not to be used as a prescriptive manual (Project Cycle Management, or PCM, is a system for project development, funding and evaluation used by the EC in its development cooperation activities).

The third part, "The policy approach", gives a non-exhaustive summary of the last development policies and tools relevant to the development of the water sector with several references. If needed, these allow the reader to deepen a series of concepts cited throughout the Water Project Toolkit.

The Water Project Toolkit will enable users to benefit from the current trends in development cooperation involving water resources. In addition, this Toolkit aims to facilitate the application of sustainable water management in national and sub-national policies, programmes and projects.

The Water Project Toolkit is designed to be used on its own, or in tandem with supplementary tools and data. In the interests of brevity and ease of application, the Toolkit provides a summary rather than a full review of the global situation relating to water resources and implications for agriculture, public health, energy and other water-related sectors.

Emerging trends have been treated and highlighted throughout the Toolkit. New experiences and references have been included in order to make this document an updated tool for water sector practitioners. In addition, the online version (www.aquaknow.net/watertoolkit) of the Toolkit allows a high level of contribution and interaction, resulting in a live and continuously updated reference.

PART 1

RATIONALE AND KEY CONCEPTS

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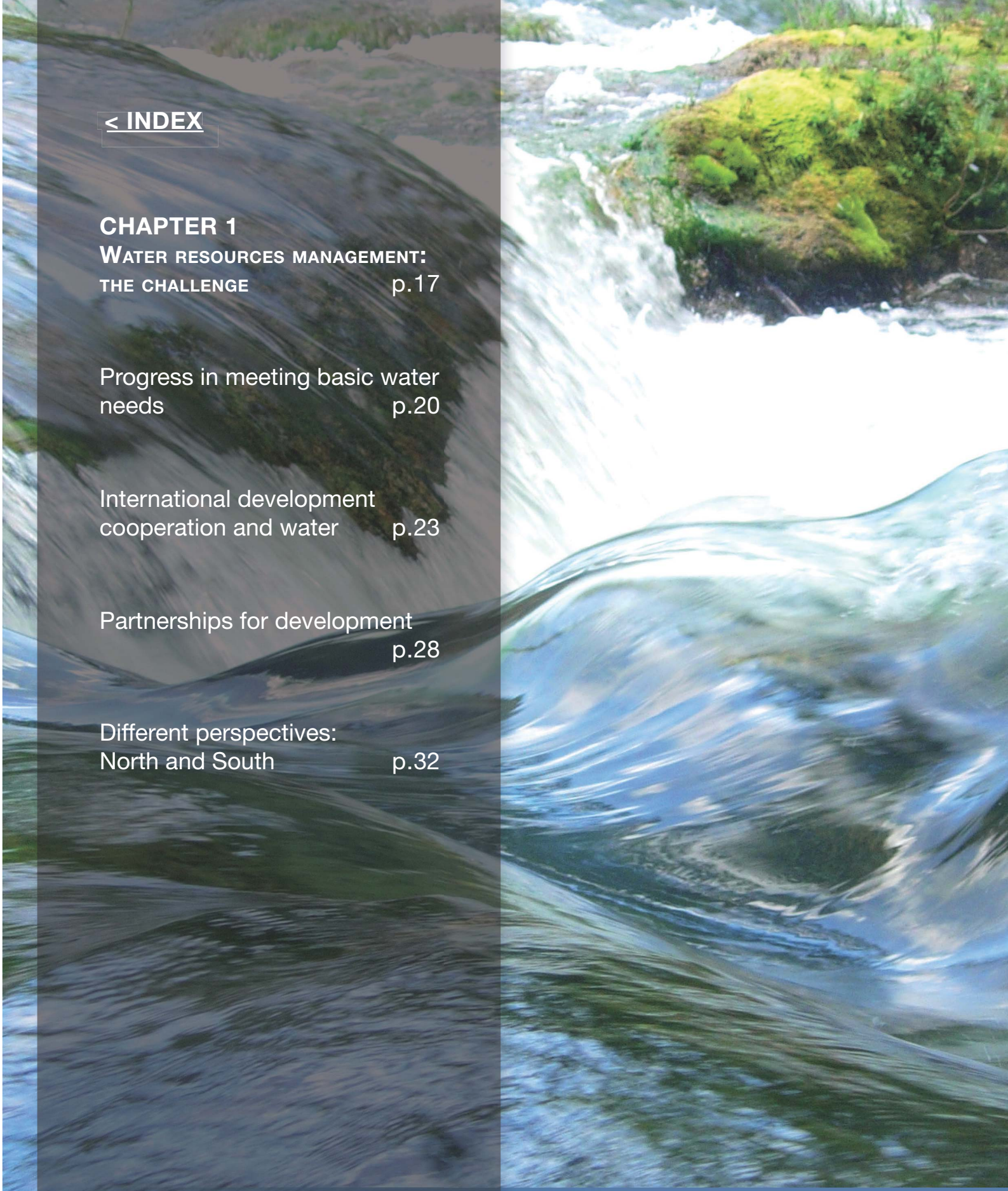
CHAPTER 1
WATER RESOURCES MANAGEMENT: THE CHALLENGE



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CHAPTER 1

WATER RESOURCES MANAGEMENT: THE CHALLENGES

Environmental stresses imposed by population growth, urbanisation, industrialisation and climate change have become a prominent theme of international concern, especially since the 1992 Earth Summit in Rio de Janeiro. One of the most affected of the natural resources is that of freshwater. Demands upon the world's supply of freshwater resources are increasing the threats and risk to both the quantity and quality of a natural resource essential to human life, health, social and economic activities. These risks to water resources have raised political attention which has been translated into political commitment, within and between countries, for the protection of this vital resource. Growing concerns related to climate change highlight the urgency of the freshwater situation. Climate change impacts are expected to affect populations directly by more frequent extreme events such as floods and droughts, rising sea levels, changes in the seasonal distribution and amount and type of precipitation such as snow and rain, Climate change is also expected to impact on the storage components of the Water Life Cycle such as glaciers, snow pack and groundwater via recharge.

The Intergovernmental Panel on Climate Change (IPCC), established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), is an intergovernmental body with the aim to provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences. Relevant reports produced by the IPCC and others cover all continents and regions, with focus on developing regions such as Africa, Asia, Latin America and the Caribbean and South East Asia where most vulnerability to climate change is perceived. To provide a framework within which nations can act in concert to address climate change, the United Nations hosted the formation of a Framework Convention on Climate Change (UNFCCC). Article 4, paragraph 1(e) of the United Nations Framework Convention on Climate Change commits Parties to develop appropriate and integrated plans for coastal zone management and water resources management for the protection and rehabilitation of areas affected by drought, desertification and floods. While the initial focus of the Convention has been on CO_2 emissions, the importance of water has been working its way firmly onto the international agenda.

There are large differences between regions and countries regarding the availability of fresh water resources, especially those in temperate and tropical zones. The majority of countries in the Middle East and North Africa can be classified as having absolute water scarcity today (Figure 1) while in Sub-Saharan African the water scarcity is more related to the economic situation (lack of human, institutional and financial capacities).

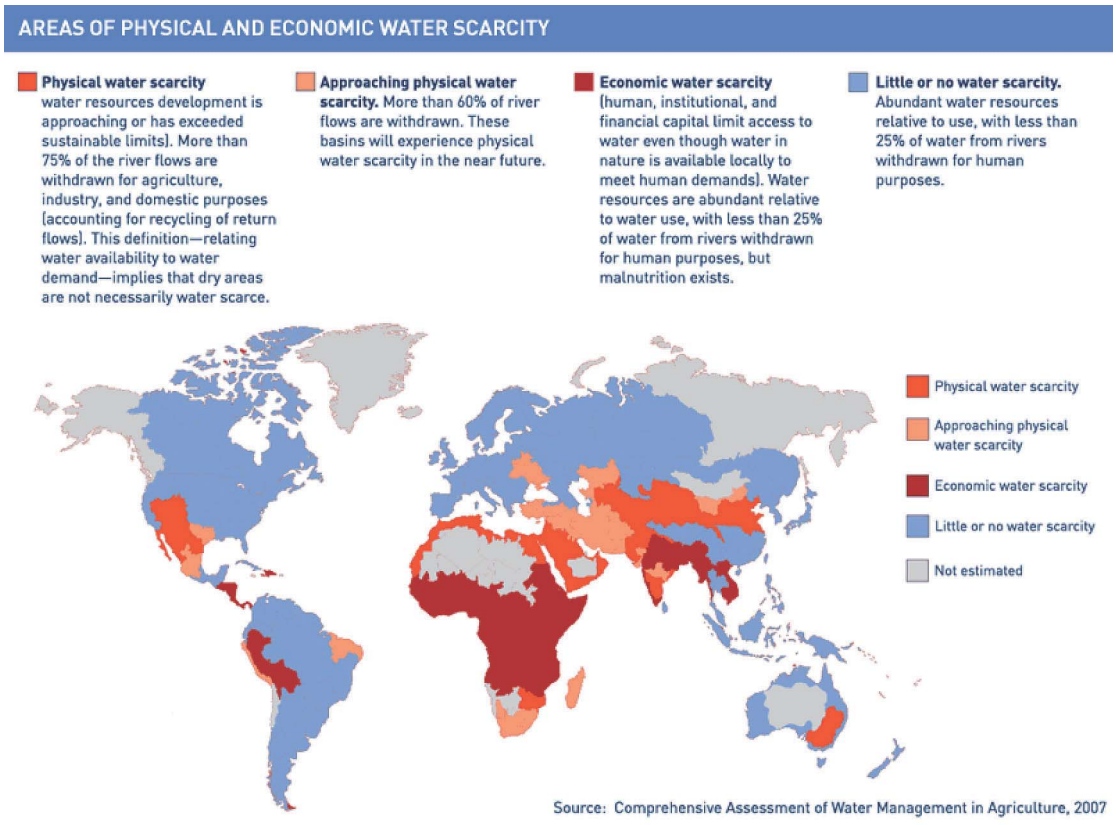


Figure 1: Areas of physical and economic water scarcity (source: IWMI, 2007)

As shown in figure 2a and 2b, according to a joint study by the International Food Policy Research Institute and Veolia water (2011), the water stress, intended as percent of total renewable water withdrawn, is supposed to increase dramatically in the countries with a stronger projected economic growth such as China, India, South Africa and USA. According to the same study the population living in water short areas will increase by 90% by 2050.

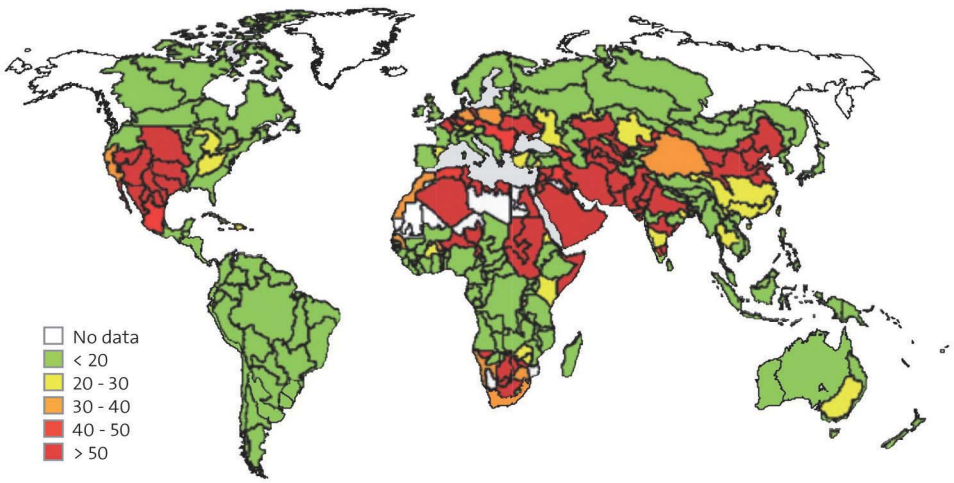


Figure 2a: Water stress in 2010 (IFPRI et al., 2011).

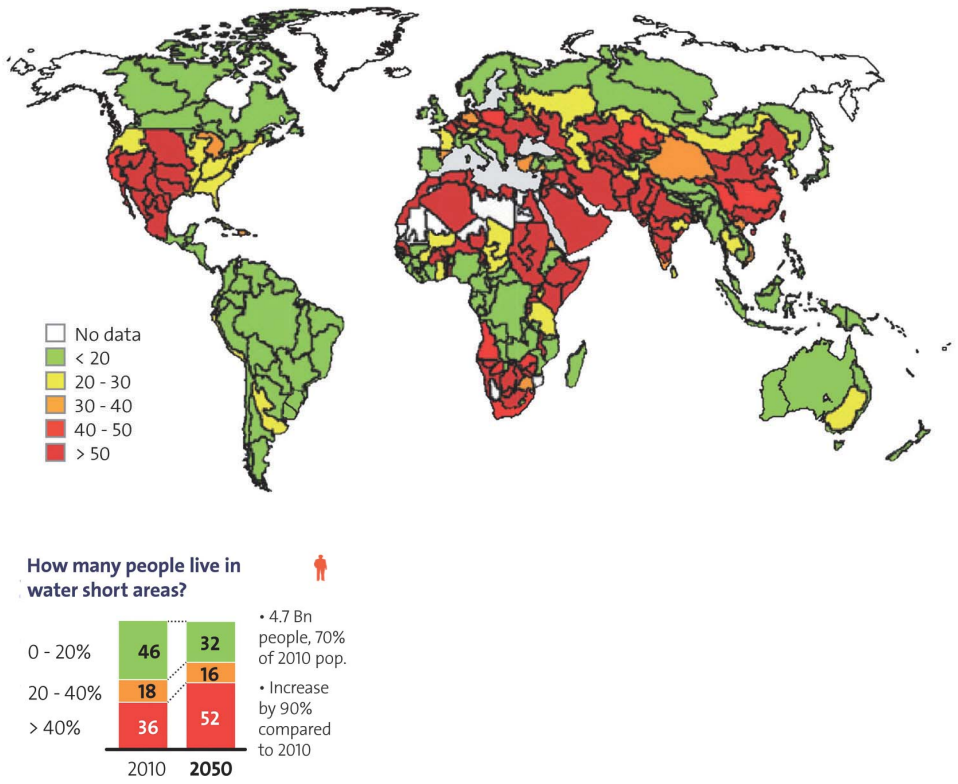


Figure 2b: Water stress in 2050 (IFPRI et al., 2011).

Some major urban centres already face serious water shortages compounded by water pollution crises, the latter often originating from water-dependent and water-impacting agricultural and industrial activities. Questions relating to water resources management and usage cut across many economic and social sectors, including agriculture, fisheries, industry, urban development, energy, environment, tourism and public health. Integrated Water Resources Management (IWRM) principles and concepts are presently used to manage competition between users and even to mediate in disputes over access to water resources and its use.

With increasing economic and demographic demands coupled with climatic change stresses, the prospect of increased competition and serious disputes within and between states and sectors over water resources in the not-too-distant future become more conceivable.

Water's special character of being essential to health as well as a key component in social and economic activities, has resulted in a special cultural status and consequently a special position in public policy. Freshwater resources have traditionally been regarded as something to which all members of the human community have rights to access. Access to clean water –and sanitation - is considered by many current international agendas and platforms as a basic human right, indispensable for leading a healthy and dignified human life. Most existing water supply systems are the result of public investments for social improvement, and as such are invariably subsidized. The use of water in the various social and economic contexts has typically either been unregulated by tariffs, or at most very low-cost; the contributions by consumers usually not able to cover the costs of operation and maintenance.

There are important implications of subsidies and cost recovery in an era of water stress, among which are water profligacy and wasteful practices, or mismanaged water services and infrastructures. In the face of water shortages and environmental concerns, discussions in some international fora have called for water to be regarded as a social and public good and not to be

available for the marketplace. However, regardless of where the responsibility of management is placed, costs must be met to ensure sustainability of services. There can be a clear distinction between the rights-based "value" of water and the value as represented by charges or tariffs for different consumer groups, but herein lie the roots of a dispute. The view which upholds water as a commodity to be bought and sold, in which the community and especially its poorer members might thereby lose their rights, cuts across deeply held beliefs and long-established ideologies, now upheld in some areas that access to water is a human right.

Lack of a holistic perspective regarding water has led to dispersed and sometimes disorganised systems of water management. Responsibilities for the management of the resource in areas such as water transport and the construction of dams, pipelines, pumping stations, treatment plants, sewerage systems, and maintenance, are often allocated to a variety of different administrative departments. Water-related activities and their management are also present within a wide range of user sectors, are subsequently managed by that sector's institution, and result in often uncoordinated management. As the water resource is finite and its utilisation needs to be equitable, efficient and planned, the challenge will be to bring all sector strands of management together.

The need to examine collectively the entire range of uses to which freshwater is put, and to design services which neither squander precious resources nor fail to respect other competing and complementary water needs, was translated into a policy and programme principle and strategy known as Integrated Water Resources Management (IWRM). This principle is the response to the growing pressure on water resources resulting from growing population and socio-economic developments. It comprises a holistic approach that makes the management and protection of water resources compatible with the development of systems serving all types of consumers. It is a vital part of the challenge facing water-related development cooperation today. IWRM contributes to the quantitative and qualitative sustainable management of interlinked surface waters, groundwater and aquifers and coastal waters, thus ensuring the social and economic development that is also dependent on vitally important ecosystems.

However, a change in strategic direction on water is underway. Given the complexities implied in the implementation of IWRM especially in sub-Saharan Africa, the concept of IWRM has been joined with the concept of 'Water for Growth and Development (WfGD, see part 3)'. This concept re-emphasises that water cannot be dealt with in isolation, but requires a high degree of collaboration and engagement between the ministry responsible for water and the ministries responsible for driving social and economic development, such as ministries of infrastructure, energy, mining, agriculture and trade. Water is therefore seen more as a horizontal cross-cutting issue within many facets of development, rather than as a stand-alone 'sector' The concept of WfGD also aims for a better interfacing between water resources and water services issues with a strong focus on how both can together support growth and development. At the forefront of the concept is the assumption that links exists between the scale and range of investments in water and successful economic development, and therefore barriers to financing measures for water development must be overcome (World Water Council, 2011).

Progress in meeting basic water needs

Survival and health

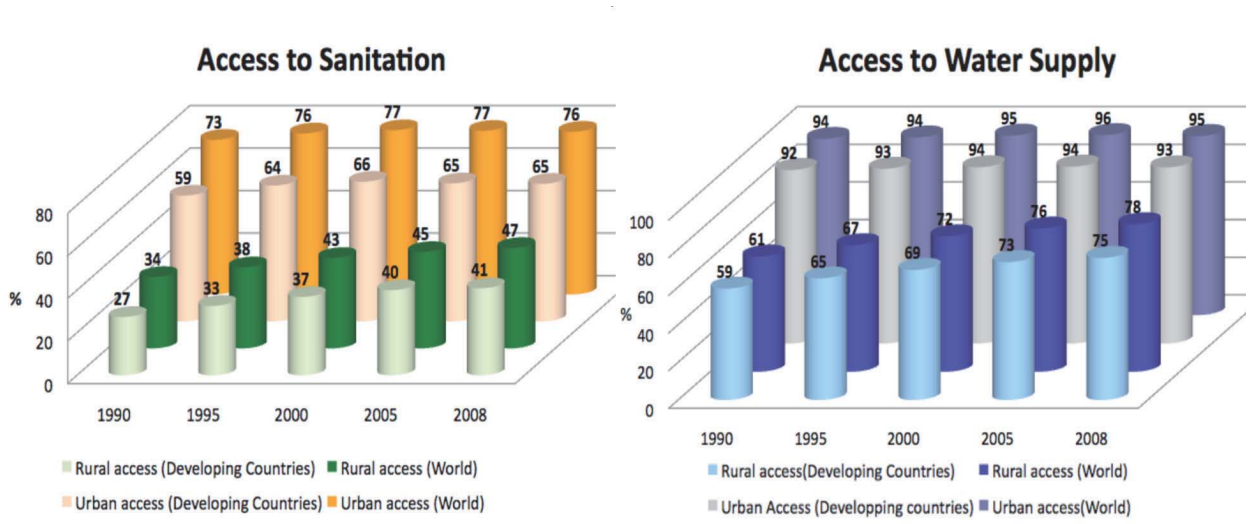
Water's special character as critical to human life, health social and economic activity has granted it a special status in belief systems and in public policy

When water first rose to international importance in the 1970s, it was identified as one of the 'basic needs' common to all humanity – alongside food, water, shelter, means of livelihood - whose fulfilment had become a stated goal of international development policy. The fulfilment of population's basic

needs for access to a supply of safe drinking water and a safe disposal of human waste, remain important parts of today's social and economic challenges. There has been some progress towards satisfying these two basic needs, but the challenge still remains today, with 900 million persons not having access to safe water and 2.6 billion people who do not have access to adequate sanitation facilities (WHO, 2011).

The UN's 'International Drinking Water Supplies and Sanitation Decade' of the 1980s was declared by the UN Water Conference at Mar del Plata in 1977. Despite the increase in attention and resources generated by the Decade, achievements in quantifiable terms fell short of stated targets (Choguill et al. 1993). Only in the context of rural water supplies did coverage manage to outstrip population growth and urbanisation. International commitments were reiterated in 1990 within the goals of 'Water and Sanitation for All" by the Year 2000. In September 2000, during the UN Millennium Summit eight development goals to free people from extreme poverty and multiple deprivations by 2015 were adopted by 189 nations and signed by 147 heads of state and government. Relevant indicators to measure progress towards the Millenium Development Goals (MDGs) were selected by national and international statistical experts. These indicators are followed up by the WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation, which is the official United Nations mechanism tasked with Millennium monitoring progress towards the Development Goals relating to drinking-water and sanitation (MDG 7, Target 7c).

In 2008, the UN General Assembly declared the year 2008 the International Year of Sanitation, the goal being to raise awareness and to accelerate progress towards the MDG target to reduce by half the proportion of the 2.6 billion people without access to basic sanitation by 2015. Given the current technologies, approaches and skilled human resources, the targeted goal is in principle reachable. The present estimated cost to halve the proportion of people without basic sanitation by 2015 is estimated at USD $10 billion.



Developing countries: Asia, Africa, Latin America, Pacific and Caribbean

Figure 3: Inequity in access to sanitation and clean water. Source: Joint Monitoring Programme (JMP), 2012.

Calls for increased prioritization in development cooperation for drinking water supply and sanitation systems have been more frequently repeated in recent years.

In spite of its shortcomings in meeting its set quantitative targets, the Water Decade - at least at the non-technical level - did succeed in changing the perception of the international development community concerning cooperation in domestic water supplies and public health initiatives. The Water Decade highlighted the then-existing shortcomings in policy and practices. These included: over-emphasis on costly and sophisticated (inappropriate) technology, which produced services

beyond the capacity of management bodies to maintain and sustain; lack of a sense of ownership by service stakeholders and users and the consequent neglect of services; a lack of gender analysis and recognition of the role of women in water-transport, plus their influence in domestic water quality and hygiene; insufficient emphasis on environmental sanitation, on health education and hygiene promotion to enable uneducated service users to appreciate the implications of water and waste disposal for family health; and finally the need for cost-effectiveness in all areas of activity in order to use scarce resources wisely. The latter is being reinforced more and more by best practices which include more efficient techniques of water storage and transportation, greater efficiency in water use in industry and agriculture, and promoting behavioural change among water consumers to minimize excess consumption, wastage and water loss.

Food and livelihoods

Although water is also needed to support other basic needs- especially food and livelihoods- issues relating to the use of water for economic production have not been accorded the same level of discussion and scrutiny. While water use in agriculture accounts for more than 75 percent of water consumption in the developing world, in the developed world the sectors of industry and even energy are having very strong impacts on water consumption and more specifically water quality. With the promotion of economic development as a solution to poverty in some developing countries, such as many in Asia, there will also come an increasing evolution of the water consumption profile which will be less agricultural and more industrial.

This evolving profile of water usage will differ among the world regions as a result of their available resources. Water withdrawal as a percentage of renewable water resources varies from a minimum of 1% for Latin America to a maximum of 51% in the Near East and North Africa, as shown in Table 1.

	Total renewable water resources (km^3)	Irrigation water requirements (km^3)	Water requirement ratio	Water withdrawal for agriculture (km^3)	Water withdrawals percentage of renewable water resources
Latin America	13409	45	24%	187	1%
Near East and North Africa	541	109	40%	274	51%
Sub-Saharan Africa	3518	31	32%	97	3%
East Asia	8609	232	34%	693	8%
South Asia	2469	397	44%	895	36%
90 developing countries	28545	814	38%	2146	8%

Table 1 Comparison agricultural waters vs. water resources. Source: FAO Aquastat, 2011.

Concern for world food security is growing and the productivity of agriculture will have to be increased to meet the increasing demand for food. Since 2006, developing countries have leased from 15 to 20 million hectares of farm land to foreign companies, investment funds and foreign governments with a turnover between 20 and 30 billion dollars, but not all of this land is allocated towards food production. While alternative economic land use could bring new opportunities to local populations, they could also over-ride important local issues such as priorities for land allocation or even unresolved land ownership issues. These competing land-uses also impact directly on water consumption and therefore water management requirements. This highlights

the need for a sustainable and also consultative management process which takes into account due consideration of local populations' land and water needs, ownership issues, environmental issues, the competing demands of other sectors, and the future challenges of climate change. While Governments have a vested interest in promoting foreign investment, they also must balance this with the responsibility to address the needs of the population and maintain an agenda of good resource management.

Although less pertinent to the fulfilment of basic needs, the growth of industrial and manufacturing processes which depend on water cannot be left out of the management picture. It is expected that the annual water volume used by industry will rise from 752 km3/year in 1995 to an estimated 1,170 km3/year in 2025 i.e. about 24% of total freshwater withdrawal worldwide (UNESCO water portal).

Increasing urbanization and population growth and the need to expand water supply services for an increased consumption will escalate competition for water allocation between urban, agricultural and commercial/industrial users. Urban and industrial environments are also known sources for creating severe upstream pollution, often with far-reaching implications for rural livelihoods, agricultural production and public health in rural areas. The necessary investments in wastewater treatment and the needs faced by cities to tap freshwater resources from ever further distances result in rising costs and increased competition between rural and urban users. Increased urbanization is often accompanied by economic growth but this is not only an urban phenomena. The demands to intensify agricultural production, accompanied by crop fertilization practices, are also becoming a serious threat to the groundwater environment. In addition, primary resource sectors such as mining and forestry also have huge impacts on the use and quality of water resources and are also in competition with the urban and rural areas.

The challenge, therefore, in terms of improving access to water and sanitation services to satisfy basic human needs is not simply one of maintaining a high profile of water needs and reversing a political trend which has led to under-resourcing of the sector. Lessons learnt a number of which were highlighted by the Water Decade, must incorporate all water users and uses – such as agriculture, urban and industrial, as well as public health – within one strategic approach.

International development cooperation and water

A number of concerns, in addition to those surfacing as a consequence of the Water Decade, have subsequently exerted a significant influence on international thinking about water. Some - such as environmental stresses, water scarcity, climate change and potential conflict - have already been touched upon. Others need to be mentioned here in the context of a path to a new international consensus on water.

In recent years, economic, environmental and 'common good' perceptions of water resources have come to assume greater importance. Concerns over poverty reduction, democracy and human rights have increased the emphasis on equity and participatory approaches. According to the Development Assistance Committee (DAC) definition, aid to water supply and sanitation includes water resources policy, planning and programmes, water legislation and management, water resources development, water resources protection, water supply and use, sanitation (including solid waste management) and education and training in water supply and sanitation. Aid for water supply and sanitation has increased since 2006; for the period 2006-2007, the DAC countries' bilateral annual aid commitments to the water supply and sanitation sector was of USD 4.7 billion. The bilateral aid to water increased at an average annual rate of 19% for the period 2002-2007 whereas multilateral aid rose over the same period in about 11% annually.

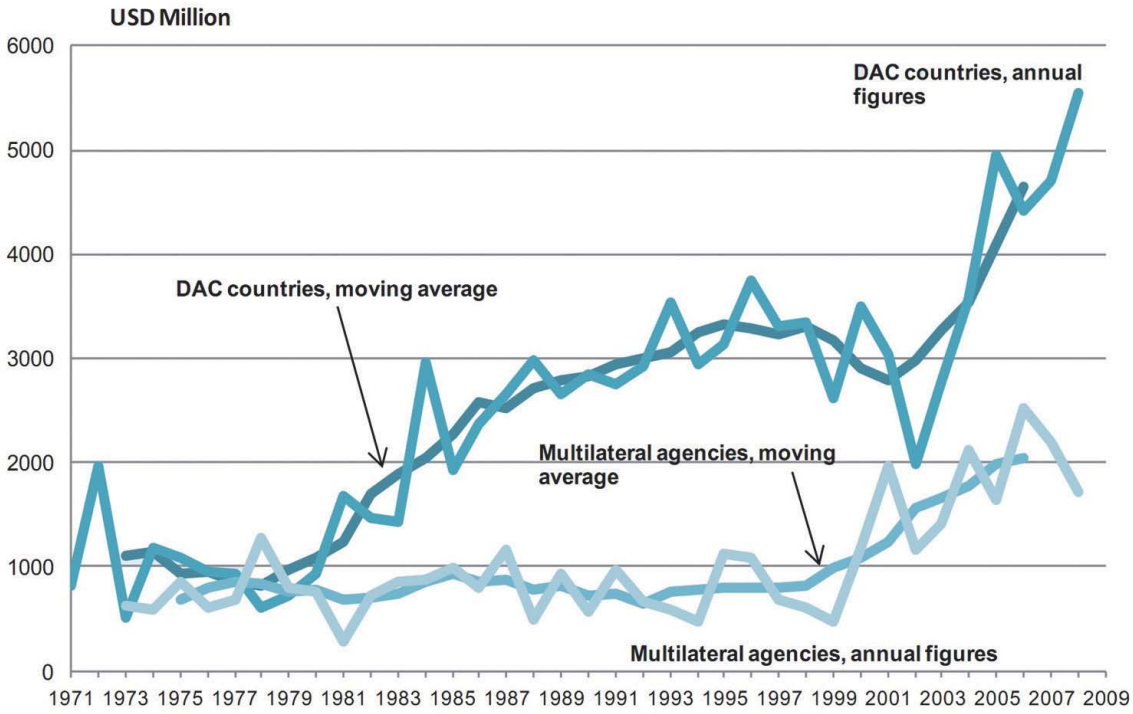


Figure 4: Trends in aid to water supply and sanitation 1971-2009, 5-year moving averages and annual figures of commitments, constant 2008 prices. Source: OECD-DAC, 2010.

The poor achievement of objectives and goals within development cooperation, coupled with similar shortfall of results associated with structural adjustment programmes, prompted a systemic analyses of the context and modalities of development cooperation overall. The need to improve efficiency and cost-effectiveness in the application of Official Development Assistance (ODA) resources, both from the perspective of intended beneficiaries and from that of donors, became compelling for pragmatic reasons (such as financial)as well as an evolving geopolitical and ideological framework.

The Paris Declaration of 2005 is one of the major steps in recent years to address these ODA shortcomings. It was endorsed by over one hundred Ministers, Heads of Agencies and Senior Officials who committed their countries and organisations to increase efforts in harmonisation, alignment and managing aid for results, with a set of actions and indicators to be monitored (OECD, 2005). It laid down a practical, action-orientated roadmap to improve the quality of aid and its impact on development. The Declaration is organized on five principles: ownership, alignment, harmonisation, managing for results, and mutual accountability; it has twelve indicators to monitor progress in achieving results and its aim is to create stronger mechanisms for accountability.

The importance of the ownership principle is linked to an increased focus on poverty reduction and is seen as a key component in the Poverty Reduction Strategy Papers (PRSPs). The comprehensive country-based PRSP strategy was launched in 1999 by the International Monetary Fund (IMF) and the World Bank, aiming to provide the link between national public actions, donor support, and development outcomes in order to meet the United Nations' MDGs. Although the overall purpose of development cooperation remains the same - to redress imbalances and create opportunities for underprivileged and under-served populations - a number of new concerns have emerged. They now reflect the importance and the need for good governance, institutional reform, administrative decentralisation, and the participation and involvement of both the civil society and the private sector. Water-related development cooperation and the new international thinking on water address these concerns and form an integral part of this Water Project Toolkit.

While the debate on water in the 1980s was largely focused on water and sanitation as essential for public health, the scope of the debate in the 1990s expanded, and the wider objective now includes the management and use of water as an important component of environmental management and sustainable development. This wider approach generally embraces water resources management and reflects environmental and economic concerns as well as good governance, transparency, and cross-cutting issues such as gender and poverty alleviation.

Consequently the afore-mentioned overlapping and complementary trends have prompted the development of an integrated approach to water resources management. This approach encompasses the following criteria: environmentally sound water management; support to food security; appropriate technology; private and public sector involvement; challenges in cost recovery and pricing; decentralisation of decision-making to the lowest appropriate administrative level; user participation in management of services; and reform of institutions and regulatory frameworks.

The backbone of the consensus

The backbone of this path to a new consensus has its origin in the key principles articulated at international meetings held in Copenhagen (the Copenhagen Informal Consultation on Integrated Water Resources Development and Management, November 1991), and Dublin (the International Conference on Water and the Environment, January 1992), in the run-up to the Earth Summit in Rio de Janeiro in 1992. The Dublin principles formed the basis of Chapter 18 (on freshwater resources) of the Earth Summit's key discussion document, Agenda 21, as illustrated below.

Box 1.1 Dublin and Agenda 21 principles

Dublin Principles	*Agenda 21*
• Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment. • Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels. • Women play a central part in the provision, management and safeguarding of water. • Water has an economic value in all its competing uses and should be recognised as an economic good.	• Ensure the integrated management and development of water resources. • Assess water quality, supply and demand. • Protect water resource quality and aquatic eco-systems. • Improve drinking water supply and sanitation. • Ensure sustainable water supply and use for cities. • Manage water resources for sustainable food production and development. • Assess the impact of climate change on water resources.

These initial principles have been consistently cited by all the major international organisations involved in water-related development policy, including the Development Assistance Committee (DAC) of the OECD. They contribute to a stated determination to identify actions consistent within a framework of integrated water resources management.

The drive to operationalize these principles began initially with the UN General Assembly Special Session (UNGASS) in June 1997, which called for urgent action in the field of freshwater. In its 2000 Millennium Declaration the UN set an ambitious agenda for improving the access to water and sanitation by 2015. In 2002, at the World Summit for Sustainable Development in Johannesburg, the "European Union Water Initiative" EUWI-Water for Life was launched "to create the conditions

for mobilising all available EU resources (human & financial), and to coordinate them to achieve the water-related Millennium Development Goals (MDGs) in partner countries". In 2003, the United Nations General Assembly, in resolution A/RES/58/217, proclaimed the period 2005-2015 International Decade for Action 'Water for Life' with the primary goal to promote efforts to fulfil international commitments made on water and water-related issues by 2015.

These discussions at the macro level represent an indication that water had gained significant international political ground. More efforts are needed on an inter-governmental level, especially in promoting good international management. International freshwater resources management will only yield the necessary policy recommendations and institutional restructuring at national level if the international community is willing to provide the necessary financial resources to support such recommendations.

The original statement of water as a commodity i.e. "economic good" as is mentioned in Principle 4 of the Dublin Declaration is still under debate: in 2002, UNESCO declared water as "a human right" and stated that "water is a social and cultural good, not merely an economic commodity". The General Comment No. 15 on the Right to Water, adopted by the UN Committee on Economic, Social and Cultural Rights at its twenty-ninth session in November 2002 (UN Doc. E/C.12/2002/11) and further revised in November 2005 has increased the pressure for national and international legislation to recognize water as a human right stating that "the human right to water is indispensable for leading a life in human dignity. It is a prerequisite for the realization of other human rights".

The growing international unanimity of vision concerning water is an important feature for the policy-making level. It provides force and recognition to the view that the development approaches applied in the past were unsustainable. They not only failed to address water scarcity and environmental issues; they also lead to a wider gap between served and under-served populations. A gap still remains between ideas, policies and actions endorsed in the macro-level debate, and their translation into policy-making structures and programmes in developing countries. While some projects stand out as beacons illuminating positive results from implementing new directions in development strategies, many programmes and projects are still challenged to change policies and ideas into actions. This Toolkit is intended to assist this process, especially in locations where there is an absence of services, service inefficiency, and poor results and benefits to individuals, communities or larger populations.

The promotion of river basin cooperation

The principle of Integrated Water Resources Management has led to the promotion of the river basin as the logical geographical unit for its practical realisation; notably by the EU, the World Bank and other Development Funding Agencies. The river basin offers many advantages for strategic planning, particularly at higher levels of government, though difficulties in their application should not be underestimated. Groundwater aquifers frequently cross catchment boundaries and, more problematically, river basins rarely conform to existing administrative entities or structures. To attempt to address these challenges, a number of river basins around the world are the focus of river basin organisations whose membership is usually composed of by a wide range of stakeholders from different sectors, levels and geographic representation. Although river basin organisations should not be seen as a panacea, they do provide a sound geographical basis for integrated water management.

Box 1.2 Transboundary water management case study

Transboundary water management. The Mekong River Commission

International aid agencies first direct involvement in international river basin goes back to 1957 with the UN implication in the creation of the Mekong Committee. This regional committee was set up by the governments of Cambodia, Lao PDR, Thailand and Vietnam. Its aim was to jointly manage the shared water resources and economic development of the Mekong River through scientific investigations and some water resources projects. It managed through all these years to promote international dialogue and cooperation in a region characterised by war.

Today's Mekong River Commission, although not exempt from criticisms, represents a clear example of a shift in water basin planning and international relations. China and Myanmar although not full members of the commission, are considered as dialogue members giving voice to all the countries of the Mekong River basin.
Since 1995 the Commission implemented many programs such as the Basin Development Plan, the Water Utilization Program, the Environment Program, the Flood Management Program, the Capacity-Building Program, the Agriculture, Irrigation and Forestry Program, the Fisheries Program, the Navigation Program and the Water Resources and Hydrology program.

This basin organization initiated an institutional framework for integrated watershed management and for a regional cooperation on water resources providing a useful model for other international basin. Moving towards a new level of maturity, in early 2011 the Commission endorsed two key strategies, the Integrated Water and Related Resources Management (IWRM)-based Basin Development Strategy, and the 2011-2015 Strategic Plan, that shape a more comprehensive and new direction for the Agency.

The IWRM-based strategy provides regional and transboundary perspectives for basin development planning, representing over a decade of collaboration between Member Countries on their shared understanding of the river's opportunities and risks associated with development.

Meanwhile, the strategic plan for the 2011-2015 period will support the implementation of this strategy as well as providing a platform for the MRC's plan to decentralise core functions of the MRC Secretariat to the national level.

The hydrological, environmental and political implications of China's intent to construct dams on the upper Mekong River and the 12 to be built planned Dams in the lower Mekong River are the current challenges that the Commission will have to face in order to prove how basin cooperation can be successful with regard to water management.

(Jacobs, 2002, The Mekong River Commission Vision, 2011)

In many parts of the developing world, major rivers traverse two or more countries and their transboundary character complicates the practicalities of river basin management. Water sharing between states which host major rivers such as the Ganges, Nile, Jordan and Mekong is an important political and strategic issue for the states concerned. Historically there are numerous examples of projects designed to meet national objectives but which ignore their impacts on the river basin as a whole; not acknowledging potential conflicts of the needs of downstream users other national or sub-national states. The 1997 Convention on the Non-navigational Use of International Water Courses provides a basis for establishing common user rights and obligations along transboundary rivers and a framework for the management of international river basin systems (UN, 2005). The importance of mechanisms for promoting river basin cooperation is now widely recognised as is illustrated by the creation of the International Network of River Basin Organisations (INBO) forum for international transboundary policies.

Partnerships for development

Until recently, water service provision has been primarily the exclusive concern of governments and municipal authorities, often in accordance with standard philosophies and belief systems concerning a 'free' resource essential to human health and well-being. However, the increasing challenges in some settings towards government-delivered services, coupled with a new appreciation of water scarcity, water value (including also as resource development) and the shortage of financial resources, have led to a reappraisal of the roles of potential actors. The building of alliances and partnerships with a wider range of stakeholders has become an increasingly acceptable theme within development cooperation for water-related activities as well as in other areas of development.

The commercial private sector

From the programming perspective, one of the sector actors whose role gained importance in the last twenty years is the commercial private sector especially that of private water companies and service providers. The two last decades have seen a growing acceptance that the state is not the only owner and operator of water-related services, including sewerage and irrigation works. There is now wider consideration that the traditional water department or public utility mode of supply is only one of a range of options.

The theme of public/private sector partnerships, with government assuming a facilitating and regulatory role instead of a provisioning role, and of privatisation of components of service delivery, is increasingly present in water policy today. This theme has gained some popularity due to the premise that involvement of the private commercial sector can overcome problems as budgetary shortages, poor management and lack of effective cost recovery. Governments have considered that a delegation of the management of public services to private companies could offer a potential solution to financial constraints and systemic problems of inefficiency.

Among the shortcomings of publicly-owned and run utilities in many developing countries that gave a strong impulse to privatisation it was emphasised that, beyond the stage of implementing projects that are funded or supported, by donors, authorities have often not been able to commit adequate resources to future operation and maintenance. These bodies may, in addition, suffer from weak technical and managerial capacity required to run existing and new infrastructures effectively. Meanwhile, tariffs for service provision have often been set at financially unsustainable levels; there is extensive leakage from systems due to poor maintenance and upkeep; and existing tariffs are not always able to be collected. Service infrastructures consequently fall into disrepair due to a lack of resources required to implement a proper operation and maintenance strategy. Unless specifically mandated to do so (and supported by sufficient resources), water authorities - often in urban areas - are also deficient in reaching poorer communities. The prospect of their being able to expand services is reduced where service management is economically and technically inefficient and cannot generate the required financial or water resource surplus. When trying to solve these series of shortcomings through the establishment of public-private partnerships, this approach led to a variety of results with sometimes limited success. This shows that the development of the water sector has no easy solutions. In the urban areas tariffs were sometimes set too high with the public budget covering anyways the differences, the rural areas continued not being served because often they are seen as unprofitable investments. The problems of governance were not solved above all in countries with limited free markets (as often happens in developing countries) in which the experience shows that the issue of privatisation has to be treated carefully.

In the last years the role of the private sector of "introducing fresh capitals" for the development and the growth of the water sector was also increasingly taken over by the investment banks, such as the European Investment Bank, the African Development Bank, the Asian Development Bank, etc.

Technically speaking there are many alternative options to full public ownership and operation of

water services, involving to a greater or lesser degree the participation of the private commercial sector. These options range along a spectrum where at one end the government retains full responsibility for operations, maintenance, capital investment, financing and commercial risk; to the other end where these responsibilities have been devolved to autonomous, commercial utilities or companies. In between these options are those whereby the management of existing systems, or the construction of new installations, has been organised through private operators under various kinds of contractual arrangements including leases (affermage or delegation of public services), concessions and build-own-operate-transfer (BOOT) schemes.

Most of these options apply principally to the context of municipal water and wastewater treatment, but are also used in the context of major irrigation works and environmentally sensitive activities such as recreation and tourism, transport and waterway management. The role of the public authorities as regulator is to ensure equity and to monitor subsidy levels and tariffs paid by water consumers. The public authorities are also responsible for determining, or at least approving, investments to be made, and for ensuring the control of private management within the framework of partnership. This requires a clear separation of roles between the public and private management.

The community-based and informal 'private sector'

Unless specific efforts are made to increase service coverage to poor and under-served communities, their domestic needs usually remain unmet by expansion of conventional water supply and sewerage schemes. Many governments undertake or facilitate special efforts for rural areas, but less often for urban and peri-urban areas. Service provision to poorer populations often depends on partnership with local community-based organisations, whether administrative entities - such as Village Councils - or non-governmental organisations.

The record of government-delivered services and the new appreciation of water scarcity and value, have led to a reappraisal of potential actors and their roles.

Local NGOs, supported by their international counterparts, have attracted considerable attention recently due to their relative effectiveness in reaching the poor, and in particular for their knowledge and experience of working closely with local communities. They also have a reputation - in many cases deserved - of achieving large results with limited resources, and their methods have therefore attracted interest from a cost-efficiency perspective. Local NGOs have become increasingly key actors in promoting the willingness, and measuring the ability, to pay for water and sanitation services, even in the most economically marginal of communities. Because of the pioneering role they have played in demonstrating the practicability and essential role of user participation in the management of community improvement schemes - including food production, catchment dams, small-scale irrigation, disease control and public health - NGOs are now regarded as mainstream actors in water development cooperation. However, the size of their contribution is often proportionately small, and not all NGOs have the capacity to operate effectively without technical or financial support.

Thus, although the involvement of the 'private sector' is also advocated internationally as a way of reaching poorer communities with basic water supply and sanitation services with little additional administrative expenditure, the participation of civil society implies the involvement of a very different kind of 'private sector'. Their motivation is usually community benefit; commercial profit plays almost no role except at a very marginal economic level such as in the manufacture by village artisans of latrines or local cost recovery for spare parts. Indeed, the perceived lack of opportunity for cost recovery, often seen as an automatic corollary of expanding services for the poor, is one reason for the dependence of many developing country governments on external cooperation for such schemes. Even schemes which do involve user fees and participatory management often still require governmental or extra-governmental support for components such as human resources, capacity building for local government departments and NGOs, and perhaps a continuation of tariff subsidies or pro-poor tariffs.

Some schemes are operated by NGOs and community associations independently of government-run services and without their support, albeit with their knowledge and within an established administrative framework. These are in the minority; local community associations more often occupy a partnership role with either the authorities or with private commercial mini-enterprises, depending on their particular situation. Many of these NGOs have recognised that, even among the poorest communities, basic cost recovery is needed to provide services and ensure efficient O&M; and they have managed to implement user fee systems. In some cases this can be in contrast to government services that may still provide free or heavily subsidised services following the principle of water as a 'public good', but which can still fail to serve the poorest populations. As with the private sector, the challenge here is to recognise the potential of partnerships with NGOs and incorporate their role appropriately into project design and implementation.

In towns and cities, the informal private service sector plays a supplementary role. Residents of slums and shanty-towns often have to fend for themselves outside the reach of government services; their water is often supplied by small-time vendors and water-carriers, and human and solid waste disposal services are operated by 'sweepers' or carters. The fact that these consumers of water (and sanitation) services often pay rates proportionally more expensive than those charged to customers receiving services from the main infrastructures, is often cited as proof that the poor can, and will, pay for water supplies and/or sanitation. In reality, they have no alternative to this dependence on informal sector provision. This 'willingness to pay' is rarely, if ever, the taken into account during the design of investment by authorities and formal sector companies in such areas. Meanwhile, the private service providers who do supply them are unregulated and often exploitative.

There is undoubtedly scope for the incorporation of manufacturers and suppliers from the informal private service sector into water supply and sanitation services and small-scale irrigation schemes. A range of artisans, masons, mechanics, well excavators and local handymen are often informally involved in the provision of water and sanitation services. The challenge is to build on these available skills resources and incorporate their activities into programme and project frameworks in an appropriate, equitable, and well-regulated manner. As is the case with the private commercial sector, it is necessary to ensure that the participation of the informal sector is not exploitative, and supports rather than supplants efforts to extend good quality services to poor and under-served communities.

Multilateral donors including the UN system

The member countries of the European Union are among the largest donors to development cooperation, both bilaterally and through multilateral channels including the EC. Many European countries have longstanding experience in the developing world and close historical ties with many countries and regions where water-related issues are critical. Countries in Africa, the Caribbean and the Pacific (ACP) have an innovative partnership arrangement with the EU under the Cotonou Agreement (negotiations for the second revision were concluded on 19/03/2010). This unique relationship enables a shared vision of policy priorities to be promoted between EU and ACP partners.

The most influential multilateral lending organisation offering support to water resources development and management is the World Bank. The World Bank is active within the full range of economic and social water-related sectors and has been a leading exponent of the new agenda in water policy. The World Bank's own water policy emphasises the adoption of a comprehensive policy framework, decentralised management of services, economic pricing of water, and a greater participation by stakeholders. A major role is foreseen for community organisations and the private sector in planning, financing and delivering services. The regional Development Banks echo the World Bank prescriptions, only with a regional focus. By its declaration of an International Drinking Water Supply and Sanitation Decade (1981-90), the UN acted as catalyst in promoting the international drive for improved basic water supply and sanitation services. The 'Water Decade' was

spearheaded by the UN Development Programme (UNDP), and a number of other UN organisations actively participated. Since the UN Conference for Environment and Development - the 1992 Earth Summit - which precipitated a major re-thinking about water as an essential natural resource, the UN has also provided the key fora where the new agenda for water resources management has been articulated. After the 1992 Earth Summit the UN set up a new international mechanism, the UN Commission for Sustainable Development (UNCSD), in which the interrelated dimensions of water management and environmental sustainability can be addressed.

Within the UN system, a number of funds, programmes and specialised agencies have long been involved with water-related activities, usually by providing technical expertise or material assistance to a wide range of projects. At the highest level, UN involvement in water is co-ordinated by UN-Water (since 2003) whose purpose is to "promote coherence in, and coordination of, UN system actions aimed at the implementation of the agenda defined by the Millennium Declaration and the World Summit on Sustainable Development"(UN-Water, 2003:1).
UN organisations offer a range of partnership possibilities with other multilateral and bilateral donors in all areas of programming. The full range of UN involvement in water is very broad; only the relevant and specific aims and objectives of the principal organisations and frameworks are highlighted here.

The key players are: UNDP, (economic production, technology and infrastructure); World Health Organisation (WHO) and UNICEF (the UN Children's Fund), (public health and community development); the UN Environment Programme (UNEP) and UNCSD, (environmental considerations); the UN Educational, Scientific and Cultural Organisation (UNESCO), UN regional commissions (UNECE, UNECA, UNESCAP, UNECLAC, UNESCWA) and the World Meteorological Organisation (WMO), (hydrology and climate); the Food and Agriculture Organisation (FAO) and the International Fund for Agricultural Development (IFAD) (water use in agriculture). In keeping with their mandates and operational modalities, UN organisations interact with the governmental policy-making and administrative apparatus at different levels, some only at the macro level, a few right down to micro. There are obvious areas of common goals and objectives, most evidently in the context of addressing basic human needs, infrastructure, community development, food security and public health.

All of the UN organisations' water policies subscribe to the Rio principles and position their activities within the 'sustainable development' framework. All equally echo the need for a comprehensive policy towards water which considers the protection of the resource, and its management and use in the light of competing demands. There have also been a number of joint initiatives between UN organisations, often with World Bank partnership. The Water Supply and Sanitation Collaborative Council, set up in 1991 in the follow-up to the Water Decade, has a wide-ranging membership and enables governmental and non-governmental players to take part in the ongoing policy debate.

International networks and expert bodies

A number of other international and national bodies exist which can offer research and technical assistance in development cooperation activities relating to water. Many countries have 'centres of excellence', whose specialists, research programmes and training courses are designed to make available the latest technical and operational information to those involved in water-related programmes and project activities. Other categories include partnership and networking bodies such as the Water Supply and Sanitation Collaborative Council; the international NGO community; and academic and scientific institutions based in different parts of the world who act as repositories of technical and professional expertise.

The long established international networking initiatives are the Global Water Partnership (GWP), supported by international and bilateral funds and the World Water Council (WWC). The GWP was set up in response to the Dublin and Rio conferences to encourage members to adopt consistent and complementary policies and programmes for water resources management. It provides a

forum in which to share information and experience, offer technical advice, and facilitate collaboration among partners. The World Water Council (WWC) acts as a think-tank to promote awareness at all levels, including the highest decision-making level, of critical water issues and their relationship to environmental sustainability. More recent international networks are the EU-African partnership, Sanitation and Water for All and Global Donor Platform for Rural Development for example.

A number of academic institutes and research centres have an influence on the direction taken by international agencies and governments; they, or experts employed by them, are frequently engaged to contribute their expertise in policy-making or technical contexts. Some of these are at the forefront of innovative solutions and awareness raising and run training programmes for engineers and other specialists from developing countries, and thereby help to promote 'best practices'. Ultimately many 'centres of excellence' associated with water resources management disciplines influence the international water agenda, but there is no single institution that covers water in its entirety.

Among the variety of experts and practitioners associated with organisations which contribute to programmes and projects, consultants of different profiles have an important role to play. Sophisticated technical expertise, only available at the international level or from 'centres of excellence', may be one obvious requirement. Sometimes the missing skills or knowledge gap is actually at the micro-level. Programme or project implementation, especially in the early critical stages, can be facilitated by the involvement of consultants from NGOs or neighbouring countries with extensive experience of - for example - health education, capacity-building among user groups, or project support communications and social mobilisation techniques.

Different perspectives: North and South

Climatic conditions and water priorities

Although there is growing evidence of a global consensus on the critical importance of water, there are nonetheless wide differences between regions - and within them - concerning the priority issues for development. At the global level, this is reflected in a broad dichotomy of view between North and South about priorities.

