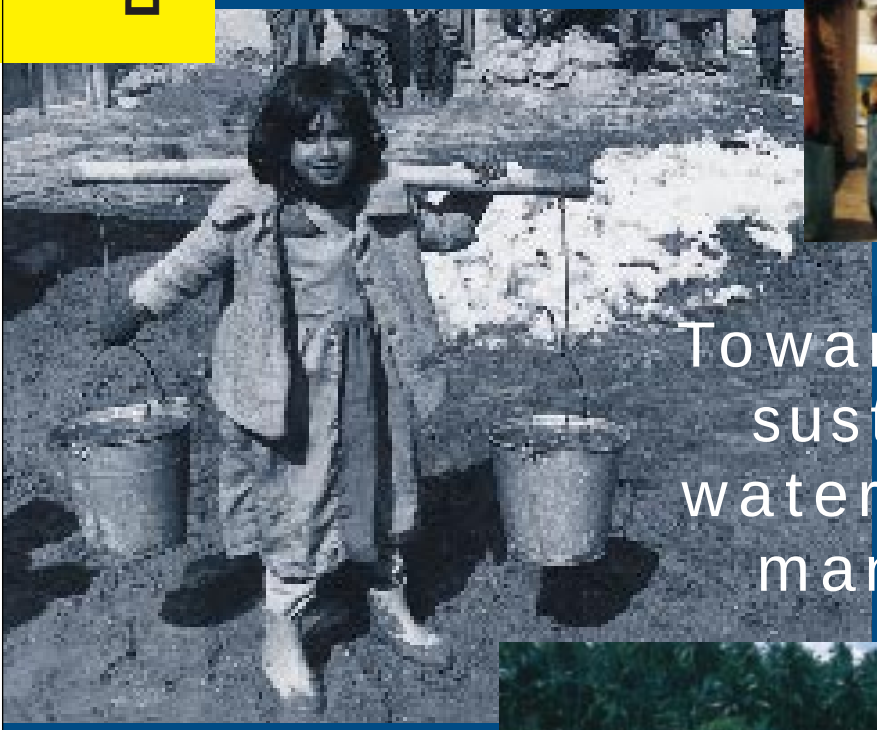
DEVELOPMENT

Guidelines for water resources development co-operation

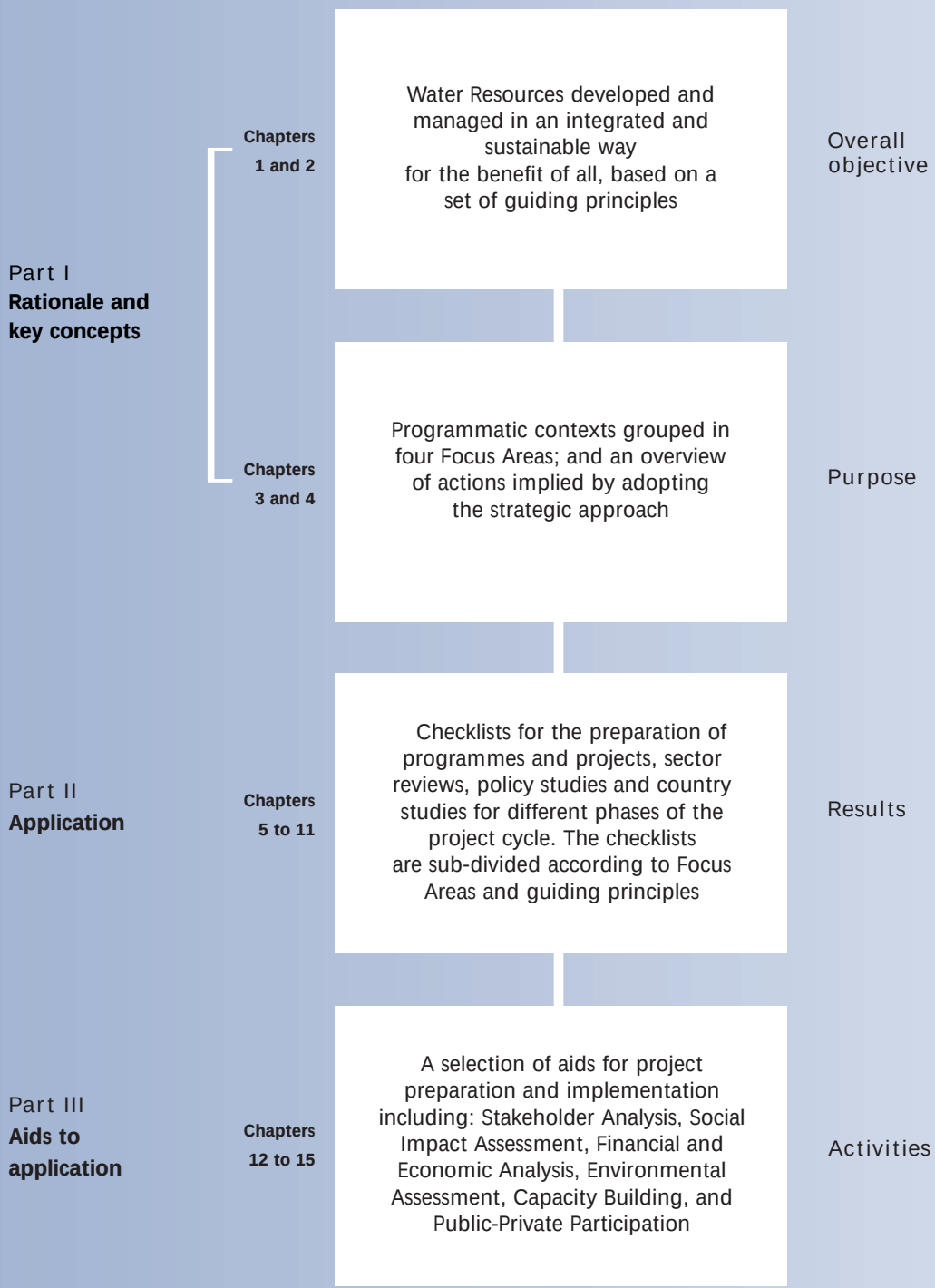


Towards sustainable water resources management

A Strategic Approach

EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR DEVELOPMENT
DIRECTORATE-GENERAL FOR EXTERNAL RELATIONS
AND NORTH-SOUTH CO-OPERATION

The Strategic Approach



Guidelines for water resources development co-operation

Towards sustainable water resources management

A Strategic Approach

European Commission
September 1998

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Abstract
Towards sustainable water resources management: a strategic approach gives guidance to practitioners involved in the development and management of water resources in developing countries. The book is divided into three parts, the first of which sets out the rationale for a strategic approach to development co-operation in water-related activity, and the key concepts it embraces. The second part contains practical suggestions to equip the user to apply the strategic approach to the actual planning and implementation of water-related activities. This part follows the phases of Project Cycle Management adopted by the European Commission in managing development co-operation. Aids for the application of the strategic approach are set out in part three. This provides supporting material to help users put into action the concepts and practical suggestions set out in parts one and two.

Printed in the UK

Foreword

João Deus Pinheiro

Manuel Marin

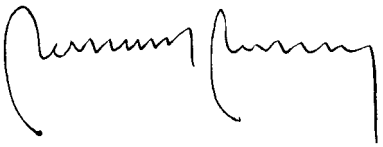
These Guidelines for European Commission development co-operation in water resources development and management represent an important step in our efforts to confront the increasing stresses on the world's supply of fresh water. Few countries feel these issues more critically than our partners in Africa, Asia and elsewhere in the developing world.

We believe that the strategic approach proposed in these Guidelines helps turn an important corner in water-related development co-operation. It advances the principles articulated at international level and provides a framework in which they can be applied in an organised fashion. Thus, a concerted effort has been made to bridge the gap between the principles and their sound and systematic operational practice.

The Guidelines have been prepared by the European Commission in close consultation with an expert group of representatives from the European Union. During the preparatory process, the Commission consulted with many of its own partners in the developing world to ensure that the final outcome was comprehensive, usable, and highly responsive to their needs. Although the main purpose of the Guidelines is to improve the quality and effectiveness of the Commission's development co-operation, harmonisation with the latest international thinking will assure that they enjoy a far wider application in water-related activity generally.

At the European Commission water resources management is regarded as a priority that has a direct bearing on Article 130u on EC development co-operation policy of the Treaty on European Union. Since the Water Decade of the 1980s, European countries have increasingly been at the forefront of efforts to improve service coverage among the poverty-stricken and under-served, and to do so within economic and environmental resource constraints. The EC and its partner countries aim to achieve a sustainable balance between social and economic objectives, rational management of the environment and enhancement of natural and human resources. We regard a balanced approach to water resources and their use across the whole spectrum of human activity as of great importance in our development philosophy.

We confidently expect that these Guidelines will play an important role in improving the quality of our development co-operation in water-related activity, and sincerely believe that our partners throughout the developing world will gain the ultimate benefit.



João Deus Pinheiro
Member of
the Commission

Manuel Marin
Vice-President
of the Commission

Preface

These Guidelines have been produced for Directorates-General VIII and IB under the Environment in Developing Countries Budget Line B7-6200. They aim to improve the quality and impact of the European Commission's co-operation with developing countries in water resources management and provision of water-related services. Their use will enable water-related co-operation to make a larger contribution to the process of sustainable social and economic development.

These Guidelines set out a strategic approach to the management and sustainability of water resources and the delivery of water-related services, providing a broad perspective of all aspects of water resources activities. They are designed to respond to the needs of EC staff and those of partner country governments and other professionals working for the Commission and its Delegations. Water issues are cross-cutting and the Guidelines should enable experts and non-experts to cross disciplinary and sectoral boundaries.

The starting-point for the Guidelines is the emergence of an international consensus on water resources issues. A series of international conferences during the 1990s – on water issues in their own right, and on water resources as an essential component of sustainable development and environmental protection – has been accompanied by a process of academic and practitioner debate within a wide range of disciplines and professions. The Guidelines accept the pre-existence of consensus around the core principles to be applied in water policy and do not attempt to re-argue the case on their behalf. Rather, the core principles have been used to generate sub-sets of principles to facilitate their practical application.

The Guidelines have been produced in the context of a EC-EU Member States expert working group on water initiatives, under the chairmanship of Amos Tincani of DGVIII. The work has been carried out under the direction of André Liebaert of DGVIII and his colleagues on the steering group, by a team of experts from several organisations led by HR Wallingford of UK in association with the Office International de l'Eau. The team leader was Alan W. Hall and the co-writer and editor Maggie Black. Valued contributions and comments have also been received from many individuals, and staff from the EU Delegations.

Contents

Part II of the Guidelines contains practical suggestions to equip the user to apply the strategic approach to the actual planning and implementation of water-related activities during the course of the project cycle. For all stages of the cycle, checklists have been prepared. Issues and responses are grouped according to a set of problem statements within the framework of the principles established in the strategic approach. In the **Identification** and **Formulation** stages, each programme context (Focus Area) is handled separately since issues and responses differ. In other phases, issues and responses are generic, and the same set of checklists applies in every Focus Area.

Part III: Aids for the application of the strategic approach 205

Part III of the Guidelines contains supporting material to aid users who are putting into action the strategic approach described in Parts I and II.

Introduction

The centrepiece of the Guidelines is a strategic approach for the equitable, efficient and sustainable management of water resources.