The idea that water must be seen as a highly-valued natural resource is now common international thinking in developed countries - is far from new to the majority of developing countries. Many developing countries are located in semi-arid areas, have semi-arid regions within their borders, or suffer from dry and wet season extremes. In some countries - India, Iraq, Sri Lanka, China and others - ancient civilisations' foundations were built upon hydraulic engineering to manage water flows, and water management still remains central to social, political, and cultural life. Problems of water scarcity, overabundance at times of seasonal flood, or both, are accepted as on-going realities and not as extreme events. For countries in these regions water has always carried political weight; and its management and conservation together with sector financial investments remain essential to their development and economic policies.

Of the OECD countries those such as Australia, Mexico, Western USA and parts of southern Europe experience water stress problems. From the Newly Industrialized Countries (NIC) China has 7% of the world's water and 400 of China's 660 main cities face water shortages with one-third of the rural population still drinking unsafe water ; by 2020 India's demand for water is expected to exceed their current sources of supply. Most industrialised countries are situated in temperate zones. Until recently, they have taken their water supply for granted and its volume has not been a matter of concern except during occasional floods or droughts. This lack of industrialised world concern has long influenced international attitudes; the 1987 Brundtland Commission Report on environment and development - Our Common Future - did not even consider water resources as an issue. However, by the time of the 1992 UN Earth Summit at Rio de Janeiro, attitudes had begun to change and include water quality concerns. Although water was not prominently discussed, the inclusion of a chapter on Freshwater Resources in Agenda 21, the key Summit document, provided a catalyst for future actions.

Although the increasing frequency of water scarcity and seasonal flood events remain priority issues for much of the developing world, water quality issues and financial investments are beginning to intrude on this agenda, while at the same time scarcity issues are becoming more prominent in parts of the industrialised world. Rapid population growth and an increasing urbanisation in the South, have recently begun to exert new pressures on what is fast becoming an over-stretched resource. Cities in the Middle East, Asia and Latin America are facing critical water problems as a result of overloading demand on limited resources, improper waste disposal, contamination of rivers and streams and the unregulated extraction of water from increasingly depleted aquifers. Agriculture remains the major water user in many countries and the diversion of water to other uses has implications for agriculture and food security. While welcoming an overdue international recognition of the importance of water, some stakeholders in the developing world have expressed reservations on the sudden pre-occupation of the industrialised world with environmental issues. Resulting demands to impose global limits on the exploitation of the natural environment, to which the developed countries were not subjected during their own industrialisation process, are sometimes seen as unfair and inequitable. Since the Earth Summit, the views of North and South have indeed moved closer together, but reservations towards blanket global prescriptions for resolving resource management issues remain. These concerns need to be taken into account, and they underscore the challenge of matching the international consensus on principles to the realities of local situations.

Implications for water policy

Contained within the international consensus on principles that should govern the response to global water problems, is the recognition that problems must be identified within the local context, and solutions developed which take local specificities into account. However, the implications of putting into effect some of the most important features of the international consensus - given the particularities of water realities in the developing world - have not always been given due recognition by donors. The growth of international unanimity of view demands more flexibility concerning the practical application of policy principles. Global programming and models need to be viewed more critically, or the international consensus principles themselves will be seen to be less relevant.

Box 1.3 The risk of blanket prescription of development programs

The risks of blanket prescription of development programs: the case study of deadly wells.

Water is essential to life but if not well treated it can be dangerous. Until the present much attention has been given to deadly diseases that contaminated surface water can bring, causing a significant burden of sickness and mortality in many developing countries. To solve this health problem many aid agencies since the 70's invested massively in projects to install tube-wells to provide ground water that was presumably assumed as a safe source of drinking-water for the population. From the 80's up until today some developing countries such as Bangladesh, parts of China, India and Sri Lanka suffer from the largest mass poisoning in history given the natural toxic substances that can be found in ground water such as arsenic and fluoride.

This tragic case study illustrates a typical example of a well-intentioned development cooperation project that eventually went wrong due to a lack of knowledge of local realities and characteristics. Blanket prescriptions can be dangerous and have devastating consequences on local populations. Still today millions of people are dying and will continue dying because of national and international error in problem analysis.

(WHO, 2001; World Bank, 2005)

In the context of development cooperation, the implications of issues such as institutional reform, realistic pricing and user participation in service management, have ramifications - especially political ramifications - which pose special problems to many governments. Proposed reform measures can easily clash with customary views about rights, or undercut entrenched interests and existing systems of administration. There are also significant technical and resource constraints affecting the means whereby, and the degree to which, the consensus emerging at the international level can actually be made operational at sub-levels. Factors such as climate, hydrology, terrain, human settlement patterns, infrastructural capacity, investment requirements and financial procedures, economic considerations, and the socio-cultural setting all have to be taken into account. This list of factors required for successful operationality explains why moral commitment to, for example, the Dublin and Rio principles, still remains stronger than their practical realisation on the ground.

Developing countries tend to be more concerned with increasing supplies through new infrastructure rather than with water efficiency or managing water demand within existing services. However, with promotion from the international consensus, government officials are becoming more aware of the need to manage resources efficiently, and that the construction of new infrastructure has to take into account environmental and social impacts, and the fundamental need for systems to be economically viable for maintenance purposes.

There are differences of view concerning the involvement of the private sector. A perception has been developed that the turning over of state-run water-related functions to the private sector is a panacea for efficiency gains, but still many developing country governments are wary of doing so, reflecting a sometimes necessary degree of prudence on their part. In parts of Asia and in Latin America, the private sector is relatively developed; elsewhere, it is weak and poorly regulated and thus, it may genuinely be the case that transfers to the private sector is either not viable or is undesirable. Where regulation is limited or unenforceable, an uncontrolled private sector can be predatory, exploiting the vulnerability of the poor (Bakker et al. 2008).

While there is clear evidence that, under regulation, some kind of private sector involvement is beneficial to users, local circumstances have to be taken into account. This also applies to the involvement of community-based organisations in management of services. The ability of small-scale farmer associations and village groups to manage complex water schemes without expert help is normally limited. Their capacity is usually confined to the management of low-level technologies, such as small catchment dams, gravity-flow schemes, rainwater harvesting, hand pumps and simple sewerage systems. Through the mediation of NGOs and motivated water authorities, such approaches have been successfully implemented in many parts of the developing world. However, they are very difficult to integrate into a systematic area-wide or nation-wide framework.

For many reasons, therefore, developing country governments consider water resources planning and management to be a central part of government responsibility. This view is consistent with the international consensus that promotes the concept of government as facilitator and regulator. The challenge is to reach mutual agreement about the level at which, in any specific instance, government responsibility can be delegated or be partnered by autonomous water services management bodies and/or community-based organisations.

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CHAPTER 2
Managing water resources equitably, efficiently and sustainably: policy principles

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Managing water resources equitably, efficiently and sustainably: policy principles

The centrepiece of the Water Project Toolkit is a 'strategic approach for the equitable, efficient and sustainable management of water resources'. This implies the need to protect the aquatic eco-system and extend the health-giving and productive properties of freshwater resources, equitably and efficiently among humankind - with special emphasis on the poor and under-served people.

The policy principles elaborated here relate directly to the core principles already established by international consensus referred to in the introduction. Their most authoritative expression is encapsulated in the four over-arching core principles agreed upon at the International Conference on Water and the Environment in Dublin in January 1992 and in the subsequent international conferences such as the 2002 World Summit on Sustainable Development (WSSD) and the follow-up at the UN Commission for Sustainable Development (CSD).

While the core principles provide a basis for water-related policy, they are relatively remote from practitioner realities and offer little guidance for resolving the dilemmas and difficulties experienced in their practical implementation. Therefore, as part of the development of a strategic approach, and to aid administrative management and implementation of water-related policy, this Toolkit presents a series of policy principles applicable at the programming and project level. These are as follows:

- institutional and management principles
- social principles
- economic and financial principles
- environmental principles
- information, education and communications principles
- technological principles.

These headings reflect the wider range of issues essential for effective water resources management. Many of these principles are inter-related and interlinked.

The policy principles broaden the framework within which integrated water-related policy can be addressed in an organised fashion. As emphasised throughout this Toolkit, water is not a commodity like other economic commodities – it is a fragile natural resource and a public good which cannot be replaced. It must be protected and access preserved for future generations in order to maintain sustainable liveable environments on which societies and economies rely.

Sound water resources management affects development activity in economic, productive, infrastructural and social sectors Concerns outside an immediate programming and project environment – such as sustainability of the resource over the long term, protection of water-dependent ecosystems, sustainability of service management, and enhancement of the wider urban or rural environment – need to be taken into account. The positive implications of adopting a broader strategic approach to water cannot be underestimated. More governments

are implementing a range of practical changes which are integrated and respond effectively to the core principles of the new consensus. Activities at the macro-level (integrated water resources management, water policies, legislation, and institutional change) and at the micro-level (user participation or community-level operation and maintenance,) are given more weight proportionately compared to technical activities. Technological issues such as construction, which previously dominated programme strategies, still remain critical components but are now regarded as one set of considerations among many.

The policy principles are cross-cutting and applicable to all types and aspects of water-related activities – from surveys, to human resources development or construction of installations – whatever their physical, social or economic setting. Such principles form a foundation for a strategic approach that will facilitate clear thinking on objectives and actions.

Institutional and management principles

1. Roles of government and official bodies at all levels should be clearly defined and areas of responsibility officially established

Management and service delivery functions need to be clearly identified and institutional responsibilities demarcated. Governments should provide a sound legal and policy framework for water resources management and facilitate service extension and provision. Governments are responsible for establishing and overseeing regulatory bodies; these bodies must be independent, transparent, accountable, and empowered to enforce regulations. All uses of water (environmental as well as consumption), and the roles of institutions involved in managing resources and providing services, need to be enshrined in law. Service and quality criteria need to be similarly established within a regulatory framework.

At national level, governments have a responsibility to develop an integrated water policy, meeting the needs of the various users within the limits of available financial and environmental resources. While financial resources can be quantified with financial tools, the geographical and hydrological nature of water resources needs to be taken into account; catchment areas have been adopted as the most effective scale of management for overall water resources (surface, subsurface and recharge).

Effort should be made to verify that water policy is co-ordinated with other policies that have implications for water use – such as those for agriculture, health, industry, energy, environment and urban development. To this end, a system of co-ordination among those responsible in the different sectors at national level is needed. An effective co-ordinating body will enable competition between water uses to be resolved, in accordance with the national policy and agreed water resources development plan. While such coordinating bodies are not easily created within government structures or administrations, river basin organisations have been used as the platform to facilitate a coordinated approach to management.

One model for achievement of an integrated strategy the Sector Wide Approach (SWAp), which provides a framework for collaboration, harmonisation and analysis that promises to lead to more effective implementation and delivery of water services and better integrated management of water resources. SWAp aims to deliver these benefits by providing a methodology for assessing the sector, which systematically considers all the interrelated factors that influence performance and sustainability. SWAp is wide because it recognizes that success depends on a coordinated response where no single actor is likely to be able to deliver all that is needed. But an efficient SWAp is no wider than it needs to be. SWAPs have been slow to develop in the water sector, since the sector is more complex than other sectors such as education and health where the sector wide approach is more developed. At the same time a successful sector wide approach

brings many benefits to the water sector precisely because the complexity of the sector requires multi-stakeholder dialogues, collaboration and coordination, and participation by all stakeholders including the state, the private sector and civil society

Many countries still implement water codes or water legislation that are outdated and are not always relevant to the challenges of today. They often do not take into account integrated water resources management and conservation, nor have they always been established through a participatory process. New laws, ratification and implementation of national and even international agreements coupled with enforcement procedures are required. As far as possible, they should be formulated permissively rather than restrictively to enable application without undue cost and administrative burden. One approach to reduce these burdens is by decentralising the various types of decision-making to the lowest, most appropriate, administrative tier. However, even though faced with challenges, costs and burdens, common references and minimum standards are still required and should always form the basis of new legislation, regulation and codes.

2. The structures and systems of management should be designed in such a way as to facilitate involvement by the responsible authorities at different levels

Participation by all stakeholders is essential for successful water management and usage. (See Part 3, Glossary.) Structures and practices of the responsible authorities therefore need to be designed to facilitate participation of the various categories of users including: water companies, industries, SMEs, farmers, domestic consumers, energy utilities, fisheries, transport and nature conservation organisations – and in doing so involve all major groups (equity mainstreaming). The contribution of civil society organisations who represent cross-cutting categories such as gender or education must also be included.

Responsibilities for water-related services and resource management need to be decentralised to the lowest appropriate administrative level according to the concept of subsidiarity; this allows the contributions of the various parties to be optimized. However, the necessary tools, capacity development incl. training and funds must first be allocated so that the resources are available for responsibilities to be fulfilled. Where responsible bodies have centralised and hierarchical command structures, they are often inadequately geared to consultation and interaction with stakeholders, especially users down to the community or household level. In such cases, organisational transformation may be necessary. On the one hand, functional responsibilities are best devolved to officials and bodies close to the realities of the situation, including local authorities, private and public companies and NGOs/ CSOs able to facilitate participation of users in decision-making, planning etc. On the other hand, the role of the public authority as regulator, facilitator and moderator is to develop an organisational culture that is outward-looking, to facilitate timely communication with all stakeholders. Therefore it is important that the division of responsibilities is well thought out and that decentralization does not become an automatic option that results in divesting central authorities of core responsibilities. The need and added value of capacity building to address administrative challenges is often a strong complement to redesigning management strategies for the central level and outwards.

3. Involvement of user organisations and the private sector, public – private and/or public/ public partnerships should be encouraged

Partnerships with the private sector and or/public / communal sectors need to be encouraged and facilitated; this is especially relevant as government authorities decentralize progressively their responsibilities for the provision of services. In this context, the private sector is deemed to include informal or civil society groups involved in water services or management, such as Water User Associations, Committees or Farmer Associations.

The roles of the private sector actors will vary according to social, economic and environmental

circumstances, but they should all be subject to regulation. A suitable relationship between public and private sectors needs to be defined which promotes the efficient operation of the facilities and collection of user fees while at the same time guarantees access and affordability to all users. Delivery of services and construction of installations may be organised through service providers which, whether publicly or privately owned and operated, can be autonomous, but still supervised and regulated by authority. At the same time, vulnerable populations – the under-served and underprivileged – need to be protected from exploitation by service providers operating largely for profit, since this sector of the population have little or no direct (consumer) influence. The principles of transparency, integrity, solidarity and equity are effective where all people and stakeholders are aware of their rights while at the same time acknowledge their responsibilities. Access to information allows users to make informed choices and to more effectively participate in the governance processes of water management and services.

Government-run water authorities and utilities companies can facilitate the transfer of technology to a wide range of private sector actors by promoting the development of local water supply, wastewater disposal and irrigation manufacturing and service industries. These industries can be large or small-scale and able to cater to the needs either of major publicly-financed schemes or micro-projects and private consumers. (See also Part 3)

Public-private partnerships (PPP) aim to combine the respective strengths of public and private partners. PPP projects are planned, financed and implemented jointly. The Private sector involvement is expected to achieve development policy objectives via the introduction of technological innovations, job creation, and improvement of production or delivery processes and thus contribute to the Millennium Development Goals. The Public sector involvement optimally maintains ownership and responsibility to ensure water services are equitably delivered and transparently managed. PPP schemes have faced some setbacks in the recent years mainly due to a lack of governance in the PPP process, including a lack of transparency compounded by unclear definitions of roles and responsibilities.

The Public-public partnerships (PUPs) involve two or more public authorities or organizations collaborating to improve the capacity and effectiveness of one partner in providing public water or sanitation services. PUPs should not be considered as an approach which is opposed to PPPs but rather as an alternative for achieving improvements in water management

4. Ongoing capacity building is needed within institutions and for participant groups at all levels

Capacity building, especially the development of human resources, the enhancement of skills, the adoption of up-to-date thinking, and improvement of the knowledge base, are needed in many institutions responsible for water resources management and services. Capacity building should extend to all levels of an organisation and to as wide a selection of stakeholders as is necessary. If a more active role in service design and implementation is envisaged for water users, the capacity of intermediary bodies, such as NGOs and local councils, may also need to be enhanced. This can include training in technical and organisational activities which allows actors to be able to make more effective decisions in management or maintenance as required.

An emphasis on ‘software’, as opposed to ‘hardware’, components of water-related projects requires that an orientation towards capacity building in these areas should be built into project design. Interpersonal skills such as communication, negotiation and leadership, as well as knowledge of project management, or environmental and public health activities are equally as important as the functional skills relating to building and managing installations. With the right encouragement and training, engineering staff can adopt more of a partnership approach to service delivery rather than a proprietary attitude towards schemes. However it is also important to understand that for capacity building on skills and knowledge to succeed, there will be required

a minimum of resources and materials, or hardware, in order to realize the benefits of these skills. The point of balance between hardware and software is often in a process of movement and requires regular review by the management to ensure the best combination of the two.

5. Management systems should be transparent and accountable and appropriate management information systems should be established

Conditions for good water governance require participation, accountability, and transparency in order to achieve successful economic, social and environmental outcomes. This requires transparency and accountability from both formal and informal sectors associated with water management: be they governments, private sector, or non-governmental organisations

The responsible authorities, their partners and water users need to have confidence in their management systems and operating procedures. This can be addressed with training and information to promote the necessary understanding, but this is not always viable at all levels for all procedures to all stakeholders. Some elements of management may always remain internal but they must always be accessible. A balance needs to be struck between flexibility and accountability.

Consequently all financing and auditing procedures must be transparent. Tariff systems, systems of financial and quality control need to be rigorous in order to avoid the mismanagement or misapplication of funds that can be associated with large-scale investments in major construction works but also are relevant at village level water supply committees.

Management information systems are very useful but they need to be suitable for the organisational level at which the relevant data collection and analysis activities are conducted. Data collection needs to be monitored in such a way that it provides information of value to managers when they require it. Regular monitoring reinforces understanding of processes, helps to engender a sense of ownership of the system and ultimately ensures that it is effectively used. However one should not look for the solution in the technology of systems. Consideration needs to be given to the level of information technology required for different functions, given cost and human resources constraints. Not all systems have to be based on computer technology, though such technology does offer obvious advantages.

Social Principles

1. A sufficient supply of water and an adequate means of sanitation are basic human needs to which everyone should have access

Water is a fundamental social resource since it is essential for human health and life itself. It is also an economic resource and a fundamental component of economic activities such as agriculture, fisheries or industrial activity, upon which the populations' livelihoods depend. Water shortages or excesses, drought and flood-prone environments have profound implications on these activities and thus for human well-being. Poverty reduction, quality of life and equity considerations therefore need to be seen as priorities in the conceptualisation and planning of activities relating to water.

The lack of safe water and sanitation in many poorer parts of the developing world is a cause of continuing concern especially for those un-served or under-served and who most at risk from water-related diseases are. It is therefore important to prioritise the extension of basic water and sanitation services to the population in both rural and urban areas. Sanitation is often neglected, although it is as important for health impacts as is access to clean water. Equal priority should therefore also be given to sanitation, whether it is community, domestic, or waste water management, an equal emphasis with water supply in the provision of essential services.

Definitions of access to sanitation and water (i.e. distance to the supply and personal security) and adequate coverage (i.e. per capita served) need to take into account the type of the installations and their use, as well as willingness and ability of users to pay. The ability of households to access water in sufficient quantity for their needs and to have access to improved sanitation are important determinants of their capacity to adopt hygienic behaviour and participate in measures for controlling water-related diseases.

The management of water as a collective/ public good is often an integral part of community life and is deeply embedded in social, cultural and livelihood strategies and behaviours. An understanding of attitudes and practices regarding water use, human waste and solid waste disposal at the household and community level, whether for economic or domestic activity, is critical to formulation of all strategies and activities intended to provide sustainable and appropriate services.

A critical review of domestic water supply schemes should pay attention to the quality of water/ water safety at the point of supply, in the method of transport and finally for storage and use at the household or user level in the context of domestic hygiene . WHO water quality standards can be applied at all points of the collection, distribution, storage and use process.

2. Users have an important role to play and their involvement should be fostered via a participatory approach

The involvement of users in water management is central .to the development of water and waste management services. This can include the provision of community labour in the construction of schemes, decision-making about siting installations, collection of tariffs, and operation and maintenance. In low-income areas or small population groups such as villages, this involvement is likely to be through community-based organisations such as water user or management committees.

The extent of community involvement in the management of water supply or sanitation services will vary with the context, the technical design of the installed systems, and the resources available at community level. Both the capacity and the limitations of community involvement need to be taken into account. Long-term sustainability of facilities in low-income communities cannot be guaranteed without a strong sense of community responsibility and ownership.

Implementing a community-based approach involves training of field and administrative staff in participatory techniques, gender and equity and adopting a flexible approach to project implementation. Local knowledge – traditional or otherwise - cultural values, indigenous practices, lifestyles and habits relating to water management and their application need to be analysed, respected and, where possible, supported.

3. Gender implications should be examined and taken into account at all stages of the planning and implementation process

The central role played by women, especially in the developing world, in the provision, service management and husbandry of water, primarily in the domestic, small and medium enterprises (SME) and small holding farms, is widely recognized. Women's participation and gender issues should be accorded special consideration in relation to water management and use.

In both rural and urban environments, much time and energy is spent by women and girls in water-hauling; time and energy that cannot be devoted to other family or economic activities. Consequently water resources management is an important factor in determining women's availability to participate in these activities. Gender implications need to be considered at all stages of the planning and implementation of water-related activities, with consideration given to the different social, economic and cultural roles assigned to both men and women. Not only

do gender implications of proposed interventions have to be considered, but women users and beneficiaries of services should participate in defining those implications. Given existing power and responsibility structures within families and communities in many parts of the world, a targeted effort is often required to enable women to take a meaningful role in the consultation and decision-making process relating to water and waste disposal. In many traditional cultures, women's perceived roles in water resources management are often for carrying and storage of domestic supply. Domestic hygiene, whether it is care of children or food preparation, is also usually regarded as the woman's responsibility. Issues such as the location and the ownership of installations; knowledge of operations and maintenance procedures; and membership of Water Committees or similar bodies are often allocated to men. The absence of women from decision-making in water resources management and service delivery is essentially inequitable, and severely hinders the possibility of realising good domestic and public health, food management and quality of life programme objectives.

Because of their domestic roles, women are also logical key candidates for educational activities concerning water use and hygiene behaviour. However, men should also be included since their attitude towards – for example – hygienic disposal of human waste and their willingness to pay for services or installations may be decisive within the household and community.

4. Mainstreaming HIV/AIDS in the water sector

For People Living with HIV (PLHIV) their suppressed immune systems make them highly vulnerable to any disease that may be carried by unclean water and sewage. HIV affected people also need more than average amounts of clean water (Ngwenya and Kgathi, 2006). As a matter of fact, big amount of water are essential for purposes of hydration, taking medicines, maintaining personnel hygiene, washing personal articles and clothing.

Unfortunately, PLHIV often have reduced access to clean water and basic sanitation: despite their greater need, they are also often subject to stigma and discrimination that limits their access to otherwise readily available clean water and sanitation facilities (Magrath, 2006).

Women usually carry out almost all water-related activities (UN Secretariat, 2007). The fatal disease is therefore a considerable burden for girls who are responsible of fetching water and taking care of PLHIV. – often while HIV-infected themselves (GCWA, 2006). Inadequate water and sanitation make home-based HIV care extremely burdensome and time consuming. Furthermore HIV-positive mothers need clean water for the preparation of formula milk for their babies (USAID, 2008).

At project level attention shall be given to internal and external mainstreaming which are often interlinked to each other. The former focuses on the reduction of sector employees' susceptibility and vulnerability to infection and on giving support to those already infected by HIV, including workplace policies and guidelines that regulate day to day activities. Related activities often consist of preventive education, treatment, care and support. External mainstreaming refers to actions such as developing partnerships between government departments/ministries, and between the public sector, the private sector and civil society. It also promotes considering HIV/AIDS as a development issue that has implications in all areas of policy making, insufficient access to water and sanitation, current health and hygiene education. It adequately addresses issues of best practices and the search for methods to assist individuals, households and the community at large to cope with the impact of HIV/AID.

5. Mainstreaming waterborne and water related diseases in the water sector

Water related diseases are primarily the result of poor access to sufficient quantities of clean water and are also usually related to environmental conditions. Problems due to water scarcity are on the increase, and at the present global pattern consumption; two out of three persons will be

living under water stress conditions by year 2025. However, as has already been mentioned, poor access can also be linked to poverty, poor services, security issues and extreme events. Water related diseases are often associated with the aftermath of natural disasters such as earthquakes and floods. Water diseases can be categorized with Environmental Classifications:

- Faecal-Oral
- Water-Washed (or water-scarce)
- Water-Based
- Water-Related Vectors

Faecal-oral diseases are the result of pathogens transmitted by human excreta and then ingested. They can be water-borne or water-washed. The result is infection of the intestinal tract which can cause extreme illness and death. The diseases can be diarrheal or dysentery type with cholera, shigela and amoeba; can include enteric fevers such as typhoid; or also include hepatitis A, polio or leptospirosis.

For *water-washed diseases* the quantity of water is often more important than the quality and there are strong links between personal and domestic hygiene and these illnesses. They include skin and eye infections such as skin sepsis, scabies, fungal skin infections and trachoma/blindness.

Water-based diseases are those where the pathogen spends part of its life-cycle in an aquatic animal such as a water snail (e.g. bilharzia) or infections is by a parasitic worm that requires an aquatic intermediate host in the life-cycle (e.g. guinea worm).

Water-related vectors carry diseases that are spread by insects that breed in water bite near water. Examples of diseases spread by insects breeding near water include malaria (anopheles mosquito), dengue and yellow fever (aedes mosquito), and onchocerciasis or river blindness (simulium black fly). Insect vectors that bite near water include the glossina tsetse fly which transmits trypanosomiasis or sleeping sickness. Malaria is by far the most important disease, both in terms of the number of people annually infected, and whose quality of life and working capacity are reduced, and in terms of deaths. Worldwide, some 2000 million people live in areas where they are at risk of contracting malaria. The total number of people infected with malaria is variably estimated to range between100 to as many as 200 million, with between 1 and 2 million deaths per year, with almost 90% of the cases in Africa.

Economic and financial principles

1. Water has an economic value and should be recognised as a social and public good

Recognition of freshwater as a finite resource has led to the emergence of the principle that water is a social and public good but one to which a price for provision services connected to it can be attached. The application of this principle becomes increasingly critical as water becomes more scarce. However, this principle should not over-ride the social imperative of providing a basic supply of safe water for every human being.

Applying an economic value to water can require the attachment of different values linked to different uses of water. These values will vary from setting to setting depending upon the user population, although it is invariably the case that survival and public health uses will be of high value; whereas recreational uses are often comparatively lower value. Where water is scarce, it is often good management to discourage low-value uses. The objective of reallocating sufficient water from low-value to high-value purposes should be investigated as an alternative to, or in parallel with, developing new sources of supply. In this context, the use of water markets can be appropriate. Some estimates of high and low-value uses of water may benefit from considering the importance of “virtual water” i.e. the non-evident water embedded in imported food crops,

and “water foot printing”. However water foot printing remains largely an accounting process, and elements of environmental and ecological responsibility as well as governance principles need to be included in evaluating the water resource.

Allocation of values to water uses helps in the following areas: balancing scarce resources with increasing demand; focussing attention on reduction of wastage and loss; conservation of the resource; and shifts in consumption towards higher value uses.

2. Charging tariffs for water services is an important component of any strategy for sustainability

Charging for water services (water supply, irrigation and wastewater disposal and re-use) is essential in order to generate funds for operating, maintaining and investing in systems; ensure that scarce supplies are allocated to essential purposes; and serves as a signal to users that a real financial value can be applied to the resource. Theoretically, a service which provides water to customers should not do so for free, even to the poorest customer. However, this principle poses a dilemma: how to provide a basic service to those who are extremely poor and yet ensure cost recovery, especially in areas where the costs of water extraction and delivery are high and/or continually mounting due to pressure on the resource.

Some basic solutions exist. For households’ consumption, a certain minimum volume necessary for basic needs can be provided at an affordable price, with higher-level volumes subject to higher tariffs (solidarity principle / cross subsidising). This will ensure that higher levels of consumption are not subsidised. Public subsidies are legitimate when applied to achieve certain social benefits (for example, provision of supplies to the underprivileged and under-served). However, these subsidies need to be transparent, targeted, and budgetary practical and sustainable (for example, covered by surpluses generated elsewhere).

The weighted average of the tariffs should be high enough to recover, at a minimum, recurrent operations and maintenance costs. Where water charges have been increased for this purpose, the aim should be to raise them progressively, and with due regard for continuing to meet basic needs and to the full marginal cost (equivalent to the average incremental cost of future supply) in order to also generate resources for expanding or modernising the system. Industrial water tariffs need to take into account the volume of water they extract, and the volume and quality of water returned to public water bodies. For example, OECD members have accepted the principle that ‘polluters pay’*:* those who dispose carelessly of wastewater should be charged for their actions.

If the tariff structure is progressively higher for increased consumption levels, they provide an incentive to conservation. Higher tariffs also generate extra resources for expanding services, although the practicalities of recovering costs for service installation and extension will depend on conditions (physical and socio-economic) operating in a given setting. The same principles apply to wastewater disposal and management.

3. “Demand management” should be used in conjunction with supply provision

Demand management seeks to maximise the usage of a given volume of water, by curbing inessential or low-value uses through price or non-price measures. In water-scarce areas, it is necessary to gain political support for demand management over supply-led solutions (the latter referring to solutions which are based on indefinite expansion of services and supplies).

A number of demand management measures can be considered, including market-based incentives such as water tariffs, pollution charges, water markets, water banking; and non-market incentives, such as leakage control, restrictions, quotas, norms, licenses and promoting re-use and recycling practices Alternative technologies, such as promoting dry sanitation methods of

water conservation, can also contribute.. All options need to be systematically identified and appraised. These appraisals need to be conveyed to the end-users and local authorities so informed choices can be made, leading to effective demand driven solutions.

In its policies towards key sectors such as industry and agriculture, a government and the population should be made aware of the potential negative impacts from developing water-intensive industries or agriculture in regions where water is scarce and estimates of different water values suggest that it should be applied to other uses.

Environmental principles

1. Water-related activities should aim to enhance or to cause least detrimental effect on the natural environment and its health and life-giving properties

Water-related activities need to be planned and implemented with due regard for all their environmental implications. Programmes and projects requiring the disruption of water flows can reduce the productivity of aquatic ecosystems, necessitate resettlement of affected populations, and devastate fisheries and grazing lands. Pollution degrades water supplies and increases the costs of water treatment. Integrated river basin management can provide a solution for surface waters since it allows all competing interests to be taken into account for one water-defined environment.

The protection of aquifers from pollution and over-exploitation should be addressed. This is especially important since the effects of mismanagement are not immediately visible and can thus be overlooked. The use of fossil groundwater must be avoided.

Water resource management systems should take into account the implications of all development activities related to the environment. These include industrial, commercial and agricultural development which lead to discharges that endanger water quality; changes in land use, such as road construction, mining or forestry activities; settlement and cultivation of floodplains and other riverine environments; and the impacts of freshwater use and pollution on estuaries and coastal zones. Water resource management objectives therefore must be carefully balanced against parallel long- and short-term development objectives. Water issues must be taken into account in (urban) planning policies (for example avoiding settlement on floodplains). Every effort should be made to capitalise on better knowledge of the water environment derived from historical as well as recent experience. With climate change impacts and environmental extreme events arriving in shorter cycles, historical knowledge becomes more relevant. Integrating the environment into the planning activity is the desirable strategy. Technical methods using local materials, and bio-control of vegetation and disease vectors, have environmental advantages and build on natural capacities for pollution control and regeneration within ecosystems.

2. The allocation and consumption of water for environmental purposes should be recognised and given appropriate value

Programmes and projects for the development, management and use of water mostly entail modifications to the natural environment in order to improve the quality of human life. Certain water-related activities, such as flood control and drainage schemes, have as part of their central purpose an environmental objective.

Maintenance of the natural water environment is important both for its intrinsic value and for supporting life. Water has an ‘in-stream’ value for fish but also supports co-existing aquatic eco-systems. Eco-systems in wetlands and coastal zones depend on a certain volume and quality of water for their sustainability. Rivers and wetlands function as wildlife reserves, navigation routes,

and areas for recreation. They also help to support natural biodiversity. In order to plan water use priorities it must be accepted that areas such as wetlands "consume" large quantities of water through evaporation. All uses, consumptive and non-consumptive, have to be considered for their ecological value and not automatically regarded as secondary to human and economic priorities.

3. Environmental changes should be monitored so that improvements can be encouraged and detrimental impacts minimised

Effective systems to monitor environmental changes throughout a project cycle and beyond will be required. Appropriate expertise is needed from the outset to ensure that environmental aspects are properly assessed. Care should be taken to adopt systems that allow flexibility of action where some environmental costs may have to be accepted in in exchange for greater social and economic benefits (see part 3).

Emphasis on environmental considerations is particularly appropriate in water-stressed areas, where the environmental and other implications of using alternative sources of supply – surface as opposed to groundwater, for example – need to be assessed. The inextricable connections between land and water management need to be recognised; land use and soil quality have a major influence on water flow and water quality, and vice versa.

4. Climate change

According to the Intergovernmental Panel on Climate Change (IPCC, 2008) "Freshwater resources have the potential to be highly impacted by climate change, and human societies and ecosystems will both feel the consequences". Climate change is expected to increase the frequency and magnitude of extreme events such as floods and droughts, and changes in the seasonal distribution and amount of precipitation. It is evident that more attention needs to be given to adaptation measures and building resilience throughout the water sector. As with other aspects of water resources management, the principles of IWRM are important for addressing climate change and water. All sectors who utilize or impact on water resources must also contribute to addressing climate change discussion on mitigation and adaptation.

The greatest impact due to climate change will be on the world's poorest people, who are most vulnerable to there surrounding environment (e.g. subsistence or small scale agriculture, small stock farmers) for their survival, or the poor in urban and peri-urban environments whose population's capacity and resources to adapt are very limited, making them extremely vulnerable. It is thus critical that climate change and risk management are integrated into water governance and development cooperation. From the perspective of the EC, the mainstreaming of climate change into development cooperation addresses four main objectives (EuropeAid, 2009):

- Identifying and avoiding harmful direct and indirect environmental impacts of programmes and projects in the different co-operation sectors, which can undermine sustainability.
- Recognising and realising opportunities for enhancing environmental conditions, thereby bringing additional benefits to development and economic activities and advancing environmental issues that are a priority for the EC.
- Promoting improved environmental dialogue with partner countries, based on the technical, economic and social arguments in favour of a more environmental approach to policies and programmes.
- Identifying potential risks of a project or programme by assessing its exposure and sensitivity as well as response capacities in place to deal with existing or anticipated climate variability and change.

Climate change adaptation measures aim to offset negative impacts but also to take advantage of positive ones, where they exist. Adaptation should not be seen just as a constraint and an additional financial and economic burden. In almost every sector, climate change intensifies already existing problems. Climate-related concerns may provide the impetus needed to implement many of the environmental and developmental 'best practices' previously neglected and in this way make programmes and projects both more effective and more sustainable.

Information, education and communications principles

1. A sound information and knowledge base is needed for effective actions within all water-related activities

Many developing countries lack sufficient data on the hydrology of their surface water resources, the groundwater resources and overall water quality. Without a full range of scientific information concerning climate and the ecosystem, it is not possible to evaluate the resource, balance its availability against demand, or reach scientifically-informed management decisions in key areas of water policy. Thus, the development of a water resources knowledge foundation and information data base is a precondition for any effective water policy.

Government authorities and agencies involved in water-related activities need proper information in order to function effectively. This information includes data on technologies, strategies, approaches, organisational models, and management information of all kinds. Data collection systems need to be established, and integrated with one another, so that activities can be continuously monitored, impacts be assessed and adjustments made.

Surveys and research projects are needed to generate and collect socio-cultural and economic as well as usual technical data. Where projects are intended to benefit low-income communities, prior information is needed about attitudes and practices surrounding water supply ownership, access and use, and traditional methods of waste management. Effective hygiene promotion depends upon thorough knowledge of existing water-and sanitation-related behaviours and beliefs. Baseline data on the prevalence of water-related diseases is also an important aid to needs identification, on-going monitoring and useful for post-intervention evaluation of public health impacts.

2. Education is a vital component of water-related schemes if health and life enhancement benefits are to be achieved and sustained

Demand for water in low-income communities is associated with survival interests, and improving quality of life with a reduction of time and labour spent by men, women and children in water-related tasks. Beneficiary definitions of social well-being relating to water may not coincide with those of donors and programme agencies, whose principal concerns are usually linked to public health (or in economic improvement schemes such as irrigation for agricultural). There is usually a higher demand for water supplies than for sanitation, although sanitation is often more essential to control water-related diseases. Therefore, education and awareness-raising of the linkages between unsafe water, inadequate excreta disposal, and disease should be integral to all schemes. This should not just be limited to low-income communities, since there are some water-related diseases which easily traverse the poverty line. Education and information programmes for sanitation and personal hygiene may sometimes need to be targeted towards women, given their special role in household water management and use. Children and teachers can also be targeted by school-based programmes.

Education is similarly needed in the environmental implications of water-related activities in the agricultural sector. Farmers need to learn the value of water and the importance of water saving in irrigation, as well as implications of irrigation and use of chemicals and fertilizers on water quality. Without an understanding of the essential need and purpose of water resources management,

user group participation in management decisions, especially in negotiations over competing user groups, cannot be obtained; and if obtained, cannot effectively contribute.

3. Communication and awareness building are essential ingredients in all forms of water resources management

The accepted best practices in water resources management and the delivery of services include extensive awareness-building among political leaders and decision-makers, professionals and academics, donors and members within civil society such as NGOs. Initially this consensus was largely limited to members of the international water-associated community, but this has now become commonly accepted practice at national levels.

Communication mechanisms, in the form of educational activity and public awareness and information campaigns, are tools regularly used to increase community-level understanding of the linkages between water and health, to manage demand for water-related services, and generate motivation and impart skills for service maintenance. Awareness-raising also reaches down to the level of users to create a climate favourable for community management of water supply and sanitation systems, local participation, good operation and maintenance, collaborative systems of cost-recovery and household management (see part 3).

Technological principles

1. A balanced approach towards 'hardware' and 'software' components of projects should be adopted

Providing a reliable supply of water for domestic or agricultural purposes requires careful attention to 'hardware', suitably balanced by attention to 'software' aspects. Technological innovation and adaptation are integral to many of the water-saving measures, service extensions and system improvements urgently required. Technical issues largely determine the costs of a given water-related project, and thus remain of paramount importance.

The present water-related project cycle can, in many settings, still be characterised as 'build, breakdown, rebuild'. Where the technology deployed is beyond the level of the users' capacity to maintain, operate or cover costs, the prospects of sustainability of the service are equally beyond reach. Thus the development and use of water resources including waste management infrastructures or irrigation works needs to take technological considerations, as well as local management capacities and community resources into account.

Technology itself needs to be applied within an integrated framework. A project designed to provide a new supply of water should, for example, take into account requirements for disposal, treatment or recycling of run-off and used water. Irrigation works should take into account the potential for soil degradation, return flow problems, mobilization of pollutants from agriculture or other water-related health hazards such as standing water and vectors for water-related diseases.

2. Choice of technology should be governed by considerations of its efficiency, appropriateness, cost, and suitability for local conditions

Technical solutions need to be selected according to criteria which include efficiency, appropriateness, cost and their potential for adaptation to the local environment. The desired approach can be summarised by the term 'appropriate modern technology ', which captures elements of capacity for operation and maintenance as well as cost-efficiency (see part 3). There have been numerous examples of poor project outcomes due to the selection of costly and inappropriate technology, whose infrastructure and management systems have fallen into disrepair because maintenance was too difficult, or of projects which have resulted in unanticipated environmental damage.

Infrastructure projects have too often imported technology from industrialised countries unsuited to the physical, economic and social conditions in which the system is being applied. While awareness of this issue has grown considerably in recent years, the application of best practices is not yet consistently applied due to lack of resources or capacity linked to insufficient priority being placed on appropriate levels of technology. Professional technical and social advice is useful to guide the choice of technology – whether it is to be 'high-tech' or 'low-tech'. For example the choice of materials should receive careful consideration regarding health security of users, impact on supplying the resources, as well as their environmental suitability. Technical decisions must take into account the social, institutional and economic context within which infrastructure will be maintained. Long-term affordability and sustainability often hinge upon the choice of technology, type of abstraction and methods of delivery. Thus, critical social and economic considerations about the viability of a technology in a given setting should not be ignored. As a general rule, technologies should not burden operators or tie them into costly and unreliable supply strategies; and finally consideration should also be given to the prospects of technology transfer and capacity building at the local level, be it supply or manufacture.

To facilitate cost-effective operation and maintenance, upgrading technologies that permit well-judged and carefully stepped development are desirable, especially in settings where systems, services or specific technologies are being introduced for the first time. These can be developed by incorporating indigenous technologies and local knowledge, scaled-down versions of larger systems or considering alternative choices for water and sanitation services.

To facilitate effective operation and maintenance, availability of spare parts, and appropriate training of operatives including local community workers – men and women- the standardisation of technology being applied is of high importance in order to reduce fragmentation of a strategy. These issues can be addressed within the regulatory framework of water resources management.

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CHAPTER 3

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CHAPTER 3

Managing water resources equitably, efficiently and sustainably: Focus Areas

The water-related programming and project activity shall be aligned with the National Sector Framework i.e. the set of national policies, laws, strategies and guidelines together with the institutions and systems that make them work; including budgets, strategies and programmes that guide the expenditure in the sector. In the previous chapter, sets of policy principles have been presented as a foundation for a strategic approach for water-related programming and project activity. These principles provide an operational philosophy and framework for sector development in areas relating to water resources management and service delivery. In this chapter, the programming contexts for the application of the policy principles are presented. These have been called 'Focus Areas', in keeping with terminology adopted in the Earth Summit document, Agenda 21.

These Focus Areas allow programming contexts to be grouped according to six broad types of activity: **Water resources (WR)** which includes all activities designed to assess the availability of the natural resource, protect its quality, and plan its use; **Basic services (BS)**, which covers service provision in rural areas and marginal or poor urban areas, often consisting of low technology systems managed by local authorities, community structures or both; **Municipal services (MS)**, which covers urban and industrial installations and systems, including wastewater treatment and sewerage systems; and **Agricultural (A)**, which covers installations and activities related to agricultural use of water, especially for irrigation; **Energy (E)**, which, for this guideline, covers water use for energy from hydropower energy only, and **Sector Performance (SP)**, covering mainly how the national sector framework is conceived and how it functions. No pre-determined priority is given to any one Focus Area as compared to any other. The programme activities covered by the Focus Areas are explored more fully below.

The application of policy principles is intended to be carried out in all Focus Area contexts. This should pre-empt the possibility that any one Focus Area could be treated in isolation from any other. While the limits between sectors can be artificially defined, there are in reality many overlaps, and the same can be said for the sub-sectors, resulting in many linkages between Focus Areas. For example work directed towards provision of basic water supplies should also include sanitation, and waste water management should consider agricultural water management activity and vice versa. Activities related to Water Resources (WR) will, by definition, impinge upon activities in all the other Focus Areas. Any grouping of activities should contribute to the need to view water holistically and foster an integrated management approach across usages and programme activities.

The programming contexts occurring within the six Focus Areas aim to accomplish a number of objectives. In the first place, they reflect a broader range of programming activity by viewing water as a resource whose protection and usage must be comprehensively planned. Secondly, they allow programming contexts with similar social, economic and technological characteristics to be grouped together: Basic services, for example, will include both rural, poor or peri-urban settings where small-scale installations managed and operated on a local basis are likely to be the norm. Thirdly, they allow for the integration of major water supply works with those of sanitation and wastewater management. Finally, this type of programming transcends simple technical categories such as 'irrigation' in favour of broader concepts such as Agricultural water management; incorporating land management, flood control, and environmental protection.

The Focus Areas offer a framework broadly matched to sectors, but they do not correspond precisely with standard administrative sectors (see box below). As has already been pointed out in previous chapters, the term 'water sector' applies to water-related activities that transcend many sectors, including primary resource sectors such as forestry or mining, productive sectors such as agriculture and industry, social sectors such as public health and urban planning, and sectors such as environment which themselves include water resources and general environmental management.

Box 3.1 Focus Areas - possible administrative departments:

Water resources: co-operating administrative departments are likely to be: Planning, Environment, Water Resources, Hydrology, Energy, Transport, Forestry, Mining.

Basic services: co-operating administrative departments are likely to be: Public Health, Rural Water Supplies, Community Development, Education, Local Authorities, Urban Planning.

Municipal services: co-operating administrative departments are likely to be: Public Works, Urban Planning, Municipal Authorities/Local Government, Health, Industry, and Transport.

Agricultural: co-operating administrative departments are likely to be: Agriculture and/or Irrigation, Water Resources, Fisheries, Public Works, Land-Use Planning

Energy (Hydropower): co-operating administrative departments are likely to be: Water Resources, Hydrology and Hydraulic, Industry, Energy, Public Works, Planning

Sector Performance (SP): co-operating administrative departments are likely to be, e.g. Ministry of Finance, Ministry of Planning, Water Resources, Ministry of Agriculture, Environment.

The variety of administrative arrangements for water-related activities, both between sectors and at different levels of national, local and municipal authority, makes it easier to distinguish between categories of activity rather than to classify water activity by sector use. It is a part of the operational philosophy expressed in the Toolkit that, even in countries where there is a separate Ministry of Water Resources – which is the case where scarcity of water or some other factor makes water politically important – water-related policy still requires integration with other ministries, sectors and administrative departments.

Even with the existence of a Ministry of Water Resources; water-related activities can and do have development projects in common with other ministries (or a public sector body answerable to a ministry) such as public health, agriculture or transport. The concept of Focus Areas for programming activity suggests the most appropriate administrative aegis for any given project. Certain water-related projects, especially in the context of basic water supply and sanitation services, may be carried out in direct partnership with community-based organisations and NGOs or be part of a school improvement program within the Ministry of Education. However, even in these cases it will be necessary to consider which government administrative entity or entities need to be involved, or at least kept informed, during the planning and implementation process. Even micro level projects should be integrated where possible with larger water-related development policies, plans and programmes in order for results to be complementary.

FOCUS AREA 1: Water resources (WR)

The lack of an integrated approach to the management of water resources has led in the past to isolated investments in water-related activity, some of which have inadvertently resulted in negative consequences on other users or on the environment. This Focus Area allows for special attention to be given to macro-scale planning for water resources management.

Surface water resources are often derived from rivers which may originate outside national and state boundaries. They contribute to the recharge of aquifers (or may themselves be charged by aquifers) which can also traverse administrative and in some cases river basin boundaries. Even where river basins are not transboundary, they rarely correspond to existing administrative boundaries within countries. Groundwater is also not confined to particular administrative localities. For both surface and sub-surface water resources there are many cross-sector considerations to be taken into account alongside the geographical nature of the resource, such as the location of human settlements and their economic activities. Water use is therefore closely linked to land use but to add to the management complexity, freshwater also has significant impact on coastal zones and waters.

At the national level, activities within this Focus Area are designed to develop and support a co-ordinated water resource management strategy within the national sector framework. The main purpose of such a strategy will be to ensure sustainable water resources use and development for all water-related sectors in the various regions of the country in order to minimize competition. Where weather disasters such as drought or floods occur more frequently than historically usual, this strategy must also incorporate environmental risks and disaster preparedness.

Some water-related activities can be multipurpose. Linked to dams are activities such as power supply, recreational use and flood control. All of these uses will be reconciled within WR activities. This is also the context in which the demands of energy production (hydropower), water for recreation purposes or the need for flood control will be jointly considered.

However, projects covering these activities are likely to be administered by agencies concerned with energy, transport or land-use but who are not directly involved in water resources management. An integrated approach is therefore needed to incorporate these different actors and ensure that non-consumptive activities are also included in the management of water resources which will address their impacts on other sectors and the environment.

An integrated approach is equally essential to enable higher levels of authority to set limits on activities where the implementation may neglect a broader view. Consequently, decision makers require access to adequate information such as resource quantity and quality, consumption and demand in order to make informed decisions on policy, allocation, investment and cost-recovery in parallel with other issues which have a direct impact on sustainable socio-economic development.

WR interventions are less likely to address infrastructure but will more often consist of studies and analyses to promote institutional strengthening. Issues to be addressed include: policy and legislation regarding ground and surface water, transboundary planning and negotiation, river basin planning and management (including the interaction between water and land use), environmental management, optimum allocation of responsibilities for resource management, designing regulation of the water sector (e.g. for service providers), and the management of water resource competition.

This Focus Area is also concerned with information and data collection, storage and use concerning water resources. This can include: hydrological and hydro-geological data, climate data, consumption, calculation of demand, establishment of standards, or use of information and data for guiding research and evaluations of monitoring systems and techniques.

Box 3.2 Project Activities and Project Example Focus Area 1

Possible project activities in Focus Area 1 include the following:

- Studies into water and land-use patterns
- Hydrogeological/hydrological surveys and data collection
- Allocation of responsibilities in River Basin Organisations
- Ecosystem protection/conservation
- Regular reviews of water policy, laws and the regulatory framework
- Development of national water standards
- Development of data collection and monitoring systems
- Cross-sector planning in hydropower and navigational uses of water
- Needs and methods for flood control /drought prevention
- Conflict resolution concerning water uses and upstream/downstream user

Project example - EUROCLIMA-agua (2010-2013)

The region of Latin America represents one of the most significant sources of renewable water in the world, accounting for some 30% of the global total. The spatial distribution of water resources, however, varies considerably across the continent. The considerable disparity in regional distribution, the need for cross-border management and the variability brought about by Climate Change mean that for Latin America water is one of the key strategic and political elements for stability and sound governance in the region.

Within this context the EUROCLIMA project was identified between the Latin American (LA) governments and the EU at the last LA-EU Lima summit. The project's aim is to help improve the knowledge of Latin American decision-makers and scientists regarding the impact of climate change in the region, and so facilitate integration of the issue within sustainable development strategies. Government representatives of the 18 beneficiary countries play a fundamental role in guaranteeing synergies and promoting the impact of results in decision-making.

Relevant to the water resources planning context, one of the ongoing activities within EUROCLIMA is the "Analysis of the variability and frequency of components of the Water Balance in Latin America". A group of LA experts supported by the EC is analysing the variability and frequency of the components of the Water Balance at the regional level (precipitation, temperature and evapotranspiration).

One of the expected outcomes is the characterization of the variability in terms of the frequency of occurrence of extreme events, which would in turn serve as the basis for establishing the risk of disasters caused by extreme hydro-climatic events. This approach furthermore complements and enriches the efforts made with the International Hydrological Programme (IHP: http://www.unesco.org.uy/phi/aqualac), for the development of National Water Balances in Latin America, which will provide data for decision-makers in response to the effects of variability and climate change. It is similarly expected to strengthen networks for cooperation in the sector within the region and with the European Union towards sound scientific based sustainable water resources policies.

Adapted from: www.euroclima.org

FOCUS AREA 2: Basic services (BS)

This Focus Area covers programmes and projects which address the extension of basic water supply and sanitation services to unserved and under-served populations in low-income communities in rural, peri-urban and urban environments. These extensions usually consist of low-technology, often community managed schemes, in which local authorities play a facilitating and/or supervisory role. In large towns and cities, the municipal authorities usually play a larger role with the responsibility for provision and regulation of services.

In most programming exercises, schemes for rural and urban areas are usually differentiated. This is partly because the administration of rural and urban areas falls under different authorities. There is a perception of an imbalance of economic and political priorities associated with rural areas, and one of comparative wealth, capital investment and higher political leverage in urban areas. This perception has an inherent blind spot for poverty in the urban areas and consequently has led to neglect of urban poor populations for provision of water, sanitation, health or other services. The pursuit of the Millennium Development Goals since their launch in Johannesburg 2002 have produced a significant improvement in coverage rates, at least as far as drinking water supplies are concerned. Sanitation coverage, however, has not improved at the same rate and now more development policy attention is being given to sanitation and waste management, especially in densely-settled low-income urban and peri-urban areas. Due to infrastructure costs, public works such as water supply, sewerage and urban drainage have difficulty to provide service outreach to poor or economically marginal urban areas. Statistics of marginal and informal populations are often not available and urban coverage figures often do not include coverage in marginal communities. As a population group, the urban poor are the fastest growing in the world. The risks to their own health, and the potentially high public health costs of the spread of communicable diseases to neighbouring populations, can often outweigh the costs of basic service provision.

Basic services providing drinking water and sanitation in poor communities, whether rural or urban, are significantly different in concept from conventional mains connections and standard sewerage and drainage. They usually consist of low-technology installations. For water supply; hand pump –tube wells, rainwater catchment tanks, storage tanks and gravity flow to public standpipes. For sanitation; pit latrines and, where practicable, simplified sewerage systems such as septic tanks, or soak away pits.

Given that many such schemes are likely to be installed in areas where no services exist; preliminary activities may require a basic needs analysis, data gathering, and the establishment of monitoring systems to implement follow-up of operations and maintenance. This type of activity falls under the previous Focus Area Water Resources (WR).

Most Basic Services systems are less expensive to install than larger scale public services; but they also usually remain unconnected to a central operating or management system. Thus, their operation and maintenance (O&M) requires very different arrangements from centrally-run systems, and correspondingly different systems of tariffs for the users. The importance of gaining community participation and ownership in order to ensure O&M and cost recovery has led to approaches which increase the application of community-based service schemes for management.

National governments need to have specific strategies prepared for implementing basic services using community management approaches –which differ from standard service supply in their social, organisational, management, and financing dimensions. However, the main operational responsibility for basic services schemes is likely to rest with local authorities, local councils, local NGOs and community groups. Successful delivery of basic services programmes will depend on their relevance to local people's existing beliefs and behaviours surround water use and human

waste disposal, gender roles in relation to water-collection and storage, and the establishment and/or use of community mechanisms for participation and decision-making. In order to maximize the benefits of improved access to water and sanitation services, hygiene promotion and health education components must form an integral part of community based management.

The provision of services should be as participative as possible. Local populations can participate in the positioning of facilities, organisation of semi-skilled and non-skilled human resources for a construction phase, promotion of hygiene, health education and environmental awareness, and even the financial, operational and maintenance management of the service. However this degree of participation does not always arrive on demand or request; certain amounts of mobilization activities often need to be invested in, and there is no guarantee that all stakeholders in the community will come on board. This will require a certain degree of flexibility and robustness in the design which could include tariffs which are pro-poor or choices of technology which may be lower than preferred by some, are less expensive, but can be less maintenance intensive.

Box 3.2 Project Activities and Project Example Focus Area 2

Typical project activities for Focus Area 2 include the following:

- Rural water supply and sanitation
- Water supply and sanitation for low-income urban and peri-urban communities
- Base-line studies and data collection from beneficiary localities, including: Knowledge, attitude and practice studies, gender issues, capacity and willingness-to-pay for recovery of costs for operations and maintenance, appropriate levels of technology for water and sanitation
- Establishment of local Water Committees Programmes for management of services and promotion of public health and hygiene
- Capacity-building for local authorities, community organisations or NGOs who will be involved in managing the services

Project example - Worm eradication in Northern Ghana (2007-2011)

Access to clean drinking water and proper sanitation is a continuing challenge for many people living in Ghana. Not only does this result in the occurrence of preventable water-borne diseases, but it also has a particular impact on women who must spend hours every day fetching water and on children who unduly miss school due to illness or to help their mother. In Ghana, guinea worm disease, a parasitic illness contracted through drinking contaminated water, has been affecting populations for as long as anyone can remember. Ghana is one of the four remaining countries (all in sub-Sahara Africa) where the disease still persists.

The project benefits from collaboration from a number of partners, requiring emphasis on co-ordination mechanisms'. These include the government of Ghana, the European Commission which is funding 75% of the project and UNICEF.

The principal aims of this project are to reduce guinea worm cases by 90%, reduce reported cases of diarrheal disease among children under 5 by 40% and finally increase sanitation coverage by 35%. The programme also seeks to increasing access to and the use of sustainable drinking water by undertaking district specific feasibility studies on factors affecting water delivery and financing options and stakeholder interventions.

Since the beginning of the project in 2007 up until 2010 some positive results occurred. In fact, the annual number of guinea worm cases fell from 3 358 to 8 (99%), 236 water schemes serving a total population of 147 916 people were created, more families could live in more hygienic environments and enjoy access to and use of improved sanitation facilities and finally a considerable number of women and children were finally relieved from the burden of fetching water and have more time to go to school or spend time with family.

Adapted from: EC case study, 2011

FOCUS AREA 3: Municipal Services (MS)

This Focus Area covers major water- and sanitation- related activities undertaken within the municipal areas, usually under the auspices of the Municipal Authorities and with their support and facilitation. These Authorities will inevitably have an important role, if in some cases primarily a regulatory one, in basic services schemes for low-income urban and peri-urban areas covered in the previous Focus Area. But in Basic Services schemes, especially where informal or illegal settlements are concerned, community groups are usually the key operators of services. The municipal water and wastewater services encompassed by this Focus Area are primarily capital-intensive types of programmes and projects with more sophisticated technology and maintenance requirements as compared with Basic Services schemes.

Programmes and projects in this Focus Area include water supply, sewerage, waste water management, and management of waste from a wide range of industrial, manufacturing and domestic consumers. Given the rapid rate of urbanisation in many developing countries, one area of concentration will be the development of additional water sources (see also WR). The increasing distance of intakes from urban settlements, for example, is contributing to the escalation of costs and creating a growing awareness of the need for efficiency and a change in water consumption habits. Rehabilitation and repair of existing systems, including the reduction of wastage from leaking pipes and reservoirs, is an important area of activity. Optimal use of existing systems, including water efficient technologies, is the preferred option to the installation of new systems.

Water quality is also as important as managing the transport elements of water supply. Municipal Services are responsible for wastewater treatment and control of upstream and downstream pollution. In many coastal areas, especially in arid and semi-arid regions, the prevention of seawater intrusion into over-exploited coastal aquifers, is becoming a major issue in many developing country cities and towns. Changing water use habits to include recycling and re-use of water, and other water saving strategies are being seen has having as strong an impact as improved technology in optimizing water use. Cost recovery, regulation and demand management will be key elements of programme and project design.

The institutions, types of agencies and the allocation of responsibilities involved in provision and management of water and sanitation services will come under scrutiny in this Focus Area, to a greater extent than in the Focus Area Basic Services. There is likely to be more frequent involvement of private sector companies or public/private partnerships in the management of programmes and projects. Reforms of the institutional and regulatory frameworks for the provision and maintenance of services, increasing the efficiency of investment and cost recovery may also be the focus of programmes and projects.

A wide range of stakeholders, many with considerable vested interests, may need to be involved; especially if investments are required for establishing a preferred level of provision usually above that of basic services. These processes require a good participation supported by awareness-

raising for informed choices and decisions in order that solutions are not too technically sophisticated or costly; but instead are efficient and appropriate.

Box 3.4 Project Activities and Project Example Focus Area 3

Typical project activities for Focus Area 3 include the following:

- Wastewater treatment plant, taking into account industrial uses
- Municipal sewerage installations
- Regulation and review of costs and cost-recovery
- Re-orientation/retraining of municipal water authority staff
- Development of private sector partnerships in service management/extension
- Rehabilitation of existing systems, maintenance and leakage control

Project example - Water supply and sanitation project in Maputo

In 2005, Mozambique launched a water supply and sanitation project in its capital city, Maputo. The Greater Maputo sanitation provision is grossly inefficient, as in most cities in sub-Saharan Africa: most people do not have access to a hygienic toilet; less than a half of the population has access to adequate drinking water and 48% of the population lives in absolute poverty.

In this context the project aims to rehabilitate water supply infrastructure, reduce water loss and wastage and extend services to the outer fringes of the metropolitan area of Maputo. By 2014, the target is to raise the number of people served, particularly the most disadvantaged, from 670,000 today to nearly 1.5 million.

The project consists of an interesting blended financial mechanism with a mix of grants from the ACP-EU Water Facility, the Dutch government and French Development Agency, a loan from the European Investment Bank (EIB) and a strong national support from the Mozambican Government. The Maputo water supply project is implemented by the public asset-holding company FIPAG (Fundo de Investimento e Patrimonio do Abastecimento de Agua).

The project had four specific objectives: (i) to increase installed production capacity to ensure constant supply to the 730 000 people presently connected to the existing water supply system (currently the system does not provide a 24-hour supply) and increase the population served by the international operator by 467 000 people in 2010 and by an additional 145 000 by 2014; (ii) to improve the system's performance by reducing unaccounted for water (so-called unmetered water or UFW) from 60% to 40%; (iii) to expand the water supply in the poorer areas on peri-urban areas with the support of small local private operators, in order to extend services to an additional 110 000 people; and (iv) to improve the promoter's capacity and financial sustainability, which will contribute to the improvement of water services in all cities under the promoter's responsibility.

The key positive socio-economic benefits will be the result of the improvement of services to the currently served population and the extension of services to areas currently not served. Without the project, the extension of improved services would be blocked and the deterioration of existing services expected, as installations are working beyond design capacity. To ensure the realisation of socio-economic benefits the project focuses on meeting the populations' needs, with respect to (i) the selection of service and income levels to respect affordability, and (ii) the encouragement of participatory management

structures, especially for shared water supply services (standpipes), strengthening the sense of ownership in local communities.
A key impact of the project is the reduction of the time spent by families on long distance water collection. Water collection is generally the responsibility of women and young girls; the project should free time for them to engage in productive or educational activities generating substantial additional wealth and increasing the likelihood of girls receiving formal education. The project will also create opportunities for women to participate in water committees and other community-based organisations and so contribute to a fairer gender balance in the management of water services.
A second significant impact is on health. Access to safe water is a dominant factor in the
A second significant impact is on health. Access to safe water is a dominant factor in the reduction of cholera and other water-borne diseases. In Maputo, studies show there are cholera cases every year and an epidemic every three years. In peri-urban areas there are an average of 3 000 cholera cases per annum, while diarrhoea cases are estimated at about 63 000 per annum. The project is expected to significantly reduce morbidity from these diseases.
The economic analysis of the project, including consideration of direct and indirect benefits (tariffs paid by people for different services in different areas, as well as the value of time saved, of reduced morbidity from waterborne diseases, and of induced economic activity) shows a satisfactory and robust Economic Internal Rate of Return according to the EIB.

Adapted from: EIB, 2006.

FOCUS AREA 4: Agricultural (A)

Food security and agricultural development are closely linked to water resource availability and quality, and the increasing population and demand on food supplies means that many countries are interested in expanding their arable lands by irrigation. It is not only the demand for food; many developing economies also have a high agricultural component as their main economic activity for family-based livelihoods, local markets and export. Finally, a number of developing countries have a policy of agricultural autonomy in order not to rely on agricultural imports. Thus we arrive at agriculture as a population, economic and security priority. In many of these countries, irrigation is the main consumption of water, sometimes as high as 70%. It is no surprise that efficiency in the use of water in irrigation is a critical consideration and that the construction and repair of reservoirs, distribution systems and the development and application of water-efficient technologies and crops are priorities.

In the past, many irrigation projects have inadequately taken into account environmental impacts. The importance of drainage for irrigation return flow, soil salinity control and the prevention of water-logging were neglected. Similarly, the adverse environmental impacts of surface abstraction (e.g. Aral Sea for cotton exploitation) or over-pumping of ground water resources for irrigation have not always been factored into the planning for agricultural activities.

This Focus Area is intended to cover schemes relating to agricultural water use and management at all levels, from small-scale, community-based schemes to large-scale economic schemes requiring sophisticated engineering. In Asia, the tendency is for the rehabilitation and modernisation of existing systems to take precedence over the development of new schemes. In Africa, community based schemes were the usual scale applied and have long been the focus of agricultural development there. However the advent of larger commercial agricultural projects is becoming more common in both regions, including for economic cash crops such as cut flowers or bio-fuels.

Agricultural irrigation is a complex activity, and the water consumption is linked to land use, cultivation methods and cropping – issues not addressed in this Toolkit. However, water resources management for agriculture purposes must also take into account prevailing conditions, livestock needs, and grazing practices and impacts. Assessing the demand must include not only competition between agriculturalists and pastoralists but also other contemporary users. Depending on the scale of the activity and, where technically appropriate, the optimisation of existing small-scale systems and irrigation practices to improve irrigation efficiency is preferred over new, large-scale irrigation schemes given all the environmental and other difficulties attendant on macro-interventions. The use of surface and groundwater resources in combination, if effectively managed and not over-abstracted, can contribute to seasonal buffers and promote more reliable irrigation services in arid and semi-arid areas.

While infrastructure will remain important in project design, institutional, social, economic and capacity-building issues will be equally so. An understanding of gender roles and support for women farmers, community management needs, participative management and above all informed decision-making are increasingly recognized as important aspects of managing agricultural irrigation activities.

As competition between water users increases, there will be pressure to reduce the volumes absorbed by irrigation, at least for crops of relatively low social and economic value. At the same time, demand for food and higher agricultural yields will continue to rise. Thus the challenge is to raise crop production while consuming less water and operating within a more restrictive financial and economic regime. The social challenge which has often arisen is a tendency to increase agricultural efficiency by applying larger scale irrigation and cropping techniques which can reduce water consumption and increase production but not cost-effectively at the family-holding or small community scale. In choosing a strategy for improving agricultural activity, trade-offs may need to be made between the pursuit of large-scale efficiency over smaller-scale economic stability. These types of choices should be taken in an informed manner and made with the consultation and participation of all key stakeholders.

Measures to reduce water consumption, cost recovery and demand management will therefore be important concerns of programme and project activity in this Focus Area. As with the other Focus Areas, the need for re-orienting or restructuring Government agencies involved in agricultural water use and management is likely to be an important component in project design. The involvement of the private sector as a partner in construction or management of schemes is likely to be a recurring theme, as will the management role of Water User Associations, Farmers Associations or other expressions of civil society. The scale of the project or the management issue to be addressed will also reflect to what degree the relevant River Basin Organisation may become involved.

Many community development programmes and projects which include small livestock development, horticulture, mini-enterprises and community-based units for manufacture of food or craft products also include water-related components. These types of projects – at least as far as their water related components are concerned – can be regarded as falling into this Focus Area. Other projects falling into this category are land management type and include those for prevention of desertification, water harvesting, soil erosion control and flood control of agricultural land.

Box 3.5 Project Activities and Project Example Focus Area 4

Typical project activities for Focus Area 4 include the following:

- Development of agricultural sector policy on irrigated farming and pastoral consumption
- Small-scale systems for irrigation
- Flood control measures
- Drainage, return flow and prevention of water-logging
- Credit programmes for smallholder irrigation
- Rehabilitation/modernisation of irrigation systems
- Establishment of Farmer User Groups and Participatory Irrigation Management
- Research and application of technology for improving irrigation efficiency

Project example- Improving livelihoods and protecting the environment through community participation (2006-2009)

Sugarcane and cotton cash crops play an important role in Pakistan's economy. The impact that these crops have on the environment due to their maximum consumption of water classifies them as 'water thirsty' crops. To produce 1 kg of cotton lint 10 000–17 000 litres of water are needed. These are also crops on which a substantial amount of agrochemicals is used.

The main goal of this EC supported project is to provide sustainable sources of clean freshwater to support the livelihoods of poor communities in Pakistan. It aims to create a mechanism to increase water availability and reduce pollution by decreasing the amount of water and agrochemicals used in sugarcane and cotton production. This is achieved by:

- developing and implementing appropriate 'on farm' better management practices
- conducting farmer training and training of trainers for extension work
- establishing farmer field schools in Faisalabad and Bahawalpur
- working closely with research centres, target farmers, extension services and NGOs

The project activities have led to a reduction of water (30%) and pesticide (60%) usage for sugarcane and cotton crops, while improving the financial situation of small-scale farmers through increased profits and decreased input costs. The establishment of farmer field schools and farmer training of trainers has enabled the farmers not only to adopt better management practices but also promote and disseminate these to other fellow farmers. Formal collaboration has been made with different stakeholders such as the Punjab Agriculture Department, the Ministry of Food, Agriculture and Livestock (MINFAL), the Kissan Welfare Association (KWA), the Punjab Irrigation and Drainage Authority (PIDA). Working closely with government, research institutes and nongovernment partners throughout the project is a key to the long-term sustainability of the project.

Adapted from: EC case study, 2009.

FOCUS AREA 5: Energy (E) (Hydropower)

This Focus area covers water use for energy purposes, specifically hydropower. Biofuels production is not included in this Focus Area.

Large hydropower projects can adversely affect development in certain regions and have unwanted social and environmental impacts. On the other hand, they can also do much to promote human development in a way that is socially equitable, environmentally sustainable and economically viable. Deployment of hydroelectric power production, if undertaken in a responsible and equitable way, can significantly contribute to lowering greenhouse gas emissions. Its associated infrastructure development can help countries to managing water scarcity / flood protection / irrigation and thus, help countries cope with extreme events related to climate variability. However, adverse environmental and social effects of large hydroelectric projects could undermine the positive impacts of these projects.

The World Commission on Dams[1] set two objectives: 1) to review the development effectiveness of large dams and assess alternatives for water resources and energy development; and 2) to develop internationally acceptable criteria, guidelines and standards, where appropriate, for the planning, design, appraisal, construction, operation, monitoring and decommissioning of dams. These objectives comprise, but are not limited to, the following general aspects:

- avoiding and minimizing impacts on ecosystems, livelihoods, health and cultural (and religious) heritage,
- analyzing needs and options on the basis of many different criteria (multi-criteria analysis)
- improving the livelihoods of people displaced and affected by projects,
- ensuring compliance with the compensatory measures,
- applying the principles of corporate environmental and social responsibility and accountability[2],

A harmonized approach should help ensure the sustainability and environmental integrity of the large hydropower project activities.
Development of hydropower requires an enabling institutional and legal framework with clear legislation, regulations and guidelines. This process needs to be developed in an open and cooperative way, involving stakeholders at all levels. Key elements to be considered are the protection plans for water resources, the management plan for water resources, the industrial concession, the watercourse regulation and water resources law. In many cases, the legal framework shall include provision for mitigation measures of permanent socio-economic uplift for the population directly affected.
The strategic role of hydropower is defined at national and regional level. Its development requires an enabling environment that includes adequate resources, knowledge and skills across multiple levels of stakeholders. Hydropower project value is defined by the so called “triple bottom line” i.e. the combination of environmental, social and economic benefits generated by each project. Environmental and social impact assessments must therefore be integrated in the planning process and its full impact must be taken into account in the whole process.

1 By adopting Article 11 b(6) of Directive 2004/101/EC, the European Union undertook to ensure that development of hydroelectric projects respect relevant international guidelines, including those contained in the World Commission on Dams November 2000 Report “Dams and Development – A New Framework for Decision-Making”.

2 In accordance with recital 15 of Directive 2004/101/EC.5

Key constraints are high capital costs, lack of capacity throughout the industry and client countries, weak regulatory and policy frameworks, limited collection and/or weak analysis of hydrological data, and other environmental factors such as geology.

Social impacts are mainly linked to involuntary displacement of communities and breakdown in community cohesion affected by plant and reservoir construction, especially ethnic communities

in remote areas. To mitigate these impacts it is important to identify the potential socio-economic impacts of projects through social impact assessments and the development of appropriate planning, monitoring and adaptation strategies for affected populations.

Water conflicts may arise on transboundary rivers between upstream hydropower use and downstream irrigation and/or hydropower use. Conflicts arise as upstream water release does not necessarily coincide with seasonal irrigation needs of the downstream riparian user. To avoid any conflict, hydropower needs to be implemented only on the basis of the results of international, independent expert examination so that the volumes and regimes of watercourse of these rivers are not upset and the ecological situation in the region will not be aggravated. Several agreements are already in place e.g. Plan of Action of the Zambezi river (ZACPLAN), Orange-Senqu River Basin Commission (ORASECOM), Lake Chad basin commission (CBLT).

In terms of scale, small scale hydropower systems as a renewable and clean energy option, used extensively in the past for shaft power, and in modern times for electricity generation, should not be overlooked. Small hydro is a good decentralised option to supply energy and alleviate poverty. If properly installed, it can be a clean energy option based on indigenous resources, and can be reliable and affordable when appropriate technologies and approaches are used for its implementation, operation and management. It can be economically and socially viable, using local materials and capabilities for installation. It also has a much lower impact on the social and physical environment. As with large scale hydro, the small scale initiatives require a policy environment that includes development agencies, through international cooperation, and governments to put in place policy arrangements to facilitate activity.

Box 3.6 Project Activities and Project Examples Focus Area 5

Possible project activities in Focus Area 5 include the following:

- Hydro meteorological/hydro-geological surveys
- River profile studies
- Site evaluation for ranking study of potential hydro-power projects
- Cross-sector planning in hydropower and navigational uses of water
- Social and environmental impacts of hydropower project, including competition among water users
- Development of data collection and monitoring systems
- Topographic surveys, Geological site investigations
- Ecosystem protection/conservation

Project example 1- EU-China River Basin Management Programme

Despite China's enormous economic success, the country still faces considerable environmental challenges, particularly problems of water shortage, water pollution, soil erosion and deteriorating water ecology. The Chinese leadership shows great concern over this and has given directives to improve the situation. Water legislation and an institutional framework for implementation of the laws are being put in place.

The concept of integrated river basin management is an integral part of China's water law. China and Europe share a common concern over the environment. To assist each other in taking responsibility for sustainable economic and environmental development within the context of Chinese-European cooperation, the EU-China River Basin Management Programme has been formulated and is presently being implemented. It is hoped that some of the lessons of how advances in Europe have been achieved, what has worked, and what has not worked, can, together with facilitating technologies, be transferred to China to help manage the transition of river basin management practices.

The main objective of this project is to attain sustainable management and use of China's water resources compatible with current social economic and natural global change as well as to establish integrated river basin management practices in the Yellow and Yangtze River basins that are environmentally sustainable and address global environmental concerns as well as those of the local population. These practices will be replicated in other regions of China.

- A dialogue platform between Europe and China as well as links with the EU Water Framework Directive have been established to allow exchange of ideas on policy and management of major river basins and water resources
- Technical assistance provided to facilitate river basin planning training, exchange visits and internships; conferences, workshops and forums; research, studies and surveys
- Soil erosion control measures undertaken in poor mountainous areas in the upper Yangtze River Basin River Basin
- Increased efficiency of use of natural and local resources due to the installation of bio-physical structures and to other interventions.

Adapted from: EC case study, 2010.

Project example 2 - Mini-Hydropower Schemes for Sustainable Economic Development in Indonesia (1999 to 2008)

Indonesia has insufficient supplies of electrical power. This lack of energy supply limits the country's development of businesses, social infrastructure and services. However, Indonesia is a water rich country and against the background of rising oil prices on the world markets and the removal of large state fuel subsidies in Indonesia, mini-hydropower is becoming increasingly attractive as a competitive energy option.
In this context the GIZ project aimed at generating energy supplies through mini-hydropower plants in Sulawesi, Java and Sumatra areas. The purpose was to improve local economic cycles able to generate additional income to cover the costs of the mini-hydropower stations.

The results up to 2008 have been:

- 85 percent of the electromechanical equipment was produced locally as a result of technical training provided in respect of adapted mini-hydropower solutions.

- creation of employment opportunities

- Exports to eight countries in Asia, Africa and Europe evidence the quality and competitiveness of Indonesian mini-hydropower equipment.

- More than 100 installations of 7-250 kW used the standard design introduced by the project, supplying some 20,000 households, small-scale entrepreneurs and public utilities in Indonesia with clean energy.

- Compared to diesel generators, these mini-hydropower plants bring a reduction in CO^2 emissions of more than 4,000 tonnes per year.

The project also advised on the formulation and exemplary implementation of a law regulating the feeding of energy into the public grid. It ensured that NGO's and Indonesian universities were involved in the project to ensure that the technical competencies were consolidated locally and to assure the sustainability of the program access to funding sources was taken into account thanks to the creation of financing models based on more commercial lines.

Adapted from: GTZ, 2008.

FOCUS AREA 6: Sector Performance (SP)

Under this Focus Area, the overall performance of the water sector can address the sub-sectors identified in the preceding Focus Areas. Aspects such as Sector Wide Approaches, performance monitoring, institutional capacity and awareness-raising are discussed.

The challenge over the coming decades will be less one of dealing with the scarcity of water resources but more one of encouraging sensible water use. Despite the growing pressure on water resources, few countries have made progress in the rationalization of the water sector. In a sector as complex as the water sector, rationalizing the use of resources often raises another challenge: that of changing the mentalities and behaviours both of individual water users and, in particular, of agricultural and industrial businesses. In many developing countries, where the lack of coordination between the actors in the water sector and the lack of expertise of local stakeholders are highly evident, changing the mindset also involves strengthening national as well as local capacities. Economically and politically unstable countries are specifically challenged to fulfil their minimum responsibilities, such as providing and regulation of basic services.

As discussed in Chapter 2, Sector-wide approaches (SWAps) are processes aimed at developing coherent sector policies and strategies. The process is best led by the national government, in close collaboration with other national stakeholders and development partners, with a common objective of improving public sector performance in terms of service delivery as well as the efficiency and effectiveness with which internal and external resources are utilized. Under the sector-wide approach, the government is the driving force behind the sector's development. It is for the government to provide leadership and ensure coordination between the national actors – both governmental and non-governmental – and donors. In the context of IWRM, elements of this leadership can be delegated to other actors in the sector. Whether totally government-led or delegated, the two approaches agree on the need for the sector to be well coordinated. Extensive consultations must enable local actors and non-State actors to get involved – the two groups which are often the most marginalized.

As an essential element of the sector-wide approach, performance monitoring is key to tracking the development of the sector and rectifying any problems. This is in line with the principles of results-oriented management set out in the Paris declaration on aid effectiveness. Three methods are generally used to provide such monitoring:

- Data collection and processing at State level, on the assumption that a reliable and organised structure exists to perform these functions. The data must in general be collected at local level and available at national level, and the more advanced the process of decentralisation the easier such activity will be.

- Data collection and measurement on a country-by-country basis concerning access to an improved source of drinking water and to improved sanitation, both of which are Millennium Development Indicators. The role of the local authorities and regions in data collection is fundamental.

- Specific studies to gather the data necessary to calculate the indicators the number of connections to a public sewage network, for example.

In so far as possible, preference should be given to a system of data collection and processing which is integrated within a ministry which has the competence and capacity to repeat studies regularly or for specific purposes. The institutional system may need to be bolstered to allow the State to perform this function. However, performance assessments conducted by independent bodies should also be undertaken on a regular basis (once a year should be the minimum, depending on the detail) in order to guarantee sector transparency.

The dynamism of the sector will be dependent on a strong political will, and the quality of the water service on the redefinition of the institutional and legal framework. However, these essential conditions are not enough: the actors must also have a vision for the sector and a genuine capacity to put into effect legal and institutional provisions. From an institutional point of view, it is important that the organization of public structures and any partners from the private sector or civil society is functional.

Accordingly, it is essential to understand the roles, responsibilities and resources of the various actors in the sector. Experience shows that the structures required to implement sector policy must take account of the existing institutions and their capacities, and that the establishment of new institutions and platforms is not always the best solution, let alone the simplest.

The various ministries, local authorities, agencies or associations of the country concerned and of neighbouring countries can benefit from joint training. The development of training channels in the beneficiary States and regions can make capacity building for Sector Performance a more sustainable process. These principles apply at both national and regional level. The particularities of cross-border management lie in the fact that it adds an additional institutional level – the river basin agency – as compared with less complicated national management. Joint training and exchanges can help to overcome these complexities.

In order to encourage the government to embrace the dynamic aspects of a sector-wide approach, the technical and financial partners, and in particular the development and donor agencies, must have a good knowledge of the governance-related issues, both in the country in general and in the water sector in particular. A methodical approach to arrive at this knowledge base is to apply a stakeholder analysis which can consist of 4 broad stages:

- evaluation of the context of water governance,
- inventory of the actors: interests, powers and motivations,
- evaluation of the relationships between those who govern and those who are governed,
- an evaluation of the sector's readiness for governance reform.

Within these 4 stages of analysis we see clearly a wide range of stakeholder participation in what should be a participative and consultative process at a national level and forming a national dialogue. This dialogue can take the form of roundtables, public forums and institutional meetings. These allow all stakeholders in the water sector to meet and get to know each other, and to

exchange views so that a consensus can be reached vis-à-vis the development of the sector, sometimes from a starting point of differing opinions.

For a dialogue to be effective it is important that all stakeholders have a minimum common understanding of issues to be discussed, and this usually involves open and transparent sharing of information and raising of awareness for the need for change. This is a pro-active process which requires facilitation usually by the Government Authorities, but in the context where they are themselves key stakeholders inside a process; this role can be taken up by development and donor agencies as external but pro-active parties to the dialogue process.

A national dialogue can be established only by government initiative and only when the government feels ready for such dialogue. This means that awareness-raising work at the national institutional level – on the part of the different actors driving forward governance identified in the course of the governance analysis (and in particular the donors) – may be necessary beforehand in order for people to realize that the way things are done must be changed.[3]

Box 3.7 Project Activities and Project Example Focus Area 6

Typical activities for Focus Area 6 include the following:

- Sector Performance reviews: technical, financial and governance
- National Dialogue: a multi-stakeholder consultation process
- Awareness-raising campaigns and processes, e.g. for poverty and gender mainstreaming in laws and regulations
- Strategy and Framework for performance measurements
- Environmental policies and laws
- Capital budget for water supply and sanitation

Case study: Strengthening Water Sector Monitoring and Information System in Ethiopia with GIRWI Project: Second Phase

Effective sector wide monitoring and the development and use of an information system to support the effective management and use of the water resource is a critical area of interest to the government and development partners in Ethiopia. The government wants to make more effective the development, utilization and management of the county's water resources. This is in full in recognition of its critical role in the country's economic growth and prosperity.

This project involves the development of a system of water sector monitoring and information through which data are collected, processed, report prepared for decision making.

The framework developed for monitoring and information system for water sector started with

3 Water Sector Development and Governance, Tools and Methods Series Reference Document N° 7, EuropeAid EC, 2009

a simple consultative definition of the approach to be undertaken and then move gradually

to a full-fledged support for using modern technologies such as a computerized and web based portal system. The following are key benchmarks for progress towards achieving the installation of the system.

Two levels of governance arrangements are proposed for water sector data and information system:

- A Centralized institutional structure for water resources information management system

- A Decentralized water resources management institutions

This project also recognizes the presence of very many institutions and organizations engaged in water sector data management as an opportunity rather than a threat. Their independence is also equally recognized as essential, less bureaucratic and which enhances wider participation, coverage and improves sector performance.

However, this could as well be a source for duplication of efforts and waste of investment unless carefully managed. Therefore, there is a strong need for a networking platform of water sector institutions and organizations involved in data management, standardization of procedures and quality control. This will allow a well-structured quantification, analysis and reporting of the data resource on a regular basis. (Strengthening Water Sector Monitoring and Information System in Ethiopia: GIRWI Project Phase II)

The establishment of a network of decentralized institutions allows and facilitates inter-linkages for information access and sharing. This is based on a protocol prepared, agreed upon and signed by participating organisations.

Based on the feedback from the assessment, adjustment is required for the healthy functioning of the network in order to improve data collection, analysis, reporting and information sharing among the networking institutions. This is expected to be through a centralized organ such as the Ministry of Water and Energy.

Integrated information management is a well-established tool enabling development activities to move towards sustainable development. Therefore, the established information system underscores the essential features of Integrated Water Resources Management (IWRM) which in itself embraces fully the concept of integrated information management system in a centralized arrangement,

The effective management of the flow of information and management information by the networks require the equipping of network member institutions and organizations with state of the art Information Technology (IT) infrastructure. This entails designing the architecture for the information system and producing design requirements for the system. The management of water sector information by a centralized organ with strong linkages with the network institutions and organizations is at the centre of this initiative design.

The development of sector wide monitoring and information system enhances the efficacy, efficiency, and equitable and balanced allocation and use of the water resources and improved sector investment in cost effective budgeting and decision making by the different users.

Adapted from: United Nations Department of Economic and Social Affairs (UN-DESA), 2011.

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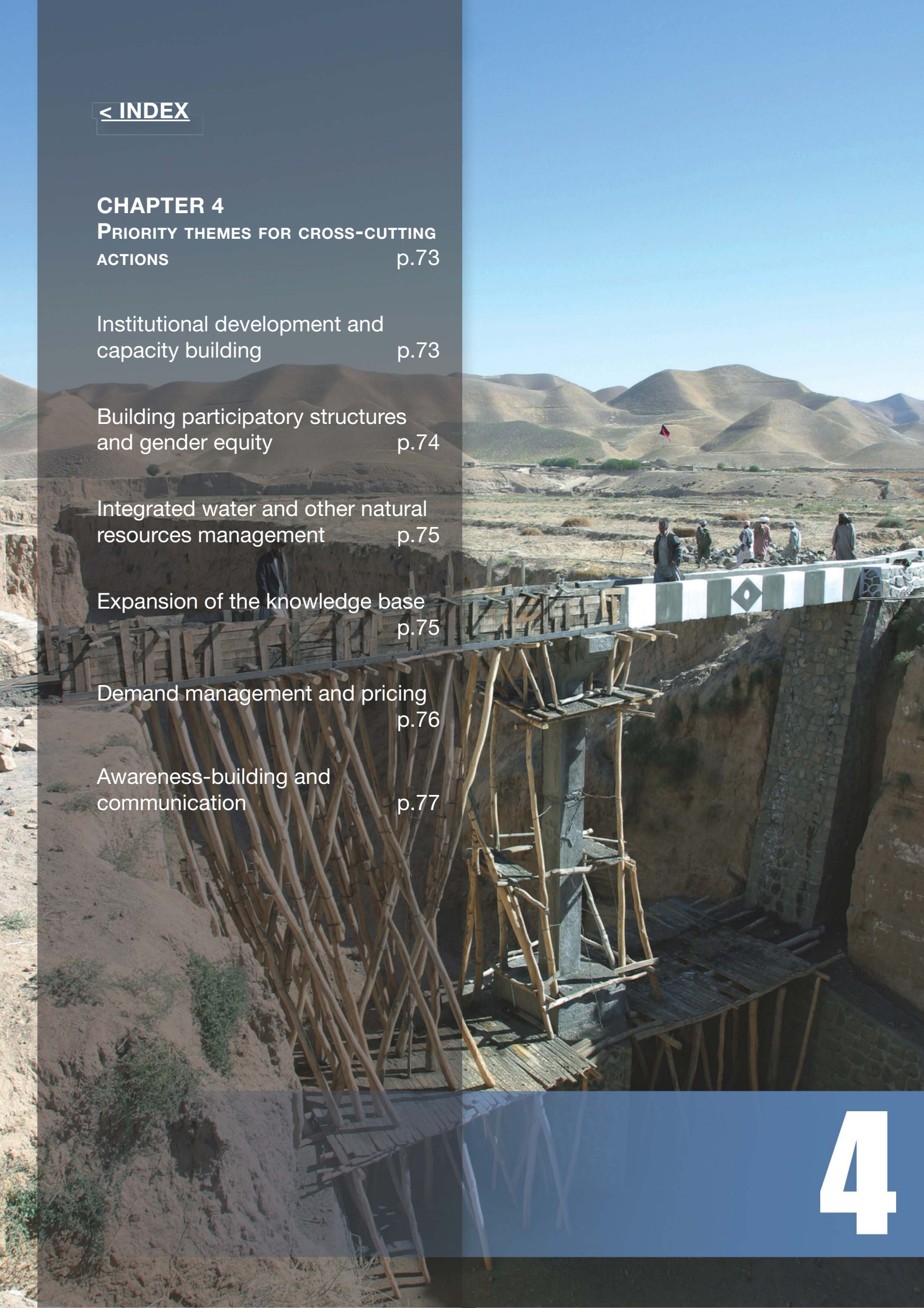

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CHAPTER 4

Priority themes for cross-cutting actions

Introduction

The application of a Strategic Approach presented in Chapters 2 and 3 ultimately leads to decisions concerning actions. This entails identifying problem areas and appropriate responses at every stage of the cooperation process. During the course of developing checklists for this purpose - presented in Part II - a number of priority themes for action were identified and are presented in this chapter. Most themes are cross-cutting through Policy Principles and Focus Areas and almost all include actions in management or institutional strengthening. All themes described in this chapter present activities in the 'software' (intended as non-infrastructure related interventions) rather than the 'hardware' (infrastructure related interventions) arena.
Actions suggested will usually be carried out by governments often with the support of development partners; many require partnership approaches in which the public and private sectors, civil society actors, research, international and donor organizations will more often play a part together. The building of partnerships is key to the strategic approach.

Institutional development and capacity building

The success of policies, programmes and services depends heavily on the resources, skills and technical expertise of the responsible institutions. These bodies need to be appropriately structured and provided with a legislative and administrative framework which promotes efficiency. Decentralization of administration of service delivery, updating of regulatory frameworks or partial devolution of service delivery are examples of institutional development. The capacity of institutions needs to be enhanced by means of human resources development and training as well as material and/or financial support. The process of capacity building is continuous, and applies to public and private sectors as well as to formal and informal bodies such as Civil Society Organizations.

Typical Actions include:

- updating policy to the circumstances of the country, taking into account lessons learned, and implementing integrated water resources management at national and international levels;
- review of existing laws, regulatory frameworks and customary practices, with a view to establishing a rational legal regime and control mechanisms for both public and private sector service providers;
- based on a comprehensive demand study, establishment of mechanisms for inter-sector liaison and co-ordination, to ensure equitable allocation of water resources between competing users
- install consultation mechanisms in the decision-making process to include inputs from commercial and agricultural water users, members of the civil society representing consumers, local communities or marginal populations, and parallel interests such as public health and education sectors;
- Foster the establishment of Sector Programmes by the government through the sector wide approach (chapter 11).
- establishment of a performance measurement framework that allows

for effective monitoring of the sector including monitoring of equity and poverty indicators, as well as monitoring management approaches and strategies to be equitable, gender-sensitive and pro-poor ;

- promote public-private and public-public partnerships;
- reinforce and mainstream processes such environmental assessment, stakeholder analysis;
- setting up of river basin organisations where appropriate, within countries or trans-nationally;
- introduction of climate change issues such as mitigation and adaptation measures and developing resilience to climate change;
- introduction of capacity building via training and reorientation of managers and administrators at all levels;
- Facilitate the development of civil society organizations such as community-level organisations in order for them to play a role in the planning, installation, management and maintenance of local services and facilities.

Building participatory structures and gender equity

Participation by stakeholders in a given programme or activity is not only desirable as a matter of democratic right, but also to ensure that investments of money and resources correspond to demand for services, and to enable those services to be equitably managed in the interests of all. A participatory process allows stakeholders to take part in decision-making relating to policies and actions undertaken by formal bodies on their behalf, whereby they also accept a degree of responsibility for those decisions. Thus, mechanisms for the expressions of stakeholders' views, especially those of service users, are needed. Within participatory management structures, the role of women in household food security, domestic hygiene and water management, and child education needs to be better recognised, and special attention paid to involving them at all decision-making levels.

Typical Actions include:

- establishment of user groups, farmers associations, water and sanitation committees, school hygiene clubs and other expressions of civil society to participate in water resources management at the local level; ensure that there is a good gender balance in the membership, and that all members play an active part in decision-making;
- adequate provision for promoting community mobilisation including funds, training and capacity building, gender empowerment, attention to child issues and most-poor community members;
- mainstreaming effective responses to water-related diseases and including HIV/AIDS;
- gender-awareness training for administrative and service provision personnel at all levels; gender-balanced recruitment and promotion (see part 3);
- needs analysis that includes demands of most-poor users, ensuring that they have the opportunity to express their views and have equitable access to service provision;
- information sharing and awareness raising at the lowest stakeholder levels on public health issues as well as creation of livelihood opportunities-in order to develop demand for water and sanitation services and promote their participation in management;
- identification of, and research on, local indigenous water management techniques

and enterprises to develop ways to integrate and legitimise sound local practice into the standard service provision.

Integrated water and other natural resources management

The protection of eco-systems and the natural resources upon which all forms of life on earth depend should be regarded as an obligation. Water, as a key natural resource, is a strategic national asset and all policies related to it should be consistent and comply with environmental protection aims and legislation. The cooperation of institutions and agencies responsible for the management of water is crucial. Proper data collection, analysis and follow up of resource management should also involve the research institutions (e.g. Academic Centres of Excellence for Water, research institutions and agencies, institutions of higher education, international earth science observatories and international water research programmes)

Typical Actions include:

- advocacy at National Policy level on behalf of water as a priority and essential resource with a social and economic value, particularly in areas of water scarcity;
- advocacy of policies, regulations and tariffs that discourage wastage and pollution;
- policy and resource investments in protection of environmentally fragile and vulnerable areas such as wetlands, coastal marine zones, deserts, and areas vulnerable to flooding and/or soil erosion;
- support earth and environmental observatories, research on water resource uses, and promote cooperation between research and policy in order to support decision making systems by the inclusion of scientific knowledge;
- capacity building and support to strengthen environmental agencies and actors – including civil society- to support their role as 'environmental watchdogs' for monitoring to ensure that environmental management and regulations are respected, extraction and usage is controlled, and pollution and contamination does not go unobserved;
- mainstreaming of environmental impacts (see Part 3) at all stages of the development and implementation of water-related projects to measure the potential or actual effects of activities on eco-systems;
- awareness-raising campaigns for government officials, the education sector and the wider public including professionals, communities and NGOs on the importance of natural resource management; ensure the incorporation of water-related environmental issues into education curricula;
- identify, research and incorporate the elements and risks of climate change into the management of water resources (e.g. studies on regional variation in precipitation patterns and potential impacts on water resources such as wetlands and shorelines).
- Climate resilience actions such as mobilizing and managing knowledge for adaptation policy and planning, integrating climate change adaptation and mitigation into national sector policies and strategies
- Management for environmental sustainability ensuring that water resources are not extracted beyond their safe yields

Expansion of the knowledge base

Water resources development and management and delivery of water-related services can only be carried out effectively on the basis of real-time knowledge and information, including: knowledge of water resources availability: surface and groundwater as well as precipitation data;

information on water quality and its impact on users and the environment; knowledge of water and water-related demands and needs of households, of different consumers and productive sectors; water requirements of the eco-systems, especially the aquatic eco-system; knowledge of good and bad performance in water and sanitation services, and the financial and social costs incurred from poor service delivery.

Typical Actions include:

- supply of equipment, instruments and training in hydrological, hydrometric and hydro-geological data collection, storage and analysis;
- surveys of water and wastewater service usage and potential demands, including willingness-to-pay and capacity-to-pay, knowledge, attitude-practice surveys among potential users; capacity building in conducting surveys and analysis ;
- equipment and training for baseline studies into ecological needs and for monitoring ongoing changes in the water-related environment;
- water quality monitoring, including provision of laboratory equipment and training; promoting the adherence to water quality standards;
- mechanisms for data exchange and sharing information between different administrative levels and between sectors, agencies and stakeholders involved in water resources management;
- establishment of monitoring and evaluation systems for water-related programmes, including provision of services for water and sanitation;
- research, data capture and modelling of climate change risks to permit their integration into national policies, plans and programmes;
- Indicators for monitoring and evaluation of occurrence and impacts of water and sanitation-related diseases including HIV AIDS;

Demand management and pricing

Demand management of water resources is the only viable alternative to indefinite expansion of supplies – a policy option not available in countries or regions facing hydrological limits. Demand management implies some form of water pricing which, above a basic subsistence supply, is correlated with high and low water values, creating conditions in which the available supply is more efficiently used. The implication of demand management is that users will have a high level of motivation to maintain services and keep them in repair to maximize service and minimize wastage. Actions under this theme are closely inter-linked with those relating to institutional development and capacity building, as well as with advocacy for a better understanding of water's importance as an environmental resource.

Actions include:

- advocacy and awareness-building activities to create the necessary political and social climate to accept the principle that water is both a social and an economic good, and as such should be subject to equitable and adequate pricing for all uses;
- studies and surveys to assess demand, capacity-to-pay and willingness-to pay; support for tariff reform and appropriate pricing regimes where necessary;
- feasibility studies to determine tariff systems needed for achieve financial viability of the level (or expected level) of services provided;
- the establishment of a regulatory framework to monitor service providers (including autonomous public sector agencies) and protect the poor from exploitation;
- advocacy of appropriate reduction of subsidies, bearing in mind equity

considerations regarding services for low-income communities or persons and other social or 'public good' considerations;

- promotion of economic analyses, including environmental economic analysis, ensuring that criteria of financial viability reflect true values of the resource and its amenity, environmental and health benefits (see part 3);
- introduction of water saving technologies, leakage control, water re-use, rehabilitation and repair of existing systems;
- demand projections that take into consideration effects of climate change and other variations of demographic demand and social needs (e.g. impact of HIV/AIDS)

Awareness-building and communication

Building political, public and private sector awareness of the need to value the social, health, economic and environmental values of water is very important. As an aid to successful programme and project implementation, and to ensuring maximum health and other impacts of services, the role of communications and awareness-raising within programmes and projects is now widely recognised. A wide variety of techniques should be used to build awareness and provide for information exchanges between stakeholders. Without good communication, the development of strong participatory structures is likely to remain elusive. (See also Part 3.)

Actions include:

- seminars, events, and dialogue platforms which offer opportunities to promote the concept of water as a valuable resource to political leaders and senior administrators;
- social mobilisation involving all types of sectors and all levels of administration, in order to promote improvement of sanitation and public health;
- introduction of environmental and water-related components into administrative training programs, technical training and education curricula;
- educational and information campaigns directed at the general public on water-related diseases, sanitary behaviour, water storage and use, and the valorisation and promotion of the role of women in household water management; studies into existing knowledge, attitudes and practice (KAP – see part 3) regarding water collection, use and management including waste-water management;
- local production and distribution of communications aids, and the use of internet, TV, radio, advertising and other media for communication of public health messages;
- international level of exchange of experiences, project models and best practices among managers and operators in different countries and localities;
- promotion of inter-state and inter-country trans-boundary information sharing mechanisms.

PART 2

THE STRATEGIC APPROACH: APPLICATION

Introduction to Part 2

Part II contains a description of Project Cycle Management (PCM), whose phases provide a time-line and project process framework in which to apply the strategic approach and checklists of key issues and potential responses. These are grouped according to both the PCM phases and the Focus Areas identified in Part I.

The strategic approach presented in Part I of the Toolkit provides a framework of policy principles and programming contexts for water related interventions. Planners, officials, practitioners and development workers are expected to use it as a guide for decision-making. Part II of the Toolkit is designed to enable readers to put the strategic approach into effect.

The application of the strategic approach entails identifying problem areas and appropriate responses at every stage of the programme process. Thus the main content of Part II consists of checklists to assist users to put into practice the policy principles at each of the different stages of the programme process and in each of the Focus Areas.

The reader should bear in mind at all times that this is not a manual; these checklists are not meant to be exhaustive, but to act as pointers towards strategies and actions. Each situation, each problem area for any given Focus Area and any stage of the PCM, not to mention the course of any project, is subject to so many variables that to produce a definitive set of checklists would not be possible, efficient nor practical.

The whole emphasis of this Toolkit is to avoid prescription, but instead to facilitate a questioning mode of project development, in which sensitivity to changing trends, local variety of economic, social and environmental circumstances, and especially the input derived from stakeholder and user participation, can be reflected.

In parts of the PCM process, the key issues and possible responses are similar for all Focus Areas, whereas in others they differ. For some checklists, therefore, the material is generic and applicable for all Focus Areas, whereas for others, results for these Focus Areas are presented separately.

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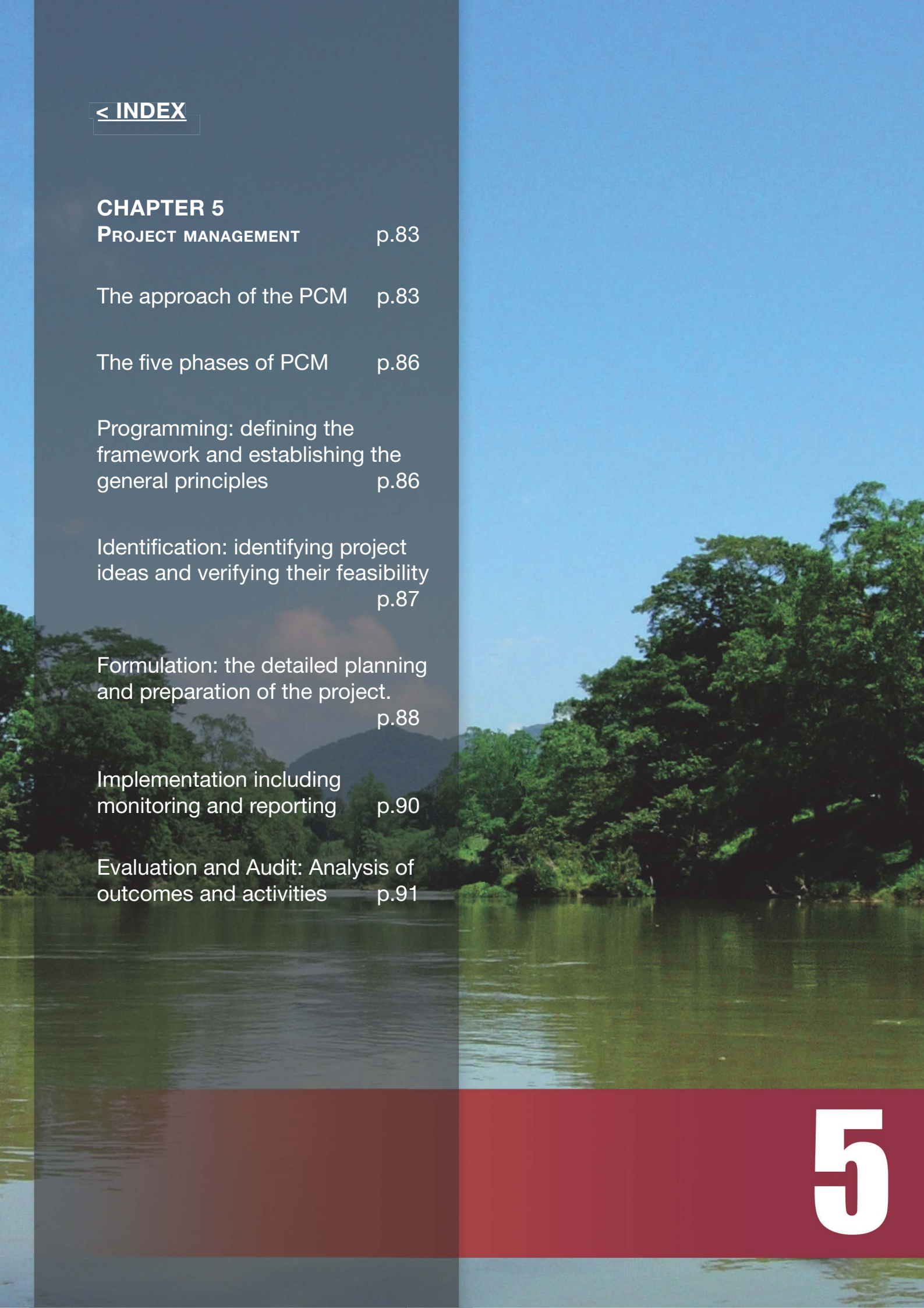
CHAPTER 5



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CHAPTER 5

Project management

Project Management (PM) methodologies in use around the World are definitions of project management processes aiming at standardizing and improving the quality of the project management lifecycle. Quality of the projects can be defined in terms of the relevance, feasibility and effectiveness of the impacts of the investment, including how well they are managed.

A project management methodology consists of process groups and control systems. The PM methodology aims at organising the project cycle structure and defining not only the content of each phase but also how it can be best accomplished.

Typically all project management methodologies imply a flow similar to the "Plan-Do-Check-Act" cycle with phases which are linked together by results – the result of one phase should become the input of another. Although, the way of defining the phases of a project can be subjective and often based on organizational procedures, each project management methodology approach should include well defined phases and the transition from one work phase to another should naturally involve the transfer of some sort of deliverable (a document, piece of software, invoice, report, an approval by committee, etc.)

The word 'project' as used in this Toolkit, should be interpreted as broadly as possible including sector planning. The term 'project' is primarily used for convenience and simply means the collection of related activities for which a contribution is provided to meet a specified objective.

Different project management methodologies have been adopted by several agencies such as the Asian Development Bank (ADB), the World Bank (WB), the EC, and national governments. In particular, the European Commission (EC) has produced a "Project Cycle Management" (PCM) manual, which has been subsequently adopted by other development partners as one of the systems for project development, funding and evaluation (EC, 2004).

Chapter 5 of the Toolkit focuses on the project management methodology adopted by the EC but aims in general at supporting good management practices and effective decision making throughout the project management processes of any organisation working in the sector.

The approach of the PCM

As mentioned, the way of defining the phases of a project can be subjective and often based on organizational procedures. In the case of the EC PCM, the project cycle presents five phases: **Programming, Identification, Formulation, Implementation and Evaluation.** In the case of the World Bank the phases would be similarly the following: Identification- Preparation- Appraisal- Approval- Implementation - Completion- Evaluation. The WB phases are slightly more numerous, and this depends on the interest for highlighting some parts of the project management phases. The WB "Completion" phase, for example, can be found within the EC PCM "Implementation" phase. Besides these methodological procedural differences, the PCM approach is constructed around the idea of carefully planned phases leading logically from one to another with mechanisms of assessment and verification.