The Guidelines: A Summary

Aim and scope

The management of freshwater resources, and of services drawing upon water for functions central to human life, is of critical importance to healthy social, economic, and political well-being. Stresses exerted on the world's water by demand from growing populations with changing consumption patterns, and by pollution and lack of environmental controls, have pushed water concerns high on the international agenda. Effective water resources development and management is recognised as a key component of 'environmentally sustainable development'; poor management of the resource can easily become a brake on socio-economic development.

The European Union, through the European Commission (EC) and the Member States, has made a significant contribution to the international debate on the impending world water crisis and the measures needed to address it. Full support has been offered to efforts at the international level, through the UN system and in inter-ministerial councils, for new initiatives on freshwater, and for the recommendations agreed at the Sixth Session of the UN Commission for Sustainable Development in April 1998. The preparation of these Guidelines for Water Resources Development Co-operation is a contribution to translating the consensus at the international level into actual co-operation activity. Although principally intended for use in the context of EC development co-operation, the Guidelines are intended for use by decision-makers in government, the private sector, civil society and international organisations of all kinds involved in water resources management.

The centrepiece of the Guidelines is a '**strategic approach for the equitable, efficient and sustainable management of water resources**'. The approach is based on internationally agreed core principles concerning the need to protect the eco-system, and to extend the health-giving and productive properties of freshwater resources equitably, efficiently and sustainably among humankind, with special emphasis on poorer and underserved people. It provides a comprehensive framework for all activities relating to water resources development; its application involves a radical change in traditional attitudes towards water management, and the introduction of good practice consistent with the internationally agreed core principles. The strategy covers the full cycle of activity, from national policy-making through implementation of programmes and projects and 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 Guidelines provides a set of practical **checklists** to enable the Guiding Principles at the heart of the strategic approach to be put into effect in different programming contexts, and to identify problem areas likely to be encountered and potential responses.

A number of commonly repeated core activities emerge from the checklists, stressing the importance which needs to be attached to what are known as 'software' – or non-technical – issues. The successful application of the strategic approach requires that these activities be given as high a priority as the technological choices which have traditionally dominated programme and project design. The priority attached to 'software' activities within the approach can be seen as part of the new thinking on water. The intention is to raise their importance to the same level as technological 'hardware', not to supplant it.

These activities almost all relate in some way to management and institutional strengthening. They can be 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 pricing; awareness-building and communications. Attention to such activities will help to make the design and management of water resources interventions more cost-effective, efficient and sustainable.

Structure of the Guidelines

The Guidelines begin with a presentation of the **rationale** for the elaboration of the strategic approach. The strategic approach itself first identifies **guiding principles** for policy development and practical action; it then clusters programmatic activity into four **Focus Areas**, within which the guiding principles are to be applied; and provides an overview of **priority themes for action** implied by use of these frameworks.

The Guidelines' core practical material (Part II) 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 programmatic process by systematic application of the principles. The overall intention is to equip those involved in water-related decisions with a framework of principle and operational philosophy to inform decision-making about water-related investments and actions.

In relation to water, as in all areas of development activity, policy and practice are constantly evolving. The practical suggestions contained in these Guidelines do not provide exhaustive instructions on how to proceed in every project planning and implementation situation, nor do they offer answers to every problem the user is likely to encounter. 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 effective problem-solving within the Project Cycle Management process, not as a definitive and prescriptive manual. (Project Cycle Management, or PCM, is the system for project development, funding, and evaluation used by the EC in its development co-operation activities.)

The Guidelines should enable all users to upgrade the quality of their water-related work; specifically, they elaborate a framework for the EC's own development co-operation relating to water. This framework conforms with contemporary international thinking relating to water resources management and service delivery, and aims to facilitate the application of that thinking within national and sub-national policies, programmes and projects.

The Guidelines are designed to be used on their own, or in tandem with supplementary tools and data. In the interests of brevity, they do not contain a full account of the global situation relating to freshwater in its various uses, and the implications for agriculture, public health, energy, etc., but only summarise trends. Other documents, including *Comprehensive Assessment of the Freshwater Resources of the World* (SEI, 1997), can be consulted for information of this kind; references are contained in the bibliography.

Using the Guidelines

The Guidelines are structured in three parts, as described below.

Part I: The Strategic Approach: Rationale and key concepts

The Guidelines opens with rationale for the strategic approach. It then elaborates its governing principles and the proposed programming framework – divided into Focus Areas – for their application. The term 'Focus Areas' has been adopted from Agenda 21, the key document of the 1992 Earth Summit, as the most straightforward way to describe the programming contexts into which water resources management and service delivery fall.

The chapters in Part I are as follows:

Chapter 1: ***Water resources management: the challenges*** describes the many challenges facing development co-operation relating to water in the contemporary world. It highlights the competing stresses to which the resource is subject, arguing the case for a holistic approach to water husbandry and use. The chapter describes the international consensus on policy and practice that has emerged from the continuing process of macro-level discussion relating to water, and the practical challenges stemming from the new perspective. It also explores key water-related challenges in the contemporary world, including the pressures on resources and freshwater quality imposed by population growth, urbanisation, and environmental constraints, and their potential for conflict.

Chapter 2: ***Managing water resources equitably, efficiently and sustainably: Guiding principles*** sets out the first key element of the strategic approach. It starts by describing the core principles consistent with the international consensus, and proceeds to more detailed principles under the following headings**: institutional and management**; **social**; **economic and financial**; **environmental**; **information, education and communications**; and **technological**.

Chapter 3: ***Managing water resources equitably, efficiently and sustainably: Programmatic contexts*** describes the second key element of the strategic approach: the contexts in which the guiding principles are to be applied. The contexts – or Focus Areas – are as follows: **Water resources assessment and planning**, which includes all activities designed to assess the availability of the natural resource, protect its quality, and plan its use; **Basic water supply and sanitation services**, which covers service provision in rural areas and marginal or poor urban areas, usually consisting of low-technology, community-managed systems; **Municipal water and wastewater services**, which covers major

urban and industrial installations and systems, including wastewater treatment and sewerage systems; and **Agricultural water use and management**, which covers installations and activities related to agricultural use of water, especially for irrigation.

Chapter 4: ***Overview of actions implied by adopting the Strategic Approach*** provides a summary description of the types of action addressed comprehensively and systematically in Part II. These are grouped according to priority themes for action.

Part II: The Strategic Approach: Application

This contains practical suggestions to equip the user to apply the theoretical information provided in Part I to the actual planning, development, and implementation of development activities related to water. Their purpose is to enable users to improve the quality of water-related development co-operation, according to a coherent vision of overall objectives relating to the resource as a whole, and subsidiary objectives relating to the specific programme or project.

The first chapter (Chapter 5) in Part II consists of an introduction to **Project Cycle Management (PCM)**, followed by an introduction to the **checklists**. PCM envisages that projects are planned and implemented within a phased structure; the strategic approach is intended to be applied according to PCM phases. These phases are as follows: **programming**; **identification**; **formulation**; **financing**; **implementation**; and **evaluation**.

Thereafter, separate chapters of the Guidelines (Chapters 6–11) take the form of checklists of key issues and potential responses, according to PCM phases. Some chapters contain checklists which are generic to all Focus Areas; others contain separate sets of checklists specific to each Focus Area. Key issues and potential responses are grouped according to the application of the principles articulated in Part I. Thus, in Chapter 7 on **project identification**, in the checklists for the **Basic water supply and sanitation services** Focus Area, key issues and responses relating to institutional and management questions are grouped, followed by those relating to social issues, and so on through all the categories of principles. For a complete description of their organisation, the user is referred to the introductory section on the checklists in Chapter 5.

The use of the checklists is intended to assist all those participating in the development and implementation of water-related interventions, whatever their existing level of expertise and experience, to ensure that all relevant issues are addressed in a planned and coherent manner. Users will, for example, be able to check that all elements of project design have been addressed; assess whether further studies or supplementary projects are indicated; determine whether the sustainability of the resource and/or the service has been sufficiently considered; review programmatic partnerships, structures, and reporting mechanisms; and advise donor and recipient government officials on appropriate remedial actions.

Part III: Aids for the Application of the Strategic Approach

This part of the Guidelines supplements the core material in Part II, providing technical information which users can draw upon to carry out actions they have identified by applying the checklists in Part II. References are included to studies and manuals which can be drawn upon in water-related work, including EC and other internationally recognised manuals on such subjects as environmental assessment, gender analysis, women in development, participatory appraisal, economic and financial analysis, social impact assessment, capacity building and human resources development, and stakeholder analysis.

The chapters in Part III are as follows:

Chapter 12: ***Glossary of key concepts*** contains definitions of key concepts mentioned in the checklists (and elsewhere in the text). Some of these concepts may not be familiar to all users; or they may sound familiar but their specific meaning within these Guidelines may require elucidation. The concepts in the glossary range from 'capacity-building' to 'gender analysis', 'international water law' to 'tariff structures'; they are arranged alphabetically. **The attention of users is drawn to this chapter, which is designed to be used in conjunction with the checklists and may need to be consulted in advance of applying the Strategic Approach.**

Chapter 13: ***Programme and project aids*** consists of different types of studies and methodologies recommended in the checklists, most of which can be used to build up the information and knowledge base at different stages of the PCM cycle. The intention is to provide sufficient information to indicate the parameters of a particular kind of study and what its outcome would consist of, not a full scale step-by-step methodological manual.

Chapter 14: ***EC Funding Sources for the Application of the Strategic Approach*** describes EC structures and funding instruments in the context of water-related development co-operation, including Decentralised Co-operation.

Chapter 15: ***Standard formats for terms of reference*** contains material standard for all EC development co-operation.

Finally, a **selected bibliography** is provided of the principal policy documents produced by bilateral donors, donor organisations and specialist institutions.

Water resources management: the challenges

Chapter 1

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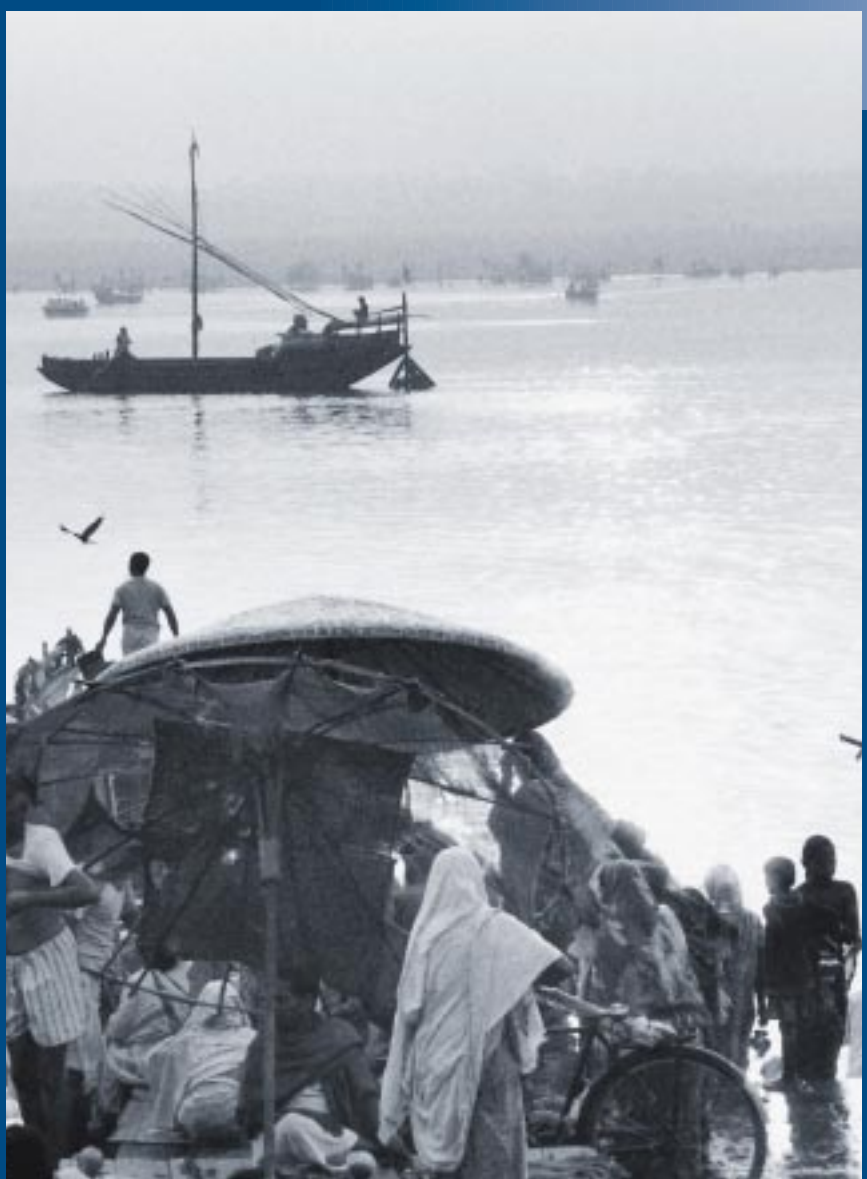
1

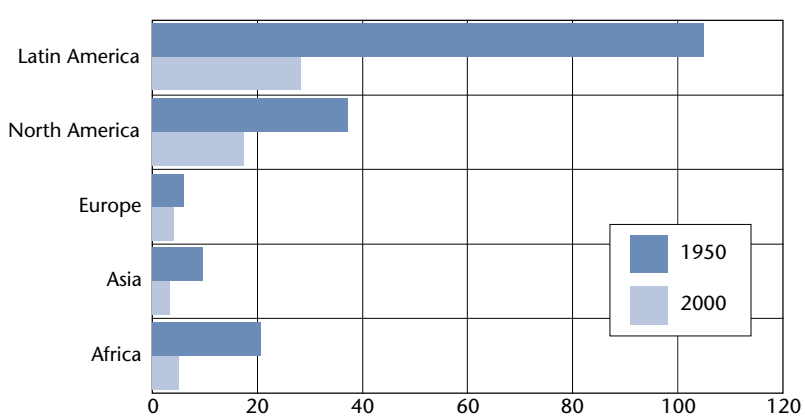
Demands upon the world's finite supply of water pose threats to both the quantity and quality of a commodity essential to human life and health



Water resources management: the challenges

ENVIRONMENTAL STRESSES imposed by population growth, urbanisation and industrialisation have become a prominent theme of international concern in recent years, especially since the 1992 Earth Summit in Rio de Janeiro. One of the natural resources most affected is freshwater. Demands upon the world's finite supply of water pose threats to both the quantity and quality of a commodity essential to social and economic activity of all kinds, and to human life and health. This has conferred on water a new level of political attention, which needs translation into political commitment within and between states to the protection of a vital resource. Current fears concerning climate change merely exacerbate the urgency of the freshwater situation.

There are wide differences regarding availability of water between regions and countries, especially between those in temperate and tropical zones. It is estimated that 230 million people live in 26 countries now classified as water-deficient (mostly in the Middle East, Mediterranean and Sub-Saharan Africa), and the number of affected countries is likely to grow rapidly. Some major urban centres already face serious water shortage and water pollution crises, in which water-dependent agricultural and industrial activity play an important part. Questions relating to water resources management and usage thus cut across many productive and social sectors, including agriculture, fisheries, industry, urban development, energy and public health. At present, few mechanisms exist at suitable levels of government to mediate clashes of interest over water husbandry and use.



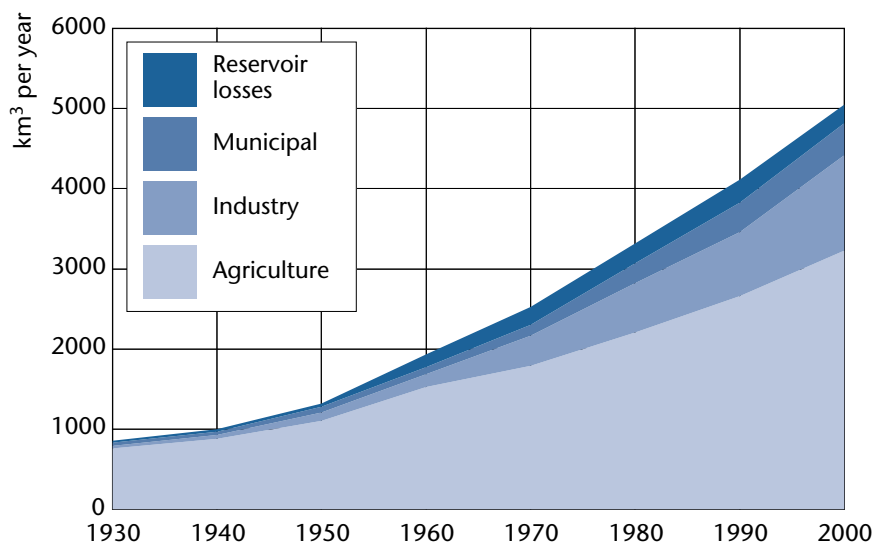
Water availability per capita (000m^3 per capita) *Source: FAO, 1996*

There are real prospects of serious disputes within and between states over water resources in the not-too-distant future.

Water's special character as critical to social and economic activity has granted it a special status in belief systems and, in the modern era, in public policy. Freshwater sources have traditionally been regarded as something in which all members of the human community have rights. Where systems for water supply are the product of public health or other types of engineering, they have almost invariably been provided from the administrative purse or heavily subsidised. And the use of water in the various social and economic contexts has typically been unregulated and charges made for it well below operations and maintenance costs.

There are important implications of this in an era of water stress, among which are water profligacy and wasteful, or mismanaged, investments. In the face of shortage and environmental concern, international fora have called for water to be seen as an economic good with a realistic price-tag, whose costs must be met by consumers to ensure sustainability of services. However, a 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.

Lack of a holistic perspective regarding water has also led to a very dispersed and confused system of water management. Responsibilities for the management of the resource, and the construction of dams, pipelines, pumping stations, treatment plants, sewerage systems, not to mention their maintenance, are distributed around a variety of administrative departments. There is, in reality, no such thing as a 'water sector'. Water-related activities are positioned within specific sectors and managed by sector-based institutions. Water management thus tends to become lost within sectoral interests whose priorities are elsewhere; they have



Estimated annual world total and by sector *Source: FAO, 1993, The state of food and agricultrure*

to do with economic productivity – such as irrigated crop yield, or to social good – such as disease control. As the water resource is finite and its utilisation needs to be equitable, efficient and planned, all sectoral strands should be interwoven. However, integrated and cross-cutting structures are notoriously difficult for governments and donors to create and administer. Water-related schemes and activities are no exception.

The need to examine in tandem 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, has only become widely appreciated in the very recent past; its translation into policy and programmatic work is still in an early phase. To respect this new holistic perspective, and work out ways in which to make the management and protection of water resources compatible with the development of systems serving all types of customers, is a vital part of the challenge facing water-related development co-operation today.

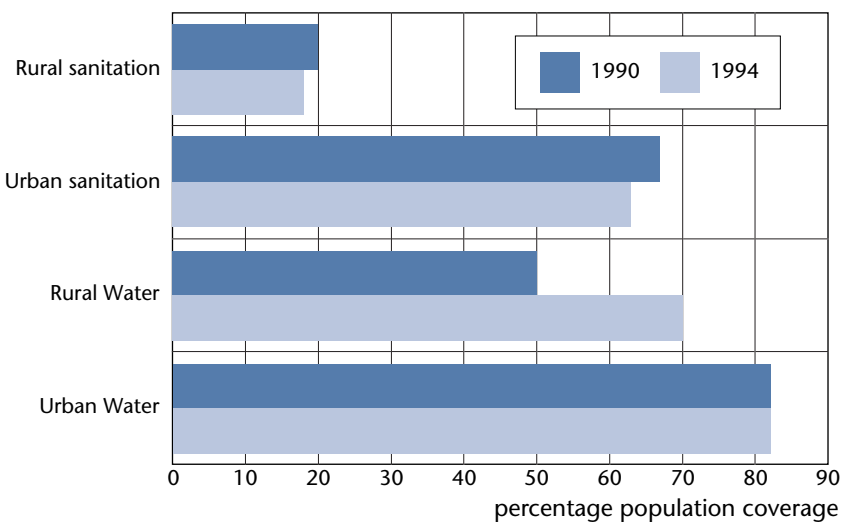
The acceleration of progress in meeting basic water needs

Survival and health

When water first rose to international prominence in the 1970s, it was as one of the 'basic needs' common to all humanity – food, water, shelter, means of livelihood – whose fulfilment had become the stated goal of international development policy. The fulfilment of humankind's basic need for a supply of safe drinking water, as well as for a safe means of disposing of human waste, remains an important part of today's challenge. There has been some progress towards satisfying these two basic needs, but not enough.

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

The UN's 'International Drinking Water Supplies and Sanitation Decade' of the 1980s was declared by the UN Water



Global water and sanitation 1990 and 1994

Conference at Mar del Plata in 1977. The Decade focused on the improvement of public health by the expansion of service coverage; its slogan was 'Water and Sanitation for All'. Despite the increase in attention and resources generated by the Decade, achievements in quantifiable terms fell short of stated targets. Only in the context of rural water supplies did coverage progress manage to outstrip population growth and urbanisation. International commitment was reiterated in 1990 to the goal of 'Water and Sanitation for All by the Year 2000', but nobody now expects the goal to be met. One constraint is the lack of adequate internal and external financing for service spread, for which an estimated $50 billion annually would be required. Resources on this scale, whether from internal or external sources, are unlikely to be forthcoming.

Calls for increases in development co-operation for drinking water supply and sanitation systems have been repeated during the 1990s. In the early part of the decade, investments in this area of water-related activity (the only one for which official development assistance – ODA – totals are available) declined as a proportion of ODA, from 8% to 5%. Since ODA as a whole also declined, water and sanitation therefore received a smaller slice of a smaller cake. Since the mid-1990s, support to water and sanitation has increased, albeit modestly, with many European countries raising their contributions. A high proportion of ODA expenditure has traditionally been concentrated in sophisticated urban water supply and sewerage schemes.

Whatever its shortcomings in meeting its quantitative targets, the Water Decade – at least at the theoretical level – changed the face of international development co-operation in domestic water supplies and public health. This was because Water Decade co-operation pointed up previous shortcomings in policy and practice. These included: over-emphasis on costly and sophisticated technology, which produced services beyond the capacity of management bodies to maintain and sustain; lack of any sense of ownership by service stakeholders and users and their consequent neglect; a failure to apply gender analysis and recognise the role of women in water-hauling and their influence over domestic water quality and use; inadequate emphasis on environmental sanitation, and on health education to enable uneducated service users to appreciate the implications of water and waste disposal for family health; and the need for cost-effectiveness in all areas of activity in order to use scarce resources wisely.