Another common analytical and management tool typically used in many project management methodologies and also by the EC PCM is the logical framework, which is prepared for every project in order to show the intervention logic as it evolves gradually through its various stages. The **Logical Framework Approach (LFA)** is designed to improve and streamline projects, making them more effective in realising their development objectives, including that of producing

sustainable benefits. The LFA is used by most governments, multi-lateral and bi-lateral aid agencies, international NGOs, etc. to prepare sector development plans and/or project proposals. It is the principal tool used for project design during the identification and formulation phases of the project cycle. Using the LFA during identification helps to ensure that project ideas are relevant, while during formulation it helps to ensure feasibility and sustainability. However, it is not a substitute for experience and professional judgment and must also be complemented by the application of other specific tools (such as Economic and Financial Analysis and Environmental Impact Assessment) and through the application of techniques which promote the effective participation of stakeholders

Four Key principles have been identified by PCM practitioners to improve the quality of judgment and decision making at all stages of the project cycle. These key principles interpreted from a perspective of sector development are:

- Projects are supportive of overarching sector policy objectives;
- Projects are relevant to an agreed-upon strategy and to the real problems of target groups/beneficiaries;
- Projects are feasible, meaning that objectives can be realistically achieved within the constraints of the operating environment, the given budget and the capacities of the implementing organisation; and
- Benefits generated by projects are likely to be sustainable.

These four principles are important measures of the quality of the project, and should provide information for judgements and decisions of managers and advisors not only during the planning stage, but at all moment during the project cycle when amendments and course corrections are indicated.

A particular mention is to be given to the last principle “sustainability”. In order to foster the sustainability of the benefits generated, a careful analysis of the other three principles is fundamental. Sustainability is in fact a delicate issue depending on the coherence with the overarching sector policy objectives, the ownership and the alignment with the target groups needs and capacities and a realistic feasibility assessment. The list of over-ambitious failed projects is long.

To support the achievement of these aims, the PCM:

- Requires the active *participation* of key *stakeholders* and aims to promote local ownership;
- Uses the Logical Framework Approach (as well as other tools) to support a number of key assessments/analyses (including *stakeholders*, problems, objectives and strategies);
- Incorporates key quality assessment criteria into each stage of the project cycle; and
- Requires the production of good-quality key document(s) in each phase (with commonly understood concepts and definitions) to support well-informed decision-making.

Project management in the context of water sector development

In line with international thinking on the water sector, development is seen nowadays as a process to which sector programmes and projects contribute; sector programmes and projects alone do not themselves necessarily constitute development. A project can be effectively executed in technical terms, but if it is not in line with national policies and plans or with social, economic or environmental realities, it may end up as a costly and unsustainable implementation exercise.

Concerning the macro level of the national policies and strategies, a coherent project management cycle, in order to increase its chances of bringing sustainable benefits to its target groups, has to take into account the sector building blocks and in particular the following elements:

- **Sector policy and strategy:** a sector policy is a statement of a government's long-term vision (ten years or more) for the sector, setting out the government's objectives for that period. The sector policy also specifies the institutional aspects (roles of different actors in the sector, division of responsibilities, financing, etc.), sets out the main principles of service management (state control, private operator etc.) and the priority action areas (geographical areas, maintenance or extension of the network) and explains which legal and regulatory decisions are deemed necessary. The sector strategy action plan, also known as the master plan, describes how, in terms of the physical and financial execution, the government intends to implement sector policy over a medium-term perspective (3-5 years). It may be necessary to set intermediate targets or priorities to meet policy objectives;
- **The sector budget and its expenditure perspective:** these two must form the financial expression, on an annual and multi-annual basis, of the sector strategy. They are drawn up in conjunction with the sector strategy and on the basis of the available resources in the sector;
- **A sector coordination framework**, through which the sector policy, action plans and budget are reviewed and updated.

Together with those three core elements, there are also two key components: the **monitoring system** and the **institutional capacity**. These two components are of equal importance and often pose major challenges for the sustainable development of the sector. Monitoring systems are common weak points, which can be detrimental to future management and programming, and call into question the use of sector budget support as a financing modality. As regards to institutional capacity, capacity building assistance must be targeted by a good needs assessement but often involves most national partners.

Not all these elements are present in all countries. Approaches and terminology can differ, but this list gives an interesting overview of a series of issues to be considered in the PCM phases.

Concerning the project level, to contribute effectively to development throughout the entire project management cycle, a process of dialogue with stakeholders and beneficiaries is needed in order to foster:

- **Ownership:** From a user-beneficiary perspective, the project is viewed as the creation of assets over which they hold responsibility and will yield sustainable benefits after funding has ceased.
- **Stakeholder involvement**: ownership cannot be created without the involvement throughout the project cycle of all actual or potential stakeholders whether they are individuals, groups or organisations that have an interest in the project. Beneficiaries and implementing organisations are generally the most important stakeholders, but others of significance can include faith-based organisations, NGOs, traders, developers, the private sector and agencies concerned with complementary or competing activities in the programme or project environment. Stakeholder interests may therefore be positive or negative towards the project. Effective PCM needs to take account of stakeholder interests at every phase of the project cycle, and make adjustments accordingly.
- **Participation**: the above elements entail an overall concept: the need for participation. Much water-related development activity depends heavily for its success on active and real participation by the intended beneficiaries. It is recognised that effective participation, as opposed to an exercise in consultation or a communications campaign, can be a long process with less easily predictable results. However participation is regarded as a vital component of the stages of identification and formulation, and should be present to some degree in other stages of the project cycle.

These are amongst the most important concepts that are behind the guiding principles treated in this Toolkit. The application of the PCM tools must be sensitive and flexible to prevent other imperatives and procedures take precedence over the development imperatives of the project or programme. At any time during the project cycle, adaptations can take into account changed circumstances or previously unknown factors. The quality criteria of relevance, feasibility and sustainability should be used when collection information on how judgments and decisions about changes need to be made.

The five phases of PCM

Programming: defining the framework and establishing the general principles

Purpose

The purpose of Programming is to assess the main objectives and priorities of the sector, and thus to provide a relevant and feasible programming framework within which programmes and projects can be identified and prepared. The programming phase consists of an analysis of the situation at national and sector level to identify problems, constraints and opportunities. For the identified priorities, strategies are formulated based on the analysis and that take into account lessons learned.. Programming helps to: establish what other activities are ongoing and/or planned in the water sector, which are the sources of financing and in what areas; review existing water sector development policy; consider water-related activity across all development sectors; and identify the key areas for water-related projects.

Input

- National policies and strategies;
- Regional or transboundary policies, strategies and development plans (if relevant);
- Sector assessment studies with baseline data and situation analysis;
- Sector plans and strategy documents;
- Evaluations of policies, strategies and sector programmes;
- Case studies analysis of past projects;
- Demand analysis and resource assessment;
- Economic, financial, social, institutional and environmental analysis.

Activities

A national water resources study may be useful to assess national and/or regional constraints, opportunities and priorities as well as determining the role of the different national and international actors. The process shall be consistent with the major elements of the LFA:

- Identify key stakeholders and assess their needs, interests and capacities;
- Identify and analyse the priority of development problems/constraints and opportunities;
- Identify development objectives which address the identified priority problems possibly in a participative way with sector stakeholders and beneficiaries; and
- Identify a strategy for a possible intervention that takes account of the proceeding analysis, including capacity constraints, lessons learned from previous experience and the ongoing or planned activities of other stakeholders.

Outcomes

An indicative sector programme specifying:

- Global objectives

- Financial issues for each development area
- Specific objectives and expected results for each area
- How cross cutting issues are taken into consideration
- Programmes / projects to be implemented in pursuit of these objectives, including the targeted beneficiaries

Focus Areas Related:

- Water Resources (WR) Programming
- Basic Services (BS) Programming
- Municipal Services (MS) Programming
- Agricultural (A) Programming
- Energy Hydropower (EH) Programming
- Sector Performance (SP) Programming

Identification: identifying project ideas and verifying their feasibility.

Purpose

The purpose of the identification phase is to:

- identify project ideas that are consistent with the sector national framework, the sector strategy, the sector programme (if existing) and partner development priorities;
- assess the relevance and likely feasibility of these project ideas consulting stakeholders (beneficiaries in particular) and other sector partners;
- assess the possibility of overlapping and other criticalities with other projects or programmes in the sector
- prepare a project identification document summarising the results of the ideas and the financial aspects; and
- determine the scope of the further work required for individual projects during the formulation stage.

Input

Most important information and data sources are from the national and local governments, non-state actors, universities and research centres, multi-lateral or regional development agencies. The priorities and targets identified in the relevant national sector framework and from relevant sector policy or sector programme objectives: local ownership of, and commitment to, potential projects are key quality assessment criteria.

Key inputs and documents are:

- the framework established during the programming phase;
- results from any relevant sector study;
- results of participative consultations with stakeholders;
- sector financing strategy (if any);
- national sector policy or strategy (if any).

Activities

The following assessments shall be carried out:

- Assessment of policy and programming framework;
- Stakeholder analysis, including institutional capacity assessment;
- Problem analysis, including scoping of crosscutting issues (e.g. gender,

governance, environment);

- Assessment of other ongoing and planned initiatives, and assessment of lessons learned;
- Preliminary objectives and strategy analysis;
- Preliminary assessment of resource and cost parameters;
- Preliminary assessment of project management, coordination and financing arrangements; and
- Preliminary assessment of economic/financial, environmental, technical and social sustainability issues.

Tools to be used are:

- Quality Assessment Criteria
- Logical Framework Approach
- Institutional capacity assessment
- Promoting participatory approaches and using facilitation skills.
- Economic and Financial Analysis

Outcomes

- Policy and programme context
- Stakeholder analysis
- Problem analysis, including scope of cross-cutting issues
- Lessons learned and review of other ongoing or planned initiatives.
- Preliminary project description – indicative objective hierarchy
- Indicative resource and cost implications
- Indicative coordination, management (including financial management/ control) and financing arrangements
- Preliminary assessment of economic/ financial, environmental, technical and social sustainability
- Follow-up work plan for the Formulation stage

Focus Areas Related:

- Water Resources (WR) Identification
- Basic Services (BS) Identification
- Municipal Services (MS) Identification
- Agricultural (A) Identification
- Energy Hydropower (EH) Identification
- Sector Performance (SP) Identification

Formulation: the detailed planning and preparation of the project.

Purpose

The purpose of the project formulation stage is to:

- Confirm the relevance and feasibility of the project ideas as proposed in the identification phase;
- Prepare a detailed project design, including the management and coordination arrangements, financing plan, cost-benefit analysis, risk management, monitoring, evaluation and audit arrangements; and
- Prepare a proposal including all the documents above mentioned to be

submitted to the funding organisation or to the government.

Input

- the project identification document defining key components of the proposed project;
- Terms of reference for detailed project design studies,
- Other assessments documents produced during Identification

Activities

The following shall be carried out:

- confirm consistency with the policy and national programming framework;
- stakeholder analysis, including institutional capacity assessment;
- problem analysis, including crosscutting issues (e.g. gender, governance, environment);
- complementarities with other ongoing and planned initiatives, incorporating lessons learned;
- strategy assessment;
- objective hierarchy assessment (objective, purpose, results and indicative activities);
- assessment of resource needs and cost requirements;
- assessment of management, coordination and financing procedures and arrangements (including financial management and internal control/reporting);
- assessment of monitoring, evaluation and audit arrangements;
- sustainability and risk assessment, including economic/financial, environmental, technical and social.

Proposed tools are

- Quality assessment criteria
- The Logical Framework Approach, including the preparation of the Logframe;
- Institutional capacity assessment, building on previous analysis undertaken in the identification stage;
- Risk management matrix;
- Guidance on promoting participation and the use of facilitation skills;
- Guidance on preparation of TORs;
- Guidance on financial management, control framework and reporting requirements;

Outcomes

- A Final project proposal; and/or
- Terms of Reference/Technical and Administrative Provisions for implementation.
- The main information elements that should be available by the end of Formulation (in order to effectively guide and support implementation) are:
    - Situation Analysis/Key Assessment;
    - project Description;
    - management Arrangement;
    - feasibility and Sustainability

Decision options can be:

- What further design / formulation work is required before the start of implementation?
- What are the final implementation / contracting modalities to be used?

Focus Areas related:

- Water Resources (WR) Formulation
- Basic Services (BS) Formulation
- Municipal Services (MS) Formulation
- Agricultural (A) Formulation
- Energy Hydropower (EH) Formulation
- Sector Performance (SP) Formulation

Implementation including monitoring and reporting

Purpose

The purpose of the implementation stage is to:

- Deliver the results and contribute effectively to the overall objective of the project;
- Manage the available resources efficiently; and
- Monitor and report on progress of activities.

The implementation stage of the project cycle is in many ways the most critical; as it is during this stage that planned benefits are delivered. All other stages in the cycle are therefore essentially supportive of this implementation stage.

Monitoring, as well as evaluation, are both concerned with the collection, analysis and use of information to support informed decision-making. For the sake of clarity it is useful to understand the differences between the monitoring and evaluation in terms of who is responsible, when they should occur, why they are carried out.

Monitoring is usually the systematic and continuous collection, analysis and use of management information to support effective decision-making. Monitoring is an internal management responsibility, although it may be complemented by 'external' monitoring inputs. Monitoring can be seen as a picture of the project shot at any given time. It does not give a complete overview but it is useful to identify issues while they can still be addressed in a timely fashion.

Evaluation is usually a more complete analysis of the relevance and fulfilment of objectives, developmental efficiency, effectiveness, impact and sustainability. It is carried out with external inputs at fixed timings such as the project "mid-term" or at the end of the project in order to feed the new programming phase of the PCM with lessons learnt.

Regular reviews of project progress should involve key stakeholders with direct responsibilities for implementation on the ground (i.e. the project management team and even the beneficiaries) as they provide a structured opportunity to discuss and agree on the content of progress reports, build a common understanding of key issues/concerns and of actions that need to be taken.

Input

The information required depends on the scope of the project: purpose, results, activities and resource requirements, budget and by the management arrangements. Information required and reporting schedule will vary according to the level of management.

The following documents might be required:

- Key indicators and source of verification as per LFA;
- Quality criteria and standards;
- Logframe matrix;
- activity/work programme schedules and resource/budget schedules;
- risk management matrix;

- checklists for planning short-visits;
- terms of reference;
- contractual documents;
- project implementation plan with calendar;
- detailed designs and tender documents.

Activities

- Monitoring and regular review
- Planning and re-planning
- Reporting aiming to:
  - Inform stakeholders of project progress;
  - provide a formal documented record of what was achieved during the reporting period;
  - document any changes in forward plans;
  - promote transparency and accountability.
- Ongoing assessment of the following:
  - Continued relevance and feasibility of the project;
  - progress in achieving objectives and resources used;
  - quality of management including risk management;
  - prospect of sustainability of benefits;

Outcomes

Projects are executed as far as possible according to plan; with adjustments to ensure that project assets can be operated successfully to maintain a sustainable flow of benefits.

The key documents required/produced during the implementation stage usually include:

- Operational work plans (usually annual);
- periodic but regular progress reports;
- specific reviews/study reports (e.g. mid-term evaluation); and
- completion reports (at end of project).

Focus Areas Related:

- Water Resources (WR) Implementation
- Basic Services (BS) Implementation
- Municipal Services (MS) Implementation
- Agricultural (A) Implementation
- Energy Hydropower (EH) Implementation
- Sector Performance (SP) Implementation

Evaluation and Audit: Analysis of outcomes and activities

Evaluation

Purpose

The approach to Evaluation in this section is based on the OECD-DAC Quality Standards for Development Evaluation (OECD, 2010).

The purpose of evaluation is to make an “assessment, as systematic and objective as possible, of an ongoing or completed project, programme, strategy or policy, its design, implementation

and results. The evaluation purpose will be in line with the learning and accountability function of evaluations such as:

- Contribute to improving sector policies, strategies, procedures or techniques;
- consider a continuation or discontinuation of a project/programme;
- accountability for expenditures to stakeholders and tax payers;

Amongst the most important objectives of an evaluation the OECD-DAC cites:

- To ascertain results (output, outcome, impact) and assess the effectiveness, efficiency and relevance of a specific development intervention;
- to provide findings, conclusions and recommendations with respect to a specific policy, programme etc.

The evaluation scope can include the time period, funds spent, geographical area, target groups, organisational set-up, implementation arrangements, policy and institutional context and other dimensions to be covered by the evaluation. Identifying discrepancies between the planned and actual implementation of the interventions are among the main results of an evaluation.

In the planning of the Evaluation a certain number of issues can be considered such as stakeholder involvement, consideration for joint evaluations with other sector actors, evaluation questions, selection and application of evaluation criteria, selection of approach and methodology, resources, governance and management structures, document defining purpose and expectations.

Input

- Terms of reference for the evaluation mission;
- the project's Logframe matrix;
- project documents clearly defining activities, objectives, results, indicators, etc.;
- monitoring reports (internal and external), produced during implementation;
- annual plans;
- the Evaluation Report format (if relevant).

Activities

- Identifying the specific needs for the evaluation and selecting the topics/ themes to be evaluated;
- Designing the evaluation, including preparing the Terms of Reference for the evaluation study and selecting the evaluator according to the relevant procedures;
- Briefing the evaluation team and the parties involved, supporting the evaluation mission; and
- Ensuring the production of a high quality evaluation report and of the dissemination of evaluation findings and recommendations.

Outcomes

The key documents produced during this stage of the cycle are the:

- Terms of Reference designing the evaluation work to be carried out, and
- Inception report usually following a preliminary desk study
- Draft Evaluation Report for inputs from the implementing organisation and other relevant stakeholders such as beneficiaries and authorities.
- Final Evaluation Report. The evaluation report should mirror the structure of the main evaluation criteria, taking into account the nature of the project, the stage at which the evaluation is carried out, and the users for whom the report is prepared.

Audit

Purpose

Audit is a very important activity when addressing public expenditures management. It provides assurance and accountability to stakeholders and recommendations for improvement of current and future projects.

The purpose of an audit is to:

- Assess an activity/subject that is the responsibility of another party against identified suitable criteria, and
- Express a conclusion (i.e. qualified opinion) that provides the intended user with a level of assurance about the activity/subject being audited.

The objectives of audits are to enable the auditor to express a conclusion on:

- The legality and regularity of project expenditure and income i.e. compliance with laws and regulations and with applicable contractual rules and criteria; and/or
- Whether project funds have been used efficiently and economically i.e. in accordance with sound financial management; and /or
- Whether project funds have been used effectively i.e. for purposes intended.

Inputs

- Terms of reference for the audit mission;
- the Logframe matrix - to help assess what has been achieved against plan;
- monitoring reports (internal and external), produced during implementation;
- evaluation reports, mid-terms or final;
- methodological guidance provided; and

Activities

- **Planning**
  - Identifying the need for an audit and establishing audit objectives and scope.
  - Designing the audit, including drafting the TOR, usually on the basis of standard formats.
  - Selecting the audit firm according to the relevant procedures (national law, donors' procedures, international cooperation agencies rules, etc.).
- **Conduct**
  - Monitoring of the conduct of the audit by external audit firms
- **Reporting**
  - Obtaining and reviewing copies of 'Aide Memoires' (memorandum with findings and conclusions), draft and final audit reports and ensuring their dissemination.
  - Arranging procedures (meetings or written procedures) between donor agency, the audit firm and the audited.
- **Follow-up**
  - Monitoring the follow-up of audit findings and recommendations including reporting on the follow-up.
- **Outcomes**
  - Terms of Reference for the audit engagement; and
  - The final Audit Report.

The audit report should mirror the structure of the main audit criteria, taking into account the nature of the project, the stage at which the audit is carried out, and the users for whom the report is prepared.

Focus Areas Related:

- Water Resources (WR) Evaluation and Audit
- Basic Services (BS) Evaluation and Audit
- Municipal Services (MS) Evaluation and Audit
- Agricultural (A) Evaluation and Audit
- Energy Hydropower (EH) Evaluation and Audit
- Sector Performance (SP) Evaluation and Audit

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CHAPTER 6

PROGRAMMING

The purpose of the programming phase is to assess the main objectives and priorities for the development of the water sector, and thus to provide a relevant and feasible programming framework within which programmes and projects can be identified and prepared. Programming analyses the situation at national and sector level, and identifies problems, constraints and opportunities to be addressed. As water is fundamental to social and economic development, this chapter defines a series of Focus Areas aiming at supporting an integrated approach to water resources management. The programming phase provides an opportunity to review socio-economic indicators, national and local priorities, and all national, regional and local factors relating to water.

During this phase, the main objectives and sector priorities will be identified and thus a feasible programming framework will be provided within which potential water-related programmes and projects can be identified, indicating which Focus Area(s) are most in need of support.

The programming phase aims at applying a truly integrated approach balancing needs, solutions and possibilities within an overall water resources management sector framework. However, an integrated approach requires a wide range of information collection and analysis.

The essential question for the programming phase is: Keeping in line with national policies, strategies and priorities, which Focus Area(s) and which kinds of support would provide an intervention that would be most beneficial?

Checklists have been developed corresponding to the following four steps in the programming process.

Step 1: Alignment to national sector framework;

Step 2: Assessing the capacity of recipients to adopt and manage programmes;

Step 3: Assessing the needs of the water sector;

Step 4: Identifying the priority Focus Areas for support

Checklist for Step 1: Alignment to the national sector framework

Water resources development and management must be assessed with regard to alignment with the national sector framework of the country.

- Are specific objectives and expected results, including any conditionalities and main performance and outcome indicators aligned to the national sector framework?
- Do national sector framework plans include measures to ensure the sustainable use of water resources? (e.g. monitoring strategies)
- Are national sector framework plans implying an effective level of participation by sector stakeholders and beneficiaries?
- Are national sector framework plans based on sound scientific and technical analyses?
- Is there a Sector programme (for instance as part of a sector wide approach) in place for the equitable development of the water sector?
- Are environmental aspects (including in-stream use) of water treated

prominently in programming and addressed in policies related to other sector activities?

- Are effects of climate change and climate change resilience duly considered?
- Are crosscutting issues, especially gender equality and HIV/AIDS, taken into consideration?
- Is water as a key element of economic activities becoming a constraining resource?
- Are key stakeholders identified and their needs, interests and capacities assessed?
- What options are available for meeting current and future water needs, and have alternatives to supply augmentation or improved efficiency been considered?
- Are complementary measures needed in other sectors to achieve a more integrated approach to water resources management?
- Are the policies in other sectors compatible with a sustainable water resources sector development and management, as set out in the Guiding Principles?
- Is or can the national sector framework be aligned and harmonized with other potential sector activities (including donors' and other development partners) and vice-versa?

Ensure that programmes do not conflict with other national / sector activity.

- Have the main objectives and sector priorities for sector development been identified?
- Have the capacity constraints and lessons learned from previous experience been taken into account?
- Is there a clear link between budget and policy? Are budget and policy priorities complementary and realistic?
- Are coordination mechanisms of key government actors and relevant national and local stakeholders in place? Are they active? Are they consistent with the structure and responsibilities of the national government?
- Is there an established mechanism ensuring stakeholders and beneficiaries participation?
- What degree of support and/or strategies are stakeholders and development partners providing in water resources management or water-related activities? Is water considered to be a high priority or taken for granted??
- What assistance is presently being provided by development partners in water resources development? Does it include guidance for future programming?
- Do support/planned activities by development partners in other sectors complement or conflict with existing or planned water resources management activities?

Based on the above assessment of compatibility to sector alignment, decide whether:

1. Activities in other sectors or by other development partners can be effective and complementary as support to the water resources sector e.g. geographical scope, project duration, most suitable partners; *or*
2. There is overlap or incompatibility with activities in other sectors or development partners; this should be resolved prior to planning or implementing any further support to water resources sector; *or*

3. If faced with multiple sector donors promoting harmonization of cooperation with development partners (e.g. to reduce transactions costs); the sector, led by the government, needs to ensure effective coordination and dialogue mechanisms
4. Activities already underway in other sectors or by other actors suggest that some specific support activities to the sector / water resources management may be not required under current circumstances.
5. Other potential sources of funding can be considered in the framework of a sector programme;
6. Types of external assistance can be considered mainly (and optimally) as e.g. macroeconomic support, technical assistance, training, investments, and supply of equipment

Checklist for Step 2: Capacity to adopt and manage a programme

A water resources sector programme can only be effectively implemented if the sector governance is adequate and if there is the required capacity existing within the sector, especially for the government, in order to handle the institutional, technical and financial aspects.

- Are the required policies, laws and regulations in place in order to support an effective sector development?
- Does the national government have the capacity to formulate and implement a sector policy and sector budget with a medium term perspective (and eventually a long term perspective)?
- Does the national leadership have the capacities to realistically implement the proposed sector programme?
- Is there a need to strengthen the key sector organisations (e.g. the government, implementing agencies, main service providers, etc.)?
- Is there a need to strengthen capacity of sector stakeholders (e.g. private sector, NGOs, local authorities)?
- What is the past record concerning sector programmes in water resources? Lessons learnt? Sector evolutions and trends?
- Have recent evaluations/capacity assessments of sector programmes and projects been initiated by the national government (in accordance with Paris Declaration principles) but with the participation of the key sector stakeholders and beneficiaries? Are results of these evaluations of recent programmes and projects being considered for future programming?
- Are customary rights, land ownership and transboundary disputes or other legal issues a constraint to effective implementation of water-related activities?
- Are the national institutional structures and capacities adequate for effective management and coordination of the proposed national sector framework and do the key organisations have clear, legally defined mandates?
- Who are the key agencies at the higher tiers of authority and are they capable of managing water resources in a holistic and coordinated way?
- Is institutional reform required, and if so, is the government aware, supportive and capable of reform?

Concerning sector funding in particular, there are a number of mechanisms for the provision of development partner support (including grants and loans). If and when this external assistance is envisaged, it is important to identify the most suitable funding mechanism during the sector programming phase and to ensure adequate local funding is available.

- How different types of water-related activities are presently financed, and to what extend is cost recovery considered?
- Would the country be able and willing to support local recurring costs and make the necessary budgetary allocations for proposed water resources activities?
- Does the country have the capacity to handle large conventional infrastructure projects or would smaller-scale intervention be more appropriate?
- Which mix of development partners' funding mechanisms is most appropriate for interventions in water resources?
- Is the type of intervention proposed within the administrative, financial, and managerial capacity of the country?
- Is the funding mechanism (s) chosen financially and economically sustainable at macro-economic level?

Based on the above assessment of capacity decide whether:

1. National policies and capacities are adequate to support the proposed water resources development and management, or
2. National policies are adequate in general but there are specific weaknesses that would have to be addressed as part of any sector programme, in other words improving national or sector governance
3. Country (sector) capacity is weak and specific actions are needed to determine ways to reform policies and strengthen capacity, is a priority
4. Current sector funding mechanisms and strategies are adequate or whether specific actions are needed to improve them and their impact on the sector programme.
5. Large-scale or smaller scale infrastructure interventions (or an appropriate mix) are most appropriate.

Checklist for Step 3: Assessing the needs of the water sector

Some countries may be fully aware of water resources issues and make appropriate plans whilst others are unaware or take a shorter-term view of needs and responses

- Is the country, or specific region, presently facing water scarcity or stress or likely to do so in the near future?
- Does the country require support in order to manage its water resources adequately?
- If no water policy exists, or is inadequate, can assistance be provided to develop one?
- If the water policy exists and it is not implemented, can the reasons be identified with internal capacities and/or external evaluation and analysis? Reasons can be varied including, ownership, planning, institutional set-up, funding, capacities, security etc.
- Do current government policies demonstrate an awareness of water resources

issues and the possibility of competition, conflicts or overlaps between in-sector and other sector users?

- To what extent are people's actual and perceived needs known and understood? Is existing water resources management clearly taking into account the social well-being of the population at the national level or in specific regions within it?
- Does the government recognise the need for an integrated/over-arching water resources policy that ensures that the water resource needs of different sectors are addressed?
- Is present legislation adequate to manage water resources effectively and, if not, can development partners provide cooperation to rectify this?

***Support to programmes/ projects should be demand-driven, fully lead by the country and developed with stakeholders and the target groups*.**

- What is the priority given to water resources in national development policy, including issues in which water resources are critical such as survival, health, food production, well-being, natural resources conservation and ecosystem services provision?
- Is there adequate political support for policy implementation to be feasible and sustainable?
- Is there adequate conformity between the local-level problems and needs being tackled by local and community-based organisations and Government policy at national level?
- Are the local level actors (local authorities, communities, etc.) fully aware of government policies and capable to implement them?
- What choices has the government made in the past to address important issues (local, national or transboundary) related to water resources or where water has played a significant role?
- Are there indications that water issues are of concern to the general population (through NGOs, media reports, pressure groups etc.)?Is the national government responding to the people's concern and, if so, how?
- Are associated issues, such as land use and environmental pollution prominent within general awareness and is this reflected in national policies and strategies?
- Is the government committed to resolving constraints between water and other associated issues, such as energy, navigation, transport and tourism?

In formulating any programme or action plan for water resources, care is needed to avoid contradictions between water-related sector policies and limit unnecessary competition for water resources such as those for agriculture, energy, health, education, transport, and environmental policies

- What is the national current level of commitment, both in policy and practice, to maintaining biodiversity, protecting the aquatic ecology, preserving ecosystem services and in general addressing human well-being?
- Is the national government already committed to water resources development and management that incorporates an integrated approach with other sector users?
- To what extent are the non-consumptive aspects of water resources, such as in-stream use, hydropower, flood control, recreation, and transport/navigation taken into account in water policies and proposed development plans?
- Have proposed project sector programmes or plans been developed in

consultation with the various sector and sub-sector ministries and their related agencies?

- Is the proposed sector development program taking into account the other relevant sectors' development programmes; including primarily agriculture, energy, health, education, transport, and environmental policies?

Policies established by the government should be developed in consultation with the various stakeholders to ensure that competing or conflicting interests are reconciled as far as possible and that the policy is acceptable to all interests

- Have proposed project sector programmes or plans been developed in consultation with the various sector stakeholders and with the end users in particular?
- Are there indications that the government policy and actions on water benefit the poor and disadvantaged rural or urban-poor populations, and that they are included as actors in the development process?
- To what extent is there conflict or competition between users (both consumptive and non-consumptive) and between the use and conservation of the water resource? Is this acknowledged within policy, strategy and general public awareness?
- Are transboundary issues significantly present in the water resources management? Is the government party to treaties or agreements with neighbouring countries or within their region overall?
- Are there conflicts over managing water resources between neighbouring administrative regions within the same country?

Based on the above assessment of needs, decide whether:

1. Water resources are a critical issue, or whether the country is confident that it can adequately manage its water resources,
2. There is a need for support to water resources in the country or region, or
3. There is inadequate information available to make a decision; in this case consider whether policy support and water resource assessment and planning should be given a high priority in the country or regional programme for development assistance

Checklist for Step 4: Identifying priority Focus Areas

It is important to identify which Focus Area(s) is/are most in need of support. This priority setting should fit within an overall sector programme based on responses to the earlier key issues.

- Is there a particular area of water use or management critical to social and economic well-being?
- How are the different Focus Areas treated within existing national and regional plans?
- Do policy conflicts make holistic planning difficult or reduce the possibility of support to any of the specific identified Focus Areas?
- Are there specific common priorities (which could result either in competition or in a more effective policy) between domestic, agricultural, and industrial water use applied by the government?
- Is there a Focus Area particularly underfunded or less regarded compared to the others?

An adequate knowledge base is crucial to reasoned planning and decision making on water resources development and management.

- Is technical information readily and sufficiently available on the quality and quantity of water sources, including surface water, soil moisture, hydrological data, meteorology, land cover and land use and aquifers? If not, will the degree of the lack of information constrain effective planning?
- Are predictions of future supply and demand being made on the basis of realistic and sound scientific and technically informed assumptions, and do they take into account all uses (consumptive and non-consumptive) of water?
- Isthe data concerning access to water and sanitation in rural and urban areas known to decision-makers?
- Is there adequate information on water quality and health issues, particularly concerning pollution, risks and vulnerability of water resources?
- Is information available on the agricultural use of water and the consumers?
- What is the potential for improving food productivity or security through improved irrigation, land drainage or flood control practices?
- Is the strategic impact of 'virtual water' *(*see Part *3*) understood and taken into account in assessing the need for irrigated agricultural production or the selection of types of crops for either food or economic activity?

Possible responses to Assessment of Steps 1 to 4

As each country is unique, any categorisation cannot be prescriptive. However, as a guide, the responses to steps 1 to 4 can help identifying the priorities for national and/or external development support. The following category examples set out a general basis for selecting different sector programme responses based on the impression gained from the issues raised in steps 1 to 4. Three categories can be determined:

Category A:

In this category, typical of "fragile states", a country or region is likely to have weak institutions, with minimal or no evidence of good governance in general; specifically, it will be either unaware of, or have limited commitment to, sustainable management of water resources. The country probably has little capacity to manage large programmes even though the need is evidently great. In such cases, the focus could be on:

- Improving or setting up a sector policy and legislation, strategy formulation, and assistance to identify priority programmes;
- The provision of basic services (urban and rural), capacity building and improvement of the institutional set-up.

However, as it is evident, addressing problems in fragile countries, needs considerable care and attention. It is likely that such countries are more in need of external funding and infrastructure support rather than immediate policy development.

Support for infrastructure will need to be designed to help the poorest in such a way that minimum external assistance is needed once work is completed, fostering as much as possible economically sustainable environment of investments. In this context community ownership may be critical and key partners need to be identified to help reduce the risk of unsustainable services. Adapted local technology or the careful selection of appropriate technology will be needed as one of the main issues for the sustainability of the interventions.

The role of the civil society, NGOs or community-based organisations and innovative funding instruments such as sector budget support, pool financing and others can have an important

role in deciding responses. Support should be available for awareness-raising and knowledge generation, such as hydrological assessments, that will be useful for more extensive interventions and permit better planning and management of water resources.

Focus Area 1 (WR) and 6 (SP) will be important but appropriate support within Focus Area 2 (BS), Focus Area 3 (MS), Focus Area 4 (AM) and Focus Area 5 (E) should also be considered.

Category B:

In this category there is likely to be clear evidence of a commitment to good governance in general and an awareness of, and desire for, equitable and sustainable water resources sector development and management (including perhaps some sector policy strategies in preparation). This should include an acceptance of the importance of stakeholder involvement and evidence of programmes to improve human resources capacity that should make the development partners interventions possible. Sector development could focus on:

- improving policy, strategy, legal and regulatory frameworks to improve water resources sector management and build on any existing work;
- support the country government for the definition of a sector programme through the principles of the sector wide approach (as defined in chapter 11).
- identifying reasons why, if policy and strategy are already defined and have some political support, but are not correctly implemented and a disconnection is apparent between the national and the local level;
- assistance to increase the participation of stakeholders and, in particular, facilitating the increased involvement of the private sector, civil society and the education sector including University and research;
- encouraging capacity building and institutional improvements at all levels;
- giving increased importance to equitable and sustainable cost recovery via service charges – with progressive steps towards equitable tariffs – to allow reductions in state subsidies;
- support for knowledge generation – strengthening data and information systems.

All focus areas should be considered for support.

Category C:

In category C the country is likely to be politically stable with clear evidence of progress towards instituting a systematic approach to water resources development and management, including legal and regulatory frameworks, capacity building and private sector development. In such countries there is likely to be an awareness of, and commitment to, the modern concepts of water resources management. Support could be required for:

- devolution of responsibility to lower administrative tiers or to the private sector, including capacity building for local government, the private sector, and community organisations in water resources development and management; assumption by central government of a planning, legal, regulatory, and facilitating role including re-allocation of water resources between sectors; and the establishment of a framework for increased public private partnerships;
- measures to introduce pollution control, wastewater treatment and reuse, and charges to industry for pollution of water courses or aquifers;
- the adoption of demand management measures to ensure reliable supplies, including rehabilitation of existing structures or other measures which minimise the need for new infrastructure;
- the improvement of integrated management through increasing knowledge

about cross–sector linkages leading to a multi-sector approach to water resources development and management, including positive participation in managing transboundary waters;

- the provision of increasingly sophisticated knowledge and data generation and computerised management information systems, with a sustainable strategy on scientific and technical knowledge management.

In summary, all Focus Areas should be considered for support to varying degrees.

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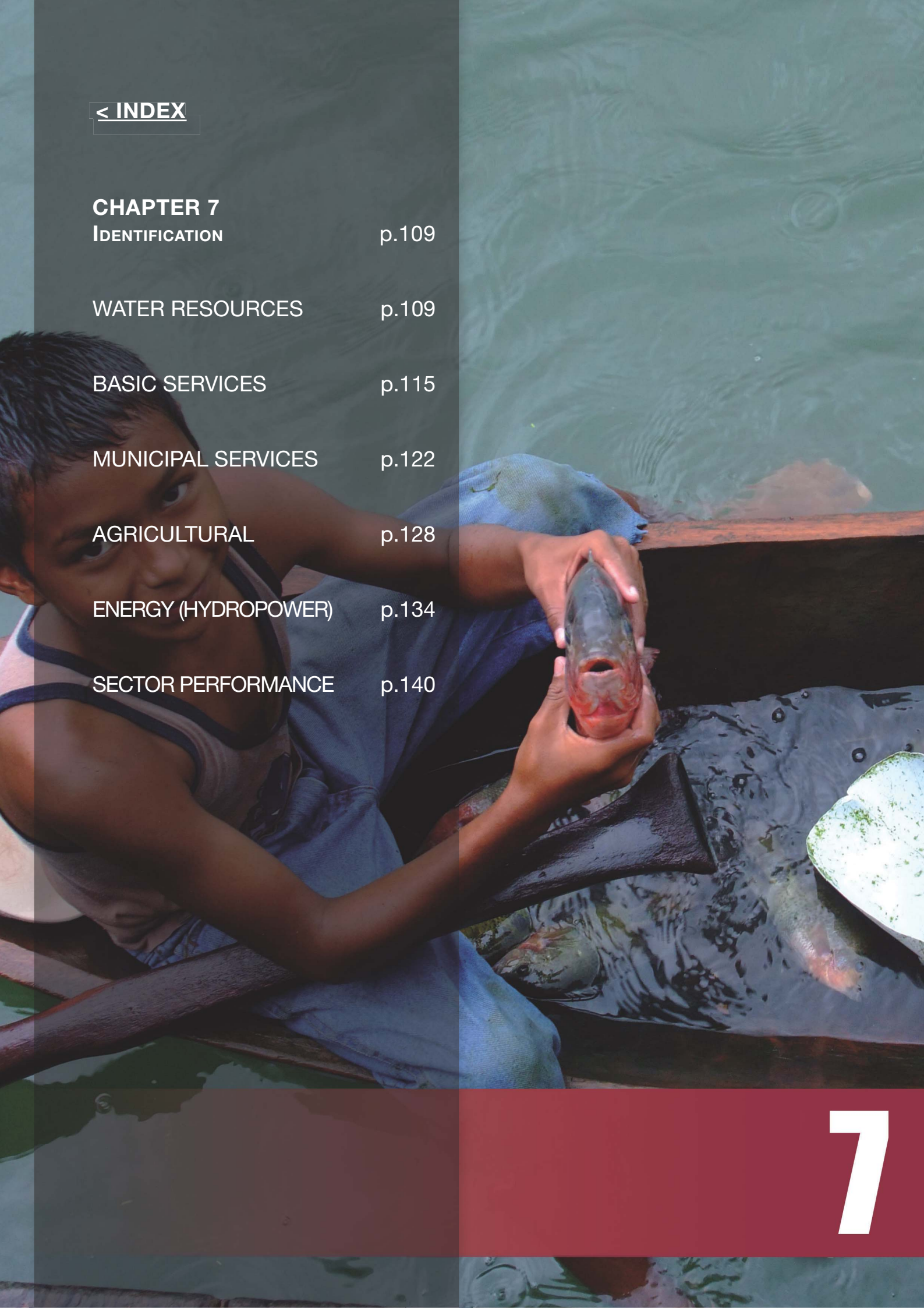
CHAPTER 7



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CHAPTER 7

IDENTIFICATION

For all phases of the project cycle other than programming, checklists have been prepared in the same format, to allow the user of the Water Project Toolkit to examine key issues likely to arise in the preparation and implementation of projects, alongside possible responses. Issues and responses are grouped according to a set of problem statements within the framework of principles established in the strategic approach, starting with Institutional and Management principles, and proceeding through all categories of principles.
In the Identification and Formulation phases, each programming context is handled separately since issues and responses differ between Focus Areas. In other phases, issues and responses are generic, and the same set of checklists applies in every Focus Area.

WATER RESOURCES

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles *The lack of an integrated policy environment at the national level can lead to inefficient allocation of water resources and poor investment decisions. Therefore examine:*	
• What is the national water development policy environment and water-specific legislative framework? • What are the priorities for sectors dependent on water (e.g. hydropower, agriculture) and the associated goals for water resources development? • Does an up-to-date, comprehensive assessment of water resource development and management issues exist? • Are climate change risks, mitigation and adaptation integrated into national policies, plans and programmes, especially in IWRM? • Does adaptive management involve the increased use of water management measures that are robust enough to withstand uncertainties?	■ Assess current water policies to determine if they are appropriate in terms of overall national and regional social and economic development priorities. ■ If water policies are inappropriate, consider support for new or revised policy formulation, including priorities. ■ Establish the government's commitment and political will toward establishing integrated water resource management. ■ Consider providing support for a comprehensive water resources assessment and management strategy. ■ Consider assisting the government in reviewing the national policies, plans and programmes at all appropriate levels ■ Review adaptive management measures
Fragmented planning functions and agency responsibilities lead to sector-based project-by- project development and inter-sector conflict. Therefore examine:	
• Which agencies, governmental and professional, are involved in planning and co-ordination at national, regional and local levels? • What is the potential for conflict or competition among different water-related sectors and users, and what mechanisms exist to resolve such conflicts? • Would the creation/improvement of river basin organisations benefit assessment and planning?	■ Commission a comprehensive institutional review concerning water resources assessment and planning. ■ Consider establishing or strengthening inter-sector co-ordinating bodies at national, regional, river basin and local levels (e.g. inter-ministerial commission, river basin committees etc.). ■ Review roles and responsibilities of the planned organisation and support its functions; identify overlaps, potential conflicts and methods for resolving them.

Transboundary water resource issues are critical to water resource availability in many countries. Therefore examine:

• What agreements govern the sharing and protection of waters with neighbouring countries? • What are the effects of neighbouring countries' water strategies on national water resources development and planning, and vice versa?	■ Consider ways of strengthening international agreements. ■ Encourage the establishment of a regional/ basin framework to guide water resource planning and management studies.

Neglect of legal aspects during strategy formulation can lead to an untenable legal framework for sound resource management. Therefore examine:

• What laws govern or regulate the use, development and conservation of water resources, and are they appropriate and up to date? • How effective is the enforcement of water-related laws and regulations?	■ Commission a study on legislation, analyse its consistency, and recommend necessary changes at all levels in the legal hierarchy. ■ Consider assistance to the government for re-drafting legislation ■ Review the effectiveness of existing enforcement capabilities

Disregard for stakeholder participation and too much emphasis on top-down planning tend to produce poor results. Therefore examine:

• Who are the key stakeholders involved in water resources management and what are their respective interests? • Do the policy framework and planning mechanisms encourage and facilitate stakeholder participation?	■ Ensure adequate awareness of the meaning of stakeholder participation at all institutional levels and clarify commitment to it within all policies. ■ Undertake a Stakeholder Analysis to identify key stakeholders and their respective interests. ■ Identify/strengthen mechanisms to enable stakeholders to voice their opinion on water priorities.

Social Principles

National and regional social development goals should be integrated with water resources policies if key objectives are to be achieved. Therefore examine:

• What are the national and regional social development objectives? • What are the potential social impacts of investments in WR? • What are the needs and demands of different social sectors with regard to water?	■ Determine the impact of the current water situation, including water quality and pollution issues, on various social sectors. ■ Conduct a Social Impact Assessment (*see Part 3*). ■ Support studies to establish water demands and needs of the different social sectors including health, education, housing, leisure, and culture.

Disregard for the social context of water use and a lack of consultation with stakeholders can result in inappropriate interventions. Therefore examine:

• What mechanisms are in place to ensure adequate participation of beneficiary/user groups in planning? • Which cross-cutting issues (such as gender, poverty alleviation, needs of ethnic minorities, public health issues such as HIV Aids) should be addressed? • Which potential user groups are known to be particularly disadvantaged?	■ Work with National down to Local Authorities, NGOs and community groups to establish an appropriate participatory approach (*see Part 3*). ■ Support measures to involve especially disadvantaged groups in the process of identifying priorities. ■ Identify which groups need to be involved during the formulation stage, and promote a suitable level of participation.

Economic and financial principles

A sense of the economic value of water is necessary to balance scarce resources with increasing demand, reduce wastage and encourage conservation. Therefore examine:

• What is the size of water-intensive or water-reliant sectors within the economy? • What is the economic value of water in its alternative, often competing uses? • What are the projected demands for water in all its (competing) uses, including consumptive and non-consumptive uses?	■ Estimate sector water use within the economy and establish water needs to support development objectives. ■ Review water values in their different uses and consider the implications for future supply provision. ■ Determine the effects of water shortages on all its competing uses, especially during drought periods.

Policies for allocation of water resources within and among sectors should promote economic efficiency and encourage higher-value uses. Therefore examine:

• What procedures are used for allocating water among its different uses, and are they efficient and flexible enough to respond to changing circumstances? • What mechanisms exist from low- to-high-value uses, and what would be the implications of any reallocation?	■ Review the efficiency and flexibility of current allocation mechanisms (legal and administrative), and investigate alternative allocation measures. ■ Investigate the scope for tradable water rights and water markets (see part 3). ■ Investigate the likely negative economic and social impacts of reallocation, allowing for events such as drought or floods.

Water is a scarce resource and demand management measures offer a means to augment existing supplies and conserve resources. Hence examine:

• What is the outlook for the future balance between the supply and demand for water? • What is the potential for economic instruments in the management of water resources? • What economic incentives/disincentives have a marked impact on water use? • Has the assessed demand considered the possible impact of climate change? • Requirement of integration of climate-induced changes with other factors including demography	■ Analyse water demand projections and compare with supply from various sources, by region, season, and use, taking into account the effect of drought. ■ Analyse cost of supplying (or saving) water from different sources, including supply-side and demand management measures. ■ Assess impacts of pricing policies and subsidies, and investigate the potential of market-based incentives (water tariffs, pollution charges, water markets). ■ Assess the demand, incorporating the impact of climate change ■ Ensure that all socio-economic factors are included while assessing water demand

Environmental principles

Environmentally sound water resource development and management relies on an integrated policy framework. Therefore examine:

• What is the environmental policy, which government and professional bodies are involved, and how does environmental planning relate to water planning? • What is the potential for conflict between environmental needs and water-related development objectives? • What are the potential environmental impacts of different interventions, and what mechanisms exist to reduce potential adverse impacts? • Has the proposed development plan taken into account the effect of climate change, including longer term challenges e.g. what is changing in the hydrological cycle	■ Undertake initial screening and, if needed, a Preliminary Environmental Assessment to identify potential environmental impacts associated with alternative interventions. ■ Check environmental policy on pollution, health, and aquatic systems, and match with water-related policy. ■ Strengthen/help establish an effective environmental agency with links to water resources agencies. ■ Ensure that climate change effects are included in the development plans ■ Review the assumptions made and consider longer term variations due to possible effect of climate change

Water is an essential natural resource and should be planned and managed within the context of an overall natural resource management strategy. Therefore examine:

• To what extent is an integrated resource management approach followed? • To what degree have all potential water sources been considered? • What provision is required for 'environmental flows', of sufficient quantity and quality?	■ Identify land/water interactions and watershed management strategies; where practicable, propose assessment and planning on a river-basin basis. ■ Examine the potential for water use efficiency and resource conservation through conjunctive use of surface and groundwater sources. ■ Check that the environmental water needs for the conservation of environmental assets have been identified and taken into account, especially for periods of low flow.

A lack of baseline data can make it difficult to assess the potential environmental impact of interventions and may lead to unplanned degradation. Therefore examine:

• What is the level and quality of environmental baseline data, and what additional data is required? • What knowledge exists on the needs of the aquatic eco-system?	■ Identify and assess sources of environmental data and information, and establish additional requirements. Include data and information-gathering components in further studies. ■ Support research into the water dependence (both quality and quantity) of different aquatic ecologies.

Information, Education and Communication Principles

Water resource assessment and planning is an inter-disciplinary process that relies on a broad knowledge base as a pre-condition for effective planning. Therefore examine:

• To what extent is the existing state of knowledge at all levels a constraint to informed decision-making? • What are the constraints to information exchange and availability? • Is there a sector communication strategy in place or under implementation?	■ Review current data collection, analysis, storage and dissemination systems. ■ Highlight the implications of a restricted knowledge base on levels of risk; give equal emphasis to information on water quality. ■ Review mechanisms for information exchange and examine ways of improving information availability. ■ Support the definition of a sector communication strategy and/or its implementation.

Communication between government agencies and other stakeholders is necessary if water-related development interventions are to be relevant. Therefore examine:

• What mechanisms are in place to support communication between government agencies and other stakeholders? • How effectively does the decision-making process incorporate user groups' needs?	■ Investigate existing communication systems for adequacy and frequency of information exchange. ■ Review and strengthen user group participation (see part 3).

Without an understanding of water resource management issues, important stakeholders are unable to contribute effectively to planning. Therefore examine:

• To what extent are raising awareness and education programmes seen as a primary component of planning? • How effectively does the decision-making process incorporate user groups' needs?	■ Identify whether awareness-raising is clearly defined within planning agency roles and responsibilities. ■ Encourage and support educational and awareness raising programmes through appropriate media.

Technological principles

Assessment of surface and groundwater resources, their allocation and use is a precondition for planning water resource management. Therefore examine:

• What is the availability of surface and groundwater resources, and how are they distributed between sectors? • What proportion is governed and controlled by water allocation procedures (e.g. water rights, water permits)? • What is the reliability of data for all sector uses and what demand assumptions are used? • What is the possibility of water unaccounted for at the basin level?	■ Establish current water allocation, actual use, and future demands for all sector users and the significance of permits or rights. ■ If water data collection is inadequate or the data is unreliable, recommend a programme of monitoring to improve data collection, storage and analysis. ■ If knowledge of actual resources or resource use is inadequate, recommend a study to strengthen resource assessments.

Effective planning relies on a wide range of tools to enhance the knowledge base and understand linkages between physical and non-physical processes. Therefore examine:

• To what extent is the knowledge base a constraint to application of planning tools and methodologies? • To what extent do current planning tools and methodologies match the planning scale (spatial and temporal)?	■ Review and assess planning tools for compatibility with current knowledge and data availability, and the skills and resources of planning agencies. ■ Identify improved planning tools and methodologies and assess training requirements to up-grade planning agency capability.

Hydrological and hydro-geological information form the basis of water resource assessments. High quality data is needed for reliable assessments. Therefore examine:

• To what extent does the existing data collection network adequately match the planning scale? • To what extent do the location, frequency and quality of data match planning requirements? • Are the hardware and analysis methods for basic data collection appropriate? • What mechanisms are in place to cope with events such as drought and floods?	■ Review data collection networks, compare with recommended standards (e.g. WMO) and assess compatibility with spatial and temporal planning scales. ■ Identify requirements for strengthening of all data collection networks ■ Verify that technologies (and planning) match the technical and financial resources of the responsible agencies. ■ Contribute to disaster preparedness strategy including data management and early warning systems of extreme events .

BASIC SERVICES

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles	
Basic service activities should be consistent with an integrated national water policy, and WHO standards. Therefore examine	
• What are the current national water policies and priorities regarding basic provision of water and sanitation services? • What is the current unsatisfied demand for clean water and sanitation, especially among disadvantaged groups? • Is the institutional framework equipped centrally and locally to provide efficient and sustainable services? • Is the water sector integrated with national poverty reduction and development strategies?	■ Work with government to identify BS options consistent with national policies which follow WHO guidelines (WHO, 2011). ■ Establish a realistic national minimum standard of service, and estimate the number of people falling below this. ■ Help government to rationalise the institutional structure to ensure effective service delivery and assess risks of any weakness in the framework. ■ Ensure national poverty reduction plans are included
Effective inter-agency and inter-sector planning is essential. Therefore examine:	
• What other agencies (professional, private and NGO) should be involved in the planning process and what should be their roles? • What mechanisms exist for interagency or inter-sector cooperation and co-ordination? • What kind of activities or approaches do the different agencies promote?	■ Compile a comprehensive list of all other relevant agencies and consult with them to identify development options. ■ Recommend procedures to enhance inter-agency cooperation. ■ Bring other key agencies such as health and education into the planning process. ■ Include support for measures to harmonize regional or national approaches.
Maximum stakeholder participation is essential for an effective project, from the earliest possible stage. Therefore examine:	
• To what extent do the institutional structures and ethos of the BS agency promote stakeholder participation at the planning stage? • How will the stakeholders be identified and what procedures exist to ensure their understanding of the stakeholder concept and effective participation? • Are planning decisions devolved to the lowest appropriate administrative level?	■ Conduct a Stakeholder Analysis to ensure identification of stakeholders, and find ways of incorporating them into the planning process (see part 3). ■ Ensure that the concept of stakeholder is not equated with 'beneficiary', but acknowledges ownership of stakeholders within the project. ■ Plan for stakeholders to be informed about stakeholder concepts and principles, and their expected role in the project. ■ Assess the feasibility of devolving power to regional, district or sub-district level and how to implicate stakeholder participation at these levels.

A sound legal basis is required for effective delivery of Basic Services (BS), therefore:

• Does legislation exist to put BS policy into practice and are there means to enforce standards? • Is there potential or actual conflict between national BS policies and regional or international legislation? • Is there an acceptable legal status for the different stakeholders involved, especially user groups? • Is there a legal framework defining the rights and responsibilities of users and service providers?	■ Assist government to strengthen legislation to achieve policy objectives and compliance with relevant standards. ■ If the legal basis restricts effective support to BS and government is unwilling to change it, consider alternative modes of support. ■ Assist the development of legal framework which gives legal status to user groups and defines the rights and responsibilities of users and service providers and permits them to fulfil their duties.

BS projects have traditionally focused on design and construction and tended to neglect O&M (operation and maintenance)and management. New policies may seek to transfer responsibility for O&M to the private sector or user groups. If so:

• Have national implementing agencies been restructured to reflect revised policies on transfer of responsibility of BS schemes to user groups? • What are the current structures for O&M and management of BS activities? • What scope exists for privatizing some part of the delivery/management of BS delivery?	■ Assist government to carry out an institutional review and advise on appropriate restructuring. ■ Ensure that feasibility studies identify viable mechanisms for user participation in the O&M and management, of the scheme. ■ Commission a review to identify services that may be sold or subcontracted to private sector or to stakeholder groups and determine cost-effectiveness of service action.

Capacity building for government institutions and user groups is required to support new initiatives. Therefore examine:

• Do implementing agencies have the necessary human and physical resources required to identify and address national priorities for BS delivery? • Is the concept of 'basic services' in water supply and sanitation clearly understood? • Are appropriate training facilities for management, communication, analytical and technical skills available for staff of the relevant agencies.	■ Review the technical and managerial capacity of all relevant agencies to identify where capacity building is required (see part 3). ■ Match equipment/infrastructure to the technical and human resources available. ■ Ensure that the concept of 'basic services' in water supply and sanitation is clearly defined and that their benefits are understood. ■ Commission a training needs assessment.

Management information systems in which both users and service providers have confidence are essential for improved operational efficiency. Therefore examine:

• What management information systems for BS schemes are in place at national, regional and project level, and are they appropriate? • What are the resources, financial, technical and human, for continued monitoring and evaluation once donor support ceases?	■ Identify weaknesses in current systems and make recommendations for improvement. ■ Include provision of specialist training to assist staff in the setting up of appropriate monitoring and evaluation systems. ■ Include provision for a data management system that is sustainable in the longer term.

Social principles

BS initiatives should be integrated with social development goals and policies. Therefore examine:

• What are the social development goals and policies in the intended project area? • What are the potential social impacts of investment in BS delivery? • To what extent will the project meet the needs of those hitherto unserved by existing water supplies and sanitation facilities?	■ Review social development policy and determine its compatibility with possible actions in BS delivery. ■ Conduct a Social Impact Assessment (see part 3) in the feasibility study. ■ Identify those not served by water and sanitation facilities, and make every effort to incorporate their needs into proposals.

BS projects can bring great health and quality of life benefits to communities, but without taking into account existing user norms, they can be underused or even abandoned. Therefore examine:

• Who are the main users and haulers of water? • What are the current norms for household water use and personal hygiene? • What is the current level of understanding of the rationale for clean water and personal hygiene? • What are the current arrangements for the disposal of human waste? • Are the linkages between HIV/AIDS and water, sanitation and hygiene considered? • Set up of a consistent set of indicators for monitoring and evaluation	■ Verify that participatory methods are used to establish who are the main users of water, and that other cultural, hygiene, health and disposal issues are documented (see part 3). ■ Include arrangements to educate users on the health and social value of safe disposal of human waste and other hygienic practices. ■ Identify appropriate measures to collect data, including indicators to determine the level of uptake. ■ Ensure that HIV/AIDS issues are considered in the project ■ Identify the relevant set of indicators for monitoring and evaluation and ensure their applicability

A community-based approach helps to ensure a sense of ownership of the project by the stakeholders and user groups. Therefore examine:

• Are users and their existing organizations accurately identified at the earliest stage? • Are adequate time and resources written into the project to permit stakeholders to be integrally involved? • Do stakeholders understand the concept of stakeholding? • Are existing community groups incorporated into the project structure?	■ Specify the scope of the Stakeholder Analysis required to incorporate the community level (see part 3). ■ Check that the project structure allows time and resources for consultation with all stakeholders, and allow for information exchange and dialogue platforms to facilitate involvement. ■ Include sufficient flexibility in the project structure to permit modification based on stakeholder and user feedback.

Women have a central role in BS projects, not only as primary users, but to manage water resources. Their participation at all levels of planning is needed. Therefore examine:

• Are implementing agencies sensitive to women's role in water collection and use, and recognize the range of women's community roles, including management roles? • What specific measures are included to increase women's awareness, capacity and involvement?	■ Include gender analysis (see Part 3) and gender planning training in courses for implementing agency staff, and in information packages for stakeholders. ■ Ensure that women's groups form a significant proportion of all community consultation and training activities.

Economic and financial principles

The economic value of water is an integral part of BS. Therefore examine

• What are the likely long-term economic benefits arising from improved supplies of clean water and sanitation? • What are the current costs of installing, managing and maintaining water and sanitation services. Who pays them and by what methods? • How far are 'basic needs' for water and sanitation currently being met?	■ Ensure that the economic aspects of water use are analysed and fed into the planning process. ■ Clearly identify global and unit cost elements (financial investment, depreciation, O & M) and specify who covers which cost element. ■ Advise on measures to ensure that meeting basic needs and access to services for all is embedded in project preparation.

Charging for services is needed to generate funds for future investment and to ensure maintenance. However, the concept of water as a free resource can be difficult to overcome. Therefore examine:

• Is there a declared national policy on water pricing and cost recovery for BS schemes, including O&M and management? • Are charging rates related to ability to pay and how will current income levels affect ability to pay for new schemes? • Is the concept of paying for hitherto free resources and assets understood? • Is there an adequate structure to manage the funds collected and/or credit secured?	■ Encourage government to define a practical policy on cost recovery for BWSS schemes and ensure that there is a system in place. ■ Ensure that O&M and depreciation costs are included in cost recovery calculations and ensure adequate provision to cover all costs, either from consumers or providers. ■ Commission willingness-to-pay and ability-to-pay studies. ■ Determine the "opportunity costs" of women's, men's, and children's time in fetching water. ■ Identify a suitable and trustworthy system whereby user groups can hold funds locally.

Where possible, demand management through both market and non-market measures should be incorporated into projects. Therefore examine:

• What is the likely demand for BS delivery; what are the incentives for *stakeholders* to use and conserve water; and do these two concepts conflict? • What practical market and nonmarket based incentives may be used to ensure sustainability of BS projects?? • Will the provision of water lead to an increase in micro-enterprises in the area, and will this lead to higher consumption?	■ Quantify likely demand levels and assist governments to establish a regular review system. ■ Commission a study of legal institutional obstacles to price and non-price instruments for demand management (see Part 3). ■ Ensure that project design uses optimum water conservation technologies. ■ Ensure that any likely increase in micro-enterprises is properly assessed and projected consumption costed.

Projects must demonstrate financial viability and accountability. Therefore examine:

• How will expenditure be audited both financially and technically? • What is the past experience regarding financial contributions from the proposed implementing agency? • Does the agency have adequate human and financial skills, and how will their activities be audited? • Are budget support mechanisms for flow of funds financial accounting developed?	■ Specify the financial and technical monitoring procedures, including the relevant indicators. ■ Assess the ability and commitment of the community or local authority to make required budgetary contributions. ■ Provide training and resources for effective financial management within an appropriate institutional framework. ■ Consider providing support to relevant authorities

Environmental principles

Environmental damage may result because insufficient time and money is invested in collection and analysis of baseline data. Therefore examine:

• Have the range and significance of environmental impacts and requirements for further environmental analysis been identified? • What environmental baseline data are available or required, are they reliable, and do they take into account seasonal variations? • Have the stakeholders been involved in the collection of data? • Will the quality of the water supplied meet WHO minimum standards without expensive treatment?	■ Undertake Initial Screening, and if needed, Environmental Assessment (see part 3). ■ Include a statement of environmental data availability and requirements in feasibility studies, and specify what further data collection will be required to address issues such as seasonal and climatic variability. ■ Check what the sources of data are, and indicate where data may be unreliable. Verify the role of stakeholders in the process of data capture ■ Ensure that the need for treatment of human wastes created by new sanitation schemes has been taken into account. ■ Ensure water quality is adequate or evaluate what levels of treatment will be required to bring it up to standard.

BS projects often bring changes in water use. Therefore examine:

• What changes in water use are anticipated, and in human settlement or land-use such as grazing? • Will rainfall and groundwater, given seasonal variation, be sufficient over time to cover new water uses? • What will be the effects upstream and downstream of the project, especially of sanitation, and what technical measures will be taken to protect natural resources?	■ Quantify likely changes in water demand arising as a consequence of the intervention and check that this is compatible with wider river basin plans. ■ Commission an assessment of training needs for use of environmental appraisal procedures. ■ Ensure climate change risks are duly considered

Information, Education and Communication Principles

The development of a BS knowledge base is a pre-condition for development of services. This requires effective data collection and monitoring procedures. Therefore examine:

• How satisfactory is the baseline data on water resources? • What are the sources of the data? Are they accurate and unbiased? • Are stakeholders' knowledge, attitudes and practice (KAP) included in the sources of data?	■ Review current data collection methods, analysis, storage and dissemination systems for BS schemes. Make sure the data collected is appropriate to the needs and includes water quality and health data. ■ Advise on improvement of systems with due regard to resources constraints. ■ Ensure that, in addition to conventional statistical methods, participatory methods of data collection are incorporated.

Without an understanding of the principles of BS schemes, stakeholder participation is weakened. Therefore examine:

• What is the current understanding of the rationale for clean water and sanitation for health and improved quality of life? • What is the current level of understanding of the concepts of participation and stakeholding? • What are the linkages of the project with Information, Education and Communications (IEC) activities by health and education agencies?	■ Ensure that appropriate education and promotion campaigns are developed, particularly for women and on health awareness and hygiene issues. ■ Include discussions, workshops and other extension activities in the strategy to disseminate information. ■ Identify training needs for information management in the public sector, and to strengthen the role of the NGO sector in the communication processes.

Technological principles

Appropriate technological solutions should be selected according to criteria that include efficiency, ease of operation, capital and operating costs, and the management capacity of the users. Therefore examine:

• What indigenous technologies are in use; what appropriate modern technology (imported and local) is in use (see Part 3); what is the desirable balance? • Is the scale of the project realistic and in keeping with available resources, in terms of proposed technologies? • What is the potential for local manufacture and replication of appropriate technology? • Is conservation of water supplies taken into account in assessment of technologies? • If NGOs are to be involved, what is their previous experience and technical capacity?	■ Assess the likely technologies and their appropriateness for users. ■ Confirm that the scale of the project is realistic in terms of policies, cost, available technology, O&M requirements, and training and information resources. ■ Confirm that appropriate technical training is available and costed into the project. ■ Ensure that technologies suggested are compatible with the level of understanding of agency staff and users. ■ Ensure that women are consulted about technological options and their suitability. ■ Identify NGOs with suitable experience and/or allow for technical support from government or consultants.

MUNICIPAL SERVICES

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles	
MS activities should be consistent with a national integrated water policy, and institutions' functions and responsibilities clearly identified. Therefore examine:	
• What is the government policy for MS and what does it prioritise? • What is the municipal structure and institutional framework for MS? • What has been the level of success of other projects with a similar scope working with the chosen municipal agencies? • What level of priority is the proposed project activity accorded in strategic planning goals?	■ If there is no specific policy on MS, or it is inadequate, commission a policy review. ■ Advise relevant authority on steps to clarify the role and functions of each level of MS. ■ Identify institutional deficiencies and address them. Consider a study to analyse the feasibility of establishing a national water agency. ■ If MS are not considered a priority, assess the reasons and identify the implications for cooperation.
Effective inter-agency and inter-sector planning is essential. Therefore examine:	
• Which agencies, municipal, inter-municipal, governmental and nongovernmental, are involved or have the potential to be involved? • Have all relevant agencies been involved during identification? • What is the potential and what policies/plans exist for cooperation between the proposed agencies? • How do policies address inter-sector cooperation between industry, domestic supply and water for agriculture? • Harmonisation between government and programmes need to address long planning horizons up to 20 years for infrastructure • Is the project based on the sector wide approach and does it articulates the strategic goals, sets targets for the sector for the coming years	■ Ensure that a comprehensive list of agencies is drawn up and that all agencies are consulted. ■ Identify inter-sector policy and planning weaknesses and ensure water forms a part of overall urban planning. ■ Identify current agency roles related to the proposed project and consider ways to facilitate cooperation between them. ■ If cooperation is not good, put in place mechanisms to resolve differences or find alternative agencies. ■ Ensure that long planning horizons are considered in harmonisations programmes. ■ Ensure project is inside the SWAp and follows sector goals.
Maximum stakeholder participation is essential for an effective project and should be involved at the earliest possible stage. Therefore examine:	
• How are *stakeholders*, consumers and operators involved in identifying the future needs of MS? • What framework exists for allowing participatory management of MS schemes and sharing the benefits?	■ Seek ways to involve users and operators in the process through, for example, advisory committees, workshops and discussion groups. ■ Carry out a Stakeholder Analysis (see part 3) ■ Design a consultative mechanism for all stakeholders and incorporate within the management system. ■ Clarify a broad framework, including legal, for participation and consultation.

MS projects have traditionally focused on design and construction aspects and neglected operation, maintenance and management. Therefore examine:

• What are the institutional provisions for MS installation, maintenance and management? • How does MS management need to be restructured to improve maintenance? • What are the tasks and responsibilities of each organization and municipal department responsible for project management and maintenance?	■ Include a network maintenance plan within an appropriate institutional framework as part of the identification study. ■ Assess existing shortcomings and identify improvement measures and costs. ■ Consider whether restructuring could be included as special conditions and/or accompanying measures to agreements. ■ Discuss allocation of responsibilities with the municipality and any supporting activities that need to be included in the project.

Participation of the private sector can be important in the efficient delivery of municipal water and wastewater services. Therefore examine:

• What is the most suitable form of private sector participation? • What policy support is there at the national level to encourage private sector involvement in projects for MS? • What is the scope for local private sector involvement in the management and operation of water supply and wastewater services? • What scope is there for the introduction of private capital and expertise, including in maintenance and revenue collection?	■ Study the range of options for private sector involvement (see part 3), and discuss ways to support the preferred option. ■ Support measures to improve private sector involvement, such as changes to laws, training and structuring contracts so as to provide sufficient working capital. ■ Identify those not served by water and sanitation facilities, and make every effort to incorporate their needs into proposals. ■ Identify any strengthening of policy and regulation necessary to control private partners in the public interest.

Capacity building for government and/or municipality staff and user groups is required to support new initiatives. Therefore examine:

• What is the institutional structure of MS administration, and how efficient is it? • What managerial and technical skills does the proposed implementing agency have for managing the project? • What training programmes and facilities exist for MS from national to the user level? • What policies and practices are used to motivate personnel, such as salaries, promotion, and training?	■ Identify deficiencies and address them through institutional restructuring. ■ Include the provision of local and/or external specialist technical assistance and training in project design. ■ Review training needs in a complementary study, including technical, economic and financial requirements. ■ Investigate ways of introducing policies and effective practices for staff motivation so to try to reduce the staff turnover.

Management information systems in which both users and service providers have confidence are essential for improved operational efficiency. Therefore examine:

• What management information systems (IS) are in place at national and municipal levels? • Are there IS and are they using appropriate technologies? • How can appropriate water and wastewater services be incorporated into the IS data flows?	■ Assess the shortcomings of the existing IS and identify improvement measures together with costing, such as using an innovative adapted technology. ■ Include provision of specialist training to assist staff in setting up monitoring and evaluation systems, including process and impact indicators.

Social Principles

Municipal services initiatives must be integrated with the social development goals of the municipality. Therefore examine:

• Have the social context and the likely social impacts been duly considered? • Are any of the social groups involved known to be particularly disadvantaged or poor and how can their interests be safeguarded? • What will be the short-term and long-term benefits to local people from their perspective?	■ Conduct a Stakeholder Analysis (see part 3). ■ Commission a baseline study which focuses on measuring components of the social goals. ■ Specify quantifiable indicators in the feasibility study or in a separate socio-cultural or even socio-economic study. ■ Plan to target all the groups identified in the Stakeholder Analysis, especially the unserved and poorest. ■ Consider tariff structures/cost recovery to meet the needs of poor consumers (see Part 3).

MS projects can bring great health and social benefits to urban areas. But without taking into account users' norms and needs, projects can be underused. Therefore examine:

• What information exists on the groups of residents and their current challenges? • Have the preferences and needs of all consumer groups been tested (including those in SMEs such as micro industries, crafts and horticulture)? • How do townspeople access and transport water? Who, within the family, is responsible for providing water and paying for it? • Are marginal and peri-urban areas excluded from municipal authority responsibilities?	■ Include a municipal review of norms and needs as part of the feasibility study. ■ Prepare terms of reference for a more comprehensive socio-economic study during formulation. ■ Conduct surveys of consumers, including ethnic differences, the unserved and the role of women. ■ Make a preliminary assessment of their willingness to pay and ability to pay for services or improvements. ■ Investigate ways of authorities to work with informal service providers (see BS) to bring poorer urban areas into the remit of the Municipal Authority.

Community involvement by stakeholders and users is more likely to ensure project success.

Therefore examine:

• Have all potential consumers been identified and what mechanisms exist for their involvement in planning? • Will the project cause temporary disruption or require resettlement and how will this be handled? • Are any social groups likely to be significantly disadvantaged (ethnic/ poor/ women) and will micro-enterprises be adversely affected?	■ Conduct a broad stakeholder analysis and seek ways to involve stakeholders in the planning process. ■ Identify possible compensatory measures and reject the project idea if, after consultation, these prove to be unsatisfactory.

Economic and financial principles

The economic value of water is an integral part of MS. Therefore examine:

• Have the benefits of improved water services been fully investigated, quantified and been factored into the investment appraisal? • What are the current costs of water? • Is wastewater collection and treatment properly costed and financed? • What are the economic benefits of the project and to whom?	■ Identify and quantify the main social, economic and health benefits expected from the programme, in monetary terms where feasible (see part 3). ■ Review current water costs and update throughout the identification process; analyze the costs of production, treatment and distribution. ■ Carry out an economic analysis of the planned project/action.

Charging for services is necessary to generate funds for future investment and to ensure maintenance and long-term financial viability. Therefore examine:

• What is the municipal policy on water service and sewerage tariffs and cost recovery? How can MS be placed on a sound financial footing? • Do current tariffs reflect historic, current or future costs of supply? • Are charging levels related to ability to pay? • What are the institutional provisions for the collection of charges for water supply and wastewater services? • What has been done to commercialize O&M and management of installations?	■ Examine the current level of tariffs and their financial yield. Determine the levels necessary to meet the financial obligations of the authority. ■ Draw up a strategy on tariffs and subsidies including a component to cover wastewater charges. (see part 3). ■ Estimate the marginal cost of increases in present consumption, and design tariffs accordingly. (see part 3). ■ Commission willingness to pay and ability to pay studies. ■ Investigate ways in which commercialization could be introduced to improve cost recovery, e.g. in revenue collection or O&M.

Demand management through both market and non-market measures should be used in conjunction with supply provision; in water-scarce areas, demand management should take priority over supply-led solutions. Therefore examine:

• What is the likely demand for water services? • What are the incentives for stakeholders both to use and conserve water? • Does the project design use optimum water conservation technologies?	■ Commission a study of legal and institutional obstacles to price and non-price instruments for demand management. ■ Specify the information and extension resources required to make stakeholders aware of possible incentives to use and conserve water.

Projects must demonstrate financial viability and accountability. Therefore examine:

• To what extent is expenditure audited by financially and technically appropriate procedures? • What is the past experience of other projects with regard to financial contributions and accountability from the proposed implementing agency?	■ Assist agencies to establish or improve external auditing practices in all expenditures, preferably by involving the independent sector. ■ Assess financial management and disbursement capabilities of participating institutions. ■ Ensure that the responsible agency is autonomous and committed to making budgetary allocations.

Environmental principles

Environmental damage may result because insufficient time and money is invested in collection and analysis of baseline data. Therefore examine:

• Have the project's potential environmental impacts, and the need for further environmental analysis been incorporated? • What reliable environmental baseline data are available or collectable? • What environmental guidelines are available to assist project preparation? • Are climate change risks integrated into national policies, plans and programmes,	■ Conduct an environmental assessment (see part 3). ■ Include an environmental baseline study early in the project. ■ Include preparation of guidelines during formulation or as an early project activity. ■ Ensure that climate change effects are included in the development plans

Municipal services often have adverse effects on water use, particularly groundwater. Therefore examine:

• Is excessive groundwater withdrawal occurring? How can this be addressed? • Is the water source rechargeable groundwater or fossil groundwater? • What are the dangers of pollution to the groundwater? • What will be the effects on surface waters and, in particular, downstream users from increased abstraction from groundwater?	■ Assess aquifer depletion, recharge capacity and mechanisms and its impact on water users and the environment. ■ If fossil groundwater is the proposed source, investigate alternative sources. ■ Study groundwater quality, the potential for pollution and the need for monitoring. ■ Determine likely changes downstream, including impacts on other riparian states for their water resources both above and below ground.

Information, Education and Communication Principles

The development of a water and wastewater knowledge base is necessary and requires effective data collection and monitoring procedures. Therefore examine:

• How satisfactory is the water resource database as a basis for reaching scientifically informed decisions? • What baseline data collection and monitoring systems are in place?	■ Assess existing databases with respect to hydrology, hydrogeology, water quality and environmental impact. ■ Assess suitability of data collection systems for managing the resource and ecosystem; plan improvements.

Education and awareness-raising targeted at municipal staff, stakeholders and users should be used to strengthen stakeholder participation. Therefore examine:

• How willing is the municipality to ensure that stakeholders and public have access to information on proposed MS? Is the willingness (or lack of) due to attitudes or limited resources? • What is the level of awareness and education concerning MS among consumers and other stakeholders?	■ Determine mechanisms for disseminating information to stakeholders. ■ Assess the awareness of staff and stakeholders of the importance of saving water and of environmental impacts in relation to MS. ■ Prepare an appropriate strategy for health education and awareness raising on water-related issues.

Technological principles

MS should be technically efficient, using appropriate modern technology that is adapted to suit local, physical, economic and social conditions. Therefore examine:

• How appropriate are the proposed technologies in all contexts including water resource assessment models, tools and methodologies? • Are the current infrastructures using the appropriate technology in relation to the use they were designed for? What are the actual and present water uses in the city? Quality, quantity, water pressure, daily distribution of needs, for each category of consumers: domestic, industry, service, agriculture?	■ Investigate the most appropriate modern technology and promote the use of clean technology. ■ Evaluate accessibility to appropriate equipment and spare parts. ■ Identify the most appropriate scale of intervention. Small-scale pilot projects can later be up-graded. ■ Ensure realistic planning and scheduling; plan for whole-cycle solutions from point of extraction to point of disposal.

Technical knowledge forms the basis of all good design. Therefore examine:

• What are the size, growth and historical development of the city? • What are the main activities of the city and the surrounding area? • Who is in charge of data collection for water, sanitation, health, flood control, urban planning, etc. and is the data analyzed, stored and accessible?	■ Commission studies and use key information in the urban planning survey. ■ Secure a realistic assessment of human, technical and financial resources. ■ Assess data handling and storage methods and decide whether and what data management improvements are needed.

AGRICULTURAL

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles	
"A" activities must be consistent with an integrated national water policy setting out the legal and policy framework for service provision. Therefore examine:	
• What aspects of A are given priority within the national water policy? • What types of initiative will find greatest support from government? • To what extent do land ownership and customary rights influence the project's potential sustainability? • Is there potential or actual conflict between national A policy and other sectors/ water uses? • Is there potential or actual conflict between national A policy and international agreements?	■ Assist government to develop or update its policy for water development. ■ Avoid options that do not address priority needs in irrigation and drainage or where government support is weak. ■ Review customary rights and land ownership and determine if conflicts are likely to arise. ■ Identify possible areas of conflict and initiate discussion to resolve issues. If irreconcilable, promote a resolution or abandon any intervention.
Fragmented planning functions and agency responsibilities lead to sector-based, project-by project development and potential inter-sector and inter-agency conflict. Therefore examine:	
• Which governmental and *NGO* agencies are or could be involved in activities relating to A or flood control? • How successful are similar activities being implemented by the relevant agencies? • What mechanisms exist for inter-sector cooperation? • Do the mandates of agencies influencing irrigation, drainage and flood control result in competition or duplication rather than cooperation? • Does harmonization between government and programmes address need for long term planning horizons up to 20 years for infrastructure? • Is the project premised on the sector wide approach which articulates the strategic goals and sets targets for the sector for the coming years?	■ Ensure that a comprehensive list of agencies is drawn up and consulted. ■ Review experiences of past projects, lessons learned and recommend improvements. ■ Assist agencies responsible for agricultural sector development to integrate water use planning with other sectors. ■ Recommend procedures to enhance inter-agency collaboration. ■ In feasibility studies, aim to identify possible conflicts between land and water use policies. ■ Review and assess the harmonization time line of the proposed planning. ■ Ensure the project is considered in the sector program (if any).

Stakeholder participation can help resolve conflicts of interest and promote user ownership of projects. Management and institutional structures should facilitate the participation of all interested parties. Therefore examine:

• Who are the key *stakeholders* and what are their interests and concerns? • What are the concerns of farmers? • Does the institutional structure and character of A agencies promote stakeholder participation in planning and design? • What procedures exist to ensure effective consultation with stakeholders? • Are planning and management decisions devolved to the lowest appropriate level?	■ Undertake a Stakeholder Analysis. ■ Make sure that any proposed intervention is fully supported by farmers. ■ Commission a review of the agencies to identify ways of ensuring greater responsiveness to stakeholder wishes. ■ In feasibility studies, determine how potential beneficiaries can gain ownership of the project. ■ Assess the feasibility of devolving power from national to regional and local level institutions.

Agencies have traditionally focused on project design and construction and neglected operation and maintenance. Policy may now be to transfer responsibility for O&M to the users. If so:

• Is there a defined national policy on transfer of systems to user groups such as *Water User Associations*? • Are implementing agencies appropriately structured to implement transfer policies? • What are the current structures for O&M and management, and how will transfer improve their function? • What scope exists for privatizing functions of irrigation and drainage agencies? • Does a legal framework define the rights and responsibilities of users and providers? • How is future O&M to be funded?	■ Assist government to define and promote a practical policy on transfer. ■ Assist government to carry out an institutional review and advice on appropriate re-structuring. ■ Review existing management structures and O&M procedures and identify how transfer of responsibilities will improve efficiency and sustainability. ■ Review service provision and identify those that may be sold or subcontracted to private sector contractors or farmers/ farmer groups. ■ Help define a legal framework giving legal status to water user groups and identify means of group formation. ■ Identify the funding structure for post-project O&M.

Capacity building (see Part 3) for government staff and user groups may be required to support new initiatives. Therefore examine:

• Do implementing agencies have the human and physical resources required to identify and address national priorities for A? • Are appropriate training facilities and programmes available for staff? • Does training include communication, leadership and analytical skills as well as technical skills?	■ Review the technical and managerial capacity of all agencies to identify where capacity building is required. ■ Commission training needs assessments within principal agencies in the feasibility studies. ■ Determine the need for training of trainers and participatory facilitators and their inclusion in project planning.

Management information systems in which both users and service providers have confidence are essential. Therefore examine:

• What management information systems are in place at national, regional and project levels? • How can appropriate management information systems be incorporated into the planning process? • Do management information systems allow for monitoring performance and levels of service?	■ Ensure feasibility studies identify weaknesses in existing systems and suggest improvements. ■ Include provision of training to assist staff in setting up appropriate systems including selection of process and impact indicators. ■ Ensure that the management information system includes appropriate monitoring systems, agreed indicators and the means to collect and analyze data.

Social Principles

Agricultural water use and management initiatives must be integrated with the social development goals of the region. Therefore examine:

• What are the social development objectives for the region in relation to A? • What are the potential social impacts of investment in A? • Is the institutional framework equipped centrally and locally to provide efficient and socially equitable sustainable services?	■ Review social development policy for the region and determine its compatibility with possible actions. ■ Conduct a Social Impact Assessment (see part 3) in the feasibility studies.

A community-based approach is more likely to ensure ownership of the project by the intended beneficiaries. Therefore examine:

• Is community cohesion adequate to permit effective community based actions? • Are potential users identified and enabled to participate in project identification at the earliest practical stage? • Are adequate time and resources written into the identification phase to permit effective stakeholder *participation*?	■ Review past interventions, examine traditional patterns of cooperation and consider practicalities of community-based programmes. ■ Ensure potential users are identified and involved in defining priorities. ■ Ensure the project structure allows time for meaningful dialogue with all stakeholders and their inclusion in project planning.

In many regions women are responsible for production decisions and contribute significant field labour. Measures are required to ensure women's effective participation in project planning and design. Therefore examine:

• Do implementing agencies fully recognize the contributions and roles of women in A? • Do implementing agencies use procedures that are sensitive to the needs of women?	■ Ensure that agencies are applying the guidelines of the EC Women in Development Manual (see part 3). ■ Include gender awareness raising and gender planning training for staff. ■ Include gender awareness rising in information packages for stakeholders. ■ Commission a study to identify the degree and presence of women in production and labour activities and factor in their role accordingly

Economic and financial principles

The economic value of land and water must be reflected in A actions. Therefore examine:

• What is the opportunity cost of land and water used for irrigation and can this information be used in planning? • Does government policy towards irrigation promote or distort incentives for efficient farming and resource allocation?	■ Estimate values of land and water in different uses and opportunity costs in irrigated agriculture or flood defence. ■ Advise on measures to help prioritize water allocation within agriculture and between this and other uses. ■ Review overall costs per ha and carry out an economic analysis (see part 3).

Charging for services is needed to generate funds for future investment and promote efficient water use. Therefore examine:

• Is there a declared national policy for A on water pricing and cost recovery? • What is known about ability and willingness to pay O&M costs? • What do cost recovery policies include? Do they include drainage installation or O&M?	■ Encourage government to define a practical and sustainable policy on cost recovery in irrigation. ■ Conduct willingness-to-pay and ability to pay studies. ■ Ensure there is adequate capital provision for drainage infrastructure and that O&M costs are included in cost recovery plans.

Where possible, demand management, through both market and non-market measures, should be incorporated into projects. Therefore examine:

• What incentives are farmers given to conserve water and maximize the value derived from its use? • What practical market and nonmarket incentives can be used to ensure sustainable water use in agriculture?	■ Review use of water pricing/subsidies to encourage farmers to save water, invest in water saving technologies, and switch to less water-demanding crops. ■ Commission a study of legal and institutional obstacles to price/non-price instruments for demand management.

Projects must demonstrate economic benefit and financial viability. Therefore examine:

• What are the estimated total project cost, and the estimated value of benefits and to whom? • What are the 'with' and 'without' project costs and benefits? • How will expenditure be audited, both financially and technically? • What is the experience regarding financial contributions from the implementing agency?	■ Collect data to allow a first estimate of a predicted flow of benefits. ■ Assess the financial management and disbursement capabilities of the agency. ■ Allow for the establishment of financial and technical monitoring procedures. ■ Ensure that returns to farmers and other relevant economic entities are adequate to ensure their support.

Environmental principles

Environmental damage may result because insufficient time and money are invested in collection and analysis of baseline data. Therefore examine:

• Is the range and significance of potential adverse environmental impacts and requirements for further *environmental analysis* indicated in the project outline? • What environmental baseline data are available and required before project formulation can proceed? • Do feasibility reports refer to the accuracy and reliability of data sources? • Are climate change risks integrated into national policies, plans and programmes.	■ Using the results of Initial Screening, undertake an Environmental Assessment (see part 3) ■ Include a statement of environmental data availability and requirements in feasibility studies and make adequate provision for upgrading data collection. ■ Indicate the source of data and their estimated accuracy and reliability. ■ Ensure climate change risks are included

A activities often bring major changes in land and water use. Therefore examine:

• What changes in land and water use are anticipated as a consequence of the project, both locally and in the river basin? • Is the supply from all sources sufficiently reliable to meet predicted present and future demands? • Is soil conservation integrated in the irrigation development plan	■ Ensure that predicted land use changes and changes in water demand are compatible with wider river basin plans. ■ Review the potential impacts on human health, water and soil quality. ■ Verify that the predictions of supply and demand are based on realistic data and sound analysis. ■ Outline soil conservation plans.

Information, Education and Communication Principles

The development of a broad knowledge base grounded in effective data collection and monitoring procedures is essential for both local and basin-level plans. Therefore examine:

• How satisfactory is the baseline data on water resources as a basis for making informed decisions? • What improvements or enhancements are needed in A data collection? • What are the impacts of a location specific project elsewhere in the basin?	■ Review data collection, analysis, storage and dissemination systems. ■ Advise on requirements for additional or improved systems with due regard for institutional and financial resources. ■ Examine the overall impacts of this and other planned projects on the water resources of the river basin.

Education and awareness-raising, targeted at agency staff and farmers, are needed to develop user participation in decisions over competing user group needs. Therefore examine:

• What is the level of awareness and education concerning water scarcity and conservation amongst farmers and other stakeholders? • What are the current levels of understanding of the concepts of participation and stakeholding? • Is the implementing agency able to ensure that processes are transparent and that stakeholders have access to information?	■ Ensure that an appropriate and realistic educational campaign is developed, using discussion groups and workshops to disseminate information. ■ Gauge agencies' commitment to and understanding of participatory methods and stakeholding. Feed conclusions into project formulation. ■ Identify training needs for information management in the public sector and to strengthen the role of NGOs.

Technological principles

Engineering solutions must take account of environment and physical characteristics; needs, resources and skills of users; capital and operating costs and markets. Therefore examine:

• Are land and water suited to the proposed initiative? • Is a specific soil conservation programme required? • Have a wide range of technological options been considered, and costs, drawbacks and benefits analyzed?	■ Initiate outline checks of quality and quantity. ■ Identify possible needs for detailed investigations including soil conservation programmes. ■ Study existing designs and O&M strategies, and build on past experience. ■ Check that the intended project scale is commensurate with human and financial resources for O&M.

The objective should be to use modern but appropriate technology. Therefore examine:

• Is the scale and development frame of the project suited to users and will it be sustainable? • How well do potential beneficiaries understand irrigation and drainage technology? • Have water-saving and water-reuse technologies been considered? • Do proposed irrigation/drainage technologies fit with skills and resources available to farmers and irrigation agencies, including credit availability and farm inputs? • Have indigenous technologies been identified and evaluated?	■ Ensure that project scale complies with policy objectives, and that needs and objectives of farmers are understood. ■ Review existing technical practices, consult farmers and identify gaps in knowledge and skills. Ensure that farmers understand and agree with the objectives. ■ Review resources, consult with other agencies and select appropriate technologies. If scarcity is likely to become a problem, reassess project. ■ Identify possible mismatches between technology proposed and project context, and the scope for using local techniques.

ENERGY (HYDROPOWER)

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles	
The lack of an integrated policy environment at the national level can lead to inefficient allocation of water resources and poor investment decisions. Therefore examine:	
• What are the priorities for sectors dependent on water (e.g. hydropower, agriculture) and the associated goals for water resource development?	■ If water and energy policies are inappropriate, consider support for new or revised policy formulation, including priorities.
Fragmented planning functions and agency responsibilities lead to sector-based project-by- project development and inter-sector conflict. Therefore examine:	
• Which agencies, governmental and professional, are involved in planning and co-ordination at national, regional and local levels? • What is the potential for conflict among different water-related and energy sectors and users, and what mechanisms exist to resolve such conflicts? • What mechanisms exist for intersector cooperation?	■ Commission a comprehensive institutional review concerning water resources and energy demand assessment and planning. ■ Consider establishing or strengthening inter-sector co-ordinating bodies at national, regional, river basin and local levels (e.g. inter-ministerial commission, river basin committees etc.) ■ Recommend procedures to enhance inter-agency collaboration.
Transboundary water resource issues are critical to water resource availability in many countries. Therefore examine:	
• What agreements govern the sharing and protection of waters with neighbouring countries? • What are the effects of neighbouring countries' water strategies on water resources development and planning, and vice versa?	■ Consider ways of strengthening international agreements. ■ Encourage the establishment of a regional/basin framework to guide water resource planning and management studies.
Neglect of legal aspects during strategy formulation can lead to an untenable legal framework for sound resource management. Therefore examine:	
• What laws govern or regulate the use, development and conservation of water resources, and are they appropriate and up to date?	■ Commission a study on legislation, analyse its consistency and recommend necessary changes at all levels in the legal hierarchy.
Effective inter-agency and inter-sector planning is essential. Therefore examine:	
• What mechanisms exist for interagency or inter-sector cooperation and co-ordination, especially the water and energy sectors? • What kind of activities or approaches do the different agencies promote? • Have all relevant agencies been involved during identification?	■ Recommend procedures to enhance inter-agency cooperation. ■ Include support for measures to harmonize regional or national approaches. ■ Bring other key agencies such as energy, health and education into the planning process.

A sound legal basis is required for effective delivery service, therefore:

• Is there potential or actual conflict between national water and energy policies and regional or international legislation	■ Assist government to strengthen legislation to achieve policy objectives and compliance with relevant standards.

Capacity building for government institutions and user groups is required to support new initiatives. Therefore examine:

• Do implementing agencies have the necessary human and physical resources required to identify and address national priorities for delivering the services?	■ Review the technical and managerial capacity of all relevant agencies to identify where capacity building is required (see part 3).

Stakeholder participation can help resolve conflicts of interest and promote user ownership of projects. Management and institutional structures should facilitate the participation of all interested parties. Therefore examine:

• Who are the key *stakeholders* and what are their interests and concerns?	■ Undertake a Stakeholder Analysis. ■ Commission a review of the agencies to identify ways of ensuring greater responsiveness to stakeholder wishes

Social Principles

National and regional social development goals should be integrated with water resources policies if key objectives are to be achieved. Therefore examine:

• What are the national and regional social development objectives? • What are the potential social impacts of investments in hydropower? • What are the needs and demands of different social sectors with regard to water?	■ Determine the impact of the current water situation, including water quality and pollution issues, on various social sectors. ■ Support studies to establish water demands of the different social sectors including health, education, housing, leisure, and culture.

Disregard for the social context of water use and a lack of consultation with stakeholders can result in inappropriate interventions. Therefore examine:

• Which potential user groups are known to be particularly disadvantaged?	■ Identify which groups need to be involved during the formulation stage, and a suitable level of participation.

A community-based approach helps to ensure a sense of ownership of the project by the stakeholders and user groups. Therefore examine:

• Are existing community groups incorporated into the project structure?	■ Include sufficient flexibility in the project structure to permit modification based on stakeholder and user feedback.

Energy / hydropower initiatives must be integrated with the social development goals of the municipality. Therefore examine:

• Have the social context and the likely social impacts been duly considered? • What will be the short-term and long-term benefits to local people from their perspective?	■ Conduct Social Impact and Socio-economic Analyses (see Part 3). ■ Commission a baseline study. ■ Specify quantifiable indicators in the feasibility study or in a separate socio-cultural study

Community involvement by stakeholders and users is more likely to ensure project success. Therefore examine:

• Will the project cause temporary disruption or require resettlement and how will this be handled? • Are any social groups likely to be significantly disadvantaged (ethnic/ poor/ women)?	■ Examine the possible need for resettlement in the feasibility study and estimate the requirements for compensation. ■ Identify potential compensatory measures and reject the project idea if these are not satisfactory.

Economic and financial principles

A sense of the economic value of water is necessary to balance scarce resources with increasing demand, reduce wastage and encourage conservation. Therefore examine:

• What are the projected demands for water in all its (competing) uses, including consumptive and non-consumptive uses?	■ Determine the effects of water shortages in all its competing uses, especially during drought periods.

The economic value of water is an integral part of hydropower. Therefore examine

• What are the likely long-term economic benefits arising from project implementation? • What are the economic benefits of the project and to whom?	■ Ensure that the economic aspects of water use are estimated and fed into the planning process. ■ Carry out an economic analysis

Projects must demonstrate financial viability and accountability. Therefore examine:

• What is the estimated total project cost? • To what extent is expenditure audited by financially and technically appropriate procedures? • Does the agency have adequate human and financial skills, and how will their activities be audited? • What is the past experience of other projects with regard to financial contributions from the proposed implementing agency? • What are the 'with' and 'without' project costs and benefits?	■ Prepare cost estimates for each option identified during the identification phase. ■ Assist agencies to establish or improve external auditing practices in all expenditures, preferably by involving the independent sector ■ Provide training and resources for effective financial management within an appropriate institutional framework. ■ Assess financial management and disbursement capabilities of participating institutions. ■ Collect data to allow a first estimate of a predicted flow of benefits. ■ Assess the financial management and disbursement capabilities of the agency.

Environmental principles

Environmentally sound water resource development and management relies on an integrated policy framework. Therefore examine:

• What is the potential for conflict between environmental needs and water-related development objectives?	■ Check environmental policy on pollution, health, and aquatic systems, and match with water-related policy.

Water is an essential natural resource and should be planned and managed within the context of an overall natural resource management strategy. Therefore examine:

• What provision is required for 'environmental flows' of sufficient quantity and quality in the management of other natural resources?	■ Check that the environmental water needs for the conservation of environmental assets have been identified and taken into account, especially for periods of low flow.

A lack of baseline data can make it difficult to assess the potential environmental impact of interventions and may lead to unplanned degradation. Therefore examine:

• What is the level and quality of environmental baseline data, and what additional data is required? Do they take into account seasonal and climatic variations? • What knowledge exists on the needs of the aquatic eco-system? • Have the range and significance of environmental impacts and requirements for further environmental analysis been identified?	■ Identify and assess sources of environmental data and information, and establish additional requirements. Include data and information-gathering components in further studies. ■ Support research into water dependency (both quality and quantity) of different aquatic ecologies. ■ Undertake Initial Screening, and if needed, Environmental Assessment (see part 3). ■ Include a statement of environmental data availability and requirements in feasibility studies, and specify what further data collection will be required. ■ Check what the sources of data are, and indicate where data may be unreliable.

Hydropower projects often bring changes in water use. Therefore examine:

• What changes in water use are anticipated ? • What will be the effects upstream and downstream of the project, especially of sediment and water quality, and what technical measures will be taken to protect natural resources?	■ Quantify likely changes in water demand arising because of the intervention and check that this is compatible with wider river basin plans. ■ Commission an assessment of training needs for use of environmental appraisal procedures.

Information, Education and Communication Principles

Water resource assessment and planning is an inter-disciplinary process that relies on a broad knowledge base as a pre-condition for effective planning. Therefore examine:

• To what extent is the existing state of knowledge a constraint to informed decision-making?	■ Review current data collection, analysis, storage and dissemination systems.

Communication between government agencies and other stakeholders is necessary if water-related development interventions are to be relevant. Therefore examine:

• What mechanisms are in place to support communication between government agencies and other stakeholders?	■ Investigate existing communication systems for adequacy and frequency of information exchange.

The development of a energy / hydropower knowledge base is a pre-condition for development of services. This requires effective data collection and monitoring procedures. Therefore examine:

• How satisfactory is the baseline data on water resources? • What are the sources of the data? Are they accurate and unbiased? • How satisfactory is the water resource database as a basis for reaching scientifically informed decisions • What baseline data collection and monitoring systems are in place? • How satisfactory is the baseline data on water resources as a basis for making informed decisions? • What improvements or enhancements are needed in a data collection? • What are the impacts of a location specific project elsewhere in the basin?	■ Review current data collection methods, analysis, storage and dissemination systems for hydropower schemes. Make sure the data collected is appropriate and includes water quality and health data. ■ Advise on improvement of systems with due regard to resources constraints. ■ Assess existing databases with respect to hydrology, hydrogeology, water quality and environmental impact. ■ Assess suitability of data collection systems for managing the resource and ecosystem; plan improvements. ■ Review data collection, analysis, storage and dissemination systems. ■ Advise on requirements for additional or improved systems with due regard for institutional and financial resources. ■ Examine the overall impacts of this and other planned projects on the water resources of the river basin

Technological principles

Hydro-meteorological information forms the basis of hydropower assessments. High quality data is needed for reliable assessments. Therefore examine:

• What is the reliability of data for all sector uses and what demand assumptions are used? • What is the amount of consumed and absorbed water unaccounted for at the basin level? • To what extent do the location, frequency and quality of data match planning requirements? • Are the hardware and analysis methods for basic data collection appropriate? • What mechanisms are in place to cope with events such as drought and flood?	■ If water data collection is inadequate or the data is unreliable, recommend a programme of monitoring to improve data collection, storage and analysis. ■ If knowledge of existing resources or resource use is inadequate, recommend a study to strengthen resource assessments. ■ Review data collection networks, compare with recommended standards (e.g. WMO), and assess compatibility with spatial and temporal planning scales. ■ Identify requirements for strengthening of basic data collection networks

Appropriate technological solutions should be selected according to criteria that include efficiency, ease of operation, capital and operating costs, and the management capacity of the users. Therefore examine:

• How appropriate are the proposed technologies in all contexts, including water resource assessment models, tools and methodologies?	■ Confirm that the scale of the project is realistic in terms of policies, cost, available technology, O&M requirements, and training and information resources. ■ Confirm that appropriate technical training is available and costed into the project.

Technical knowledge forms the basis of all good design. Therefore examine:

• Who is in charge of data collection for hydrometeorology, sanitation, health, flood control, urban planning, etc. and is the data analyzed, stored and accessible? • Are geology, topography and existing level of infrastructure, suited to the proposed initiative?	■ Assess data handling and storage methods and decide whether and what data management improvements are needed. ■ Identify possible needs for detailed investigations including soil conservation programmes.

SECTOR PERFORMANCE

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles	
Sound design of the sector programme is essential. Therefore examine	
• Is the intended role of the government well defined? • Are the tentative objectives, scope and contents clearly defined? • Are the objectives consistent with the Paris Declaration?	■ Review the proposed role of the government and other sector actors. ■ Review the objectives, scope and contents. ■ Ensure consistency with the Paris Declaration.
Fragmented planning functions and agency responsibilities lead to sector based project-by-project development and sector conflict. Therefore examine:	
• Which agency, governmental and professional organisations are involved in the planning and coordination at national, regional and local level? • Does the sector policy explicitly address the role of the government in the sector? • Has the government prepared the sector policy? • Are there national coordination mechanisms between government and non-state actors in place? • Is coordination effective in the sector?	■ Commission a comprehensive institutional review concerning the sector planning. ■ Review the roles of relevant stakeholders and of the government. ■ Asses the role of the government in the preparation of the sector policy. ■ Review the coordination mechanisms in place and consider possible assistance. ■ Consider strengthening and developing capacity to coordinate.
Disregard for stakeholder participation and too much emphasis on top-down planning tend to produce poor result. Therefore examine:	
• Has the government involve relevant partners in the sector in the discussion and have results being widely distributed at all levels and discussed?	■ Ensure that the analytical work has been carried out at all levels by the government with the other partners.
Social Principles	
Social objectives of the sector must be clearly defined. Therefore examine:	
• Is the strategy for poverty alleviation clearly defined and are target groups clearly specified? • Are local beneficiaries consulted and involved as appropriate? • Have women and the unserved been adequately represented?	■ Assess the feasibility of the proposed poverty alleviation strategy. ■ Ensure that consultation mechanisms are properly integrated within the framework for service delivery. ■ Ensure that all stakeholders are properly represented.

Economic and financial principles

Sector budget and its multi-year perspective are relevant. Therefore examine:

• Are budgets allocations and budget out-turns consistent with the sector policy? • Is the sector budget strategy dependent on external finance? • Is a Medium term fiscal framework (MTFF) in place? • Has the Medium term expenditure framework (MTEF) been prepared?	■ Review budget allocations and assess its consistency with sector policy. ■ Examine budget strategy based on past performance and future plans. ■ Consider to reinforce the national capacities for the preparation of MTFF. ■ Ensure that the MTEF includes the sector expenditures estimates.

Environmental principles

Environmental principles should be part of any sector programme. Therefore examine:

• Is resilience to climate change included in the sector policy? • Are international dimension issues e.g. transboundary water issues duly considered? • Are appropriate environmental legislation and laws in place? • Is there a clear monitor system set-up?	■ Ensure climate change and resilience to climate change is part of the sector policy. ■ Ensure international water issues aspects are included. ■ A legal environmental framework must be in place. Consider giving assistance to the government. ■ Review the monitor system and availability of relevant indexes. Consider assistance for setting-up a reliable monitoring system.

Information, Education and Communication Principles

Participation of beneficiaries and relevant stakeholders is fundamental. Therefore examine:

• Is there a mechanism in place for a structured process of consultation with beneficiaries? • Is there an adequate linkage with local government and national government? With beneficiaries?	■ Ensure that feedback from relevant stakeholders has been considered. ■ Ensure local government are informed and their opinion are sought and taken into consideration. ■ Ensure local government is active in the consultation process.

Technological principles

Design, gathering and analysis of performance indicators is relevant. Therefore examine:

• Are SMART (Specific, Measurable, Affordable, Relevant, Time-bound) principles respected? • Is the data source for indicators clearly identified? • Are indicators disaggregated so that the impact on men and women, the poor and less poor and/or specific target groups can be assessed? • Is the structure of indicators consistent with the monitoring of the national monitoring strategy	■ Ensure that the performance indicators selected follow the SMART principle. ■ Review sources for indicators – ideally from the national statistic system and avoid project-based indicators. ■ Ensure that indicators are disaggregated by gender, socio economic category or other specific criteria. ■ Ensure that indicators are consistent with the national monitoring system.

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CHAPTER 8
Formulation

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CHAPTER 8

FORMULATION

For all phases of the project cycle other than programming, checklists have been prepared in the same format, to allow the user of the Water Project Toolkit to examine key issues likely to arise in the preparation and implementation of projects, alongside possible responses. Issues and responses are grouped according to a set of problem statements within the framework of principles established in the strategic approach, starting with Institutional and Management principles, and proceeding through all categories of principles.
In the Identification and Formulation phases, each programming context is handled separately since issues and responses differ between Focus Areas. In other phases, issues and responses are generic, and the same set of checklists applies in every Focus Area.
Checklists on financing issues are included in the formulation phase.

WATER RESOURCES

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles *Water Resources Management is a continuous process which needs to adapt to external factors, such as changes in policy, economic climate and development objectives.* *Therefore examine:*	
• Have there been any significant changes in priorities and objectives which require a reassessment of the project? • To what extent has an integrated approach been adopted? • Have climate change risks being integrated into national policies, plans and programmes for IWRM • To what extent are adaptive management measures robust enough to withstand uncertainties?	■ Use the feasibility study to reassess the relevance and appropriateness (and therefore the objectives) of the project and, if necessary, reformulate it. ■ Ensure lessons from previous assessments and studies are taken into account. ■ Assess commitment to and evidence of an integrated approach and, where necessary, define conditionalities to ensure that a more integrated approach is adopted. ■ Ensure that climate change risks are integrated into national policies, plans and programmes, especially for IWRM. ■ Review and ensure that adaptive measures are robust and included in water resources management.

Effective inter-sector and inter-agency planning is essential for an integrated approach. Therefore examine:

• What organisational framework and mechanisms for inter-sector co-ordination at the national, regional and local levels are proposed? • What measures (e.g. policy decisions or institutional changes) are required to improve integration? • What other (external) initiatives complement the project activities?	■ Review the organisational framework and ensure roles and responsibilities are clearly defined to avoid conflict and to facilitate their integration. ■ Define conditionalities, requirements (such as policy) for institutional change and a timetable for their implementation. ■ Review donor supported programmes and other initiatives and ensure links are established.

Changes in transboundary water management can have a major impact on proposed projects. Therefore consider:

• What changes in transboundary water management have taken place since identification? • What is the likely impact on future resource availability over, and beyond, the stipulated planning horizon?	■ In the light of changes, re-assess the appropriateness of the project and modify accordingly. ■ In the feasibility study, ensure the risks and uncertainties associated with transboundary water management are reflected in the analyses.

Water-related planning can become ineffective if the outputs and recommendations are not ratified and acted upon by the appropriate bodies. Therefore examine:

• What measures are included to ensure a continuous and dynamic follow-up approach to the planning process? • What will be the status of emerging water-related plans (e.g. policy, recommendation and regulation)? • What measures are in place to ensure water-related plans will be adhered to?	■ Specify indicators to monitor project implementation and beyond. ■ Ensure the status of outputs is sufficient to provide a strong framework for implementation activities. ■ Check that institutional and financial resources are allocated in order to sustain a long-term dynamic approach to the planning process and the follow-up.