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 has not been accorded the same level of discussion and scrutiny. Agriculture uses more water than any other area of human activity, absorbing around two-thirds of withdrawals from rivers, lakes and aquifers; around 40% of the world's harvest is estimated to depend on irrigation. A higher proportion of future gains in food production – 60% – are expected to come from irrigated land, and there is no doubt that future global food supplies cannot be secured without improvements to irrigation efficiency and adequate investment.

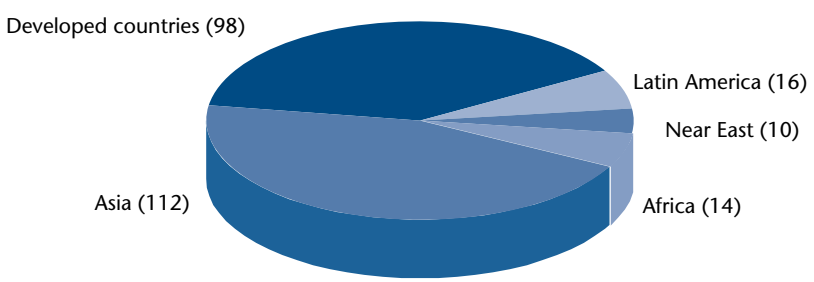
However, donor investments in irrigation have been falling over the past two decades. For example, World Bank investment has fallen dramatically, from US$2.2 billion in 1978 to US$750 million in 1993, and the trend appears to be similar in most external support agencies. This is partly a result of disillusion following past support given

to large-scale construction of dams, canals, and river diversion works. These have gained a poor reputation because of lower than expected economic returns, controversial resettlement programmes, and negative environmental impacts such as soil salinisation and water-logging. Lack of interest in investment in irrigation also stems from low agricultural prices and complacency about the world food supply. The 1996 World Food Summit demonstrated that this complacency was misplaced; concern for world food security is now growing. Environmentally sound ways need to be found of expanding irrigated agricultural production, especially of food, while reducing water use.

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 picture. In many parts of the developing world, industrial usage of water is rising rapidly alongside the urbanisation process. Not only does this impose conflicts of interest over water flow volumes between urban users and farming populations; it can also create severe problems of downstream pollution with far-reaching implications for rural livelihoods and public health. The necessary investments in wastewater treatment – which is seriously under-funded – and the need faced by cities to tap freshwater resources from ever further distances are causing costs to rise and the potential for conflicts between agricultural and industrial users to grow.

The Water Decade changed the face of international development co-operation in domestic water supplies and public health

The challenge, therefore, in terms of accelerating the provision of water services to satisfy basic human needs is not simply one of maintaining a high profile for water needs and reversing the political trend which has led to under-resourcing. It includes absorbing the lessons learned from past mistakes, many of which were highlighted by the Water Decade; it also means addressing



figures in brackets million hectares

Irrigated area by region, 1990

Source: FAO, 1996

all uses of water – agricultural and industrial, as well as human survival and public health – within one strategic approach, and identifying a common set of principles to guide that overall approach and sectoral sub-sets of it.

International thinking on water: the consensus

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 and potential conflict – have already been touched upon. Others also need to be mentioned as part of the context of the new international consensus on water.

The end of the Cold War has provided lasting reverberations in international affairs, including changes in the climate surrounding development co-operation. Economic, environmental and 'common good' arguments have come to assume more importance, both in the justification of development co-operation *per se*, and in the nature of the development approaches favoured by donors. Concern with poverty reduction, democracy and human rights have also increased the emphasis on equity and participatory approaches. The expression of concern has not however been translated into increased levels of ODA, which has been subject to budgetary pressures and undergone a decline.

At the same time, the disappointing results of much development co-operation, coupled with similar disappointments associated with structural adjustment programmes, has led to systemic analysis of the context and modalities of development co-operation. The need for efficacy and cost-effectiveness in the application of ODA resources, both from the perspective of intended beneficiaries and from that of donors, has become compelling for pragmatic reasons, independently of the changing geopolitical and ideological framework.

Although the overall purpose of development co-operation remains the same – to redress imbalances and create opportunities in favour of the world's underprivileged and underserved – a number of new concerns have emerged. Without engagement with these, the overall purpose of co-operation in development is regarded by key international donors as unattainable. These include the need for good governance, institutional reform, administrative decentralisation, participation and involvement of civil society and the private sector. Conditionalities associated with development co-operation today relate to this new paradigm. Its parameters are as pertinent for water-related development co-operation as for other areas, and the new international thinking on water has taken them on board; respect for them is an integral part of these Guidelines.

While the debate on water in the 1980s was largely focused on water and sanitation as adjuncts to public health, in the 1990s the scope of the debate dramatically expanded and the wider focus became the management and use of water as part of environmental protection and sustainable development. The lessons concerning water for meeting basic needs learned during the 1980s, especially the public health lessons, were still prominent. But the consensus surrounding those lessons began to merge with a wider consensus embracing water resources management generally, and reflecting environmental and economic concerns as well as good governance and the other elements of the post-Cold War development paradigm.

Thus a number of overlapping and complementary trends have prompted a search for a new and holistic approach

for water resources management. The approach needs to encompass environmentally-sound water management; food security especially among the poor; appropriate technology; private sector involvement; reduction of subsidies; decentralisation of decision-making to the lowest appropriate administrative level; user participation in services; reform of institutions and regulatory frameworks; and cost recovery and pricing.

The backbone of the consensus

The backbone of this consensus is expressed 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. Their expression at Dublin was as described in the box below. The Dublin principles formed the basis of Chapter 18 (on freshwater resources) of the Earth Summit's key discussion document, Agenda 21. Chapter 18 identified seven focus areas for action (see box).

These principles were subsequently endorsed and an Action Plan prepared at the post-Rio Ministerial meeting on water and sanitation at Noordwijk in the Netherlands (1994). They 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. Although there is continuing debate on some – for example, whether water should be regarded as an 'economic good' – there is broad consensus around them, and a stated determination to identify actions consistent with their implementation within a framework of integrated water resources management.

The drive to operationalise these principles was given new force by the UN General Assembly Special Session (UNGASS) in June 1997, which called for urgent action in the field of freshwater. EU member states and the EC supported a freshwater initiative whose first

Dublin Principles

- 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.

Agenda 21

- 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.

manifestation was an Expert Group Meeting in Harare, Zimbabwe, in January 1998. In March 1998, an International Conference on Water and Sustainable Development held in Paris developed a Programme for Priority Actions. In April 1998, the 6th session of the UN Commission on Sustainable Development (UNCSD) held in New York made recommendations on comprehensive strategic approaches to freshwater management.

These recent discussions at the macro level indicate that water is indeed gaining international political ground. However, much more effort is needed before the consensus can be said to have been widely translated into practical action on the ground. In particular, as was pointed out by UNGASS in 1997, intergovernmental statements of intent regarding freshwater will only yield fruit in terms of the necessary policy and institutional restructuring at national level if the international community is willing to provide additional financial resources to support its recommendations.

Nonetheless, the international unanimity of vision concerning water is an important feature of the policy-making environment. It gives force and recognition to the view that 'more of the same' approaches applied in the past are unsustainable. Not only do such approaches fail to address water scarcity and environmental issues; they lead to a wider gap between served and unserved populations. The challenge now is to translate the consensus within the international community concerning water from a rhetorical to a practical existence.

There is still a gap between ideas and actions endorsed in the macro-level debate, and their translation into policy-making structures and programmes in developing country settings. Some projects stand out as beacons illuminating potential new directions. But many programmatic activities and projects are only just beginning to address the new list of concerns or have implemented only a handful. These Guidelines are intended to help the process along where it matters most, in locations where absence of services, or service inefficiency, unsuitability, or unsustainability have had damaging effects on people and communities.

The promotion of river basin co-operation

The theme 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 the Asian Development Bank. The river basin offers many advantages for strategic planning, particularly at higher levels of government, though difficulties should not be underestimated. Groundwater aquifers frequently cross catchment boundaries, and more problematically, river basins rarely conform to existing administrative entities or structures. Although river basin organisations should not be seen as a panacea, they do provide a sound geographical basis for integrated water management.

In many parts of the developing world, major rivers run through two or more countries and their transboundary character complicates the practicalities of river basin management. Water sharing between states through which run such major rivers as the Ganges, Nile, Jordan and Mekong is self-evidently an important political and strategic issue for the states concerned. There have been in the past too many instances of projects designed to meet national objectives which ignore their

Middle East Water Data Banks Project

A Multilateral Working Group on Water Resources is one of five such groups set up within the context of the Middle East Peace Process to promote regional co-operation between the Core Parties (Palestinians, Jordanians and Israelis). A Regional Water Data Banks Plan to improve availability of data for water managers, planners and operators was agreed by the delegates in 1994, as was the establishment of an Executive Action Team (EXACT) to assist in the co-ordination of the plan. EXACT was formed in 1995 and is composed of two representatives of each of the Core Parties as members, and two representatives from four other parties as facilitators: European Commission, US, Canada and France. EXACT is expected to provide technical oversight of the Water Data Banks Plan.

The general objective of the Plan is to create, in the case of the Palestinians and to enhance, in the case of the Jordanians and Israelis, a hydrometric data base facility, including meteorological, hydrological, hydro-geological and water quality data. Activities in the following areas are foreseen: communications and information, network review/evaluation, field data collection, laboratory analysis, data bank quality assurance and quality control. The Implementation Plan has 40 recommendations, one of which relates to specific assistance to the Palestinians and the other thirty-nine to all three Core Parties.

The aim of the project is to facilitate the execution, in whole or part, of 14 of the 40 recommendations. The main activities are the development of a hydrological bulletin, identifying and inputting historical, meteorological and water quality data. The project includes technical assistance, training and provision of equipment.

The Core Parties have expressed an interest in extending activities undertaken under the auspices of EXACT. Particular areas include: analysis of wastewater quality and quantity; installation of additional field measurement equipment including advanced data collection and transmission equipment; and training in data analysis.

impacts on the river basin as a whole and neglect the potentially conflicting needs of downstream users in other national or – in federal countries – sub-national states. The recent Convention on the Non-navigational Use of International Water Courses (April 1997) provides a basis for establishing common rights in transboundary rivers and a framework for the management of international river systems.

In March 1998, a Round Table was held in Petersberg, Germany, on Co-operation for Transboundary Water Management, which produced the Petersberg Declaration. The Round Table focused on instruments to support the use of water as a catalyst for regional co-operation rather than as a source of potential conflict. The importance of mechanisms for promoting river basin co-operation is becoming more widely recognised, and is reflected in support for the International Network of River Basin Organisations (INBO).

The creation of new partnerships

Until the recent past, water service provision has been primarily the exclusive concern of governments and municipal authorities, in accordance with standard philosophies and belief systems concerning a 'free' commodity essential to human life. However, the record of government-delivered services in some settings, coupled with the new appreciation of water's scarcity and value, and with the shortage of resources for extending services, have led to a reappraisal of potential actors and their roles. The building of alliances and partnerships with a wide range of stakeholders has become a theme familiar within development co-operation for water-related activity, as in other areas.

The commercial private sector

From the programming perspective, one of the actors whose growing role is highly significant is the commercial private sector, especially private water companies. The last decade has seen a reaction in many countries against the state as the automatically preferred owner and operator of water-related services, including sewerage and irrigation works. There is now wider appreciation that the traditional water department or public utility mode of supply is only one of a range of options.

The theme of public sector/private sector partnerships, with government assuming a facilitating and regulatory role instead of an all-providing role, and of privatisation of some part of service delivery, constantly re-occurs in water policy statements. The popularity of this theme can be credited to the promise held out that involvement of the private commercial sector helps to overcome such widespread problems as budgetary shortages, poor management and lack of cost recovery. Governments have concluded that delegation of the management of public services to private companies offers a potential solution to financial constraints and systemic problems of inefficiency.

Among the shortcomings of publicly-owned and -run utilities is that, beyond the stage of implementing projects funded, or supported, by donors, they typically commit inadequate resources to future operation and maintenance. These bodies may, in addition, suffer from weak technical know-how and managerial capacity to run the new infrastructures effectively. Meanwhile, tariffs for service provision are often set at uneconomic levels; there is extensive illegal 'leakage' from systems; and even existing tariffs are not collected. Within a few years, service infrastructures may fall into disrepair and become unsustainable. Unless specifically mandated to do so, water authorities – especially in urban areas – are often already deficient in reaching poorer communities; the prospects of their doing so are reduced where they are uneconomic in serving better-off communities and cannot generate a surplus.

There are many alternative options to full public ownership and operation of water agencies, involving a greater or lesser degree of participation by the private commercial sector. These options can be ranged along a spectrum at one end of which the government retains full responsibility for operations, maintenance, capital investment, financing and commercial risk; at the other end of the spectrum, these responsibilities have been devolved to autonomous, commercialised utilities or companies. In between are situations 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*), concessions and build-own-operate-transfer schemes.

Most of these options apply principally in the context of municipal water and wastewater treatment, and also in the context of major irrigation works and environmental, including leisure and transport, waterway management. The role of the public authorities as regulator is to ensure equity, and monitor subsidy levels and the 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 and a clear separation of roles.

The community-based and informal 'private sector'

Unless specific efforts are made to increase service coverage to poor and underserved communities, their domestic needs usually remain unmet by expansions of conventional water supply and sewerage schemes. Many governments undertake or facilitate such special efforts for rural areas; less often for urban areas. These rural schemes are frequently supported – even made possible – by development co-operation funds supplied by bilateral agencies, UN and other multilateral sources including EC, or by international NGOs. Their effectiveness often depends on partnership with local community-based organisations, whether administrative entities – such as Village Councils – or non-governmental; sometimes both.

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

Local NGOs and their international counterparts have attracted considerable attention in the recent past because of their relative effectiveness in reaching

South India case study: NGOs as intermediaries in transferring service maintenance

Extensive breakdown of handpumps in Visakhapatnam District in Andra Pradesh led to an NGO initiative in the early 1990s to transfer maintenance responsibilities from the district government to local communities. Oxfam, the British NGO WaterAid, and Viswasamakya, a 15-member local NGO network, were involved.

The local NGOs worked with communities to establish water and sanitation committees, to be responsible for establishing a water fund to pay for handpump repairs. This required reversing the previous local understanding that the government was exclusively responsible for handpump maintenance. Village mechanics were trained by government mechanics to carry out repairs, and in an interim period, were paid a stipend for repair work by the NGOs. Eventually, they are expected to become self-employed, remunerated by the water committees.

Within three years, 400 water committees were formed, and 50 had raised local funds. In 1996/97 2,000 pumps were repaired. The community infrastructure for repairs and maintenance is now in place. The outstanding question is whether it can be successfully sustained over the long term.

the poor and their knowledge and experience of working closely with communities. They also have a reputation – in many cases deserved – of achieving much with little, and their methods have therefore attracted attention for cost-efficiency reasons. Certainly without the work of NGOs, the willingness and ability to pay for water supplies (and occasionally, for sanitation) found even in the most economically marginal of communities would probably still be unrecognised. Because of the pioneering role they have played in demonstrating the practicability of user participation in the management of all kinds of community improvement schemes – including food production, catchment dams, small-scale irrigation, disease control and public health – NGOs are now regarded as part of the mainstream in water development co-operation. However, the size of their contribution is proportionately small, and not all are equipped to operate effectively without technical 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 community benefit; commercial profit plays almost no role except at a very marginal economic level: for example, in the manufacture by village artisans of latrines. Indeed, the lack of opportunity for cost recovery which is often perceived as an automatic corollary of expanding services for the poor is the reason for the dependence of many developing country governments on external co-operation for such schemes. Even those which do involve user fees and participatory management still require governmental or extra-governmental support for components such as human resources and capacity building by local government departments and appropriate NGOs.

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 framework. But these are in the minority; local community associations more often occupy a partnership role with the authorities on the one hand, and private commercial mini-enterprises on the other. Their importance is that they have recognised that, even among the poorest communities, cost recovery is needed to provide services and ensure efficient O&M; and they have managed to develop user fee systems. In some cases this is in contrast to official bodies who go on providing free or heavily subsidised services on grounds of 'public good' while often failing to serve the poor. As in the case of 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 purview of government services; their water is often supplied by small-time vendors and water-carriers, and human waste disposal services are operated by 'sweepers' or carters. The fact that those they provide with water (or sanitation) often pay for the service at rates more expensive than rates charged to customers receiving subsidised mains services 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 dependence on informal sector provision; this 'willingness to pay' is

rarely, if ever, the basis for 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 in the informal private service sector into basic water supply and sanitation services, and into small-scale irrigation schemes. A range of artisans, masons, mechanics, tubewell-sinkers and local handymen are involved in informal public health and agricultural water use occupations. The challenge is to build on their existing skills, and incorporate their activities into programmatic and project frameworks in an appropriate, equitable, and well-regulated manner. As in the case of 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 underserved communities.

Multilateral donors including the UN system

The member countries of the European Union are among the largest donors to development co-operation, 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 Lomé Convention. This unique relationship enables a shared vision of policy priorities to be promoted. *(See Part III, EC Resources.)*

The most influential multilateral lending organisation offering support to water resources development and management is the World Bank. The 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 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, with a regional focus.

Some official bodies go on providing a free or heavily subsidised service on grounds of 'public good' while failing to serve the poor.

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 in which the new agenda for water resources management has been articulated. After the Earth Summit it 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 in some way with water-related activity, usually by providing technical expertise or material assistance to projects of different kinds. At the highest level, UN involvement in water is co-ordinated by the Administrative Committee on Coordination (ACC) Subcommittee on Water Resources, to which the Department for Economic and Social Affairs (DESA) functions as Secretariat. 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 particular concerns 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) 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 joint concern, most conspicuously in the context of basic human needs, infrastructure, community development, food security and public health.

All of the UN organisations' water policies subscribe to the Rio principles and nowadays 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 requirements. 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 the course of development co-operation activity relating to water. Many countries have 'centres of excellence', whose specialists, research programmes and training courses are designed to make the latest technical and operational information available to those involved in water-related programming activity. Other categories include partnership and networking bodies, such as the Water Supply and Sanitation Collaborative Council mentioned above; the international NGO community; and academic and scientific institutes based in different parts of the world acting as repositories of technical and professional expertise.

The most notable recent international networking initiative is the establishment of the Global Water Partnership (GWP), supported by international and bilateral funds, with Secretariat support from Swedish SIDA. 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. Another recently established partnership mechanism is the World Water Council (WWC). The Council 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.

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 sub-contracted to contribute their expertise in policy-making or technical contexts. Some of these are at the forefront of innovative solutions and consciousness raising; a number run training programmes for engineers and other specialists from developing countries, and thereby help to promote 'best practice'. 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 kinds 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. But 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

The 'new' idea that water must be seen as a highly-prized commodity is far from new to the majority of developing countries

Although there is 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. At the global level, this is reflected in a broad dichotomy of view between North and South about priorities.

The 'new' idea that water must be seen as a highly-prized commodity – an idea which has only recently come to dominate international thinking – is far from new to the majority of developing countries. Many are located in semi-arid areas, have semi-arid regions within their borders, or suffer from dry and wet season extremes. In some – India, Iraq, Sri Lanka, China and others – ancient civilisations were built upon hydraulic engineering to manage water flows, and water management remains central to social, political, and spiritual life. Problems of water scarcity, and of over-abundance at times of seasonal flood, are a day-to-day reality. Water has always carried political weight; its management and conservation are clearly essential to development and all economic policies

take water needs into account.

Of the OECD countries only Australia, Mexico, Western USA and parts of southern Europe experience water stress problems similar to those of many developing countries – and they have the resources to resolve them. 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 on occasion of temporary flood or drought. This lack of industrialised world concern 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. By the time of the 1992 UN Earth Summit at Rio de Janeiro, attitudes had begun to change, but mainly because of water quality concerns. Although water was not prominently discussed, the inclusion of a chapter on Freshwater Resources in Agenda 21, the key Summit document, did provide a catalyst for future action.

Although water scarcity and seasonal flood remain the priority issues for much of the developing world, quality issues are beginning to intrude on their agenda, just as scarcity issues are becoming more prominent in parts of the industrialised world. Rapid population growth in the South and an even more rapid process of urbanisation have recently exerted 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 overload on sources, improper waste disposal, contamination of rivers and streams and the reckless extraction of water from 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. In addition, the discharge of increasing volumes of untreated waste water from towns and cities into rivers has downstream implications for agriculture and rural life.

While welcoming an overdue recognition of the importance of water at the international level, some professionals in the developing world have had reservations about the sudden pre-occupation of the industrialised world with environmental issues generally. The expression of these concerns has appeared to demand the imposition of constraints on the exploitation of the natural environment to which the developed countries were not subjected during their own industrialisation process. Since the Earth Summit, the views of North and South have moved closer together, but reservations towards blanket prescriptions about resource management have not entirely disappeared. These need to be taken into account, and underscore the challenge of matching an international consensus on principles to the realities of local situations.

Implications for water policy

Contained within the international consensus on the principles that should govern the response, is the recognition that problems must be identified according to the local context and solutions developed which take local particularities 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 does not preclude – indeed it demands – flexibility concerning the

practical application of policy principles. Universalist programmatic models need to be abandoned, or the principles themselves will be repudiated.

In the context of development co-operation, the implications of issues given emphasis by donors, such as institutional reform, realistic pricing and user participation in service management, have ramifications – especially political ramifications – which pose special problems to many recipient country governments. Many still need to be persuaded that measures which clash with customary views about rights, or which undercut entrenched interests and existing systems of administration, are ultimately in their best interests. There are also significant technical and resource constraint differences affecting the means whereby and degree to which the consensus emerging at the international level can be made operational. Factors such as climate, hydrology, terrain, human settlement patterns, infrastructural capacity, investment requirements and sources, economic considerations, and the socio-cultural setting all have to be taken into account. These factors help to explain why there is so far a much stronger rhetorical commitment to the Dublin and Rio principles than there is evidence of 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, and traditionally seek support from the donor community for infrastructure projects; indeed they fear that the new agenda around which international – which is primarily donor-driven – consensus has coalesced will lead to a reduction in capital investment for such projects.