Incorporating stakeholders' needs and views into WATER RESOURCES helps to foster a sense of ownership. Therefore examine:

• What is the level of cooperation and co-ordination between planning agencies and other stakeholders? • To what extent do procedures ensure effective stakeholder participation? • To what extent have stakeholders contributed to changes since the identification stage? • Have all water uses (including hydropower and navigation) been considered?	■ Review past experiences with coordinating and co-operative mechanisms to look for lessons learned and indications whether stakeholder involvement has improved. ■ Include procedures for stakeholder participation during formulation and subsequent implementation. ■ Check that project formulation allocates adequate time and resources for building effective participation. ■ Include awareness-raising measures in project formulation for both planners and potential stakeholders.

Requirements for capacity-building and training must be addressed during project formulation. Therefore examine:

• To what extent are the proposed implementing agencies capable of managing the project? • What provision has been made to strengthen the capabilities of the implementing agencies and other key stakeholders? • To what extent is training an integral part of the project?	■ Establish the current capabilities of key agencies (especially implementing) and, where necessary, include components to strengthen them. ■ Assess the practicality and relevance of introducing inter-disciplinary units to support implementation. ■ Include provision for specialist technical assistance to train agency staff at all appropriate levels.

Management information systems providing indicators of performance are essential for efficient project implementation and monitoring. Therefore examine:

• How will project progress, outputs and benefits be monitored? • To what extent do existing information systems permit adequate monitoring?	■ Establish quantifiable and time bound indicators for evaluating implementation and post implementation phases. ■ Identify information needs and ensure formulation includes integration of information sources and, where necessary, additional data collection. ■ Allow for adequate long term budgetary allocations for management information systems.

Social Principles

Water resource planning should be integrated with social development goals. Therefore examine:

• To what extent have other users and uses of water been considered? • To what extent will traditional water rights and practices be affected? • To what extent will poorer sections of the community benefit? • To what extent are traditional livelihoods either incorporated or threatened?	■ Specify indicators for social impact assessment and monitoring. ■ Ensure that potential social impacts, including public and environmental health impacts, are examined and potential areas for conflict between users and beneficiaries identified. ■ Identify minority and disadvantaged groups via stakeholder analysis and ensure that they have access to project benefits. ■ Explore negative impacts on traditional livelihoods and propose mitigation measures.

Developing a community-based approach is likely to increase ownership and commitment to sustainability. Therefore examine:

• What is the level of beneficiary, and other stakeholders, involvement? • To what extent are key stakeholders consulted in project design? • To what extent are community structures and mechanisms present in the beneficiary groups?	■ Check that participatory techniques have been used to capture local knowledge, attitudes and practices. ■ Take into account findings from project identification and ensure formulation reflects demand-led interventions. ■ Assess the presence of community mechanisms already in place and identify where they may require development.

Economical and Financial Principles

Economic analysis of the project should reflect the economic value of water in all its competing uses. Therefore examine:

• To what extent have opportunity costs of changes in water use been realistically assessed? • What are the risks involved, what are the consequences, and to whom? • To what extent have costs of mitigation measures been included? • What is the potential for introducing water markets? • What is the cost of being unable to meet future demands, especially under drought conditions? • Has the assessed demand considered the possible impact of climate change? • Do demand impacts include a balance between climate-induced changes and other factors including demography?	■ Ensure the opportunity costs of water are included in the economic analysis. ■ Make a detailed study of technical, social, institutional and financial risks; quantify consequences and outline mitigation measures. ■ Ensure costs reflect and include measures to mitigate adverse impacts. ■ Examine the legal, institutional and customary obstacles to the growth of water markets, and consider ways that the project could overcome these while safeguarding third party, vulnerable groups and environmental interests. ■ Assess economic and financial impacts of unreliable supply, seasonally and during dry years. ■ Assess the demand considering impacts of climate change ■ Ensure that all factors are included while assessing water demand

Environmental Principles

Environmentally sound solutions rely on managing and mitigating adverse impacts within an overall resource management strategy. Therefore examine:

• Has an initial screening environmental assessment identified significant environmental impacts, and what level of Environmental Assessment is required? • To what extent are environmental mitigation and enhancement measures specified? • Has the proposed development plan taken into account the effects of climate change? • Climate change requires the water sector responding to longer term challenges e.g. what can be expected to change in the hydrological cycle?	■ Consider support for a specific project to develop an effective natural resource management strategy with a clear environmental component. ■ Undertake either an Environmental Analysis or a stand-alone Environmental Impact Assessment ■ Incorporate all opportunities to enhance environmental quality and protect environmental assets. ■ Ensure that climate change effects are included in the development plans ■ Review the assumptions made and consider long term variations due to possible effects of climate change

Interventions to bring benefits to one user group or sector can have adverse impacts on water availability for user groups downstream. Therefore examine:

• What are the expected impacts on downstream users? • To what extent have long-term cumulative effects been addressed? • To what extent has waste disposal been integrated with supply-side interventions? • What account has been taken of environmental flows, including under drought conditions? • To what extent are existing water sources at risk? • Have water demand assessments considered possible impacts of climate change? • Does the development plan consider climate change effects?	■ Ensure that impacts of interventions on water availability and quality for other water users have been included. ■ Confirm environmental flow requirements and other in-stream uses, and identify measures to protect ecological functions. Make adequate allowance for low flow or drought periods. ■ Ensure the full cycle of water use from supply to disposal is included in project formulation. ■ Ensure that protection measures for existing water sources, both surface and groundwater, are included. ■ Ensure that the assessed demand considers the possible impacts of climate change. ■ Ensure that the proposed development plan takes into account the effects of climate change.

Environmental monitoring is necessary to ensure mitigation measures are effective and to identify unforeseen impacts. Therefore examine:

• What environmental monitoring is proposed? • What additional data/information is required? • Are the existing standards for the quality of freshwater and wastewater appropriate?	■ Specify monitoring indicators for environmental impacts during project implementation and beyond. ■ Establish components for additional data collection to support environmental analysis and environmental monitoring. ■ Review the reasons for the adoption of prevailing quality and environmental standards for water and wastewater. Consider updating if necessary.

Information, Education and Communication Principles

Effective WATER RESOURCES relies on good data collection and analysis on all aspects of water-related information including socio-cultural, economic, and environmental. Therefore examine:

• What are the key gaps in water-related information? • Which aspects of water-related information should be strengthened? • How will information be disseminated to those that require it?	■ Ensure key deficiencies have been identified and target data collection toward these. ■ Establish information networks with due regard for institutional structures and financial resources needed to sustain them. ■ Define explicitly the strategy and routes of information sharing through implementation and beyond.

Education and awareness-raising are key methods of enabling stakeholders to contribute effectively to the planning process. Therefore examine:

• To what extent do proposed measures raise the awareness of stakeholders?	■ Include project components for assessment of awareness, awareness-raising, education and capacity building as part of formulation.

Technological Principles

Hydrological and hydro-geological data should be selected to contribute to efficiency, ease of O & M, and capital and operating costs. Therefore examine

• What are the current data constraints and to what extent will data collection enhance national, regional and local systems? • To what extent are the proposed technologies compatible with existing methods and techniques? • To what extent do proposed technologies match available resources?	■ Assess benefits of proposed additional data collection and ensure its compatibility with existing systems. ■ Verify that technologies match the technical and financial resources available within the implementing agencies. ■ Consider the importance of the assessment of resources, either nationally or at river basins level or aquifers.

BASIC SERVICES

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles	
Changes in policy objectives and economic factors since the identification phase, and recent lessons from previous projects, should be taken into account. Therefore examine:	
• Have policies, legislation or institutional frameworks affecting the project context changed since the identification phase? • Have lessons learned from other BASIC SERVICES projects been taken into account? • Has the unsatisfied demand for clean water and sanitation changed since identification? • Is the water sector integrated into the national poverty reduction and development strategies?	■ Reassess the relevance of the project in the light of changes in the situation and make appropriate modifications. ■ Incorporate any changes in legislation in the project design. ■ Ensure that lessons learned from relevant projects are taken into account. ■ Ensure that changing demands for both water and sanitation receive attention. ■ Ensure national poverty reduction plans are included in project design.
Effective inter-sector and inter-agency planning should be facilitated by the project. Therefore examine:	
• What organisational framework is proposed? Have clear roles and mandates been established for all parties across relevant sectors and agencies? • What special conditions, policy decisions or institutional changes are required for the project to succeed? • Have other programmes been initiated that may influence the project? • Harmonization between government and other investment programmes would need to address long planning horizons up to 20 years for infrastructure. • Is the project premised on the sector wide approach and does it articulates the strategic goals, sets targets for the sector for the coming years?	■ Ensure that the roles, responsibilities and tasks of all involved are fully defined. ■ Define conditionalities and requirements for institutional change and set a timetable for their implementation. ■ Ensure that there is homogeneity between this project and other BASIC SERVICES projects, planned or underway. ■ Review and assess the harmonization time line of the proposed planning ■ Ensure the project is considered in the SWAp
Effective stakeholder participation requires that their views and needs help to shape the design of the project. Therefore examine:	
• Are the government agencies responsible for project implementation viewed positively by the stakeholders? • Do the stakeholders fully understand their rights and obligations? • Does the project structure include specific procedures to ensure stakeholder participation in project planning, design and implementation?	■ Ensure that a participatory approach to BASIC SERVICES planning is implemented and adequate resources allocated. ■ Ensure that stakeholders receive information about their rights and obligations on an ongoing basis. Inform them of any changes since the identification phase. ■ Where appropriate offer management skills training or other capacity building to facilitate information exchange and devolution of power.

Sustainability of BASIC SERVICES requires that responsibility for a significant share of management and O&M be devolved to users, within a suitable organisational structure. Therefore examine:

• What types of local entity, government and NGO, operate in the project area? What roles can they play in O&M? • Are the organisational structures and legal status of local NGOs and community organisations well defined? • Does national policy and legislation facilitate their involvement? • Are the relative obligations of service providers, and those of community organisations/user groups, well-defined? • Do community organisations/user groups have adequate skills and resources to plan, fund and implement system maintenance? • What is the degree of participation by women in local organisations?	■ Identify local structures (official, private sector, and NGO, including community organisations) that have the skills and motivation to assist in developing a service management system. ■ Develop a strategy to devolve service management and O&M to user groups, with the assistance of local organisations and NGOs; ensure participation by women. ■ Ensure that relevant legislation exists to permit management and financing of services by nongovernmental entities; allow for this to be formulated if necessary. ■ Ensure that financial and human resources are available to sustain O&M services and provide technical and managerial training, especially to local bodies and user groups.

Requirements for training and capacity-building, identified in the feasibility study, must be addressed in project formulation. Therefore examine:

• Are the implementing agencies capable of managing the project in terms of staffing, expertise, and institutional structures? • Does the project include training for agency staff and all those administratively responsible at different levels for system management, including users? • Do training plans include gender sensitivity, and incorporate training for women?	■ Reduce the scope or scale of the project to match the availability and capacity of staff. ■ Include conditions to ensure that qualified personnel fill nominated positions. ■ Include adequate staff training, training for NGOs, community organisations and user groups, including training for women managers and maintenance staff. ■ Include provision of specialist technical assistance to train agency staff and local officials at appropriate levels.

Management information systems in which both users and service providers have confidence are essential for operational efficiency. Therefore examine:

• What human or financial resources for data collection and analysis will be available once donor support ceases? • What systems have been established to monitor social, economic and environmental impacts? • Is it clear how the quality of service delivered to users will be monitored and reported?	■ Review information systems proposed during identification. ■ Establish social, economic and environmental performance indicators for project monitoring and evaluation. ■ Specify indicators for impact assessment and define data requirements for their measurement; take account of human and financial requirements for long-term monitoring. ■ Recommend standard sets of readily understood core indicators; enable collection of gender-disaggregated data where possible.

Social Principles

Development of BASIC SERVICES projects may disrupt traditional user rights to water and land. Therefore examine:

• Are traditional water and land use rights likely to affect project viability? • Will the project encourage new settlement of people and animals around water points? • Will traditional water sellers or other workers lose their livelihood?	■ Ensure that traditional rights are taken into account and if they affect project viability redesign the project, especially issues related to land ownership and tenure. ■ Quantify the likely environmental pressures of settlement around water points and consider the effectiveness of existing laws to control settlement. ■ Initiate consultation with those adversely affected and investigate whether compensation should be paid. ■ Ensure separation of human and livestock water points

Development of BASIC SERVICES can require significant changes in social and cultural norms and habits, especially with regard to sanitation. Therefore examine:

• Have social customs and attitudes to water storage and protection, domestic hygiene and existing methods of human waste disposal, been explored? • Will the introduction of alternative methods, such as pit latrines and regular hand-washing, require significant changes in social habits and behaviours? • Will greater accessibility to water affect water collection, storage and usage habits?	■ Review the results of social studies carried out during identification or by other BASIC SERVICES projects. ■ Consider a study to document cultural norms, attitudes and behaviours concerning water, hygiene and sanitation. ■ Make sure that the results of social studies, particularly regarding sanitation, are fully incorporated into the project design. ■ Make sure water quality and health issues (including public and environmental health) are included in the social studies.

Improved BASIC SERVICES schemes can also lead to increased inequalities between different social groups. Therefore examine:

• Will poorer communities or minority groups derive equal benefits from the project as compared with wealthier groups? • How will those whose traditional or already established occupations depend on water or waste disposal be affected? • What is the likelihood of an increase in small enterprises leading to an increase in demand? • Are the linkages between HIV/AIDS and water, sanitation and hygiene considered? • Is there a consistent set of indicators for monitoring and evaluation.	■ Discuss alternative strategies with stakeholders and ensure the project is formulated to target the underserved as a priority. ■ Identify minority groups influenced by the project and verify that they will have access to services and participation in their management. ■ Ensure that traditional water sellers and waste disposal workers are included as stakeholders; examine the likely impact of the project on their livelihoods. ■ Include an estimate of the increase in small enterprise water users in calculating likely demand for services. ■ Ensure that HIV/AIDS issues are considered in the project. ■ Identify the required set of indicators for monitoring and evaluation and ensure their availability.

A community-based approach is more likely to ensure ownership and sustainability of services by the users. Therefore examine:

• Does the project build on existing community structures and include disadvantaged groups? • Do existing community organisations and structures pertinent to BASIC SERVICES represent all interest groups or are some excluded, notably women and minority groups? • Does the project offer opportunity for local employment in construction, manufacture (for example, of sanitation equipment), and operation and management of services, including for women? • Will there be sufficient long-term benefits to sustain new roles and responsibilities?	■ Identify existing community structures and ensure that new structures complement these. ■ Use participatory techniques to capture local knowledge, cultural values and indigenous technical knowledge. ■ Check that designated community 'representatives' represent all groups including women. ■ Provide scope for participation by local suppliers, contractors and manufacturers in the project. Include as much as possible long term strategies. ■ Include sufficient flexibility in the project structure to permit modification during implementation. ■ Ensure that interventions do not undermine the potential role of the private sector.

Given the centrality of water to women's daily lives, measures are required to ensure the effective participation of women in project planning and design. Therefore examine:

• Does the project demonstrate that the role of women in water collection and household use has been sufficiently respected during formulation? • Will services be planned and managed so that benefits will be equitable between women and men (including issues of security)? • Have cultural attitudes and practices, including those relating to women's and men's roles *vis a vis* water and waste disposal and privacy, been acknowledged?	■ Ensure that staff with training in gender analysis and/or experience in gender mainstreaming participate in project formulation. ■ Where gender sensitivity is a new concept, allow for awareness-raising; consider setting a requirement for a proportion of women on stakeholder and management committees. ■ Ensure that participatory components and activities address issues specific to women and children including cultural attitudes towards women as usual collectors of water.

Economic and Financial Principles

The economic value of water must be reflected in BASIC SERVICES schemes. Therefore examine:

• What are the economic incentives for stakeholders? • What is the economic viability of the proposed intervention? • Has the opportunity cost of water been given sufficient weight, especially with regard to gender issues? • What economic indicators will be applied to monitor the impact of the project on the users and the wider economy?	■ Carry out an economic analysis even though economic benefits may not be a criterion for supporting the project. ■ Confirm the calculation of benefits from the identification phase and recommend changes to project design if appropriate. ■ Ensure that current values of water are fed into the formulation process. ■ Specify indicators for economic impact assessment and define data requirements for these indicators to be measured, taking account of long-term financial and resource requirements for monitoring.

Charging for services is needed to generate funds for future investment and promote the idea of water as a valuable commodity. Therefore examine:

• Has the concept of water as an economic rather than 'free' resource been addressed? • Is there a traditional market for water, including purchase from vendors, and if so what are the charges? • Can pricing incentives be used to encourage users to manage water supplies more efficiently? • What mechanisms are in place to ensure financial sustainability after the project? • Is there an adequate system in place for collecting and holding community funds?	■ Explain the concept of water as an economic resource and show that proposed charges are necessary for sustainability. ■ If willingness-to-pay studies were undertaken during the identification phase, incorporate the outcomes in setting charges. ■ Assess whether the type and size of equipment/infrastructure is appropriate and ensure that the project is realistic in its assumptions regarding cost recovery. Assessment of capacity-to-pay can contribute. ■ Take into account existing systems for financial management and check the acceptability and reliability of those entrusted with financial management. If changes are required, consider incorporating them into a capacity building activity.

A balanced approach between supply augmentation and demand management is required. Therefore examine:

• What choices are available on the supply side to improve coverage to those unserved by water supplies? • Is it legal and feasible for users to trade water between them and sell it to other sectors? • Is there an adequate analysis of the risks and assumptions involved in the project?	■ Give priority to interventions that improve service to those underserved and investigate options for augmenting supplies ■ For areas with good coverage investigate options or demand management to improve efficiency. ■ Include a financial analysis (see Part 3) in the feasibility study to determine long-term sustainability of the chosen balance between supply and demand. ■ Where there are significant variations in costs between projects, verify predictions and investigate alternative solutions. ■ Identify the technical and financial risks associated with the project and outline appropriate mitigating measures in the feasibility study.

Projects must demonstrate financial viability. Therefore examine:

• Is the project financially viable in the longer term? • How do predicted project costs compare with similar projects? • Is there an adequate analysis of the risks and assumptions involved in the project? • Are budget support mechanisms for flow of funds financial accounting developed?	■ Include a financial analysis (see Part 3) in the feasibility study to determine long-term sustainability. ■ Where there are significant variations in costs between projects, verify predictions and investigate alternative approaches. ■ Identify the technical and financial risks associated with the project and outline appropriate mitigating measures in the feasibility study. ■ Ensure support to relevant authorities, if and when required.

Environmental Principles

Projects in BASIC SERVICES often bring changes in land and water use. Therefore examine:

• What are the expected impacts on downstream water quality and quantity? • Will increased groundwater abstraction lead to aquifer depletion and exacerbate seasonal variations in water supply? • What are the expected impacts on human health and settlement? • Have the danger of land degradation and health risks from waste water treatment and disposal methods been evaluated? • Are climate change risks integrated into national policies, plans and programmes?	■ Undertake Environmental Assessment if appropriate. ■ Set up systems for monitoring downstream quality and quantity. ■ Include prediction of future rates of abstraction and confirm long-term sustainability of supply. ■ Confirm that any likely risks to human health have been adequately evaluated. ■ Confirm long-term sustainability of the results of increased settlement of people and animals around supply points. ■ Ensure climate change risks are duly considered.

Accurate baseline data collection and informed analysis are the keys to minimising environmental damage. Therefore examine:

• Did the identification phase indicate adequate, unbiased environmental assessment and monitoring procedures? • Have appropriate indicators of environmental impact been specified? • Have appropriate environmental health indicators been specified?	■ Specify indicators for monitoring environmental impact during implementation and subsequent operation. ■ Verify that measureable health indicators exist and collection and analysis is sustainable. ■ Include training for staff in environmental assessment and monitoring. ■ Consider the strengthening of stakeholder input to data collection using participatory methods.

New sanitation schemes may cause disposal problems. Therefore examine:

• Are adequate treatment and disposal measures included in the project design? • Has the allocation of land for treatment works and disposal been addressed? • Are there significant downstream pollution risks from treatment effluent? • What possible uses can be made of the waste water or slurry?	■ Ensure that disposal is adequately planned for in terms of land use, plant, cost and management, and that measures are included to protect nearby water points. ■ Confirm that any likely risks to human and animal health have been identified and as accurately evaluated as possible. ■ Confirm that the concepts of treatment and disposal of waste water and slurry, as well as re-use or recycling are understood and accounted for.

Information, Education and Communication Principles

An adequate knowledge base is a pre-condition for development of BASIC SERVICES programmes. This requires effective data collection and monitoring procedures. Therefore examine:

• What gaps exist in the information needed for effective planning and subsequent monitoring? • Are there risks considered concerning potential uncertainty of data? • To what extent is lack of knowledge a constraint to informed decision-making?	■ Specify detailed information needs and data collection methods with attention to water quality as well as quantity. ■ Confirm that monitoring indicators are appropriate and resources available to collect the necessary data. ■ Review current data and ensure implications of risk are reflected in the analysis. ■ Assess to what degree information and knowledge are implicated in decision-making

Education and awareness raising targeted at BASIC SERVICES agency staff and users is needed to ensure an understanding of principles and participatory approaches. Therefore examine:

• Has the concept of participation and stakeholding been sufficiently established, including gender and the poor? • Are essential concepts such as clean water/grey water/dirty water and bacterial contamination understood by both agency staff and consumers? • Have linkages with health and education agencies been effectively established? • Do community organisations/user groups understand technicalities of BASIC SERVICES design?	■ Allow for workshops or short training sessions to raise awareness about management, participation and stakeholder involvement. ■ Ensure balanced representation at workshops across different groups and between sexes. ■ Consider links with health and education authorities to deliver essential water and sanitation health messages. ■ Include training to ensure the use and maintenance of appropriate technology for all stakeholders.

Technological Principles

Appropriate specification and design of hardware for BASIC SERVICES depends on complete and reliable information.

• What confidence can be placed in the quantification of supply and demand? • Are estimates of litres/day/person reasonable and commensurate with resource estimations? • Is likely water demand compatible with present and predicted demands from other sectors? • Are allowances for system inefficiencies and management losses realistic?	■ Examine the methods used to determine supply and demand, and if necessary recommend additional data collection. ■ Confirm that the predicted water demand can be met without conflict with other sectors and without unacceptable costs. ■ Compare the design efficiencies with those seen in other similar schemes.

The design of hardware and specification of operating rules must minimise detrimental impacts on the environment. Therefore examine:

• Will proposed technologies minimise the impacts of the project on water supply, land degradation, and human and animal health? • Is the design, funding and phasing of water supply and sanitation works adequate to prevent long-term degradation of areas surrounding installations?	■ Ensure an Environmental Impact Assessment (see Part 3) has been undertaken and results incorporated. ■ Ensure the feasibility study addresses the risks of degradation around water sites and sets out appropriate ameliorative measures, including a long-term perspective. ■ Apply environmental sanitation principles to project design.

Engineering solutions should take account of the material and technical resource base available to operating agencies and users. Therefore examine:

• What indigenous or modern technologies can be included in the project? • Is local manufacture of equipment practicable? • What is the condition of existing water supply and sanitation structures? • Do the proposed technologies require the acquisition of new skills by agency staff and users? • Are the proposed technologies compatible with others already in use in the country and feasible for use at village level? • Have women been adequately consulted with regard to proposed technologies?	■ Based on studies carried out during identification, select a balance of appropriate local and imported technology. ■ Determine the scope for local manufacture of equipment. ■ Identify the source and cost of replacement components and needs for skills, training, workshop facilities and equipment. ■ If the existing infrastructure and equipment is in poor condition, identify the causes and address them ■ Include technical training to train users/ agency staff to maintain equipment. ■ Ensure that technologies proposed are compatible with existing national standards and are also gender-sensitive.

MUNICIPAL SERVICES

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles	
Changes in policy objectives and economic factors may influence predicted project benefits. Lessons from previous projects in MS should be taken into account. Therefore examine:	
• How has the project context changed since the identification phase? • Have lessons and experiences from other projects been taken into account? • What special conditions are required to support the project? • What institutional reform and legislative change may be required to ensure project success?	■ Redesign the project so that it is consistent with changed water policy or other factors, or abandon it. ■ Ensure that lessons from past and ongoing projects in the region are considered. ■ In the feasibility study, specify a timetable for implementing any special conditions. ■ Institutional changes should form part of the project or be included as a condition potential risk.
Effective inter-agency and inter-sector planning should be facilitated by the project. Therefore examine:	
• Have all municipal institutions likely to be associated been identified? • Have clear roles and mandates been established for all involved parties? • What mechanisms are in place for inter-agency cooperation? • What decision-making mechanisms for urban planning and water issues exist within the municipal board or council? • Harmonization between government and programmes addresses need to address long planning horizons up to 20 years for infrastructure • Is the project premised on the sector wide approach and does it articulates the strategic goals, sets targets for the sector for the coming years?	■ Define the roles and responsibilities of all involved parties, and allocate their tasks. ■ Identify institutional deficiencies which may affect inter-agency exchange and address them through restructuring. ■ Ensure that water and sanitation are included in overall urban planning and if cooperation between different services is inadequate, recommend improvements. ■ Review and assess the harmonization time line of the proposed planning. ■ Ensure the project is considered in the sector programme or in the SWAp (if any).
Effective stakeholder participation needs to be implemented with the views and needs of stakeholders shaping the form of the project. Therefore examine:	
• Are the government and/or municipal agencies involved in project implementation viewed positively by the target group? • What scope is there for involvement by local NGOs and community groups in managing and maintaining MS?	■ Ensure the project aims to build relationships between local communities and relevant local government institutions. ■ Identify stakeholders and ensure all relevant groups are included. ■ Identify specific areas of action for community group involvement and discuss with municipality.

Projects should aim for effective public-private sector partnership in service delivery. Therefore examine:

• What is the relationship between the public and private sectors *for* MS? • Does the project design encourage and facilitate participation by local private commercial companies? • What is the capacity of the private sector to take on some of the responsibility for managing services, and what are the most appropriate partnership models? • Are there mechanisms for protecting the consumer?	■ Ensure that the project design and contract arrangements accommodate local private sector participation (see part 3). ■ Develop programmes for hand-over or sub-contracting, especially to local actors, using criteria of efficiency, acceptability, cost savings, etc. ■ For peri-urban areas, determine how informal systems can come within the purview of municipal authorities. ■ Strengthen or introduce a regulatory mechanism to protect consumers and include institutional studies to design a suitable structure for service delivery monitoring.

Requirements for training and capacity-building must be addressed in the project formulation phase. Therefore examine:

• How able are the designated agencies to manage the project? • Have the human resources needs of key institutions been addressed and does the key staff have the relevant skills? • How able are local/community groups to undertake some of the tasks required for managing MS? • What is the scope and cost of the technical assistance required?	■ Include targeted institutional strengthening in the project. ■ Undertake a full assessment of human resources during project formulation; ensure that the project's scope is commensurate with available skills and terms and conditions are adequate for staff motivation. ■ Clarify the terms of reference for local and/or external technical assistance and costs and include them in the overall project budget. ■ Detail the training requirements of the municipality in the feasibility study.

Management information systems in which both users and service providers have confidence are essential for operational efficiency. Therefore examine:

• Is it clear how the quality of service delivered to users will be monitored and reported? • What systems have been established to monitor the social, economic and environmental impacts of the project?	■ Check that suitable performance indicators for the evaluation of project performance during implementation and subsequent operation have been clearly defined. ■ Make sure that the management information system is transparent and accountable in order to promote user/provider confidence. ■ Allow for the establishment of a monitoring and evaluation system within the management process.

Social Principles

MS projects must conform with social development goals. Therefore examine:

• How many people will the project affect? • How will the project take account of local knowledge, cultural values and indigenous practices? • How will the project take into account the effects of MS on health? • Is there a consistent set of indicators for monitoring and evaluation of HIV spreading and/or mitigation of AIDS impact in place?	■ Ensure that the feasibility study maximises the range of beneficiaries. ■ Use participatory methods to assess local knowledge, attitudes and practices and ensure account is taken of the results. ■ Incorporate baseline studies and initial health screening programmes. ■ Specify indicators of social impact and means for their monitoring and analysis. ■ Set up of a consistent set of indicators for monitoring and evaluation HIV spreading or mitigation of AIDS impact identification.

Full involvement by stakeholders and users is more likely to ensure project success. Therefore examine:

• What are the opportunities for increased employment arising from stakeholder participation? • How will the project build on existing local structures? • How will the project serve the poorer communities? Does the project address conditions in slums? • How will ethnic or minority groups be actively involved in the process?	■ Include specific actions to ensure full participation by the local community to express local needs, in discussion groups, councils, etc. ■ Determine existing community structures and examine whether conflict is likely to arise from any proposed structures. ■ Include assistance for participation of ethnic minorities or other disadvantaged groups.

Effective provision of MUNICIPAL SERVICES should take account of the needs and roles of women. Therefore examine:

• How will gender issues be dealt with? Do institutions have the *capacity* to address and identify gender issues (see Part 3)? • Are the benefits of the MS project likely to be equitable to men and women?	■ Include specific assistance/conditions to promote women's participation. ■ Employ experts with proven expertise in gender analysis and include gender issues in training for agency staff. ■ Consult with both men and women consumers to establish their differing needs, roles, opinions and experiences and incorporate them into the project design.

Economic and Financial Principles

The economic value of water must be recognised as an integral part of any municipal water and wastewater project. Therefore examine:

• What are the current and potential economic returns related to the project? • Have all the project benefits been fully assessed? • Have all the project costs been estimated?	■ Ensure that all assumptions made about markets, patterns of demand, costs and benefits are fully explained to all stakeholders. ■ Determine in detail the economic costs and benefits by carrying out a full economic analysis.

Charging for services is needed to generate funds for maintenance, management, future investment and service spread. Therefore examine:

• What mechanisms are in place to ensure financial sustainability after project investment support ends? • Does the implementing agency have experience in absorbing the amount of funds needed to implement the project? • What regulatory mechanism is proposed?	■ Set the project mechanisms at a level that appears sustainable and consistent with the agency's past performance in handling funds and for projected needs. ■ Ensure that the regulatory mechanism has powers to monitor charges levied by private sector operators. ■ Determine ability to pay for various groups, including industry and commercial operators, and establish a stepped tariff structure; introduce 'polluter pays' principle.

Demand management, through both market and non-market measures, should be incorporated into projects.

• Has demand for MS changed since the identification phase? • How do the project's costs compare with those of similar projects? • Are there any incentives in place to encourage more efficient water use? • Are industrial and commercial users being charged adequately for water services?	■ Critically examine methodologies used for assessing demand variations. ■ If costs are significantly different from similar projects, clarify the reasons and, if necessary, investigate alternative solutions. ■ Include financial and other incentives to encourage efficient water resources use and management by multiple users in the project design.

Projects must assess financial risks and demonstrate accountability. Therefore examine:

• What system will be established to audit financial information? • What is the past experience of similar projects with regard to accountability? • What are the risks involved in undertaking the project? • What confidence can be placed on the demand estimates for municipal water supply and wastewater services?	■ Assist in the establishment of an appropriate auditing system and provide capacity building. ■ Incorporate lessons from other projects in the region. ■ Carry out a financial analysis to ensure that the enterprise is financially sound. ■ Determine technical and financial risks, quantify the consequence of each and outline appropriate mitigation measures and costs.

Environmental Principles

Environmental damage may result because insufficient time and money is invested in collection and analysis of baseline data. Therefore examine:

• Are the likely environmental impacts of the project, and measures to mitigate adverse impacts, defined? • Is sufficient environmental baseline information available to allow proper environmental monitoring? • How does the project incorporate environmental health issues and environmental monitoring?	■ Conduct an Environmental Assessment either within the formulation study or as a self-standing Environmental Impact Assessment (see part 3). ■ Incorporate baseline environmental studies and initial health screening programmes. ■ Establish appropriate environmental monitoring indicators and monitoring structures and systems. ■ Make resources available to ensure sustainability of monitoring.

MS projects often bring changes in water use. Therefore examine:

• What are the potential impacts on water quality and quantity downstream? • What are the potential impacts on habitats downstream? • What scope is there for environmental enhancement? • Are climate change risks integrated into national policies, plans and programmes?	■ Evaluate the potential impacts on water quality and water quantity downstream and the consequences for users and the ecosystem. ■ Incorporate appropriate mitigating measures or alternative solutions into the project. ■ Assess the economic and financial implications of environmental measures and include in the economic analysis (see part 3). ■ Opportunities for enhancement to the environment should be incorporated into the project design. ■ Ensure that climate change effects are included in the development plans.

Municipal wastewater schemes present disposal problems. Therefore examine:

• What will be the effect of wastewater discharge on the environment? • Will sanitation/wastewater treatment facilities be located close to human settlement? • Has the allocation of land for treatment plant and disposal been adequately addressed? • What use will be made of pipe sludge and treatment plant sludge? • Are there significant downstream pollution risks from treatment effluent?	■ Redesign the project to avoid impacts on the aquatic eco-system, fisheries and coastal/marine ecology. ■ Ensure that disposal is adequately planned in terms of land use, equipment, costs and management ■ Locate a site for sanitation treatment facilities away from human settlement and in consultation with stakeholders. ■ Consider whether commercial use could be made of processed sludge for manure and wastewater for irrigation. ■ Confirm that risks to human and animal health have been identified and accurately evaluated.

Information, Education, and Communication Principles

The development of a water and wastewater knowledge base is a pre-condition for successful project implementation and service delivery. Therefore examine:

• What data collection systems are in place? • What baseline data is needed to facilitate mid-term reviews or post evaluation of project interventions?	■ If necessary, put in place additional data-gathering and storage processes. ■ Identify monitoring and operational indicators that can be used to assess inputs, outputs and impacts. ■ Establish urban pollution management procedures to collect data and enable measurement of impacts on watercourses.

Education and awareness raising among municipal staff and other stakeholders on MS principles is needed to facilitate participation and exchange. Therefore examine:

• Are the stakeholders aware of MS principles and will the project enhance understanding of these principles? • What mechanisms are in place for communication between the consumers, service providers, local authorities and other stakeholders? • What consultative mechanisms will be in place once the project is operational?	■ Gauge support for new processes and generate an appropriate climate for service delivery. ■ Strengthen or establish communication channels between stakeholders; such as the use of mass media messaging or radio and television campaigns. ■ Set up a suitable consultative committee between the municipal, private sector entities and other users/stakeholders.

Technological Principles

Appropriate modern technology must be utilised to suit local physical, economic, social, and environmental conditions. Therefore examine:

• What is the capacity of the municipal authority/ enterprise to use and maintain the proposed technologies? • Are the proposed technologies compatible with national standards or is the technology already used in the country? Can the level be maintained? • What mechanisms are in place to ensure MS maintenance?	■ Consider alternative project technologies (models, tools and methodologies) and gauge their cost effectiveness. Verify existing national standards or technological practices. ■ Determine accessibility to appropriate equipment and spare parts. ■ Select the sophistication of the technology so it can be operated, and maintained by the staff of the responsible organisation. ■ Include provision of adequate training in new technologies in the project design.

AGRICUTURAL

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles *Changes in policy objectives and economic factors may influence predicted project benefits; lessons from other AGRICULTURE projects should be taken into account. Therefore examine:*	
• How has the policy and economic context changed since identification? • Have lessons and experiences from past and on-going projects been taken into account?	■ Reassess the relevance and appropriateness of the project. If necessary, modify or abandon the project. ■ Ensure that lessons from past and on-going projects in the region are taken into account. ■ Assess how policies on agricultural imports will affect local production.
Effective inter-sector and inter-agency planning should be facilitated by the project. Therefore examine:	
• What organisational framework is proposed and have clear roles and mandates been established for all the parties involved? • What special conditions, policy decisions or institutional changes are required for the project to succeed? • Does any aspect of the project conflict with local legislation or international agreements? • Harmonization between government and other investment programmes would need to address long planning horizons up to 20 years for infrastructure • Is the project premised on the sector wide approach and does it articulates the strategic goals, sets targets for the sector for the coming years?	■ Ensure that the roles, responsibilities and tasks of all involved parties are defined. ■ Define conditionalities, requirements for institutional change and a timetable for their implementation; define ways of monitoring compliance. ■ Revise the project to comply with legal requirements, or consider formulating an alternative intervention. ■ Review and assess the harmonization time line of the proposed planning ■ Ensure the project is considered in the SWAp.
Ensure that commitment to stakeholder participation is effectively implemented so that the views and needs of stakeholders help shape the project. Therefore examine:	
• Are the government agencies involved in the intervention viewed positively by other stakeholders? • Do the stakeholders fully understand their rights and obligations? • Does the project structure and timetable allow for effective stakeholder participation in planning and design? • If significant changes have occurred in project plans, have the stakeholders been party to these changes?	■ Ensure that adequate resources are allocated to communication between the stakeholders and implementing agencies. ■ Identify the need for conflict resolution procedures and ensure they are established or strengthened. ■ Include information dissemination mechanisms such as workshops, public meetings, use of media and newsletters, to present information to stakeholders. ■ Include mechanisms promoting stakeholder participation in planning, design and appropriate decision-making.

The sustainability of systems requires that users shoulder significant responsibility for O&M and management of systems, within a suitable organisational structure. Therefore examine:

• Is it feasible to transfer service management directly to farmers/Water User Associations? • Is it clear to users who are responsible for water allocation and system control? • Are the obligations of the irrigation and drainage service providers established? • Do the proposed user groups have skills and access to adequate resources to plan, fund and implement system maintenance? • Is the private sector capable of taking on some amount of responsibility for service and delivery?	■ Identify the feasibility and practicalities of turning over system management to legally constituted companies or Water User Associations, and the mechanisms through which transfer will take place. ■ Include in the project design preparation of O&M manuals that define obligations, tasks, frequency and resource requirements. Include mechanisms for dissemination and uptake. ■ Specify resources needed to prepare O&M manuals in local languages and their pre-testing. ■ Ensure adequate financial and human resources are made available to sustain group development. ■ Ensure that the project promotes private sector involvement.

Requirements for training and capacity building, identified in the feasibility study, must be addressed in project formulation. Therefore examine:

• Are the staff, expertise and structures of implementing agencies appropriate for managing the intervention? • Has there been a significant improvement in the knowledge base of the agency staff since the identification phase? • Are sufficient and adequately skilled local staff available to fill posts? • Are training programmes for agency staff and beneficiaries included?	■ Include specialist technical assistance to train agency staff at all levels, and users, and mechanisms for evaluating training activities. ■ If necessary, reduce the scope or scale of the project to match human resource capabilities. ■ Ensure that staff of the implementing agencies are fully involved in the feasibility studies. ■ Include conditions to ensure that qualified personnel fill nominated positions including adequate budgetary allocations to recruit and retain skilled staff.

Management information systems in which users and service providers have confidence are essential. Therefore examine:

• Is it clear how the quality of service delivered to users will be monitored and deficiencies reported? • What systems have been established to monitor the social impact of the intervention?	■ Establish performance indicators that will be used during implementation and subsequent operation. ■ Specify indicators for impact assessment and define the data requirements for these indicators to be measured, taking account of long-term financial and resource requirements.

Social Principles

Development of irrigation, drainage and flood control works may disrupt traditional user rights to land and water resources. Therefore examine:

• Are traditional water rights and land-use patterns documented and taken into account? • Will the intervention require resettlement of people or livestock or the reallocation of land? • Is the intervention likely to result in a significant unregulated migration or displacement of people?	■ Establish whether traditional land and water rights fit with the project. If not, consider changes to make the intervention acceptable to stakeholders. ■ Use Social Impact Assessment (see part 3) to identify people affected by land use changes (e.g. displacement) and plan for compensation. ■ Identify measures to control unregulated migration and allow for service usage by a realistic number of 'unofficial users'. ■ Ensure that provision of water for irrigation will not cause conflict with pastoralists. ■ Are the findings of monitoring and assessment of actions integrated into project formulation?

The provision of irrigation can lead to increased inequalities between different social groups. Therefore examine:

• Are expected impacts on stakeholders adequately quantified? • Will poorer communities derive equal or lesser benefits from the intervention as compared to wealthier groups in the project zone? • Have measures been taken to ensure minority groups can participate fully in the use and benefit from the management of facilities?	■ Review the results of Stakeholder Analysis. If potential inequalities are great and compensatory measures inadequate, re-formulate the intervention. ■ Ensure that the feasibility study includes a Social Impact Assessment (see part 3) to identify compensatory measures for disadvantaged stakeholders. ■ Ensure that minority groups are identified and have access to project resources

A community-based approach is more likely to ensure ownership of the intervention by the intended beneficiaries. Therefore examine:

• Are the intended beneficiaries supportive of the proposed activity? • Does the intervention build on existing community structures? • Does the intervention offer maximum opportunity for local employment in construction and operation? • Are scheme beneficiaries trained to take responsibility for operation, maintenance and cost recovery? • Are there sufficient long-term benefits to sustain new roles and responsibilities?	■ Ensure the intervention is designed in collaboration with all stakeholders. ■ Identify existing community structures and ensure that new structures complement them. ■ Ensure that participatory techniques are used to capture local knowledge, cultural values and indigenous practices. Provide scope for local contractor participation. ■ Include human and financial resources for training needs assessment of beneficiaries. ■ Ensure that the design includes a mix of long and short-term benefits.

In many regions, women are responsible for certain production decisions and contribute significantly to field labour. Therefore examine:

• Have women's agricultural needs, which may be different from those of men, been understood and taken into account? • Are the benefits of irrigation likely to be equitable between men and women?	■ Use staff with training in gender analysis and a track record in gender sensitivity in project formulation. ■ Demonstrate that, where available, gender-disaggregated statistics have been used in project design. ■ Consider setting a requirement for a proportion of women to be on stakeholder and management committees.

Economic and Financial Principles

The economic value of water must be reflected in activities relating to AGRICULTURE. Therefore examine:

• Are subsidies for water and irrigation services encouraging the wasteful use of water for low-value purposes? • Can subsidies and/or pricing incentives be used to encourage farmers to manage water more efficiently?	■ Review the desirability of subsidies and establish a timetable for phasing out those which are counterproductive. ■ Identify whether financial incentives can be used to encourage the uptake of more water-efficient irrigation practices. ■ Review the desirability of offering price incentives (including subsidies) on equipment to improve water use efficiency.

Charging for services is needed to generate funds for future investment and promote water allocation to higher-value uses. Therefore examine:

• What mechanisms are in place to ensure financial sustainability once the project is implemented? • Have actions been taken to challenge the concept of water as a free resource?	■ Ensure that water charges are consistent with the outcome of willingness-to-pay studies. ■ Compare the intervention with others and ensure that it is realistic in its assumptions regarding incomes and cost recovery, and capacity-to-pay. ■ Include educational programmes and awareness raising to explain and justify the need for water charges.

Where possible, demand management, through both market and non-market measures, should be incorporated into projects. Therefore examine:

• Is it legal and practically feasible for farmers to trade and sell water? • Is it appropriate or feasible to introduce licensing systems to regulate water abstraction and drain discharges?	■ Ensure that legislation promotes the required environment for water trading. ■ Evaluate the potential for introducing licensing to control rates of abstraction and drainage flows, taking account of the resources required forensuring compliance.

Interventions must demonstrate economic benefit and financial viability. Therefore examine:

• What are the predicted economic benefits of the intervention? • How do predicted project costs compare with similar projects? • Is there an adequate analysis of the risks involved in undertaking the intervention? • What economic indicators will be applied to monitor the impact of the intervention on direct beneficiaries, the local and national economy? • What is the relevance of the data used in the economic impact assessment?	■ Confirm the calculation of benefits and recommend changes to project formulation if appropriate. ■ Ensure that economic analysis (see part 3) states the assumptions regarding future product prices, patterns of demand and opportunity costs. ■ Where there are significant variations in costs between possible alternative interventions, ensure a thorough review of cost predictions and investigate alternative approaches. ■ Specify indicators for economic impact assessment and the data requirement for these indicators ■ Ensure that relevant data for impact assessment is available

Financial viability is critical to successful irrigated agriculture for both farmers and service providers. Therefore examine:

• Is the financial viability of the intervention too heavily dependent on insufficient factors? • Are assumptions made regarding cost recovery realistic? • Is there adequate physical and social infrastructure in place for cost recovery to be implemented? • Do assumptions used in farm budget calculations remain valid during implementation?	■ Identify the technical and financial risks associated with the intervention and outline appropriate mitigating measures. ■ Identify the repayment capacity of users and utilize in the design cost recovery mechanisms. ■ Examine the cost recovery record of other similar interventions. ■ Review past farm budget calculations and update in accordance with available data.

Environmental Principles

Environmental damage may result because of insufficient time and money are invested on the collection and analysis of baseline data. Therefore examine

• Does the intervention incorporate adequate environmental monitoring? • Have appropriate indicators of environmental impact been specified? • Are existing environmental data collection and monitoring procedures adequate to meet requirements? • Are climate change risks integrated into national policies, plans and programmes	■ Specify indicators that will be used to monitor environmental impacts during project implementation and subsequent operation. ■ Identify the data and data-collection structures required for long-term monitoring and if they are compliant to requirements such as legislation. ■ Ensure climate change risks are included

AGRICULTURE activities often bring major changes in land and water use. Therefore examine:

• What are the expected impacts on downstream water quality and quantity? • Have the dangers of land and soil degradation been evaluated and minimised? • What are the expected impacts on the ecology and on human health? • Will the intervention result in increased groundwater abstraction and aquifer depletion or quality?	■ Ensure that all the potential environmental effects have been identified along with satisfactory mitigating measures. ■ Include prediction of future abstraction rates and their impact on groundwater levels and quality in the feasibility study, especially for drought or low flow conditions. ■ Review measures to monitor and control rates of abstraction such as licensing, electricity tariffs, and public education campaigns. ■ Ensure that providing water for livestock will not cause environmental degradation.

Information, Education and Communication Principles

Knowledge, based on effective data collection and monitoring procedures, is a pre-condition for development of AGRICULTURE programmes. Therefore examine:

• What gaps exist in the information needed for planning, decision making and subsequent monitoring? • What is the quality and completeness of the data? • To what extent is the lack of knowledge a constraint to informed decision-making? • What baseline data is needed to facilitate mid-term or post implementation evaluation of interventions?	■ Specify information needs in all areas including technologies, management, decision making and user participation and organisation. ■ Confirm that indicators are appropriate and adequate. ■ Review current data availability and sources and ensure implications of risk to quality are reflected. ■ If data quality or availability is a constraint, consider support for interventions described under the WATER RESOURCES Focus Area.

Education and awareness raising targeted at agency staff and users are needed to develop user participation and reach decisions over competing user group needs. Therefore examine:

• Has awareness increased among agencies and users since the identification phase? • Do farmers understand the proposed plans and management structures? • Have the concepts of participation and user responsibilities been established and accepted within agency staff? • Do the farmers understand the importance of efficient water management and environmental issues? • If Water User Associations are to be created, do the farmers fully understand the implications?	■ Review state of awareness, and promote education on water saving and management, soil conservation and environmental aspects. ■ Include activities for improving knowledge on water use with due regard to social structures, language and resources. ■ Evaluate awareness among agency staff and assess the role of extension workers and include training so that they can educate farmers on water use and management. ■ Include education programmes to assist farmers to understand the concept of Water User Associations.

Technological Principles

Appropriate specification and design of hardware for water control and management can only occur when there are reliable estimates of resources and needs. Therefore examine:

• Do estimates of supply and demand for water need revising? • Is the water demand of the proposed project compatible with present and future demands from other sectors? • Are assumptions and allowances for management inefficiencies and system losses realistic?	■ Examine the methods and data used to determine supply and demand and, if necessary, recommend additional data collection or adjust analysis and estimates. ■ Confirm that the predicted water demand of the project can be met incorporating consumption within other sectors. ■ Compare the design with those in other similar schemes in the region.

The design of hardware and specification of operating rules must minimise detrimental impacts on the environment. Therefore examine:

• Will proposed technologies minimise the impacts of the intervention on soil erosion, water quality and human health? • Are the design, funding and phasing of drainage works adequate to prevent long-term land degradation? • Is drainage adequate to facilitate good return flow and prevent soil and soil moisture salinity	■ Ensure that technical design takes account of the environmental assessment regarding health impacts and catchment management and includes mitigating measures. ■ Ensure that the feasibility study fully addresses the risks of poor irrigation return flow and soil salinisation and sets out appropriate drainage designs. ■ Review environmental sustainability of the technology and procedures.

Engineering solutions should take account of the material and technical resource base available to the operating agencies and the users. Therefore examine:

• Is the intervention structured to allow users to participate in selection of outline and detailed designs? • What is the condition of any irrigation and drainage infrastructure on which the intervention will build? • Does technology lend itself to management by farmers? • What technical and/or financial support and training will operators need to sustain the system? • Are the technologies compatible with others already in use in the country? • Do the proposed technologies build upon indigenous technical knowledge?	■ Where possible, proposals should be based on requests from farmers. Outline designs should be discussed in the field with intended users. ■ If existing infrastructure is in poor condition identify the causes and if feasible address these, rather than introduce new constructions. ■ If technologies require specialised skills or facilities, look for alternative solutions. ■ Include training programmes for users as managers. ■ Ensure compatibility with existing technology. ■ Ensure that local technologies of water acquisition and control have influenced the selection of technology.

Simplicity and operational flexibility must be incorporated in the operating environment. Therefore examine:

• Is water distribution easily understood so that inequities of supply are clearly explained and addressed? • How will the system function at times of water shortage? • Is the technology flexible enough to allow for reasonable changes in cropping patterns, operating methods and irrigating periods?	■ Verify that the technology proposed is acceptable and comprehensible to the users. ■ Ensure that the technology can still be operated under conditions of temporary water shortage. ■ Make realistic assumptions about how services will operate in the long term and check that the types of technology adopted will function under changing conditions.

Sustainability requires that maintenance needs are identified and agreements for the technical performance of installations reached with agencies and farmers. Therefore examine:

• What are the tasks and commitments of users and managers associated with the selected technologies? • How will irrigation and drainage maintenance be organised? • How will maintenance be financed?	■ Discuss O&M models with agency and farmers; identify constraints and make recommendations for overcoming them. ■ Draw up maintenance schedules and estimate the costs, for discussion with agency/farmers.

ENERGY (HYDROPOWER)

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles	
Hydropower projects needs to adapt to external factors, such as changes in policy, economic climate and development objectives. Therefore examine:	
• Have there been any significant changes in priorities and objectives, which require a reassessment of the project?	■ Use the feasibility study to reassess the relevance and appropriateness of the project and, if necessary, reformulate it.
Effective inter-sector and inter-agency planning is essential for an integrated approach. Therefore examine	
• What measures (e.g. policy decisions or institutional changes) are required to improve integration between sectors or agencies? • What other (external) initiatives complement the project activities?	■ Define conditionalities, requirements for institutional change and a timetable for their implementation. ■ Review donor-supported programmes, and other initiatives and ensure links are established.
Changes in transboundary water management can have a major impact on proposed projects. Therefore consider:	
• What changes in transboundary water management have taken place since identification? • What is the likely impact on future resource availability over, and beyond, the stipulated planning horizon?	■ In the light of changes, re-assess the appropriateness of the project and modify accordingly. ■ In the feasibility study, ensure the risks and uncertainties associated with transboundary water management are reflected in the analyses.
Incorporating relevant stakeholders' needs and views into hydropower development is essential. Therefore examine:	
• What is the level of cooperation and co-ordination between planning agencies and other stakeholders? • Have all water uses including agriculture and water supply as well as flood control been considered?	■ Review past experiences with coordinating and cooperative mechanisms. ■ Ensure that all water uses are included in the project formulation, including up to the transboundary level.
Requirements for capacity-building and training must be addressed during project formulation. Therefore examine:	
• To what extent are the proposed implementing agencies capable of managing the project? • To what extent is training an integral part of the project?	■ Establish the current capabilities of key agencies and, where necessary, include components to strengthen them. ■ Include provision for specialist technical assistance to train agency staff at all appropriate levels.

Effective hydropower planning relies on good data collection and analysis on all aspects of water-related information including socio-cultural, economic, and environmental. Therefore exam

• What are the key weaknesses or gaps in water-related information? • What are the current data constraints and to what extent are the proposed technologies compatible with existing methods and techniques?	■ Ensure key deficiencies have been identified and expand data collection to address these gaps. ■ Assess benefits of additional data collection including verifying that technologies match the technical and financial resources available within the implementing agencies.

Social Principles

Hydropower planning should be integrated with social development goals. Therefore examine:

• To what extent will traditional water (and land) rights be affected? • To what extent are traditional livelihoods threatened?	■ Specify indicators for social impact assessment and monitoring. ■ Ensure that potential impacts are examined and potential areas for conflict between users identified. ■ Explore negative impacts on traditional livelihoods and propose mitigation.

Economical and Financial Principles

Economic analysis of the project should reflect the economic value of water in all its competing uses. Therefore examine:

• To what extent have opportunity costs of changes in water use been realistically assessed? • What is the cost of being unable to meet future demands, especially under drought conditions?	■ Ensure the opportunity costs of water are included in the economic analysis (see part 3). ■ Assess economic and financial impacts of unreliable supply, seasonally and during dry years.