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. However, they may be inhibited by the political implications of such a change. Realistic water pricing is likely to be very unpopular among those with service connections, and however essential, the introduction of fees may therefore be politically painful. Therefore, they may continue to rely on donors to fund water projects desperately needed for the enhancement of supplies or coverage, but be reluctant to address the longer-term problems. Given these difficulties, reconciling the views of donors towards cost recovery with those of recipients is a major challenge.

Cities in the Middle East, Asia and Latin America are facing critical water problems as a result of overload on sources, improper waste disposal, contamination of rivers and the reckless extraction of water from depleted aquifers.

Likewise, there may be differences of view concerning the involvement of the private sector. A perception has developed that donors regard the turning over of state-run water-related functions to the private sector as a panacea for efficiency gains. Many developing country governments are wary of so doing. In parts of Asia and in Latin America, the private sector is relatively developed; elsewhere, it is weak and poorly regulated. Apart from the desire not to relinquish power over a valued asset, it may genuinely be the

case that transfer to the private sector is either not viable or undesirable. Where regulation is limited or unenforceable, an uncontrolled private sector can be predatory, exploiting the vulnerability of the poor. At present, up to 30% of urban dwellers in the developing world buy their water from unregulated vendors at several times the cost of water from a mains supply; this situation needs to be redeemed not administratively reinforced.

While there is clear evidence that, under regulation, some kind of private sector involvement is beneficial to users, different 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 limited. Their capacity is confined to the management of low-level technologies, such as small catchment dams, gravity-flow schemes, rainwater harvesting, handpumps and simple sewerage systems. Through the mediation of NGOs and sympathetic water authorities, such approaches have been successfully implemented in many parts of the developing world. However, they are very difficult to bring 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 should cease, or be partnered by autonomous water services management bodies and/or community-based organisations.

Managing water resources equitably, efficiently and sustainably: guiding principles

Chapter 2

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The guiding principles should be seen as a next level of principles based on the core principles already established by international consensus.

Managing water resources equitably, efficiently and sustainably: guiding principles

Introduction

The centrepiece of these Guidelines is a '**strategic approach for the equitable, efficient and sustainable management of water resources**'. The strategic approach proposed is based on internationally agreed core principles concerning the need to protect the aquatic eco-system, and to extend the health-giving and productive properties of freshwater resources equitably and efficiently among humankind, with special emphasis on poorer and underserved people.

The guiding principles elaborated here should be seen as a next level of principles based on the core principles already established by international consensus. Their most authoritative expression is encapsulated in the four over-arching principles agreed at the International Conference on Water and the Environment in Dublin in January 1992. More recent expanded expressions of these core principles – as outlined in Chapter 1 – can be seen as reinforcements and further elaborations of a shared vision.

While the core principles provide an underpinning basis for water-related policy, they are relatively remote from practitioner realities and offer little guidance for resolving the dilemmas and difficulties contained in their practical implementation. Therefore, as part of the development of a strategic approach, and to aid intellectual management of the new dimensions of water-related policy, these Guidelines present sub-sets 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 now considered essential for effective water resources management. However, many of the principles and categories are inter-related and interlinked.

The sets of principles broaden the framework within which water-related policy can be addressed in an organised fashion. As emphasised throughout these Guidelines, water is a renewable natural resource whose sound management affects developmental activity in many economic, productive, infrastructural and social sectors. The new thinking brings into play a very broad range of issues, with implications for project formulation and funding mechanisms. Reference to concerns outside the 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 implications of adopting a much broader strategic approach to water

cannot be underestimated. Few governments have addressed the whole range of practical changes required to respond satisfactorily to the core principles of the new consensus. Activities at the macro-level (integrated water resources management, water policies, legislation, institutional change) and at the micro-level (user group participation, community-level operation and maintenance, subsidiarity,) are given more weight proportionately than in the past. Technological issues and construction, which previously dominated programme formats, while remaining critical are now regarded as one set of considerations among many.

Although grouped, the principles are cross-cutting and universal, applicable to all types and aspects of water-related activities – from surveys, to human resources development, to construction of installations – whatever their physical, social or economic setting. Such principles should be seen as the bedrock of the strategic approach. Their application is supposed to aid clear thinking about objectives and actions; an effort has been made not to overload users with criteria for programme formulation in such a way as to impede rather than aid their work.

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. The role of government at all levels and in all contexts may need to be reviewed. Where they have not already done so, governments should work towards providing a sound legal and policy framework for water resources management and becoming the facilitators of service extension and provision, and reduce their role as direct provider of services and builder of public works.

Government is also responsible for establishing regulatory bodies; it is important that these be independently operated, transparent, accountable, and empowered to enforce regulations. All the different uses of water, and the roles of different institutions involved in providing services, need to be enshrined in law *(see Part III, Glossary)*. Service criteria need to be similarly established, preferably by consensus among the various stakeholders.

At national level, governments have a responsibility to develop an integrated water policy, meeting the rational needs of the various users within the limits of available resources, financial and environmental. In any such national policy, geographical and hydrological scales need to be taken into account; catchment areas can be proposed as a useful basis for overall water resources management. Care should be taken that the water policy is co-ordinated with other policies with implications for water use – such as those for agriculture, industry, energy 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 many countries have water codes or water legislation these are rarely comprehensive and often outdated. They often do not take account of water resources management and conservation, nor have they been established through a participatory process. New laws and enforcement procedures may be needed. As far as possible, they should be formulated permissively rather than restrictively to enable the regime to be enforceable without undue cost and administrative burden. However, common references and standards are needed in relation to water quality and items manufactured by the local water-related industries.

In allocating roles and responsibilities, the need to decentralise the various types of decision-taking to the lowest, most appropriate, administrative tier should be respected.

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 III, Glossary.)* Structures and practices of the responsible authorities therefore need to be designed to facilitate participation of the various categories of users: water companies, industries, farmers, domestic consumers, energy utilities, fisheries, and nature conservation departments.

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 maximised. However, the necessary tools, training and funds must first be allocated so that the resources are available for responsibilities to be fulfilled. Currently, many of the responsible bodies have centralised and hierarchical command structures inadequately geared to consultation and interaction with other stakeholders, especially users. 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 councils, private companies and organisations able to facilitate consultation with users. On the other hand, the role of the public authority as regulator, facilitator and moderator should develop an organisational culture that is outward-looking, to facilitate communication with all stakeholders.

3 Involvement of user organisations and the private sector should be encouraged

Partnerships with the private sector need to be encouraged and facilitated; this is especially relevant as government authorities set out to divest themselves progressively of responsibilities for the provision of services. In this context, the private sector is deemed to include Water User Associations and Farmer Groups.

The role of the private sector will vary according to social, economic, environmental and other circumstances, and needs regulation. A suitable relationship between public and private sectors needs to be found to promote the efficient operation of the facilities and collect user fees. Delivery of services and construction of installations may be organised through service providers which, whether publicly or privately owned and operated, should be autonomous. At the same time, vulnerable populations – the underserved and underprivileged – need to be protected from exploitation by market providers since they have no consumer influence.

Government-run water authorities and utilities companies are also in a position to facilitate the transfer of technology to the private sector, encouraging the development of local water supply, wastewater disposal and irrigation manufacturing and service industries. These industries can be both large- and small-scale, able to cater to the needs both of major publicly-financed schemes and of micro-projects and private consumers, including NGOs and community-based organisations. *(See also Part III)*

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. *(See also Part III,)* Capacity building should extend to all levels and concerned groups; the importance of professional training and, where necessary, reorientation cannot be overstated. Where a more active role in service design and implementation is envisaged for users, the capacity of intermediary bodies, such as NGOs and local councils, will also need to be enhanced and training provided in technical and organisational activities.

The new emphasis on 'software', as compared to 'hardware', components of water-related projects means that orientation towards these areas should be built into their design. Interpersonal skills such as communication, negotiation and leadership, as well as knowledge of project management and health education, are as important as functional skills relating to building and managing installations. Engineering staff need encouragement to adopt a partnership approach to service delivery rather than a proprietary attitude towards schemes. Additional technical competencies – hygiene education, soil management, environmental protection, social mobilisation – are likely to be needed.

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

Given the need to build alliances between stakeholders, the responsible authorities and their partners and users need to feel confidence in management systems and operating procedures. A balance needs to be struck between flexibility and accountability.

All financing and auditing procedures need to be transparent. Systems of financial control need to be rigorous in order to avoid the mismanagement or misapplication of funds sometimes associated with large-scale investments in major construction works.

Management information systems need to be suitable for the organisational level at which the relevant data collection and analysis activities are conducted; inputs and outcomes need to be monitored in such a way that they provide information of value to managers when they require it. This in turn helps to engender a sense of ownership of the system and ensure that it is effectively used. 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

6 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 basic to the support of human life and health. It is also a fundamental economic resource on which the livelihoods of farming populations (and some other occupational groups) depend, and whose shortage or excess in volatile, drought- or flood-prone environments has profound implications for human well-being. Survival, poverty reduction, quality of life and equity considerations therefore need to be given over-riding importance 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. It is therefore important to prioritise the extension of basic water and sanitation services to the unserved and underserved poor, especially those most at risk from water-related diseases in both rural and urban areas. The same principle should apply when considering investments in water supply infrastructures related to farming and family well-being.

Sanitation is often neglected, although it is as, or more, important for health impact than access to clean water. Care should therefore be taken to give sanitation, in the form of community or household facilities, equal emphasis with water supplies in service provision.

Definitions of access to water (i.e. distance to the supply) and adequate coverage (i.e. per capita availability) need to take account of the nature of the installations and their use, as well as willingness and ability to pay; this

applies equally to drinking water facilities as to small-scale irrigation works. The ability of households to access water in sufficient quantity for their needs is an important determinant of their capacity to adopt hygienic behaviour and co-operate in measures for the control of water-related disease.

The management of water as a collective good may be an integral part of community life and deeply embedded in social interactions and livelihood strategies. Understanding of attitudes and practice regarding water use, human waste disposal and environmental sanitation by households and communities, both for productive use (e.g. farming, livestock) and domestic use (e.g. drinking, washing, cooking, personal hygiene and cleanliness), is critical to formulation of all activities intended to provide such beneficiaries with sustainable services.

Drinking water supply schemes should also pay attention to the quality of water/water safety at the point of supply (recognising that it may become contaminated between supply and use due to poor environmental sanitation by households and users). Reference can be made to WHO water quality standards *(see Part III)*.

7 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 now recognised as a central principle of the development of water and waste disposal services; this involvement should extend beyond the provision of free community labour in the construction of schemes, to decision-making about siting, collection of tariffs, and operation and maintenance. In low-income areas, this involvement is likely to be through community-based organisations.

The exact extent of community involvement in the management of an irrigation works, water supply or sewerage system will vary with context, technological nature of the installed systems, and the resources available at community level. Both the potential and the limitations of community involvement need to be recognised. Long-term sustainability of facilities in low-income communities, given their typically dispersed nature, cannot be guaranteed without a concerted effort to inculcate a sense of community responsibility and ownership.

Implementing a community-based approach may involve training field and agency staff in participatory techniques and adopting a flexible approach to project implementation. Local knowledge, cultural values, indigenous practices, lifestyles and habits relating to water management and its use need to be respected and, where appropriate, supported. *(See also Part III)*

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

The central role played by women in the provision, management and husbandry of water, primarily in the domestic and household context, has gained widespread recognition in recent years. Gender issues needs special consideration in relation to water management and use.