Environmental Principles

Environmentally sound solutions rely on managing and mitigating adverse impacts within an overall resource management strategy. Therefore examine:

• Has an initial screening and environmental assessment identified significant environmental impacts, and what level of Environmental Assessment is required? • To what extent are environmental mitigation and enhancement measures specified?	■ Undertake either an Environmental Analysis or a stand-alone Environmental Impact Assessment (see part 3) as required in the national resource management strategy. ■ Incorporate all opportunities to enhance environmental quality and protect environmental assets.

Interventions to bring benefits to one sector can have adverse impacts on water availability for upstream and/or downstream users. Therefore examine:

• What are the expected impacts on upstream and downstream users? • To what extent have long-term cumulative effects been addressed? • What account has been taken of environmental flows, including under drought conditions?	■ Ensure that impacts of interventions on water availability and quality for other water users have been included in impact assessments. ■ Confirm environmental flow requirements and other in-stream uses, and identify measures to protect ecological functions. Make adequate allowance for low flow or drought periods.

Environmental monitoring is necessary to ensure mitigation measures are effective and to identify unforeseen impacts. Therefore examine:

• What environmental monitoring is proposed? • What additional data/information is required?	■ Specify monitoring indicators for environmental impacts during project implementation and beyond. ■ Establish components for additional data collection to support environmental analysis and environmental monitoring.

SECTOR PERFORMANCE

KEY ISSUES	POSSIBLE RESPONSES
Institutional and Management Principles	
Definition of all sector components of the sector is essential. Therefore examine	
• Which is the status of development of the sector programme? • Is the sector policy consistent with the government's own national strategic objectives and with the donor's objectives of development cooperation? • Are the tentative objectives, scope and contents clearly defined?	■ Assess the status of development of the sector programme. Consider assistance if necessary. ■ Assess the proposed sector policy consistency with donors and government policy. ■ Define clearly the sector programme components and assess their relevance in relation to the national strategic framework
Fragmented planning functions and agency responsibilities lead to sector based project-by-project development and sector conflict. Therefore examine:	
• Is an overall sector coordination in place? • Are the roles of all stakeholders agreed upon and has a memorandum of understanding been signed? • Have the key sector organizations the required capacity?	■ Ensure that coordination mechanisms are in place and operational ■ Ensure all appropriate stakeholders have entered into a common agreement ■ Evaluate the key sector organizations and consider possible technical assistance
Disregard for stakeholder participation and too much emphasis on top-down planning tend to produce poor result. Therefore examine:	
• Has the government involved relevant partners and stakeholders in the sector in the discussion and have results being widely distributed and discussed?	■ Assess the extent of stakeholder consultations and ensure their comments are incorporated into the process.
Social Principles	
Social objectives of the sector must be clearly defined. Therefore examine:	
• Is the strategy for poverty alleviation clearly defined and are target groups clearly specified? • Are local beneficiaries consulted and involved as appropriate? • Have women and the unserved been adequately represented? • Do indicators reflect poverty alleviation and are they gender-sensitive?	■ Confirm the feasibility of the proposed poverty alleviation strategy ■ Ensure that consultation mechanisms are properly integrated within the framework for service delivery ■ Confirm that all stakeholders are properly represented, especially marginal groups ■ Confirm that indicators are consistent with poverty alleviation policies, strategic papers and are gender-sensitive

Economic and financial principles

Sector budget and its multi-year perspective are relevant. Therefore examine:

• What is the position of the donor community regarding the financing of the sector programme? • Are budgets allocations and budget out-turns consistent with the sector policy? • Has the sector budget been finalized and has the government submitted it to the Parliament (or to whom should approve it)? • Is the proposed sector programme sustainable?	■ Evaluate the position of the donor community regarding the sector. ■ Review budget allocations and ensure its consistency with sector policy. ■ Examine budget strategy based on past performance and future plans. ■ Ensure that budget is finalized and submitted. ■ Assess the financial and operational sustainability of the proposed sector programme

Environmental principles should be part of any sector programme. Therefore examine:

• Is resilience to climate change included in the sector policy? • Are international dimension issues e.g. transboundary water issues duly considered? • Is there a clear monitoring system set up?	■ Confirm that climate change and resilience to climate change is part of the sector policy. ■ Confirm that international water issues aspects are included. ■ Confirm there is a monitoring system and availability of relevant indexes and indicators.

Information, Education and Communication Principles

Participation of beneficiaries and relevant stakeholders is fundamental. Therefore examine:

• Is there a mechanism in place for a structured process of consultation with beneficiaries? • Is there an adequate linkage with local government?	■ Confirm that there is a mechanism and procedures for feedback from relevant stakeholders and that it is considered ■ Confirm local government are informed and their opinion are sought and taken into consideration

Technological principles

Design, gathering and analysis of performance indicators is relevant. Therefore examine:

• Are the SMART (Specific, Measurable, Affordable, Relevant, Time-bound) principles respected? • Are data sources for indicators clearly identified? • Are indicators disaggregated so that the impact on men and women, the poor and less poor and/or specific target groups can be assessed? • Is the structure of indicators consistent with the monitoring of the national monitoring strategy?	■ Confirm that the performance indicators selected follow the SMART principle. ■ Confirm sources for indicators – ideally from the national statistic system and avoid project-based indicators. ■ Confirm that indicators are disaggregated by gender, socio economic category or other specified criteria where required. ■ Ensure that indicators are consistent with the national monitoring system

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CHAPTER 9

IMPLEMENTATION

All previous phases of the project cycle management are essentially supportive of the implementation phase. The implementation phase is the most critical and the most important at the same time, as it is at this stage that planned objectives should be achieved and the benefits delivered to beneficiaries.

The purpose of the implementation stage is to:

- Deliver the results, successfully carrying out the activities planned in order to achieve the objectives, and contributing effectively to the needs identified during the programming and identification phases;
- Manage the available resources efficiently;
- Monitor and report on progress.

For all phases of the project cycle other than programming, checklists have been prepared in the same format, to allow the user of the Water Project Toolkit examine key issues likely to arise in the preparation and implementation of projects, alongside possible responses. Issues and responses are grouped according to the set of problems statements within the framework of principles established in the strategic approach, starting with Institutional and Management principles and proceeding through all categories and principles.

In the identification and formulation phases each programming context is handled separately since issues and responses differ between Focus Areas. In other phases, issues and responses are generic, and the same set of checklists applies in every Focus Area.

ALL FOCUS AREAS

KEY ISSUES	POSSIBLE RESPONSES
Implementation Monitoring *Effective control of costs, contracts, and budget disbursement are essential to ensure project compliance with implementation targets. Therefore examine:*	
• Have all contracting arrangements been concluded? • Is the agreed national / international budget component being released on schedule? • Are project costs in line with budget? • To what extent is the award and supervision of contracts transparent and efficient? • What mechanisms have been established for financial accountability? • Is the inception phase including reviewing of project work plan and Logical Framework Analysis approved? • Have adaptive management measures been considered? Are they robust enough to withstand uncertainties?	■ Ensure that all contracting arrangements are concluded ■ Discuss any local budget shortfall at an appropriate government level. ■ Where costs exceed budget, identify causal factors and correct. If impossible, reduce the scope or scale of the activity. ■ Discuss the tender and award procedures with appropriate agencies to ensure correct, timely and transparent application of procurement procedures. ■ Agree on financial management procedures with the implementing agency. ■ Ensure that the inception phase is approved and carried out as planned within the logical framework ■ Ensure robust adaptive measures have been considered and matched with estimated risks or uncertainties
Changes in policy objectives and economic factors external to the project may necessitate revision to reflect their influence on project results/outcomes. Therefore examine:	
• Have there been significant changes in the project context since financing was secured?	■ Carry out a Mid-term Review to re-assess the project objectives, outputs and activities to determine their influence on its viability. ■ In Mid-term Review, determine what changes can be made to the scale, scope and schedule of the project. ■ Profit from annual narrative and financial reporting to measure actual versus planned activities in relation to possible changing context

It is important that conditions built into the financial agreement for the project are fulfilled. Therefore examine:

• Have the pre-conditions, agreed at the time of financing, been fully satisfied? • Are there specified conditionalities to be satisfied during implementation and are these being met?	■ Discuss unsatisfied pre-conditions with the relevant agency as soon as possible. ■ Consider renegotiating the financing agreement. ■ Monitor progress on all conditionalities and discuss any shortfalls with the implementing agency.

Monitoring and supervision of all aspects of the project must be effective, and allow planned revision of targets and other remedial actions to be made in good time. Therefore examine:

• Has a monitoring and supervision procedures been duly established? • Are appropriate data being collected to permit timely calculation of input, output and impact indicators relating to all the guiding principles? • Are project progress reports serving a useful purpose? • Is there a need for any additional project supervision?	■ Review monitoring and evaluation procedures, and undertake further training within the implementing agency as necessary. Verify also the effectiveness of the monitoring process ■ Verify that progress reports are being used to highlight rather than disguise problems. ■ Where problems are encountered, commission Mid-term Review to revise the project and logical framework. ■ Discuss the need for further capacity building or external supervision to enhance project monitoring.

Institutional and Management Principles

Management information systems may need revision if the nature or scopes of the project are revised during implementation. Therefore examine:

• Are effective management systems in place? • Are the project planning and procurement and contracting mechanisms working effectively? • Does the quantity and quality of data collected match the needs of the project and permit effective monitoring and management decision-making?	■ Where management systems appear weak or open to abuse, discuss systems improvements with government. ■ Review the operation of systems established for data collection, storage and processing and make necessary revisions. ■ If the project scope or objectives are revised, ensure that management information systems are still appropriate.

Changes in the structure of implementing agencies may weaken (or improve) their capability to implement the project or programme. Therefore examine.

• Have changes in the structure of the implementing agency, since financing was secured, altered their ability to implement the project? • As a consequence, does the schedule of project activity and the achievement of goals still seem realistic?	■ Re-assess the implementation schedule and propose revisions. ■ Identify if additional consultancy support may be required to meet shortfalls. ■ Consider whether other public or private sector agencies should be brought in.

Measures to improve inter-sector and sector coordination planning may meet with resistance, thereby hindering implementation. Therefore examine:

• Are weaknesses in the strategic plan or developments in other sectors, or internal to the sector, affecting implementation? • If the project was predicated on institutional reforms, have these been carried out? • Are different actors of the sector and stakeholders fulfilling their roles and responsibilities?	■ Identify weaknesses in existing procedures for integrated planning, including roles and responsibilities, and recommend improvements. ■ Identify what remedial actions may be taken to reduce inter-sector or intra-sector conflicts and integrate implementation with other programmes and projects. ■ Monitor compliance with preconditions relating to institutional change, discuss shortcomings and try to find remedies. Where this is impossible, modify the project framework.

Sustainability of services requires that users and operators understand and fulfil their responsibilities for O&M. Therefore examine:

• Is the strategy for handing over services to the public or private operating agency and/or users well-defined and feasible? • Are there maintenance strategy and plans in place? • Are the current O&M technologies efficient and adapted? • Are recurrent cost requirements ensured?	■ Ensure that the hand-over plan and associated training requirements are defined, running on schedule and being taken up as planned. ■ Support the establishment of a O&M strategy including the identification of appropriate technologies. ■ Ensure maintenance plans and mechanisms to address recurrent costs are in place.

There is a danger that training and capacity-building measures, defined at formulation, are cut back during implementation or are ineffectual. Therefore examine:

• Are the implementing agencies managing project implementation – financial management, stakeholders participation, data collection, monitoring – satisfactorily? • Have suitable staff been recruited and retained to fill key project posts? • Is the agency developing its human resources over the long term? • Is there a need for strengthening the implementing agency's management capacity in the short term?	■ Where under-performance is evident, discuss with the implementing agency and identify remedial actions. ■ Verify that suitable trained staff have been engaged as required. If not, identify ways to attract and retain suitably qualified staff. ■ Verify that training is providing the required skills. ■ Review the agency's human resource development strategy and make recommendations for improvements. ■ Identify what additional consultancy support may be required and how it may be funded.

Social Principles

The financing proposal may identify effective women's participation and other social issues as central to the project's success. Therefore examine:

• Is a participatory approach been undertaken? • Are women centrally involved in implementation activities? • Are women represented on a significant proportion of all committees at decision-making levels? • Are the linkages between HIV/AIDS and water, sanitation and hygiene considered? • Set up of a consistent set of indicators for monitoring and evaluation of participation.	■ Verify the functioning of participative mechanisms, including the involvement of all the stakeholders. ■ Initiate discussions and actions to improve the participation of women in the management of project activities. ■ Review the structure of committees. Where necessary and practicable, seek to increase the proportion of women. ■ Ensure that HIV/AIDS mainstreaming is applied whenever appropriate ■ Ensure all indicators are consistent and data is available and measurable.

Intervention may disrupt traditional user rights to land and water resources and lead to increased inequalities between stakeholders. Therefore examine:

• Are compensation measures for land consolidation and land taken for rights of way acceptable? • Are compensation measures adequate for those losing traditional rights to water? • Is there evidence of detrimental social impact that was unforeseen during formulation?	■ Identify and review traditional land and water rights to be affected by the project action. ■ Ensure that affected parties have full information regarding expected project benefits. Consult with stakeholders, and improve compensation if necessary. ■ Identify the extent, nature and causes of the detrimental social impact and modify the project's implementation to reduce the problem.

Where a community-based approach is used the community may want to modify the scope of the project during implementation. Therefore examine:

• Are local communities requesting changes or additions to the project? • Are the targeted stakeholders, including the disadvantaged, women and minority groups able to participate in implementation decisions such as modifications? • Is the participation of different stakeholder groups equitable, accountable and transparent? • Are key target groups receiving benefits from the project as intended? • If the project causes temporary or definitive disruption/ high impact or requires resettlement, is this handled according to best practices and do the affected people participate in the implementing decision? • Is the participation of social groups that will be significantly disadvantaged (ethnic/ poor/ women) being duly considered?	■ Assess requests to determine whether they are representative of the community or whether they represent a certain group's agenda ■ Assess requests to determine if changes can be incorporated. If not, present the issues to the community and examine alternative strategies. ■ Identify those stakeholders who are marginalised, and develop methods for their participation in the decisions. ■ Encourage participation processes that avoid any one group gaining undue influence or control. ■ Identify what factors are preventing social benefits from reaching the target groups and revise the project approach to overcome them. ■ Ensure adequate participation of affected groups and ensure they participate actively in the decisions.

Economic and Financial Principles

Changes in economic factors occurring between financing and implementation may require revision of the project. Therefore examine:

• Have any factors changed that may result in the project not bringing about the intended economic benefits for any beneficiary group?	■ Identify the factors that may reduce economic benefit. Discuss these with relevant parties and modify project activities as required.

Long-term financial sustainability must be ensured during implementation. Therefore examine:

• Are mechanisms intended to ensure cost recovery and the financial sustainability defined in the project being put in place? • Are monitoring procedures in place to determine the financial sustainability of the project?	■ Initiate discussions with government to ensure that necessary human, financial and physical resources are in place. ■ Strengthen training and capacity building concerning cost recovery procedures. ■ Ensure that all parties understand the data gathering and reporting procedures needed to facilitate cost recovery.

Coordination of fund contributions is essential to avoid wastage of resource and project delay. Therefore examine:

• Are the sector coordination mechanisms to address systematic issues, such as project and programme coordination, on national scale in place? • Are contributions from the agreed sources been delivered as scheduled? • Are budget support mechanisms for flow of funds financial accounting in place?	■ Ensure all coordination actions are in place via e.g. workshops, appropriate meetings ■ Initiate meetings at an appropriate level. ■ Ensure all necessary budget support mechanisms are well functioning

Environmental Principles

Environmental damage may result because adverse impacts were previously unrecognised or inadequate resources provided for mitigating measures. Therefore examine:

• Is the project having any unforeseen environmental impacts? • Are institutional structures and equipment in place to permit effective environmental monitoring during and after implementation? • Are the mitigating measures defined during project formulation being fully implemented? • Is there provision for 'environmental flows' of sufficient quantity and quality? • Is the level and quality of environmental baseline data as required and does it take into account seasonal variations? • Are the effects upstream and downstream of the project, especially of sediment and water quality and the related technical measures to protect natural resources being implemented?	■ Review the environmental monitoring procedures and advise government as to their adequacy and sustainability. ■ Review the implementation of mitigating measures to assess their adequacy, sustainability and acceptability. ■ Check with stakeholder representatives to see if there are unforeseen environmental consequences. If necessary, define new mitigating actions. ■ Ensure environmental flows and seasonal variations are considered. ■ Ensure all required data is available, screened and quality assured before use. ■ Ensure all upstream/downstream effects are duly considered and all measures are being implemented.

Information, Education and Communication Principles

Information obtained from project monitoring should be used to shape and direct the implementation process. Therefore examine:

• Do monitoring and evaluation procedures appear reliable? • Is information on project performance being circulated to all stakeholders, or merely being held in unread reports? • Are project reports being analysed and used to inform project management decisions?	■ Ensure all relevant stakeholders participate, e.g. through workshops. ■ Use process and impact indicators to evaluate if project implementation is on schedule and meeting objectives. Circulate to stakeholders and use in project decisions. ■ If indicators cannot be calculated, appear unreliable or inadequate, review monitoring and evaluation procedures.

Provision of information and clarity of procedure are necessary for conflict resolution between different stakeholder interests. Therefore examine:

• Are implementing agencies providing adequate information to stakeholders and ensuring transparency of purpose and decision making? • Are awareness and dissemination activities reaching all beneficiaries including disadvantaged and minority groups?	■ Ensure that proposed information dissemination measures – workshops, newsletters, village meetings, etc. – are implemented. ■ Ensure that training of government staff and other stakeholders in information management is carried out.

Technological Principles

Where construction quality is poor or equipment is badly specified, systems may fail prematurely and maintenance costs will be high. Therefore examine:

• Are project consultants and contractors performing adequately? • Is supervision of construction and commissioning of systems adequate? • Are construction works being monitored to ensure quality and adherence to design specifications? • Is the equipment procured proving satisfactory?	■ Monitor the effectiveness of consultants and contractors against agreed performance indicators. Where necessary consider revoking contracts or applying penalties. ■ Strengthen the technical supervision of construction. ■ Evaluate the effectiveness of any installed equipment and use the findings to influence subsequent procurement.

Technology that was judged appropriate at the design stage may prove in-appropriate as implementation proceeds. Therefore examine:

• Are any weaknesses in technical design becoming apparent? • Are users showing a willingness and ability to take responsibility for operation and maintenance of equipment? • Do agency staffs understand the technology and know its operation and maintenance requirements? • Is local knowledge being incorporated into designs?	■ Carry out a mid-term review, mandating technical experts to recommend revisions to design, equipment specification or other corrective action. ■ Evaluate the level of uptake by local beneficiaries of the proposed technology. ■ Review the training programmes that are in place for the end users of all new technologies. ■ Examine the possibility of adopting alternative technical solutions, including appropriate indigenous technologies.

Technological and construction aspects usually represent the major capital cost items. Therefore examine:

• Are the implementation costs within budget estimates? • Is the project delayed? • Is the original design proving to be inappropriate or likely to result in high O&M or other recurrent cost problems?	■ Identify the reasons for higher costs and if necessary revise designs. ■ If higher costs are due to external factors (e.g. major currency fluctuations, climate change) consider revisions to the project to remain within budget, seek additional funding or, under severe conditions, recommend project closure. ■ Ensure that issues of cost over-run are addressed in the terms of reference (TOR) of any mid-term review.

Hydro-meteorological information forms the basis of water / hydropower assessments. High quality data is needed for reliable implementation. Therefore examine:

• Is data for all sector users reliable and are the demand assumptions still valid? • Are the hardware and methods for basic data collection and analysis appropriate? • Are projections for extreme events such as drought and flood part of the analysis?	■ Ensure water data collection is adequate; if data is unreliable, implement a programme of monitoring to improve data collection, storage and analysis. ■ If knowledge of actual resources or resource use is inadequate, recommend a study to strengthen resource assessments. Include extreme event projections.

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CHAPTER 10

Evaluation-Audit

For all phases of the project cycle other than programming, checklists have been prepared in the same format, to allow the user of the Water Project Toolkit examine key issues likely to arise in the preparation and implementation of projects, alongside possible responses. Issues and responses are grouped according to the set of problems statements within the framework of principles established in the strategic approach, starting with Institutional and Management principles and proceeding through all categories and principles.
In the identification and formulation phases, each programming context is handled separately since issues and responses differ between Focus Areas. In other phases, issues and responses are generic, and the same set of checklists applies in every Focus Area.
Monitoring refers to the systematic review of the physical progress and quality of the process, the financial progress including budget and expenditures, the preliminary responses by the target groups to the project activity and the reasons for unexpected/adverse response of target groups and possible remedial actions to be taken. In summary monitoring focuses on an "ongoing analysis of project progress towards achieving planned results with the purpose of improving management decision making" (EC, 2004:46).

Evaluation relates to the "assessment of the efficiency, effectiveness, impact, relevance and sustainability of aid policies and actions" (EC, 2004:46). Normally it is carried out periodically and at project completion / ex-post, the users are rather planners and policy makers than project managers. Evaluation allows learning broader lessons applicable to other projects; it provides accountability and is useful for giving inputs to policy review.

Audit refers to the opportunity to uncover the issues, concerns and challenges encountered in the execution of a project/programme. The purpose of an audit of external aid projects is to assess the legality and regularity of project expenditure and income, to check if projects funds have been used efficiently and economically and also if they have been used effectively.

The following principles shall be followed to the greatest possible extent:

1. Design of monitoring and/or review system must always keep in mind who needs what kind of information based on: hierarchy in the management system and project's objective, institutional and management structure needs and decision making responsibilities.
2. Data collection should be sufficient to have a tangible impact on the quality of decision making.
3. Triangulation principles shall be applied whenever possible i.e. data shall originate from more than one source and collected through more than one method.
4. A benchmark shall be provided against which progress can be assessed.

ALL FOCUS AREAS

KEY ISSUES	POSSIBLE RESPONSES
OPERATIONAL MONITORING[1] *Operational monitoring permits effective post-project evaluation, provides lessons to improve future project quality and helps identify new projects. Therefore examine:*	
• Have significant external changes occurred that will affect the sustainability of the project? • Was the technical and non-technical project design adequate? • Did the project take sufficiently into account relevant sector principles such as the participatory approach, sector coordination, cost-effectiveness and sustainability of services provided, improvement of monitoring, transparency and reporting? • Are the issues raised in the checklists from programming to implementation taken into account? • Were sufficient monitoring indicators established during implementation and has data been collected to enable meaningful assessment? • Have the proposed indicators been assessed? • Have project's regular reviews and operational plans been carried out? • Have project's progresses continuously been recorded? • Have key stakeholders been continuously updated with project's outcomes? • Have audits been commissioned?	■ Take account of any external change (positive or negative) that may distort the content of the evaluation of the project and assess if further assistance is needed to modify the project to take account of such changes. ■ Derive lessons from the project that can be used to improve the quality of future interventions such as via project design. ■ Derive lessons from the project in order to improve the quality of future monitoring, evaluation and audit mechanisms. ■ Revise forward plans (budgets, resources, activities and possibly results) in light of experience gained through project monitoring and review.
Institutional and Management Principles *Sustainable hand-over of infrastructure and equipment depends on the training of users and organisations who are allocated responsibility for O&M and management of services. Therefore examine:*	
• Was there a clearly defined strategy for hand-over of the project; was it sufficiently comprehensive and was it effectively implemented? • Were the right people trained and given a correct and appropriate mix of skills? • Where external technical assistance was used to provide training, was this cost effective?	■ Evaluate the effectiveness of handover. If there was no strategy, or it failed, evaluate what level of skills transfer took place; identify weaknesses in training and make recommendations for the future. ■ Determine whether there is an adequate local or national skills base to reduce to a minimum external technical assistance for O&M

1 Monitoring must continue through the operational period in order to assess long term sustainability

Projects must have sufficient flexibility in their design, implementation schedule and subsequent operation to permit adjustments to be made. Therefore examine:

• What factors, internal or external to the project, changed significantly during implementation or subsequent to completion and how did this influence the project? • Were lessons and experiences from past projects taken into account? • Do they include lessons learned from other projects?	■ Identify internal and external changes and determine how the project was adapted to respond to changes. ■ Identify mechanisms that may be used in future projects to improve flexibility.

Provision should be made for effective inter-agency and inter-sector planning. If this was weak, lessons should be learnt for the future. Therefore examine:

• Were the principles of sector coordination followed by all sector actors? • Were the institutions identified to implement the project appropriate? • If relevant, was the envisaged support to the implementing agencies adequate and did the mandates of each agency complement or contradict one another? • Did the implementing agencies fulfil their responsibilities?	■ If the institutions or their internal structures were inappropriate, identify alternative partners or make recommendations for future institutional reform / capacity building. ■ Investigate the reasons for inadequate support and make recommendations for change. ■ Where agencies failed to perform adequately, identify the weaknesses and recommend necessary capacity building measures (see part 3).

The project should have been formulated and implemented in a way that ensured effective stakeholders involvement and participation. Therefore examine:

• Were all stakeholders given the opportunity to participate in project/programme formulation? • Were users, NGOs, private sector organisations and all the other stakeholders effectively involved in project implementation? • What informal and formal local community structures, including indigenous management systems and organisations, were incorporated into the project? • Were contracts packaged to encourage participation by the local public/private sector?	■ If groups were prevented from participating, determine the causes. ■ Analyse the actual and potential involvement of NGOs, users, private sector and all the other stakeholders. If their involvement was ineffectual, suggest means to strengthen their performance and participation in future projects. ■ Identify local knowledge and local institutions that contributed or could have contributed to the project. ■ Discuss possible modifications to legislation.

Social Principles

Ownership by stakeholders and user groups of services provided by the project is essential in ensuring sustainability. Therefore examine:

• Were all stakeholders, including women, the disadvantaged and minority groups identified and involved in project implementation? • Did the users actively participate in the design, installation, operation and maintenance of services and do they have a clear sense of ownership?	■ Assess the comprehensiveness and utility of the stakeholder analysis conducted during formulation and recommend improvements. ■ Determine if the findings of gender analysis influenced project design and implementation. ■ If the intended and stakeholders have failed to take on ownership, assess the reasons and recommend changes for future projects.

Evaluation must determine to what extent intended social development has been achieved and what unexpected impacts may have occurred. Therefore examine:

• Are data available to calculate whether intended social impacts were achieved? • What lessons can be learnt regarding the interactions between social development and water related projects? • Did the benefits from the project reach the target number of beneficiaries? • Is the distribution of benefits and opportunities generated by the project equitable? • Were policies to target women, the poor or minority groups effective? • Were HIV/AIDS related issues appropriate and implemented? • If reallocation/resettlement of people was required, were all necessary steps and measures taken care off, according to international best practices and norms?	■ Where data are unavailable or social impact indicators are inadequate, re-consider the monitoring exercise. If necessary, use proxy indicators and interviews. ■ Use Social Impact Analysis (see part 3) as part of project evaluation and to make recommendations for future projects. ■ If the number of beneficiaries, the extent of benefits, or the equity of their distribution are less than projected, identify the causes. ■ Evaluate the effectiveness of any targeting policy and make recommendations.

Economic and Financial Principles

The economic and financial sustainability of the project depends on the avoidance of inappropriate subsidies and effective cost recovery. Therefore examine:

• Are cost recovery mechanisms effective and raising sufficient incomes to cover the targeted proportion of operating, maintenance and depreciation costs? • If subsidies to cover service costs are essential, are they operated in such a way as to prevent wasteful water use? • Is there a sector financing strategy commonly established by the government and its partners in place?	■ Evaluate cost recovery mechanisms and discuss any required improvements with government. ■ Review tariff structures (see part 3) and the use of government subsidies to identify ways of reflecting the true cost of water delivery without inflicting hardship on the poorest. ■ Assess the government and other investor performances related to disbursement of funds. ■ Review the sector financing strategy together with the government and its partners.

Projects must demonstrate economic benefit and financial accountability if they are to be sustained over the long term. Therefore examine:

• Are data available to calculate the economic impact defined in project formulation? • Has the project yielded the predicted economic benefits? • Was the project completed within budget? • Was the financial management of the project by the implementing agencies adequate and was this supported by reliable external auditing?	■ Where data are unavailable or economic impact indicators are inadequate discuss with those responsible for monitoring. If necessary, use proxy indicators. ■ Identify the causes of any significant variation between predicted and actual economic benefit. ■ If there was a major overspend, identify the causes and analyse its effect on calculating economic impact. Ensure that the findings are incorporated in future programming. ■ Assess the disbursement and management capacity of the implementing agencies and plan disbursement schedules for future projects of these agencies accordingly.

Environmental Principles

Environmental damage may result because insufficient time and money is invested in collection and analysis of data during and after. Therefore examine:

• Are data available to calculate the environmental impact defined in project formulation? • What were the environmental impacts of the project? • Were mitigating measures effective in minimising adverse and unforeseen impacts? • Is an adequate level of environmental monitoring continuing after project completion? • Were indicators selected based on sound theoretical and practical bases?	■ If data are unavailable or the environmental impact indicators are inadequate discuss with those responsible. If necessary, use proxy indicators. ■ Where significant unforeseen environmental impacts have occurred, identify the reasons; indicate mitigating measures, and ensure that improved environmental analysis is incorporated in future project cycles. ■ Assess the efficacy and acceptability of the mitigating measures introduced. ■ Make recommendations for improved long term monitoring and reporting.

Information, Education and Communication Principles

Evaluation should determine whether the knowledge base was adequate and whether recommendations for improved data collection have been implemented. Therefore examine:

• To what extent did the absence of reliable baseline technical/environmental and/or social data lead to weaknesses in project design or implementation? • Was it possible to monitor project implementation effectively? • Is there on-going monitoring of all relevant aspects of the project? • Was evaluation jointly prepared by all partners and jointly carried out?	■ Evaluate the impact of baseline data quality on the project outcome. If necessary make recommendations to establish better, and targeted, routine data collection for ongoing monitoring. ■ Review the performance of agencies responsible for monitoring progress and impacts, and discuss difficulties with the agencies involved. ■ Ensure that the evaluation is jointly commissioned by the national implementing agency and carried out by an independent evaluator.

Public education, awareness raising and free availability of information to all stakeholders facilitate the sustainability of water projects. Therefore examine:

• Are the established national policies and sector strategies comprehensible and actually feasible for the local stakeholders? • Are the established national policies and sector strategies disseminated to relevant stakeholders? • Has the government taken actions to improve the transparency of the sector policy decision-making process and its implementation strategies? • Is information made available to all stakeholders in a comprehensible manner? • Were public education activities successful? • Were awareness raising campaigns successful? • Have the local stakeholders/actors the knowledge and the capacity to fulfil sector policies and strategies requirements?	■ Assess improvements in the provision of accurate and understandable information by government and private sector agencies. ■ Assess the effectiveness of education and awareness campaigns by means of impact indicators defined at formulation. If data is inadequate, make a rapid appraisal of impact amongst key stakeholder groups. ■ Identify means to support public education in addressing sector policies and implementation strategies requirements.

Technological Principles

In evaluating the appropriateness of technology and its influence on the wider results of the project, the accuracy of underlying data is critical. Therefore examine:

• Have technical design assumptions regarding water supply and demand proved valid? • Have technical design assumptions regarding sanitation proved valid? • Have climate change effects been considered? • Have technical and geotechnical data-based assumptions regarding hydropower / dam proved valid?	■ Assess whether all technical design and study assumptions were valid. Where inaccurate assumptions have led to poor design, make appropriate recommendations for future projects.

Technological solutions must be acceptable to the target users and compatible with the environment. Therefore examine:

• Were users/other stakeholders able to participate effectively in the selection of technology? • Have the users/operators of equipment received sufficient training in its operation and maintenance? • Is the infrastructure capable of operating as planned under conditions of water scarcity and/or peak demand?	■ Assess the attitudes of all the key stakeholders to the installed technology and their role in its selection. ■ Evaluate the training delivered during project implementation and the provision made for continuing user training. ■ Review the operation of infrastructure. Assess whether it meets design specifications and the appropriateness of those specifications as can be reflected in the uptake of the users and managers. ■ Discuss any shortfall in implementation with the government agencies involved, particularly where this may have user acceptability or environmental consequences.

Sustainability of infrastructure and equipment can only be achieved if the technical and financial requirements for maintenance are met. Therefore examine:

• Are the financial, technical and institutional provisions for maintenance of infrastructure proving effective and sustainable?	■ Assess systems of cost recovery for O&M, the availability of technical expertise, spares, and the institutional arrangements for providing the resources and labour to carry out maintenance. Make practical recommendations for improvement.

PART 3

THE POLICY APPROACH

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CHAPTER 11
Water for sustainable development

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CHAPTER 11

WATER FOR SUSTAINABLE DEVELOPMENT

Governance and water resources management

The concept of governance in the water sector arose in order to guarantee more rational water resource management, ensure that the poorest people have access to water and to generally contribute to changing attitudes within the sector.
Governance comprises the range of measures, rules, decision-making bodies, information services and supervisory bodies which make it possible to guarantee the proper functioning and monitoring of a State, organisation or, in this case, a sector. Its main concern is to ensure that the interests of "rights holders" (citizens, public authorities, partners etc.) are respected and it is underpinned by four fundamental principles:

- accountability (reporting etc.), according to which policymakers must prove to stakeholders that public goods are being managed properly,
- participation of all the actors in the sector and their ownership of governance processes,
- inclusion of all actors in the sector, particularly the most vulnerable, such as women and children, who have the same rights as other stakeholders,
- transparency in financial management, the award of contracts and the results obtained as well as providing easy access to information.

Integrated Water Resource Management (IWRM), defined earlier in the document, is the approach that implements governance measures aimed at conserving and ensuring the sustainability of water resources.

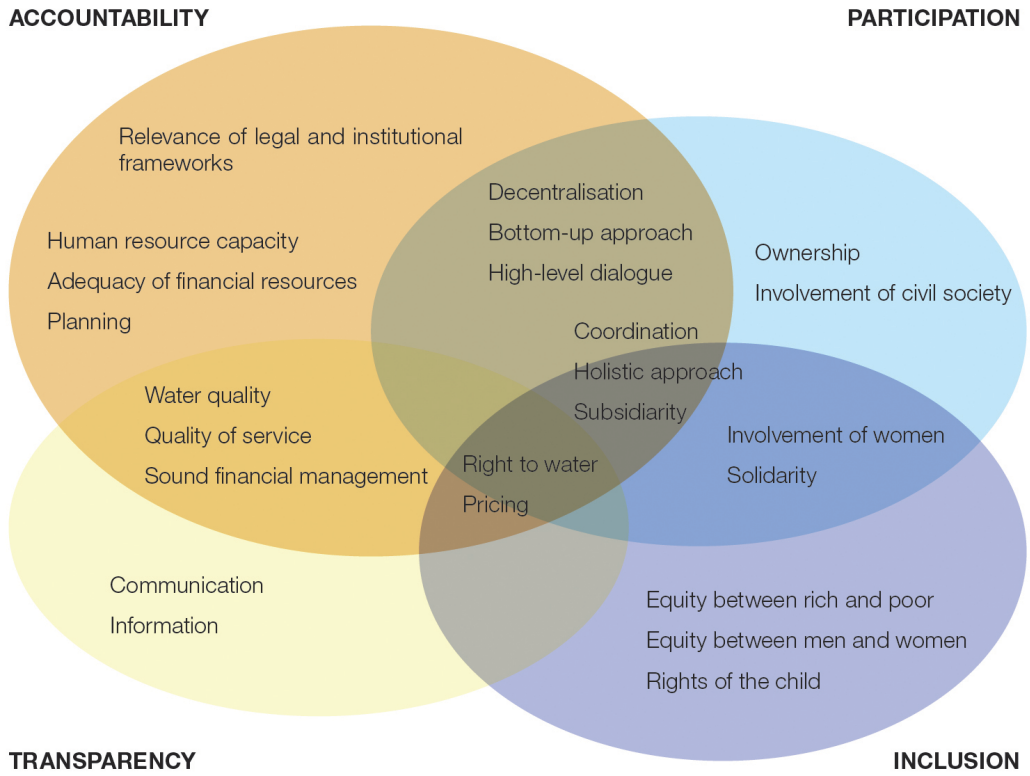

Figure 5: IWRM aspects in relation to the 4 governance principles (EC, 2009)

The sector-wide approach

The sector-wide approach is a joint dialogue process (government, technical and financial partners, other actors in the sector) which allows the government to define and implement its sector programme. The government's sector programme (SP) includes all the documents required to establish and implement its vision for the sector, with particular regard to policy, strategy, budget and the coordination framework of the sector. Sector-wide approaches are processes aimed at improving public sector performance in terms of service delivery as well as the efficiency and effectiveness with which internal and external resources are utilized. The national sector programme is based on three key elements: sector policy and strategy; the sector budget and its medium term expenditure perspective and the sector coordination framework.
The core elements of a sector programme in general, but in particular of an inclusive approach to sector development, can comprise the following core elements:

i) sector policy and strategy: a sector policy is a statement of a government's long-term vision (ten years or more) for the sector, setting out the government's objectives for that period. The sector policy also specifies the institutional aspects (roles of different actors in the sector, division of responsibilities, financing, etc.), sets out the main principles of service management (state control, private operator etc.) and the priority action areas (geographical areas, maintenance or extension of the network etc.) and explains which legal and regulatory decisions are deemed necessary. The sector strategy action plan, also known as the master plan, describes how, in terms of the physical and financial execution, the government intends to implement sector policy over a medium-term perspective (3-5 years). It may be necessary to set intermediate targets or priorities to meet policy objectives;

ii) the sector budget and its expenditure perspective (known as Medium Term Expenditure Framework MTEF): the two must form the financial expression, on an annual and multi-annual basis, of the sector strategy. They are drawn up in conjunction with the sector strategy and on the basis of the available resources in the sector;

iii) a sector coordination framework: through which the sector policy, action plans and budget are reviewed and updated.

In addition to these three core elements, there are also two key components: the monitoring system and institutional capacity. These two components are of equal importance and often constitute stumbling blocks within sector programmes. Sector programme monitoring systems are often weak, which is detrimental to future management and programming in the sector and can call into question, from the European Commission's point of view, the use of sector budget support as a financing modality. As regards to institutional capacity, capacity building assistance must be targeted and should often involve most of the national partners.

Participation

Concerning participation, in the past few decades participatory development has been in vogue for development programmes worldwide. This trend is the result of the notable failures of coercive 'top-down' projects introduced in developing countries during the 1970s to '80s (Choguill et al., 1993). In the quest to legitimize development programmes and make them more sustainable, the idea of a 'bottom-up' approach appeared. In the nineties, participatory methods became the new way of pursuing development programmes, but without losing the bottom up approach.
With particular reference to the water sector, the participatory approach can be defined as one of the main development principles related to sustainability both from the point of view of Integrated Water Resource Management (IWRM, Dublin 1992) policies and from water sector governance (GWP, DfID 2009, EC 2010 etc.). Concerning IWRM, the Dublin principles (1992) state that water development and management should be based on a participatory approach, involving users,

planners and policy-makers at all levels.
In the same way, at sector level, participation is one of foundation principles of the Sector Wide Approach that through the joint dialogue process (government, technical and financial partners, other actors in the sector) allows the government to define and implement its sector programme.
At the community level the purpose of participation is to gather information in a non-extractive way and involve the stakeholders in the policy making and policy implementation processes. This will mean having to:

- Stimulate the community to identify the causes of its problems and collective aspirations;
- Facilitate communication with the community;
- Help the community to identify resources, experiences, and potential improvement;
- Identify interests and conflicts; and
- Motivate communities to develop self-reliance in project development and management

Capacity Building: promoting governance and participation

Capacity building is a long-term, continuous process, involving the application of a number of very specific techniques to strengthen the performance of the sector in question and also the sector supporting organizations. There is no common consensus on what capacity development is, nor is there a consensus on how it should be achieved, and many agencies, countries and organizations have their own definition of what capacity building should be. However the important issue to take into consideration is that capacity building cannot be just a sum of multiple unrelated activities, but in order to be effective should rather be a coordinated process with goals and strategies to be achieved.
In terms of capacity development in water management, it is possible to identify three main focus areas of capacity building:

- The creation of an appropriate political environment, with appropriate policy and legal frameworks: “Capacities at the level of the enabling environment include policies, legislation, power relations and social norms, all of which govern the mandates, priorities, modes of operation and civic engagement across different parts of society”. (UNDP, 2008:5)
- Human resource development and the strengthening of managerial systems: “Capacity refers to the skills, experience and knowledge that are vested in people.” (UNDP, 2008:6)
- Institutional/organizational development, including community participation: “Capacity comprises the internal policies, arrangements, procedures and frameworks that allow an organization to operate and deliver on its mandate, and that enable the coming together of individual capacities to work together and achieve goals.” (UNDP, 2008:6).

The most common means for building capacity in the water sector are: training programs, building networks of knowledge and shared experience, delivering education to equip individuals with the ability to learn continuously, dissemination and awareness campaigns.
Development partners have to “facilitate resourcefulness” (Vandeveer and Dabelko, 2001:3) and build on local energy and commitment. They have to respect the principles of local participation, which are strongly associated with capacity development efforts. In the water sector, capacity building activities are essential to enable the governance environment to support the increased participation in water management. Recently, many international organizations promoted a capacity building strategy as a tool capable of strengthening existing local abilities to participate effectively in projects and activities.
In water management, as set out by the IWRM principles, a holistic approach is crucial to capacity building given the number of actors involved in the sector (governments, international aid agencies, NGOs, etc.) and the multiple uses of the water resource (eg: agriculture, irrigation

systems, WASH, etc.). The holistic capacity building approach is important because trying to build capacity in one area without including others often fails to achieve the desired results and thus wastes effort, time and resources.

Stakeholder Analysis

The purpose of a stakeholder analysis is to identify the people, groups, actors or organizations that may influence or be affected by the realisation of a project, and understand the relationships between them. It has been acknowledged that generally stakeholder analysis improves a water project's positive outcomes and most especially its sustainability. A stakeholder analysis can be carried out with different approaches such as theoretical (Policy Network and Actor network theories) or pragmatic (mapping interests and influences) through a wide variety of tools working with qualitative and quantitative data. Whatever the methods, a stakeholder analysis should normally at least consider the following attributes as defined by the World Bank (2007):

- the stakeholders' position on the reform issue,
- the level of influence (power) they hold,
- the level of interest they have in the specific reform,
- and the group/coalition to which they belong or can reasonably be associated with

Stakeholder analysis is particularly useful in developing participatory approaches in a project, since it helps to identify those who might participate and thus influence the outcomes of the project. However, not all stakeholders will have a 'participatory' relationship with the project, but may still be affected by or be able to influence, even peripherally, project outcomes. Stakeholder analysis contributes to project design through the logical framework, and by helping to identify appropriate forms of stakeholder participation. A usual first step of a stakeholder analysis is to achieve a stakeholder mapping in order to identify primary, secondary and key stakeholders.
Primary stakeholders:
This category comprises those whose main livelihood or interest is ultimately affected (either positively (beneficiaries) or negatively (e.g. those involuntarily resettled).
Secondary stakeholders:
Those whose interests are related to the project in a less immediate way than as the primary stakeholders, for example suppliers of project inputs.
Key stakeholders:
Key stakeholders are those who have the capacity to influence the project outcomes, but who are not themselves directly affected by it, for example legislators and officials.
Moreover, mapping exercises usually seek to categorize existing knowledge of the interests of the stakeholder and institutions. Stakeholder analysis should always be undertaken first at the project identification stage. If a logical framework is prepared, the stakeholder analysis will provide useful information for it. The stakeholder analysis should be repeated and refined as the project continues.

Poverty and Social Impact Assessment (SIA) /Poverty Impact Analysis

The Paris Declaration on Aid Effectiveness stresses the importance of results-oriented frameworks to improve aid effectiveness and to assure better pro-poor outcomes. To this effect, different tools are available, such as Poverty Impact Analysis (PIA), Poverty and Social Impact Analysis (PSIA), Social Impact Analysis (SIA).
PIA is a tool based on a balance of qualitative and quantitative information, on existing information sources that can assist in identifying the consequences of an envisaged project and in providing a basis for harmonization as it uses a standardised set of matrices.
Poverty and Social Impact Analysis (PSIA) studies how the impact of policy reforms on the welfare is distributed on different stakeholders groups, primarily on the poor and vulnerable groups.

Its overarching objective is to promote evidence-based policy choices, by explicitly including poverty and social impacts in the analysis of policy reforms, and to build country ownership of policies by informing a public debate on the trade-offs between policy choices. PSIA can be used for analysing the link between policy reforms and their poverty and social impacts, design mitigating measures and risk management systems.

Social Impact Analysis (SIA) "includes the processes of analyzing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment" (IAIA, 2003).

There are five main elements of social development to consider in the water projects. These are:

- The cultural features and implications of water use;
- The perceived needs of all those affected by changes in policy and by new projects;
- Inclusion of all members of society, particularly those who may be disadvantaged by poverty, or by their status in society;
- Recognition that the roles and needs of women and men may be different, but that they should have equal status in society, and that equal participation and benefit for women and men is a pre-requisite for a successful project;
- Encouragement of the participation of all stakeholders in the development process and the eventual empowerment of communities.

Cultural issues with regard to water are especially sensitive. There may be beliefs and behaviours associated with water use to which strong religious or customary value is attached. There may also be differences in attitudes between women, children and men. These differences are more easily exposed by participatory methods of enquiry, and in the first instance by discussing with women and men separately.

Gender Analysis

The promotion of gender equality and women's rights is not only a crucial goal in itself, as a matter of fundamental human rights and social justice, but is also a *sine qua non* for achieving all development goals. As a matter of fact gender equality is key to achieve the MDGs.

Gender denotes the social roles of women and men as opposed to their biological difference. Access to socially valued and valuable resources is unequal, and is normally biased in favour of men. Women generally have less access than men to training, land, secure employment and leisure, as well as to the political process. Already in 1979, the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), adopted by the UN General Assembly defined what constitutes discrimination against women and set up an agenda for national action to end such discrimination. Unfortunately such discrimination still widely persists.

Gender mainstreaming is a strategy aimed at achieving gender equality. The EC *Toolkit on Mainstreaming Gender Equality in EC Development Cooperation* (2004) defined that in order to mainstream gender equality in development cooperation programmes and related activities the following steps are essential:

- Statistics disaggregated by sex and qualitative information on the situation of women and men must be obtained for the population in question. This information is required not only at project/programme beneficiary level, but also at the macro and meso levels.
- A gender analysis should be conducted with regard to the gendered division of labour, access to and control over material and non-material resources, the legal basis for gender equality/inequality; political commitments with respect to gender equality; and the culture, attitudes and stereotypes which affect all preceding issues. Gender analysis should be conducted at the micro, meso- and macro-levels.
- Gender analysis of a programme or project concept should reveal whether gender

equality objectives are articulated in the initial idea, whether or not the planned activity will contribute to or challenge existing inequalities, and whether there are any gender issues that have not been addressed.

- During the identification and formulation phases, gender analysis contributes to the identification of entry points for actions that will be needed in order to meet gender equality objectives.
- A gender-sensitive monitoring and evaluation system should also be in place from the design phase onwards, including the establishment of indicators to measure the extent to which gender equality objectives are met and changes in gender relations achieved.

Without identifying such differences, it is not possible to devise policies that meet the specific needs of women and men and address existing inequalities.
The development of gender planning techniques such as the use of gender-disaggregated statistics and task analysis in which female and male tasks are defined, responds to the need to allow for gender differences in the planning and implementation of programmes and projects.
Gender planning methodology identifies several roles of women as household and domestic managers; economic producers (e.g. in farming); and community leaders. It also identifies two crucial distinctions in gender interventions: projects which address women's needs, by improving existing work methods and relieving their domestic and farming burdens; and projects which address such strategic needs as equality with men, improved status and access to resources.
Gender analysis and the PSIA/ PIA /SIA (see above) should seek to identify the allocation of tasks to women and men, and to measure time and burdens in relation to women's and men's activities, and to calculate the likely benefits and losses to both women and men.

Water for inclusive Growth and Development

While access to water for basic needs is acknowledged as a right, it is an accepted fact that water is inextricably linked to growth and development. Furthermore, for certain areas of the developing world (such as Sub-Saharan Africa), certain concepts brought up by IWRM such as the integration of the different uses have been coupled with a new impulse promoting Water for Growth and Development (WfGD). This combination is giving as much weight to economic growth as principal reducers of poverty in development as it does to MDG targets for basic services such as food security, household poverty and access to electricity. The concept of WfGD has been developed particularly in Africa, where African Ministerial Conference on Water (AMCOW) Ministers have since 2008 been embracing the concept. It is being recognised that in developed countries the focus on water management and operation is important and certainly needed, but that for the least developed countries the lack of recognition of the significance of investments in water infrastructure has serious consequences. For securing water and achieving economic development and growth, a minimum level of water infrastructures is required.
Whether a country should invest in water management and operation or in infrastructures therefore clearly depends on its local situation and its level of water sector development, blanket prescriptions of course are not the answer to complex economic, social and environmental realities.

At the same time poor countries must not see infrastructures as a Panacea. This could result in some unsustainable and catastrophic results; investments must not only be addressed in building infrastructures but also in developing in parallel sound institutions and sustainable, equitable and environmental sound solutions.
The contribution that water can make to growth and development as a whole is important; consequently the World Water Council (WWC) (2011) developed an "effective investment framework". This framework aims at improving financing measures in the African continent taking into account three key institutional levels - local, national and regional- as well as three

interdependent “securities”- human security, economic security and water security. To achieve the best possible investment actions for sustainable development and growth the WWC suggests that the three securities must intersect with the three cited institutional levels.

One of the most advanced experiences in WfDG is in South Africa where, since 2009, a Water for Growth & Development Framework is under implementation. Key points include the centrality of water to all South African sectors and the necessity of taking a cross-sector approach to ensuring water security and balancing water interests.

This push towards growth in development is also defined by the EU in its communication “Agenda for Change” (EC, 2011) adding the concept of inclusion, affirming that “Inclusive and sustainable economic growth is crucial to long-term poverty reduction and growth patterns are as important as growth rates. To this end, the EU should encourage more inclusive growth, characterised by people’s ability to participate in, and benefit from, wealth and job creation. The promotion of decent work covering job creation, guarantee of rights at work, social protection and social dialogue is vital. Development is not sustainable if it damages the environment, biodiversity and natural resources and increases the exposure/vulnerability to natural disasters” (EC, 2011:7).

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CHAPTER 12
TOOLS FOR SUSTAINABLE DEVELOPMENT COOPERATION

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CHAPTER 12

TOOLS FOR SUSTAINABLE DEVELOPMENT COOPERATION

Economic and financial analysis

In this section we present elements of economic and financial (ECOFIN) analysis of programmes and projects (EC, 2000). Financial and economic analysis provides a partial view of projects which complements analyses by technical, social and environmental specialists and analyses in consistency with the sector policies. The ultimate purpose of financial and economic analysis is to determine, as accurately as possible, the costs, efficiency of resource use (especially the financial and economic return on investments), and the relevance of projects to current economic policies and structural reforms.

Financial and Economic analyses have **different perspectives or points of view**.
Financial analysis involves examining the activities and resource flows of the main entities (Stakeholders) or groups of entities separately. Economic analysis involves examining the impact on society (the economy) as a whole. The two forms of analysis do not therefore provide the same information, but complement each other. Economic analysis usually takes a national perspective, but can also take the perspective of a region or a sector, if the programme focuses on one of these.

- Financial Analysis calculates the incentives for the main stakeholders, checks the solvency and longer-term sustainability of the project, and helps to design possible cost recovery mechanisms. It prepares the ground for an Economic Analysis, when the cash flows of the stakeholders are consolidated into a single cash flow.
- Economic Analysis also provides valuable information on the contribution of the project in the international context as well as domestic effects in the economy.

The ECOFIN analysis we propose uses 5 evaluation criteria.

Relevance

Relevance measures the contribution of the proposed project or programme purpose with the stated overall objective and asks the following questions:

- does the project or programme address the financial needs of the target groups and the real needs of the intended beneficiaries?
- does the project qualify as useful or necessary from the point of view of society as a whole? (this is an economic question rather than financial)
- how well is the project fitting with the national and/or sector priorities undertaken by the government?

Effectiveness

Effectiveness measures the extent to which the project or programme will attain or has attained its purpose and is expressed by the following ratio:

$$\frac{\text{output achieved}}{\text{output planned}}$$

and asks the following question:

- have the right measures been (or will be) applied to achieve the stated goal and expected outputs of the project or programme?

This can refer to the type and scope of chosen activities as well as the choice of stakeholders and final beneficiaries.

Efficiency

Efficiency compares the results achieved to the resources used and can be expressed by the ratio:

$$\frac{\text{output achieved}}{\text{input applied}}$$

This criterion should include comparing alternative approaches to achieve the same output to see whether the most efficient process has been adopted. Efficiency poses the following questions:

- Is the project using a minimum of resources and are resources used efficiently?
- Are the returns of the project adequate (only for measuring tangible benefits)?

Impact

Impact measures the intended (or unintended) effect of the project on socio-political goals established by the government for the society and the economy as a whole. This does not consider measuring financial impact. When looking for impact we try to address the following question:

- What are the effects of the project on the national economy (economic growth, government budget, foreign exchange, and income distribution)?