In rural and seasonally water-short environments, much of women's time and energy is typically spent in water-hauling to the detriment of their own and their children's well-being. Water resources management similarly impacts upon many women in their farming, small livestock management and micro-entrepreneurial roles. Thus, gender implications need to be taken into account 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 men and women in a given setting. Not only do gender implications of proposed interventions have to be considered, but ways need to be identified whereby women users and beneficiaries of services can themselves help define those implications and take part in the community consultation process so that their specific voice be heard.

Given existing power structures within families and communities in many parts of the world, a targeted effort will probably be needed 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 only perceived role vis à vis water resources management is haulage and storage of domestic supplies. Thus, issues such as siting and ownership of installations; knowledge of operations and maintenance procedures and relevant skills; and membership of Water Committees or similar bodies are normally confined to men. Absence of women from decision-making vis a vis water resources management and service delivery is both inequitable, and severely hinders the possibility of realising public health, food production and quality of life programme objectives.

Because of their domestic roles, women are also logical key candidates for educational activity concerning water use and hygiene behaviour. However, men will also need to 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. *(See also Part III)*

Economic and financial principles

9 Water has an economic value and should be recognised as an economic good

Recognition of freshwater as a finite resource has led to the emergence of the principle that water is an economic good to which a price should be attached; and the application of this principle becomes increasingly critical as water becomes scarcer. However, this principle does not over-ride the social imperative of providing a basic supply of safe water for every human being.

A sense of the economic value of water implies the attachment of different values to different uses of water. These values will vary from setting to setting as decided by the community, although it is invariably the case that survival and public health uses will be high-value uses; whereas recreational uses will be comparatively lower-value. Where water is becoming scarce, it is desirable to discourage low-value uses. The possibility of reallocating water 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 purposes of water may benefit from considering the importance of 'virtual water' (the non-evident water embedded in imported food crops: *see Part III)*.

Allocation of values to water uses helps in the following areas: balancing scarce resources with increasing demand; the reduction of wastage and loss; conservation of the resource; and shifts in consumption towards higher value uses. *(See also Part III)*

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

Charging for water services (water supply, irrigation and wastewater disposal) is essential in order to generate funds for operating, maintaining and investing in systems; ensure that scarce supplies are allocated to essential purposes; and signal to users the real value of the resource. As a matter of principle, a service providing water should not give its product away 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.

This dilemma needs to be resolved. For household consumption, a certain minimum volume necessary for basic needs can be provided at an affordable price, with higher-level volumes subject to higher tariffs. This will ensure that higher levels of consumption are not subsidised. Public subsidies are legitimate to achieve certain benefits (for example, provision of supplies to the underprivileged and underserved). However, these subsidies need to be transparent, targeted, and budgetarily practicable and sustainable (for example, covered by surpluses generated elsewhere in the system).

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 raised to this level, the aim should be to raise them progressively, and with due regard for continuing to meet basic needs, to the full marginal cost (equivalent to the average incremental cost of future supply) in order to generate resources for expanding or modernising the system *(see Part III)*. Industrial water tariffs need to take account of the volume of water extracted, and the volume and quality of water returned to public water bodies.

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 higher consumption levels, this provides an incentive to conservation. It also generates 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.

11 '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 (i.e. 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, auctions, water banking; and non-market incentives, such as leakage control, restrictions, quotas, norms, licences and demonstration projects. All options need to be systematically identified and appraised.

In its policies towards key sectors such as industry and agriculture, a government should be discouraged from developing water-intensive industries or agriculture in regions where water is scarce and estimates of different water values (see Chapter 1) suggest that it should be applied to other uses. *(See also Part III.)*

Environmental principles

12 Water-related activity 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 land. Pollution degrades water supplies, increasing the costs of water treatment. In some countries, integrated river basin management may 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 afforded particular attention as the effects are not visible and can thus be neglected. The use of fossil groundwater should be avoided.

Water resources management systems will need to take into account the implications of all development activities related to the environment. These include industrial and agricultural development leading to discharges that endanger downstream water quality; changes in land use, such as road construction; settlement and cultivation of floodplains and other riverine environments; and the impacts of freshwater use and pollution on estuaries and coastal zones. Water resources management objectives therefore have to be carefully balanced against other long- and short-term development objectives.

Every effort should be made to capitalise on better knowledge of the water environment derived from recent experience. Working with the environment rather than against it is the desirable strategy. Technical methods using local materials, and biological methods to control weeds and disease vectors, have environmental advantages and build on natural capacities for pollution control and regeneration.

13 The allocation and consumption of water for environmental purposes should be recognised and given appropriate emphasis

Programmes and projects for the development, management and use of water mostly entail modifications of the natural environment to improve the quality of human life. However, 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 also important both for its intrinsic value and for supporting life. For example, water has an 'in-stream' value for fish and for the support of 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

also have important functions as wildlife reserves, navigation routes, and areas for recreation. They also help to support natural biodiversity. In order to plan water utilisation priorities, therefore, it must be recognised that areas such as wetlands "consume" large quantities of water through evaporation. All uses, consumptive and non-consumptive, have to be considered and not automatically regarded as inferior to human and economically productive uses.

14 Environmental change should be monitored so that improvements can be encouraged and detrimental impacts minimised

Appropriate systems to monitor environmental changes throughout a project cycle and beyond will be needed. 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 since some environmental costs may have to be accepted to gain greater social and economic benefits. *(See Part III.)*

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. Integrated resource management needs to be the over-riding macro-environmental consideration.

Information, education and communications principles

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

Many developing countries lack sufficient data on hydrology, groundwater resources and 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 decisions in key areas of water policy. Thus, the development of a water resources knowledge base is a pre-condition for an effective water policy.

Similarly, government authorities and agencies involved in water-related activity need proper information in order to function effectively. This information includes data on technologies, strategies, approaches, alternative 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 collect socio-cultural and economic as well as 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 excreta disposal. Effective hygiene education depends on thorough knowledge of existing water- and human waste-related behaviours and beliefs. Baseline data on prevalence of water-related disease is an important aid to post-intervention monitoring of public health impacts.

16 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, convenience and 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 schemes for agricultural water use, with crop production). There is also usually a higher demand for water supplies than for environmental sanitation, although sanitation is more essential to disease control. Therefore, education in the linkages between unsafe water, inadequate excreta disposal, and disease should be integral to all schemes for low-income communities.

Education programmes in environmental sanitation and personal hygiene may need to be biased towards women, given their special role in household water management and use. Children can also be targeted by school-based programmes. Education is similarly needed in the environmental implications of water-related activities; in particular, farmers need to learn the value of water and the importance of water saving in irrigation. Without an understanding of the purposes of water resources management, user group participation in management decisions, especially in negotiations over competing user group needs, cannot be obtained; and if obtained, cannot be fruitful.

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

The new thinking surrounding water resources management and the delivery of services requires extensive awareness-building among political leaders, decision-makers regarding water, professionals and academics, donors and NGOs. As yet, the emerging consensus is largely confined to members of the international water-associated community. To put its principles into operation and resolve the many practical dilemmas they raise will require widespread understanding of their implications.

Communications mechanisms, in the form of educational activity and public

information campaigns, are also needed to increase community-level understanding of the linkages between water and health, to increase demand for all kinds of water-related services, and generate motivation and impart skills for service maintenance. Awareness-building among users also helps to create a climate favourable to community management of schemes, strong local participation, and the collection of water dues. *(See Part III).*

Technological principles

18 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, be characterised as 'build, neglect, rebuild'. Where the technology deployed is remote from the users' capacity to maintain, operate or pay for it, prospects of sustainability of the service are equally remote. Thus the development of water and waste disposal infrastructure and irrigation works needs to take technological considerations, as well as local management capacities and community resources, into account.

Technology itself needs to be provided within an integrated framework. A project designed to provide a new supply of water, for example, should take into account the need to dispose of, or recycle, run-off and used water. Irrigation works should take into account the potential for soil degradation or water-related health hazards, such as the development of mosquito breeding-grounds.

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

Engineering 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', capturing elements of cost-efficiency and suitability for the purpose *(see Part III).*

There have been numerous examples of poor project outcomes due to the selection of over-costly and inappropriate technology, which has fallen into disrepair because maintenance was too difficult, or which has caused unanticipated environmental damage.

A common problem in many

infrastructure projects has been the importation of technology from industrialised countries unsuited to the physical, economic and social conditions in which the system is located. Highly professional technical advice is required to guide the choice of technology – whether it is to be 'high-tech' or 'low-tech', it should still be 'state of the art'; and the choice of materials should receive careful consideration regarding safety and environmental suitability. As importantly, technical decisions must take into account the social and economic context in which infrastructure will have to be maintained. Long-term affordability and sustainability often hinge upon decisions taken concerning technology including energy sources for pumping. Thus, critical social and economic considerations about the viability of a technology in a given setting should not be ignored. Technologies should not burden operators or tie them into costly and unreliable supply contracts; consideration should also be given to the prospects of technology transfer and local manufacture.

To facilitate cost-effective operation and maintenance, upgrading technologies that permit staged development are desirable, especially in settings where systems and services are being introduced for the first time. These can be developed on the basis of indigenous technologies and local knowledge, and on scaled-down versions of existing systems (in the case of sewerage, for example).

To facilitate effective operation and maintenance, easy availability of spare parts, and convenient training of operatives including local community workers, standardisation of technology needs to be assured. This issue may need to be addressed within the regulatory framework.

Managing water resources equitably, efficiently and sustainably: Programmatic contexts

Chapter 3

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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 Agenda 21.

Managing water resources equitably, efficiently and sustainably: Programmatic contexts

Introduction

In the previous chapter, sets of policy principles have been presented as the bedrock of a strategic approach for water-related programming and project activity. These principles provide an operational philosophy and framework for EC development co-operation 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 four broad types of activity: **Water resources assessment and planning (WRAP)** which includes all activities designed to assess the availability of the natural resource, protect its quality, and plan its use; **Basic water supply and sanitation services (BWSS)**, which covers service provision in rural areas and marginal or poor urban areas, usually consisting of low-technology, community-managed systems; **Municipal water and wastewater services (MWWS)**, which covers major urban and industrial installations and systems, including wastewater treatment and sewerage systems; and **Agricultural water use and management (AWUM)**, which covers installations and activities related to agricultural use of water, especially for irrigation. No pre-determined priority is given to any one Focus Area as compared to any other. The programmatic activities covered by the Focus Areas are explored more fully below.

The application of principles to the Focus Areas is intended to be carried out in such a way that all principles are applied in all contexts. This should pre-empt the possibility that any one Focus Area could be treated in isolation from any other. There are many linkages between Focus Areas. Work directed towards provision of basic water supplies, for example, cannot omit to consider agricultural water management activity, or vice versa. Activities related to Water resources assessment and planning will, by definition, impinge upon activities in all other Focus Areas. The grouping of activities should not detract from the need to view water holistically and foster an integrated management approach across usages and programmatic activities.

The organisation of programming contexts represented by the four Focus Areas aims to accomplish a number of objectives. In the first place, it reflects the broader range of programming activity necessitated by the new thinking about water as a resource whose protection and usage must be comprehensively planned. Secondly, it allows programming contexts with similar social, economic and technological characteristics to be grouped together: Basic water supply and sanitation services, for example, includes both rural and poor urban settings where

small-scale, differentiated installations managed and operated on a local basis are likely to be the norm. Thirdly, it allows the integration of major works for drinking water supplies with those for environmental sanitation, wastewater management and sewerage. And finally, it transcends merely technical categories such as 'irrigation' in favour of larger concepts such as Agricultural water use and management, which includes land-water management, flood control, and environmental protection.