Sustainability

Sustainability measures the extent to which the project results will persist in the future, especially beyond the end of external support or contribution. Recurring costs must be examined and alternatives such as levels of cost recovery are considered here. In terms of cost recovery linked to the consumer or end-user, the following characteristics of these key actors and stakeholders need to be analyzed:

- willingness to pay
- capacity to pay

Typical questions concerning stakeholders include:

- Do the main stakeholders face solvency problems during the implementation of the project?
- Can the main stakeholders meet the recurrent costs after the end of the project?

Benefits from Investment: Cost benefits and Cost effectiveness

The core of financial and economic analysis is to put a monetary value on costs and benefits. Costs are usually known, but some benefits may not have a price, and can be difficult to value (non-tangible). This is the case of many projects, notably in the social sectors.

Cost - Benefit analysis is used to value projects with tangible benefits

- values benefits by direct calculation
- includes ‘Cost recovery’ (contributions by users to pay for services) in calculating costs, cash flows, solvency and sustainability. It is important to compare such costs with household incomes or any similar statistics to verify affordability. *For example, when final beneficiaries have to pay a fee for water, from which the maintenance of the pumps etc is paid, it is vital to check that this fee can really be afforded by the beneficiaries.*
- allows calculating profitability criteria that show the proportion between costs and benefits, and can be used as a criteria to choose between various possible projects or technical components.

Cost – Effectiveness analysis is used to analyse projects with non-tangible benefits.

- analyses non-tangible benefits which cannot be valued in monetary terms by direct calculation
- focuses on costs per unit of benefit, and compares them with similar types of costs elsewhere - *e.g. comparing the cost of vaccinating one person, or of one bed-night in hospital, or of a child's schooling for one year, in the project area; with the costs elsewhere in the country, in neighbouring countries, or even, in certain cases, regionally or world-wide.*
- is usually specific to a sector, since comparisons are normally only possible within a sector (health, education…) and not between sectors.

Box 11.1 Which analysis: Cost - Benefit or Cost-Effectiveness?

- In no case should one assume that because some benefits are non-tangible, no financial and economic analysis is possible.
- As most projects include a mixture of tangible and non-tangible benefits, both types of analyses should normally be done.
- Even projects with tangible benefits should be submitted to cost – effectiveness analysis, to make sure that unit costs are reasonable compared to similar projects. For example is the cost of a health centre reasonable compared to similar centres in comparable regions or countries?

Mainstreaming Environment and Climate change

As poverty reduction, development and the protection of the environment are mutually dependent, the rationale for mainstreaming the environment including climate variability and change is based on a number of arguments. These include the concept of ecosystem services and the increasing realization of external environmental costs. The concept of sustainable development based on approaches that not only address economic objectives but also social and environmental ones is established and emphasized in international development cooperation objectives, however achieving sustainable development remains both a local and global challenge.
In the EC context, mainstreaming is defined as 'the process of systematically integrating a selected value/theme/idea into all domains of development cooperation…' (EC, 2009) and requires changes both in ideas and practices. The integration of the environment and climate change serves four main objectives:

- Identifying and avoiding harmful direct and indirect environmental impacts of programmes and projects in the different co-operation sectors, which can undermine sustainability.
- Recognising and realising opportunities for enhancing environmental conditions, thereby bringing additional benefits to development and economic activities and advancing environmental issues that are a priority for the EC.
- Promoting improved environmental dialogue with partner countries, based on the technical, economic and social arguments in favour of a more environmental approach to policies and programmes.
- Identifying potential risks of a project or programme by assessing its exposure and sensitivity as well as response capacities in place to deal with existing or anticipated climate variability and change.

According to the UNDP, environmental mainstreaming refers also to "the integration of environmental considerations into core institutional thinking and decision-making" (UNDP, 2004). UNDP's environmental mainstreaming approach includes the integration of sustainability objectives into poverty reduction practices, internal and external capacities building, the promotion

of regional environmental strategies, enhancement of environmental soundness and sustainability of UNDP policies influencing programmes and operational processes, and improving the quality of environment programmes in achieving broader socioeconomic and human development goals (UNDP 2004).

The World Bank (WB) deals with environmental mainstreaming setting environmental priorities in project and programme design and encouraging linkages between environment and macro-economic measures. With this strategy the WB aims at improving the quality of life and quality of growth by focusing on better resource management. The WB Environment Strategy (WB, 2011) has reinforced Environment Mainstreaming into sector lending by stressing the need for cross-sectoral approaches to environmental issues. Often in connection with the Bank's risk management in its lending portfolio, GEF, the Multilateral Fund for the Montreal Protocol, and other grant facilities provide financing for projects with global environmental benefits.

Climate change represents an additional and formidable challenge to sustainable development, interacting with existing environmental trends and intensifying pressures. It also represents extraordinary opportunities to stimulate new thinking and promote sustainable development trajectories. More needs to be learnt about the precise effects and location of the challenges, and during this learning process responses based on a 'robust' approach are advocated.
Notions of climate change include mitigation (reducing green-house gas emissions) and adaptation (reducing sensitivity to the consequences). Increasingly, environmental conditions are also linked to security and potential conflict in particular regarding access to and the management of natural resources.

Climate change is already considered to be one driver in the creation of 'environmental refugees' with the related social and political challenges. The eradication of poverty in the context of sustainable development is the fundamental objective of EU development policy, and as environmental goods and services play a key role in the livelihoods of the poorest, effective environmental integration is crucial.

Gender needs to be considered in the context of environmental integration since different gender roles may result in different needs, activities and practices that produce different pressures on the environment., Gender-based roles may subsequently be affected in different ways by environmental change (EC, 2009).

The Programming phase is crucial for environmental integration because key decisions concerning the overall co-operation process made at this point can be difficult to adjust in later phases. The EC, as other development partners (UNDP, WB, etc.), has its own environmental analysis tool to be integrated during the programming phase. The Country Environmental Profile (CEP), a report that includes the analysis of the country's environmental situation, current policies, institutional capacities and environmental co-operation experience is the basis for producing clear recommendations for the integration of the environment during the programming phase. In line with the Paris Declaration and the Accra Agenda, efforts towards increased collaborations by the development partners for country level environmental analytical work are underway. As an essential part of the Country Environmental Profile (CEP) preparation process, coordination among national and international development partners should be sought, leading to joint analytical work and, where possible, alignment on nationally-led exercises, such as within the framework of joint assistance strategies.

Taking into account the relationships between the main sectors and the environment in designing the strategy does not mean that only sectors with less negative environmental impacts should be supported. It means rather that cooperation objectives, approaches and strategies should be adapted, as relevant, to mitigate possible negative impacts and enhance positive impacts, thereby ensuring the sustainability of support. Effective integration of environmental aspects can also translate into adaptation of work schedules to accommodate the necessary environmental assessments; the allocation of financial resources for the implementation of environmental measures; and the choice of an adequate set of performance indicators, reflecting environmental and sustainability concerns, in the proposed intervention framework.

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GLOSSARY and BIBLIOGRAPHY

GLOSSARY

- **Accra Agenda for Action:**

In 2008, the Accra Agenda for Action (AAA) was agreed based on the on the commitments agreed in the Paris Declaration. It was agreed on:

- Predictability – donors will provide 3-5 year forward information on their planned aid to partner countries. Country systems – partner country systems will be used to deliver aid as the first option, rather than donor systems.
- Conditionality – donors will switch from reliance on prescriptive conditions about how and when aid money is spent to conditions based on the developing country's own development objectives.
- Untying – donors will relax restrictions that prevent developing countries from buying the goods and services they need from whomever and wherever they can get the best quality at the lowest price.

- **Appropriate modern technology:**

The term 'appropriate technology' was originally often used interchangeably with 'intermediate technology' at a time when the over-sophistication of technology used in many development projects was a major problem and led to their failure. It has therefore often been wrongly applied to mean technology of an unsophisticated kind. However, the key concept is that technology should be 'appropriate' in all senses – managerially, economically, socially, environmentally; this may mean that it should not be highly sophisticated, but not necessarily. In addition, there have been a number of technical advances and introductions of cost-cutting materials in low-level technology in recent years – in the cases, for example, of hand pumps, tube well casing and latrine parts. And certain apparently low-level technologies – solar power, for example – are technically complicated and require high levels of precision. Therefore, the term 'appropriate modern technology' captures all elements and can be used to ensure no confusion with low-level or intermediate technology, or technology which is not up-to-date.

- **Awareness raising**

Awareness raising or awareness building is the objective of information, education and communications activity, usually directed at the intended beneficiaries of services but also at other stakeholders, including politicians, government officials, and private companies. Identifying awareness raising as a specific activity of programmes and projects underlines the fact that a certain level of awareness – about the nature of services, the costs of services, the need to protect water after the point of collection, the need for hygienic use of water to control disease, and about many other aspects of water-related schemes – cannot be taken for granted among potential service users. Awareness of the relevant issues is necessary for effective participation and community ownership of schemes, for developing support for service charges and systems of tariff collection, and for introducing mechanisms for environmental protection. Awareness raising is needed to close the gap between the expectations of donors and project managers, and those of beneficiaries, especially among undereducated populations, and cannot be left to chance. See also Communications techniques.

- **Basic needs/Basic services**

The concept of meeting 'basic needs' was developed in the 1970s and internationally adopted to supplement economic growth as the primary target of development cooperation. Previously, the assumption had been that the fruits of economic growth would automatically 'trickle down' to the poor, but re-assessments in the late 1960s showed that the poor were typically gaining little from – relatively successful – economic growth policies, and were in many cases becoming further marginalised. The meeting of basic needs for food, water, shelter, health care and education thus became the driving force of the second and third UN Development Decades (1970s and 1980s). The concept of 'basic services' was developed as the strategy for meeting 'basic needs', initially in health care and water supplies; later in sanitation, household food security and education. Critical components of the 'basic services strategy' included low-cost, appropriate technology

approaches; and the recruitment and training of the community-based worker (under many different designations) at the frontline of service extension. This person, male and female, acts as a link between services and communities, sometimes as a para-professional employee or volunteer, and often as a proselytiser for the benefits of services and their proper use. He or she may also collect levies for service maintenance and use. The concept of 'basic services' therefore not only conveys the idea of a minimal level of service to meet 'basic needs', but their facilitation via support to community mechanisms. (See also Participation.)

- **Beijing Global Platform for Action**

The Beijing Global Platform is a product of the UN Conference on Women in Beijing in 1995 designed to promote women's rights and gender equality in development. It sets out policies and practices, which local authorities and other decision makers have been directed by governments to fulfil, and which organisations can use to support their gender-related work. The Platform identifies 12 'critical areas of concern': poverty, education and training, health, violence against women, armed conflict, the economy, power and decision-making, institutional mechanisms, human rights, media, environment and the girl child. The Platform defines strategic objectives and spells out a series of actions to be taken over the next five years by governments, the international community, non-governmental organisations and the private sector, to eliminate discrimination against women and to remove all obstacles to their equality.

- **Capacity building**

'Capacity building' is the term used to describe the necessary process of institutional expansion, improvement or reform which facilitates the effective operation of programmes or services. The process should be continuous, and applies as much to formal bodies as informal bodies, such as local community groups. The concept of capacity building has become very prominent in development thinking during the recent past.

- **Clean technology**

Technology used today must respect environmental sustainability. This means designing systems so that as little waste and as few emissions as possible are produced. 'Clean technology' is a holistic approach to technology. It may mean switching to a more environmentally benign production method, or the introduction of a system which reduces waste output. A key objective in water-related contexts is to minimise both consumption and waste throughout the whole process of water supply and sewerage delivery, transport and treatment, without compromise to public health. For example, volumes of water used in flushing can be minimised: it is unsustainable to use environmentally and economically expensive clean, treated water as a medium for the transport of domestic and industrial waste. This waste, as well as sullage (or grey water) can be seen as a resource. By utilising sullage for irrigation, for example, the volumes of mixed waste entering a plant can be reduced, therefore minimising the energy and chemicals used in water treatment.

- **Communications techniques**

Establishing good communications channels between key stakeholders – notably project staff, officials, local communities and beneficiaries – is an important part of project planning. Without good communications, the participatory process is likely to remain cosmetic and ineffective. Many techniques have been developed for eliciting and exchanging information between stakeholders, especially between project staff and beneficiary populations and user groups, and are described in the literature on participatory appraisal (see below). Low-income, illiterate or marginalised groups may feel inhibited in face-to-face contact with outsiders and these techniques are designed to overcome such problems. Communications aids such as flip-charts, cue-cards, visualisation of problems, videos and cartoons, may be needed. NGOs, educators, and communications experts with the relevant experience need to be involved in the development of such aids and their application. More distant communications channels such as radio and television can also be used, but active participation requires face-to-face communications.

- **Decentralised cooperation**

Decentralised cooperation is the term used by various development cooperation agencies to describe various funding mechanisms for developing projects with, and implementing them through, partners other than governmental agencies, including local authorities, universities and NGOs. (See Chapter 14 for a full description.)

- **Demand management**

Demand management (DM) of water resources is the alternative to supply augmentation, the prevailing policy in many countries until recently. In countries or regions facing implacable hydrological limits, DM recognises water scarcity as a fact of life and creates the conditions in which users can appreciate its real value. By making better use of the resource, DM obviates the need for costly new investments, and avoids the environmental disturbance inherent in many new supply schemes. DM has various themes: losses and waste reduction, economy in use, the development of water-efficient methods and appliances, creation of incentives for more careful use of the resource, improved cost recovery, reallocation from low- to high-value uses, devolving responsibility from central government, greater use of economic instruments (prices and markets). DM typically includes measures to relate the value of water to the cost of its provision, and thereby motivate consumers to adjust their usage. DM entails treating water more like an economic resource, as opposed to an automatic public service. Introducing DM involves action at three, mutually reinforcing, levels: creating enabling conditions through government policies; specific incentives for water users; and the implementation of projects and programmes in such areas as leak detection, canal lining, and wastewater recycling.

- **Economic and financial analysis**

Financial analysis is undertaken to determine a budget for the project, as well as the intrinsic (before financing) and financial (after financing) value of a project, for individual economic entities or a group of entities. It is a very useful tool to verify the 'affordability' of water for the poorest groups. Economic analysis broadens the perspective to national scale and allows assessment of the relevance, effectiveness, efficiency and viability of the project. However, as it cannot always give a full picture of the factors affecting a given project, it should not be used as a sole criterion for making decisions, but used in combination with other analyses .

- **Ecosystem management**

The ecosystem is the ecological framework within which flora and fauna exist and thrive. The aquatic ecosystem covers the components of the hydrological system: lakes, rivers, streams and wetlands, but is defined also by floodplains, catchments and estuaries which constitute complex and interrelated hydrological systems. Each of these components function in a larger ecological landscape influenced by the other components of the hydrological cycle including adjacent terrestrial systems. Management of the ecosystem involves ensuring that flora and fauna exist in harmony with their environment. Changes to the ecosystem occurring naturally are usually slow to make an impact. Man-made changes can upset the balance of the ecosystem and cause it to be unstable. Damage may be irreversible, long-lasting and cause further negative effects. Ecosystem management principles require that changes made to the aquatic environment are environmentally sensitive and will not have an adverse impact on other components or the entire ecosystem.

- **Environmental analysis**

Various forms of environmental analysis can be used to identify the potential environmental impacts of a project. In cases where the environmental impact is likely to be significant due to the size and type of the project, a full Environmental Impact Assessment can be undertaken.

- **Environmental economic valuation**

The three main approaches to valuing environmental impacts are: using market prices for the physical effects of environmental change on production; the use of stated preferences (what people say their environmental values are); various kinds of revealed preferences (inferences drawn from peoples' actual behaviour).

- **Environmental sanitation**

Environmental sanitation aims to achieve safe, non-polluting human waste disposal in rural and urban areas, recognising that the nature of sanitation systems has important implications for the quality and safety of the environment as a whole. In many crowded areas where waste disposal presents a health and convenience problem of significant proportions, sewerage is impracticable for cost reasons; its heavy use of water for flushing and the level of contamination it can introduce into waterways also renders it undesirable and costly from an environmental perspective. Over-dependence on 'flush and discharge' for human waste disposal in an era of increasing water scarcity has led to calls for an 'ecological' approach to sanitation, in which solid wastes and liquid wastes are separately disposed and water for flushing used sparingly if at all. The thrust of environmental sanitation is that on-site disposal via latrines is the preferred system for low-income areas. Many latrine systems also have the advantage that their stored waste contents can over time be used as nutrients for food production; in rural areas they can be used directly by householders, and in urban areas, sold as a fertiliser product for income-generation purposes. However, latrines – especially cheaper models – can be poorly constructed and insanitary, failing to confine waste adequately to prevent contamination of surrounding soil and groundwater and presenting a health hazard at times of seasonal flood. To overcome these problems and others associated with insufficient attention to the environmental implications of sanitation systems, more research is needed both into low-cost and higher-cost technologies and into methods of recycling and treatment.

- **Gender**

Since the UN Decade for Women (1980–1990), women's multiple roles in development have been much more widely appreciated. Women used to be seen primarily as beneficiaries, especially of social services such as maternal and child health and domestic water supplies; today their role as actors, both in terms of their contribution to the household and community economy, and as domestic and community managers, is also appreciated. In the past, women's development activities were seen as separate from the mainstream. Once it was recognised that they are actors in all development activities, a word was needed which would enable development planners to take into account special issues arising from women's and men's different social as compared to biological roles; hence the use of 'gender' for this purpose. A 'gendered' approach is one in which the different roles and viewpoints of women and men have been identified. The impact of any intervention on men as well as on women has to be assessed, but the reality is that women generally have less access than men to land, training, education, employment, leisure opportunities, and political power. Gender analysis allows planners to identify existing disparities, with a view to helping correct them or at least to avoid reinforcing them.

- **Hygiene (or health) education**

It is nowadays regarded as axiomatic that public health benefits are unlikely to be gained from basic water supply and sanitation service schemes in low-income communities unless their installation is accompanied by programmes of hygiene or health education. This is one of the critical items of 'software' in BWSS now given emphasis alongside appropriate 'hardware'. Experience has shown that
(a) a water supply may be an important felt need among communities, but for survival, convenience, and burden-reduction reasons, not for protection of family health; (b) the germ theory of disease and the threat posed by pathogens are not well-understood among uneducated populations; (c) low-income communities frequently ignore the need for safe waste disposal as a health protection measure; (d) as a result of insanitary storage practices, lack of hand-washing, and poor excreta disposal, water which was safe at the point of collection frequently becomes contaminated. Hygiene education is needed to correct this situation. Agents and organisations suitable for the delivery of hygiene education include health department workers, sanitation officers, NGOs, and teachers. There is extensive experience with good hygiene education programmes (including school health education) which can be called upon.

- **Indigenous Technical Knowledge**

This term is used to describe the existing technical knowledge in local societies/cultures. ITK is particularly important for basic water supply, sanitation and irrigation activities since it has been used since time immemorial in the following contexts: well-digging and management; gravity-fed ponds; irrigation works; control of seasonal flows by terracing, diversion, dams, aqueducts, etc.; water-lifting. ITK often fulfils criteria of appropriateness and cost-effectiveness, and can be used as a basis for Participatory Technological Development (see below).However, development professionals, who may even develop parallel systems without realising that ITK systems exist, often ignore it. ITK is most effectively gathered by using participatory approaches and observation. Local people often do not know that a particular piece of local technology is unique, and they can also feel threatened by technology from outside. It is therefore important for them to understand that their technology is as valid as modern counterparts.

- **Integrated water resources management**

'Integrated water resources management' (IWRM) expresses the idea that water resources should be managed in a holistic way, co-ordinating and integrating all aspects and functions of water extraction, water control and water-related service delivery so as to bring sustainable and equitable benefit to all those dependent on the resource. IWRM therefore takes account of: natural aspects of the water resources system (surface water, groundwater, water quality); water uses in all sectors of the economy and for all purposes, including consumptive (agriculture, industry, domestic) and non-consumptive (ecosystems, hydropower, fisheries, recreation, navigation and flood control); the institutional framework for management of the resource; national objectives and constraints (social, legal, economic, financial, environmental); and the spatial variation of resources and demands (upstream-downstream, basin-wide usage, inter-basin transfer).
IWRM implies a concerted attempt to moderate between competing or conflicting demands by users and stakeholders. Effective IWRM will therefore be a dynamic and interactive process involving consultation across sectors, a high level of communications activity, and an appropriate institutional, legal and financial framework. The EU recognises the importance of IWRM in its Water Resources Framework Directive.

- **International water law**

In 1997, the UN General Assembly adopted a Convention on the Law of the Non-navigable Uses of International Watercourses aimed at guiding states in negotiating agreements on specific watercourses, and invited member states and regional economic integration organisations to become parties. This is the most recent body of international legislation for negotiation and conflict resolution concerning transboundary waters.

- **Knowledge, Attitude and Practice (KAP) studies**

KAP studies are used to establish existing knowledge, attitudes and practice *vis à vis* basic health and hygiene, including those which relate to water and sanitation. These studies may be critical to reaching an understanding of whether underprivileged communities appreciate the connection between water, excreta, germs and disease, and what existing beliefs and behaviours need to be changed in order for provision of services to lead to health impacts. If the principal values attached to water are spiritual, or have to do with temperature or taste, a new and safe source may not necessarily be valued. KAP studies have often shown that convenience, and savings of women's time and energy, are rated much more highly than health benefits. KAP also has an influence on quantity of water used in the household, types of use, and other health-related water behaviours. Methodology for KAP studies is available in the social survey literature. (See also Social data collection)

- **Marginal cost pricing**

'Marginal cost pricing' expresses the theory that the net benefits of an economic activity are maximised when prices are equal to the marginal cost of production. This is because prices measure consumers' marginal willingness to pay, and therefore the value, of a commodity or service. The marginal cost is the quantity of resources, which must be employed to produce a single extra unit of the commodity. When price equals marginal cost, it indicates that the cost of

the marginal unit of production is just equal to, and therefore justified by, the value of the extra consumption. In the case of water resources, the 'cost of production' should be interpreted to include the impact on the environment. Damage to the environment can lower welfare directly (e.g. through reduced amenity), or indirectly, through the need to spend more on water treatment. Also, any current use must reduce the amount of water available for use in future periods. This would apply to any store of water, such as an aquifer or lake, being used in excess of its recharge rate. Continued exploitation must at some time lead to exhaustion. Hence, current use of the resource has an opportunity cost which is the cost of use foregone in the future. Various formulae exist on which marginal cost pricing policies can be based, which take into account the indivisibilities, which are a feature of water resources, investment.

- **Metering**

Systems of metering for calculating water consumption, and thereby charges owed by the customer per unit of water consumed, are needed in cases where charges or tariffs for water are not set at a flat rate per user. However, it is important to recognise that metering is expensive to install and operate efficiently, and that users are likely to reduce their usage, so that it may not be economic – however apparently desirable – to install a metering system. Any decision to install metering will have to take many factors into account: the value and scarcity/abundance of water; the cost of installing meters, maintaining their security, staffing their inspection, billing customers, etc.; possible customer reactions; the desirability and practicalities of introducing a two-tier payment system, whereby above a certain level, price per unit increases, thus helping reduce waste and increase revenues. Most OECD countries, and a growing number of other countries, use metering for urban domestic water consumption. (See also Tariff structures.)

- **Monitoring Indicators**

Monitoring is the systematic and continuous observation of actual events, and their comparison with the planned situation or outcome. Monitoring is necessary both to check the actual project performance on an ongoing basis, and to measure whether it has achieved the objectives it was designed for. In order for monitoring to be undertaken, indicators are needed about which data can be collected on a regular basis. The selection of useful indicators is critical to the quality of data collected.

- **Non-governmental organisations (NGOs)**

This term is used to describe many sorts of organisations, whose only common characteristic is that they are separate from government, if not from its regulatory control. They are mainly voluntary agencies, charitable bodies, educational institutions, community based interest groups and associations (professional, local, gender, etc.). Thus they are regarded as organised expressions of civil society, and are often suitable channels for development activity and funds. International NGOs have traditionally worked through local and indigenous NGOs as operational partners. The range of NGOs and their technical and managerial capacity is very wide. Many are primarily active in rural areas; some in low-income urban areas; some concentrate on project activity whereas others specialise in advocacy and awareness raising. In recent years, strengthening the capacity of local NGOs has been seen as a means of fostering development and the institutions of civil society, which has a developmental purpose in itself. In some countries, where government service infrastructures are underdeveloped, NGOs have become an alternative or additional conduit to government for development cooperation funds from governmental and multilateral donors. Their role has accordingly been given greater recognition, and has at the same time come under greater scrutiny and regulation by recipient governments. As far as water-related activity is concerned, they are most likely to act as partners with local authorities in the context of BWSS. Their focus on the poor, and their emphasis on participation, favours their involvement at community level.

- **Paris Declaration**

On March 2, 2005, the participants at the Paris High-Level Forum issued the "Paris Declaration on Aid Effectiveness," in which they committed their institutions and countries to continuing and increasing efforts in harmonization, alignment, and managing for results, and listed a set

of monitorable actions and indicators to accelerate progress in these areas. Another principal document coming out of Paris was a "Report on Aid Effectiveness: Review of Progress, Challenges, and Opportunities.

The responsibility of developed and developing countries for delivering and managing aid are condensed in terms of five principles:

1. Ownership - Developing countries set their own strategies for poverty reduction, improve their institutions and tackle corruption.
2. Alignment - Donor countries align behind these objectives and use local systems.
3. Harmonization - Donor countries coordinate, simplify procedures and share information to avoid duplication.
4. Results - Developing countries and donors shift focus to development results and results get measured.
5. Mutual Accountability - Donors and partners are accountable for development results.

The Paris Declaration sets out 12 specific objectives and measurable targets to achieve by 2010. The objectives and targets were not part of the original Paris Declaration; however, the DAC and the World Bank were mandated to set out objectives and targets and established indicators for each of the targets based on country level information. Nevertheless, country development strategies and procurements are based on World Bank information on Poverty Reduction Strategy Papers (PRSP) and World Bank country assessments of policies.

- **Participation**

Although the concept of 'popular participation in development' is far from new, realisation has grown during the recent past that 'participation' must be organised in such a way that it leads to popular involvement in decision-making, not simply in making voluntary contributions of time, effort or payment. Thus, today, participation is understood to mean a process by which people share in decisions relating to policies and actions undertaken by formal bodies on their behalf, and by which they accept responsibility for those decisions. A participatory approach is often one which leads to project beneficiaries becoming actors or managers within a service delivery scheme: in BWSS, as hand pump caretakers, for example, or as latrine manufacturers and installers. Basic services schemes usually include the establishment of local Water Committees, with responsibilities for community involvement and contributions. A local community-based worker, voluntary or modestly paid, frequently acts as go-between between service providers and consumers as a strategy for fostering participation (see also Basic Services). From the perspective of senior project managers and government agencies, the benefits of participation are that stakeholders have a sense of ownership of the project, are motivated to take an active part in project activities, and their contributions may keep cost low and ensure services are wanted, used properly and maintained. The participation by women as well as men at all levels is regarded as essential. (See also Gender, Participatory Appraisal and Stakeholders.)

- **Participatory Appraisal**

Participatory appraisal (often known as PRA because its origins were in rural appraisal) is a process of gathering information in which people are involved in the collection of information about their own communities. This allows them to become actively involved in the analytical process concerning actual or proposed interventions, mobilising stakeholders and collectively identifying and prioritising, problems and actions to resolve them. Typically the method relies on verbal communication and often incorporates techniques such as structured interviews, focus groups, and mapping.

- **Participatory Irrigation Management (PIM)**

Participatory irrigation management denotes a system of managing irrigation schemes which involves users in all aspects of their development and operation. The principle of participation in irrigation was introduced in the recognition that scheme design and management was not sufficiently responsive to local conditions and needs. Other more pragmatic incentives include the poor performance of many public sector agencies and the drive to reduce government expenditure on operation and maintenance.

- **Participatory Technology Development (PTD)**

PTD focuses on technology development appropriate to the needs, interests and skills of the users, usually starting from technology with which they are already familiar and competent. The purpose of PTD is to enable users to maintain a sense of control and ownership of technology, to provide them with information about the options available to them and the knowledge to assess alternatives. PTD utilises indigenous knowledge – the local knowledge that is unique to a given culture or society. Indigenous knowledge has a value in its own right, enjoys high credibility locally, is not dependent on a high level of education, and has its own channels of dissemination. By taking time and effort to document local knowledge, it becomes accessible to those trying to introduce change. A relationship based on understanding and respect helps to establish a sound basis for participatory approaches.

- **Polluter pays principle**

The 'Polluter Pays' principle is based on an economic approach to pollution control designed to ensure that the polluter bears the cost of the pollution damage and/or the costs incurred in controlling the pollution – otherwise known as the abatement costs. The OECD describes it as 'the principle to be used for allocating costs of pollution prevention and control measures to encourage rational use of scarce environmental resources and to avoid distortions in international trade and investment'. Accordingly, 'the polluter should bear the expenses of carrying out the above mentioned measures decided by public authorities to ensure that the environment is in an acceptable state. In other words, the costs of these measures should be reflected in the cost of goods and services, which cause pollution in production and/or consumption.'

- **Private sector participation**

The participation of the private sector in delivery of water supplies, irrigation and wastewater services has attracted much attention as a solution to systemic problems of service delivery. The basis for its advocacy is the recognition that private commercial companies tend to operate services with greater efficiency and less waste than government-run utilities, while managing to recover their costs. The level of development and the suitability of private sector institutions in different settings will strongly influence the form of public-private partnerships. Options are wide-ranging, from minimum private sector involvement, which could consist of contracting out the management of certain major installations; to full divestiture to autonomous water companies of responsibility for capital investment, operations, and commercial risk.

- **Ramsar Convention**

The Convention on Wetlands, adopted in Ramsar, Iran, in 1971 and since known as the Ramsar Convention, came into force in 1975. It was the first of the modern global intergovernmental treaties designed to protect the environment and preserve natural resources. The Convention's mission, which was re-stated in 1996, is the conservation and the wise use of wetlands by national and international cooperation as a means of achieving sustainable development throughout the world. As of January 1998, 106 states had become Contracting Parties. Membership in the Ramsar Convention entails an endorsement of the principles that the Convention represents, facilitating the development of national policies and actions, including legislation, to make best possible use of their wetland resources. Contracting Parties are committed to designating at least one site meeting Ramsar criteria for inclusion on the list of wetlands of international importance; including wetland conservation within national land-use planning; establishing nature reserves; and consulting with other parties about the implementation of the Convention, especially with regard to transboundary wetlands. The administration of the Convention is entrusted to a secretariat at the IUCN – the World Conservation Union in Switzerland.

- **Regulatory systems**

Regulatory systems are needed to monitor and enforce established laws, agreements, rules and standards (see also Water laws and legislation). These cover such matters as the administration of water rights and allocations; standards of service; water quality; environmental protection; and prices and tariffs charged by regulated utilities. In many countries the regulatory functions are inadequately performed and spread inconsistently between agencies; this is an increasingly

serious deficiency where service delivery or operational functions are being decentralised or devolved to the private sector. Too often, regulatory bodies are established, but the resources, human and financial, are not made available to permit effectiveness. They need to be able to: develop data collection strategies; define regulatory policy and enforcement measures; define methodologies for monitoring; take effective action on breaches of standards; and act as arbitrator in conflicts of interest. Legislation is needed to ensure that regulations are coordinated and enforced.

- **Re-use and recycling of water**

Freshwater scarcity is now a major issue in many areas of the world. Additional sources of water are therefore required – especially for agriculture, which is a major water user. The re-use or recycling of drainage water, wastewater, brackish water or polluted groundwater can be economically and environmentally beneficial and practicable in many settings. However, these water sources require careful management. The two main re-use techniques are: blending (normally for drainage water) which involves the mixing of marginal quality water with good quality water to reduce the concentration of pollutants; and treatment which involves either high-cost treatment works or low-cost robust systems such as constructed wetlands, soil aquifer systems or stabilisation ponds to remove pathogens and undesirable trace elements. Stabilisation ponds can achieve water of good enough quality to use for unrestricted irrigation based on WHO (1973) Guidelines. The re-use of drainage water for irrigation is already extensively practised in Egypt, Pakistan and USA. The re-use or recycling of water for domestic purposes will increase as low-cost techniques for treating water become more widespread.

- **River Basin Organisations (RBOs)**

The river basin as a planning and management unit for water resources has been seen as a means of developing an integrated approach. Its closed geographic boundary system permits various sectors and users in a basin to work together: agriculture, flood control, industry, settlements, communities, etc. Since these water uses fall under the aegis of different administrative departments, a survey is needed to identify those present in the basin, their various roles and capacities, and how they will inter-relate, before an RBO can be established. RBOs have proved their worth in the following areas: watershed management including erosion control; data collection and storage for surface water flows; land-use planning and flood risk prevention; the facilitation of demand management decisions based on a comprehensive understanding of the uses of water and their relative values within the basin; coordination between the various sector authorities present in the basin and with stakeholders. Shortcomings include the fact that hydraulic boundaries do not match aquifer boundaries and water table over-exploitation and pollution of groundwater can easily be neglected.

- **Social data collection**

This term is self-explanatory; the recent past has seen a growing emphasis on social data collection given that many development projects have failed because they have been 'rejected' or simply not perceived as beneficial and therefore ignored by those they were intended to benefit. Social data is likely to fall within the following parameters: before and after an intervention; over time; comparing like with like; measuring increase or decrease. Methods of collecting data of structure, while seen as disciplined and managerially accountable, tend to disallow participation by stakeholders in service delivery decision-making distant from the centre. However, the 'lowest appropriate administrative level' should not be a level without the resources, clout, or technical expertise to take informed and effective decisions. Subsidiarity must not be allowed to mean abandonment of responsibility, but rather encourage the mobilisation of resources and inputs at all levels, and capacity building to allow greater decentralisation of decision making on a progressive basis. which reflect the real needs and attitudes of local people participatory rural appraisal (PRA) , rapid rural appraisal (RRA), and Knowledge Attitude and Practice (KAP) studies. All these are covered in the literature on social survey methodology.

- **Social Impact Assessment (SIA)**

Social Impact Assessment is a method of finding out how a community or set of communities are likely to experience the intended outcomes of a project; and whether these are likely to

affect their lives in such a way that they will reject the project, experience it either negatively or positively, and what level of ownership and responsibility for it can be anticipated.

- **Stakeholders**

A stakeholder is a person or a group of people who have a direct interest in the project because its existence will materially affect their lives. The interests of stakeholders will be established by dialogue with them, as will their attitudes and reactions to the project and the demands it may make upon them, and they are therefore crucial to the participation process. The identification of stakeholders through stakeholder analysis at an early stage is therefore essential. Stakeholders may include: project beneficiaries; local people who are not beneficiaries; NGOs; community-based organisations such as women's groups; government departments and agencies; private producers and entrepreneurs; farmers' associations; fishermen; local artisans; industry; trades unions; professional associations (e.g. engineers); donors; consultants; councillors and other political representatives. It is important to include minority groups, low status groups and the poorer groups in society.
Stakeholder analysis is also used to assess the relationships between the project and all the actors. It can then be used as a basis for designing approaches to build on those relationships, where they are positive, or improve them where they are negative.

- **Social mobilisation**

Social mobilisation is the term used to describe a planned effort to mobilise population groups, community and political leaders and other stakeholders behind a set of programme objectives and activities. A social mobilisation campaign could include a National Day (for example, for Sanitation) launched by the President or a top political leader. Groups within society, including NGOs, local administrators, schools, and government departments can be invited to undertake special activities up to and on the Day, and efforts made to ensure maximum media coverage. Social mobilisation can be a means of expanding communications channels and putting across messages about public health or environmental protection to a wide range of audiences. (See also Communications techniques.)

- **Subsidiarity principle**

The principle of subsidiarity has been recognised as an internationally agreed principle governing water-related activity. As expressed in the Institutional and management principles in Chapter 2 of these Guidelines: 'Responsibilities for water-related services and resource management need to be decentralised to the lowest appropriate administrative level according to the concept of subsidiarity.' The intent of this principle is to discourage the perpetuation of centralised and hierarchical command structures in authorities responsible for water resource management. This type 221 of structure, while seen as disciplined and managerially accountable, tends to disallow participation by stakeholders in service delivery decision-making distant from the centre.
However, the 'lowest appropriate administrative level' should not be a level without the resources, clout, or technical expertise to take informed and effective decisions. Subsidiarity must not be allowed to mean abandonment of responsibility, but rather encourage the mobilisation of resources and inputs at all levels, and capacity building to allow greater decentralisation of decision making on a progressive basis.

- **Tariffs**

Tariffs or charges raise revenues for water services and are necessary for the operation and development of water supply and wastewater services. They also help to underline to users that water is a valuable resource. The most common kind of water charge is a flat-rate charge based on property values. The flat-rate charge has the benefits of certainty over the level of revenue and ease of administration and collection. Its major disadvantage is that charges are not related to the actual level of consumption. Thus this kind of charge cannot serve any economic purpose. Once the annual charge is paid, water becomes free, hence users have no incentive to restrain their consumption. The alternative to flat rate charges is volumetric charges, which vary according to the amount of water consumed (see also Metering). Most volumetric tariffs are of the two-part kind, with both fixed and varying elements. Some systems entitle the user to a free allowance

of water for basic household needs, before volumetric charges begin to apply. Seasonal tariffs impose surcharges on water consumed at times of the year when it is scarcer and more costly to supply. In emergencies, such as drought, water may be rationed, or certain uses to be prohibited. Different systems of tariffs are needed for irrigation; industrial water usage; and for waste and wastewater removal and treatment when this is not automatically coupled to water supply.

- **Tariff structures**

The criteria for fixing the structure of tariffs are as follows:
(1) The financial yield should enable the provider to cover the full costs of operating and maintaining water supply (and wastewater) services and meet capital costs where possible.
(2) The tariff should reflect the cost of supplying each unit of water to the consumer, so that costs and benefits of the water can be equalised at the margin to ensure an 'efficient' allocation of resources. The tariff should also signal the relative costs of providing water to different classes of consumer, at different times and in different locations, so that uses with less social importance are charged at higher levels than those with more.
(3) The tariff system should be seen to be 'fair'. It must bear some relationship to ability to pay – poor consumers should receive special consideration. But fairness also implies some link between payments and the amount of water consumed.
(4) It is in the public interest that every urban household should use enough water for personal hygiene, food washing and preparation, and for toilets. Thus there are important public health reasons to ensure that services are used and the tariff should not discourage this consumption. However, nor should it encourage waste.
(5) The tariff should attempt to internalise the environmental costs entailed in water supply, treatment and disposal.
(6) The charging system should be easy for the customer to understand and for the authorities to defend. It should not impose heavy administrative costs nor keep changing. This criterion is likely to run counter to some of the others listed above.

- **Transboundary waters**

The waters of a number of major rivers are shared between two or more countries in the developing world. In some cases, notably in the Indian sub-continent, the geographical basin includes not only more than one single national territory, but several autonomous states within one of the countries. Although the idea of the international river basin organisations (RBOs) enjoys the support of international organisations, particularly UN bodies, it has so far been greeted with only modest success. This is not surprising since a high degree of common purpose is required to reach agreement over the sharing of the waters of large international rivers. However, since this is a potential cause of conflict, notably in the Middle East, efforts to bring the various countries and states together to plan water resources development on a mutually agreed basis clearly need to be emphasised. An organisation – the International Network of River Basin Organisations (INBO) – exists to promote such mechanisms, which can become a catalyst for inter-state cooperation. (See also River Basin Organisations, and National and International Water Law.)

- **UN Millennium Development Goals (MDG)**

In September 2000, during the UN Millennium Summit the Millennium Development Goals (MDG) were adopted by 189 nations and signed by 147 heads of state and government setting up eight goals to be achieved by 2015 as an answer to the world's main development challenges

These are:

1. eradicating poverty and hunger in the world;
2. achieving universal primary education;
3. strengthening gender equality;
4. reducing child mortality;
5. improving maternal health;
6. combating HIV/AIDS, malaria and other diseases;
7. ensuring environmental sustainability;
8. developing a global partnership for development.

- **Virtual water**

'Virtual water' is the nonevident water embedded in water intensive commodities such as food crops. A tonne of wheat, for example, requires 1,000 tonnes of water over 100- 150 days in order to reach maturity. 'Virtual water', if factored into the national water balance sheet, can be the most economically significant form of water in water-short (arid) countries. Rather than use valuable supplies of freshwater for producing crops such as wheat (whose price in real terms has been falling over time), a country can, by importing food, effectively import water. Thus, integrating 'virtual water' into economic and environmental assessments of the agricultural resource base may permit the reduction of water deficits. Around 95 million tonnes of wheat entered world trade in the mid- 1990s, reflecting a 'water-trade' of at least 95 cubic kilometres of 'virtual water' annually. The Middle East and North Africa economies imported about 40 cubic kilometres of 'virtual water' annually in cereals in the mid-1990s.

- **Water laws and legislation**

Laws and regulations provide the framework within which water-related policies are put into effect. However, in many developing countries capacity shortfalls mean that it is difficult to enforce elaborate legislation, so that laws relating to water need to take this into account. Among their key purposes are protection of public health, protection of natural resources, and prevention of unfair pricing. Legal instruments provide the mechanism for translating policy into practical implementation. Rules, regulations and standards provide the authority for management and enforcement agencies. They facilitate cross-sector actions, provide mechanisms for conflict recognition and resolution of competing interests. Effective regulatory systems are particularly essential for decentralised management, where standards may slip and irregularities occur. The major issues in framing water legislation include ownership of the resource, rights of usage and authority to regulate. Water law is also closely linked to land use in many countries.

- **Water-borne diseases**

The term 'waterborne disease' is often used loosely, to describe all diseases carried by water. Strictly, water-borne diseases are those in which the infectious agent is itself carried by water: diarrhoeal diseases including typhoid, cholera and dysentery; and infectious hepatitis. Other diseases are water-washed: skin diseases such as yaws, scabies, leprosy; eye diseases such as trachoma; or water related, in which case the disease is spread via an organism living in water, such as schistosomiasis (via snails) and guinea-worm; they may be insect related, in which case they are spread by an insect that breeds in water or bites near it, such as sleeping sickness (tsetse fly), malaria and yellow fever (mosquito), river blindness (blackfly). Other diseases are spread by poor sanitation; pathogens in human excreta remain exposed or are washed into waterways. These include all diarrhoeal diseases and parasites such as hookworm and roundworm. Many factors in basic water supplies and sanitation projects and irrigation schemes need to take disease control into account.

- **Water markets**

The aim of water markets is to encourage existing water supplies to be used more efficiently, by allowing users to sell their water rights to other consumers. Water markets tend to be preferred by farmers to volumetric charges for irrigation water. All water, not just that which is surplus to the farmer's use, becomes potentially marketable, and farmers have an incentive to drop low-value applications if they can earn more by selling it ('water farming'). Water markets have other advantages:

(1) They recognise traditional water rights, capitalised in the value of land. Farmers become allies in the transfer of water to other users.

(2) They remove the need for large financial subsidies for building and operating irrigation systems, which usually benefit wealthier farmers.

(3) They offer flexibility in responding to changes in crop prices and water values.

The development of efficient water markets depends on a number of conditions, including the ability of the seller to establish ownership at law over the resource, which means that customary rights may be insufficient as a basis for a deal. In addition, for markets to operate in respect of the

public interest, the needs of third parties and the wellbeing of the populations living downstream have to be considered.

- **Water ownership**

It is important to distinguish between ownership of water, and the right to have access to water and use it. Regulation of the resource can only arise out of an authority, explicit or implicit, that the government has the right to manage the resource in the public good. Most governments expressly own water, and the protection of the resource is therefore a public function to which individual rights are subservient. The right to use water is based either on customary or statutory claims. In order to be regulated, these must be clearly identified. Customary rights may include the right to expropriate, use or trade water, on which can be built systems of community ownership or use and water 224 charges. While building upon existing systems is often the surest and most acceptable route to implementation, systems based only on customary rights may not be able to assure efficient and equitable allocation of a scarce resource. A system of water law needs not only mechanisms of ensuring access to water (water rights) but also a system of obligations regarding usage and control of the levying of water charges by individuals (restriction of rights).

- **Water quality standards**

Whether water quality is satisfactory will depend on its intended use (e.g. drinking, other domestic usage such as bathing, irrigation, industrial use). Factors such as scarcity will also affect the quality standards applied. Setting these standards, which should be enshrined in law, is the responsibility of the government regulatory authority. WHO issued international guidelines to facilitate this process (WHO, 2011). Some variables are critical to human health and should be checked whatever the level of service; for example, for drinking water, E. coli and total coliform bacteria should not be detectable in any 100 ml sample. However, the high level of public health importance placed on water quality in municipal water and wastewater services may not be appropriate for basic water supply services. Studies have shown that water quantity often plays a more significant role than water quality in improving health and reducing morbidity from water-related disease in low-income communities. The time, energy and difficulty of water-hauling means that, typically, very little water is used in the household for any purpose, and this coupled with inadequate means of excreta disposal has a greater impact on health than lack of safe water. In addition, water often becomes contaminated between the source of supply and its use (see Hygiene education, above). Thus, obtaining high standards of water quality in basic services schemes may be less important than making available a high volume per capita at a close distance to the home. Measuring water quality is a technical procedure; laboratories and suitable equipment will be needed.

- **Water User Associations**

Water User Associations normally comprise a formal, usually legally-bound, group of farmers (or water users), often grouped around a particular canal or borehole, with responsibility for managing and maintaining the part of the system that serves them. These Associations have come into existence as a result of governmental determination, often with donor support, to devolve some of the responsibility for the management and maintenance of irrigation (or domestic water and wastewater) services from central government onto users. Motivated by the search for efficiency and cost-savings, the creation of Water User Associations can be seen as a form of privatisation, with the government agency adopting the role of service provider rather than operator. Water User Associations can also be seen as a means of community participation and community ownership of services. The degree of responsibility for the service and its maintenance varies from one model to another. In principle, their creation should lead to greater user commitment and reduced government intervention. To date, success with this approach towards devolution of services has varied considerably.

- **Willingness-to-pay (WTP) surveys**

In recent years the planning of water services has been greatly assisted by the spread of market surveys of potential users. These surveys aim to uncover users' preferences for the proposed service, and what they would be willing to pay for it (hence the name, willingness-to-pay, or

WTP surveys). These surveys provide a variety of information about householders' current sources of water; the volume of water used for different purposes; their preferences about the proposed service; what they are now paying for water, and what they would be prepared to pay for a specified improvement; and whether they would connect up to a new supply source. These surveys are equally applicable for sanitation and sewerage.

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WATER RELATED INSTITUTIONS WEBSITES:

Australian Mekong Resource Centre:
http://www.mekong.es.usyd.edu.au/

Center for Environmental Economics and Policy in Africa:
http://www.ceepa.co.za/

Coastal Services Center (NOAA):
http://www.csc.noaa.gov/

Dutch NRC Handelsblad newspaper:
http://www.nrc.nl/

European Parliament:
http://www.europarl.europa.eu/

EUROCLIMA:
www.euroclima.org

EU Legislation Glossary:
http://europa.eu/scadplus/

European Environmental Agency:
http://www.eea.europa.eu/

FAO's information System on Water and agriculture (Aquastat):
http://www.fao.org/nr/water/aquastat/

FAO Water:
http://www.fao.org/nr/water/
http://www.fao.org/climatechange/

Global Water Partnership:
www.gwpforum.org/

Global Policy Forum:
http://www.globalpolicy.org/

GWP toolbox:
http://www.gwptoolbox.org/

International Institute for Environment and Development:
http://www.iied.org/

IMF- Poverty Reduction Strategy Papers:
www.imf.org/external/NP/prsp/prsp.asp

International Water Sanitation Center:
http://www.irc.nl/

Intergovernmental Panel on Climate Change:
http://www.ipcc.ch/

WEBSITES

International Institute for sustainable development:
http://www.iisd.org/

International Union for Conservation of Nature:
http://cms.iucn.org/

IHP-HELP Centre for Water Law, Policy and Science:
http://www.dundee.ac.uk/water/

Joint World Bank/IMF 2005 PRS Review:
http://siteresources.worldbank.org/INTPRS1/Resources/PRSP-Review/2005_Review_Final.pdf

Japan International Cooperation Agency:
www.jica.go.jp/

Mekong River Commission:
http://www.mrcmekong.org/

Norway renewable Energy Website:
http://www.renewableenergy.no/

OECD-Water Portal:
www.oecd.org/water

PSIRU research:
http://www.psiru.org/

Postdam Institute for Climate Impact Research:
http://www.pik-potsdam.de/

Pacific Institute:
http://www.worldwater.org/

Swedish International Development Agency:
http://www.sida.se/

Stockholm Resilience Center:
http://www.stockholmresilience.su.se/

The Nordic Africa Institute:
http://www.nai.uu.se//

The Nile Basin Initiative:
http://nilebasin.com/

TU Delft:
http://www.tudelft.nl/

The International Center on Small Hydro Power:
http://www.inshp.org/

The right to water website:
http://www.righttowater.info/

The International Year of Sanitation 2008 website:
http://esa.un.org/iys/

The UN Refugee Agency:
http://www.unhcr.org/

The International Fund for Agricultural Development (IFAD):
http://www.ifad.org/english/water/

UNESCO Water Portal:
http://www.unesco.org/water

United Nations Economic Commission for Europe:
http://www.unece.org/env/water/

Waternunc the network for water businesses:
http://www.waternunc.com/

Waternet- geopolitics of water scarcity in the Middle East:
http://www.waternet.be/

Waterwiki:
http://waterwiki.net/

Wetlands International Global Site:
http://www.wetlands.org/

World Resource Institute:
http://www.wri.org/

World Water Council -right to water:
http://www.worldwatercouncil.org/

World Bank water:
water.worldbank.org/water/

World Water Forum (6th):
www.worldwaterforum6.org

ACRONYMS

- ACP : (Sub-Saharan) Africa, Caribbean and Pacific
- ADB: Asian Development Bank
- A: Agricultural
- BS: Basic Services
- COI: Cost of illness
- CV: Contingent valuation
- CVM: Contingent valuation method
- DAC: Development Assistance Committee
- DANIDA: Danish International Development Assistance
- DC: Decentralised cooperation
- DCP : Data collection platforms
- DESA: Department for Economic and Social Affairs
- DFID: Department for International Development
- DG: Directorate General
- DM: Demand management
- EA: Environmental analysis
- EC: European Commission
- EDF: European Development Fund
- EIA: Environmental Impact Assessment
- EIB: European Investment Bank
- EIRR: Economic internal rate of return
- EOS: Division of Operational Support in Environmental Health
- EU: European Union
- FA: Focus Area
- FAO : Food and Agriculture Organisation
- FEA: Financial and economic analysis
- FIRR: Financial internal rate of return
- GAD: Gender and development
- GATT: General Agreement on Trade and Tariffs
- GWP: Global Water Partnership
- HC: Human capital
- IADB: Inter-American Development Bank
- ICID: International Commission on Irrigation and Drainage
- IFAD: International Fund for Agricultural Development
- IHE: International Institute for Infrastructural Hydraulic and Environmental Engineering
- IHP: International Hydrology Programme
- IIMI: International Irrigation Management Institute
- INBO: International Network of River Basin Organisations
- IRC: International Water and Sanitation Centre
- ISPAN: Irrigation Support Project for Asia and the Near East
- ITK: Indigenous technical knowledge
- IUCN : The World Conservation Union

- IWRM: Integrated Water Resource Management
- KAP: Knowledge, attitude and practice
- M&E: Monitoring and evaluation
- MVPE: Market valuation of physical effects
- MWWS: Municipal water and wastewater services
- NGO: Non-governmental organisation
- NPV: Net present value
- O&M: Operation and maintenance
- ODA: Official development assistance
- ODI: Overseas Development Institute
- OECD: Organization for Economic Cooperation and Development
- PCM: Project Cycle Management
- PTD: Participatory Technology Development
- RBO: River basin organisations
- RC: Replacement cost
- SADC: Southern African Development Community
- SIA: Social impact assessment
- SIDA: Swedish International Development Cooperation Agency
- SSA: Sub-Saharan Africa
- SWAp: Sector Wide Approach
- TCM: Travel cost method
- TOR: Terms of reference
- UK: United Kingdom
- UN: United Nations
- UNCED: United Nations Conference on Environment and Development
- UNCSD: United Nations Commission for Sustainable Development
- UNDP: United Nations Development Programme
- UNECE: United Nations Economic Commission for Europe
- UNEP: United Nations Environment Programme
- UNESCAP: United Nations Economic and Social Commission for Asia and the Pacific
- UNESCO: United Nations Educational, Scientific and Cultural Organisation
- UNGASS: United Nations General Assembly Special Session
- UNICEF: United Nations Children's Fund
- US: United States
- USAID: United States Agency for International Development
- VIP: Ventilated improved pit
- WHO: World Health Organisation
- WID: Women in development
- WMO: World Meteorological Organisation
- WR: Water resources
- WSS: Water supply and sanitation
- WSSCC: Water Supply and Sanitation Collaborative Council
- WTP: Willingness to pay
- WWC: World Water Council

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