The Focus Areas also offer a framework broadly matched to sectors, although they do not correspond precisely with standard administrative sectors (see box). As has already been pointed out in Chapter 1, the term the 'water sector' has been strenuously avoided in these Guidelines. Water-related activity transcends many sectors, including productive sectors such as agriculture and industry, social sectors such as public health and urban planning, and some new umbrella sectors, such as the environment, which may include water resources management alongside housing, transport and environmental conservation. When the phrase 'the water sector' is used, it usually refers only to public health engineering for drinking water supplies and sanitation – which is another reason to avoid it.

Focus Areas and administrative departments

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

Basic water supply and sanitation services: co-operating administrative departments are likely to be: Public Health, Rural Water Supplies, Co-operatives, Community Development, Local Government, Urban Planning.

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

Agricultural water use and management: co-operating administrative departments are likely to be: Agriculture and/or Irrigation, Water Resources, Fisheries, Public Works, Planning.

The variety of administrative arrangements for water-related activity, both between sectors and at different levels of national, local and municipal authority, makes it easier to distinguish between categories of activity than classify water activity by sector. It is a part of the operational philosophy expressed in these Guidelines 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 will need to be examined in and integrated with the work of other sectors and administrative departments. The existence of such a Ministry does not preclude the possibility that certain water-related activities receiving development assistance will fall under the aegis of another ministry (or public sector body answerable to a ministry): industry, agriculture, energy or public health are obvious possibilities. The concept of Focus Areas for programming activity suggests, but does not prescribe, 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. 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 need to be notionally integrated with larger water-related development policies, plans and programmes.

Focus Area 1: Water resources assessment and planning (WRAP)

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 has been devised to allow for special attention to be given to macro-planning of water resources management; activities which fall within it may be new or unfamiliar to many users of these Guidelines, but should be given due consideration given their over-arching importance for all water-related activity.

Apart from its importance for human survival and well-being, water is a basic ingredient in many productive and non-productive activities. Surface water resources are derived from rivers which may originate outside national and state boundaries; even where there are no problems of trans-boundary competition, river basins rarely correspond to existing administrative boundaries within countries. Similarly, groundwater extraction does not occur tidily: its beneath- and above-ground impacts are not confined to particular administrative localities. As already outlined, there are many cross-sectoral considerations to be taken into account, alongside the geographical anomalies associated with the resource itself and its location vis a vis human settlements and its deployment for economic production. Water use is closely linked to land use, and freshwater outflows can have significant impact on the coastal zone. Water is therefore extremely complex to manage.

At national level, activities within this Focus Area will mainly be designed to develop and support a co-ordinated strategy on the use of water resources. The main purpose of such a strategy will be to ensure sustainable development in all water-related sectors in the various

Possible project activities in Focus Area 1 include the following:

- Studies into land and water use patterns
- Hydrogeological/hydrological surveys
- Review of practicality of establishment of River Basin Organisations
- Ecosystem protection/conservation
- Review of water laws and regulatory framework
- Establishment of national water standards
- Development of data collection and monitoring systems
- Cross-sectoral planning in hydropower and navigational uses of water
- Flood/drought prevention and control
- Conflict resolution concerning water uses and upstream/downstream users

Project example: Sub-Saharan Africa Hydrological Assessment and HYCOS

The severe droughts of the 1980s led to appeals from many African countries for international support for water resources development activity, and at the same time revealed major deficiencies of hydrological services in the region. Growing water scarcity and rising population were jointly acting as an important constraint on the alleviation of poverty and the improvement of health standards. But the commitment of funds to suitable and effective interventions depended upon better hydrological data and data-gathering networks. The EC therefore became involved in the financing of two projects; Sub-Saharan Africa Hydrological Assessment and Hydrological Cycle Observing System (HYCOS).

The Hydrological Assessment project's objective was to assist Sub-Saharan countries to establish sound hydrological monitoring systems for the purposes of planning and evaluating water resources development projects. Its three major components were: preparation of inventories of the present status of data collection, processing and publication; identification of major gaps in the current networks (including equipment, techniques, institutions and training); and recommendations for programmes to upgrade water data collection. A number of donor agencies were involved, including UNDP, UNESCO, WMO, the African Development Bank, the French Government and the EC. The World Bank executed the project, except in three countries (Rwanda, Burundi and Zaire) where it was not only funded but implemented by the EC.

By 1993, four sub-regional reports and 39 country reports and a series of hydrological and hydrogeological maps had been generated by the project. A number of critical issues had been identified, many of which stemmed from cuts in public spending associated with Africa's economic difficulties. One of the main recommendations was the development of a Sub-Saharan African component of the global Programme WHYCOS – 'World Hydrological Cycle Observing System'. The funding of the first regional project in the Southern African Development Community (SADC) was approved by the EC, and launched in 1997.

SADC-HYCOS has three main purposes: to provide SADC with an information system for the sustainable improvement of regional integrated water resources assessment, monitoring and management; assist the participating countries to develop their own national capacity in these fields; and to collaborate with other national, regional and international efforts to modernise, rationalise and improve water resources information systems.

The expected outcomes of SADC-HYCOS include the installation of a real time data collection and transmission system with a network of 50 Data Collection Platforms (DCPs); these will be located at benchmark hydrological stations. This should lead to the development and implementation of an operational regional database aimed at providing updated and timely data of consistent good quality. Training activities and on the job experience for technicians from the SADC countries will be provided at a Pilot Regional Centre established at an existing institution to implement the project.

regions of the country, and in so doing, help to avoid or resolve conflicts of interest over allocations of water between stakeholders. In countries vulnerable to extreme events such as drought or floods, planning considerations will need to include disaster prevention.

The various uses of water from multi-purpose dams (for irrigation, power, municipal supplies, recreation and flood control) will be reconciled within WRAP activities. This is also the context in which the interactive requirements of energy production (hydropower) and water use in, for example, irrigation will need to be jointly considered.

Water resources assessment and planning activities can and should take place at sub-national levels as well, and form a part of regional, district and area development plans. A number of supporting activities will therefore be needed at local levels.

The Focus Area would include consideration of the planning implications of activities for non-consumptive uses such as flood control, hydropower and navigation; and consideration of the impacts of other activities on these non-consumptive uses. Projects covering these activities will most likely be promoted by donor officials or recipient country agencies concerned with energy or transport and not directly interested in water resources. An integrated approach is needed to ensure that they are taken into account in the management of the resource. Similarly, the protection of the environment and environmental or ecological needs, often remote from project locations, can be neglected unless an overall perspective is applied.

An integrated approach is essential for the higher tiers of authority in order to set out the limits for activities which may otherwise neglect the broader view. It is also important that decision makers have access to adequate information on the resource and user demand patterns in order to make correct decisions on policy, allocation, pricing, legislation and other issues which will have a direct impact on sustainable socio-economic development.

WRAP interventions are unlikely to include construction and will more often consist of studies and institutional strengthening. Issues to be addressed include: policy and legislation regarding ground and surface water, trans-boundary planning and negotiation, river basin planning and management (including the interaction between water and land use), environmental protection and conservation, distribution of responsibilities for management of the resource and management of water-related installations, regulation of service providers both public and private, and the co-ordination of, and conflict resolution between, sectors involved in water use.

The Focus Area is also concerned with basic information collection, storage and access for water resources, including: hydrological and hydrogeological assessment, river gauging, climate and consumption patterns, improving the knowledge base concerning quantity and quality of water, calculation of needs and demands, establishment of standards, research and specialist studies for example on environmental factors and the development of monitoring systems and techniques.

Focus Area 2: Basic water supply and sanitation services (BWSS)

This Focus Area covers programmes and projects which have to do with the extension of basic water supply and excreta disposal services to unserved and underserved populations in low-income communities in both rural and urban environments. These usually consist of low-technology, community managed schemes, in which local authorities play a facilitating and/or supervisory role. However, in large towns and cities, the municipal authorities have ultimate responsibility for the provision of services, and need to fulfil their responsibility by establishing the regulatory framework, urban planning, and playing their part in facilitating service spread.

In most programming exercises, schemes for rural and urban areas are conceptually differentiated. This is not only because the administration of rural and urban areas falls under different authorities, but because there is a perceived dichotomy between the poverty, neglect and economic backwardness of rural areas in the developing world, and the wealth, high levels of capital investment and political leverage which characterise urban settlements. This perception has tended to lead to neglect of poor urban areas, in water-related activity as in other forms of infrastructural investment. Although rural areas have also suffered from neglect, activities launched during and since the International Water Decade of the 1980s have produced a significant improvement in coverage rates, at least as far as drinking water supplies are concerned. Sanitation coverage, however, has in fact declined and as a result more policy attention is now being given to waste disposal, especially in densely-settled low-income areas in towns and cities. Enhanced programme support is needed in this context.

The major public works with which municipal authorities are mainly pre-occupied in the water, sewerage and urban drainage context rarely provide service outreach to slum and shantytown areas. Thus, even where levels of urban coverage appear high, the figures may mask the fact that coverage in marginal communities is inadequate or non-existent. As a population group, the urban poor is the fastest growing in the world. The risks to their own health, and of the spread of communicable disease to other neighbourhoods, posed by their crowded, insanitary and germ-laden habitat outstrip the public health risks of service deprivation to any other population.

Basic services providing drinking water and human waste disposal in poor communities, whether rural or urban,

Typical project activities for Focus Area 2 include the following:

- Rural water supply schemes
- Water supplies for low-income urban communities
- Environmental sanitation in low-income urban communities
- Rural environmental sanitation schemes
- Data gathering from intended localities
- Research and development of low-cost hygienic latrine technology
- Knowledge, attitude and practice studies
- Establishment of local Water Committees
- Programmes for hygiene education
- NGO capacity-building

Project example: Gokwe Integrated Rural Water Supply and Sanitation Project, Zimbabwe

Since independence in 1980, the government of Zimbabwe has placed considerable emphasis on improving the well-being of the rural population using a national Integrated Rural Water Supply and Sanitation Programme as part of their strategy. The two districts proposed for EC funding, Gokwe North and Gokwe South, had a combined population of 430,000 who regularly suffered from diarrhoeal infections, and from eye and skin complaints. A primary cause was poor sanitation and hygiene practices, coupled with the use of unsafe drinking water. Surface water supplies are few, usually contaminated, and often at a considerable distance from people's homes while water from shallow wells is often unreliable. The paucity of supplies was an encouragement to lack of hygiene in the household.

During a three-year implementation period the project aims to rehabilitate 50% of existing water points to the national standard level; provide new domestic water points (boreholes and wells) to 50% of the population; introduce a three-tier maintenance system in connection with all new and rehabilitated water points, including village-level caretakers; facilitate the construction of latrines in 20% of all households; educate all communities in health and hygiene and in maintenance of water point facilities; and strengthen the process of decentralised planning and implementation of integrated water and sanitation programmes.

The project benefits from collaboration from a number of partners, requiring emphasis on co-ordination mechanisms'. These include the Ministry of Health and Child Welfare, which is actively involved in a latrine-building and hygiene education programme, and the Ministry of National Affairs Employment Creation and Co-operatives, whose Village Community Workers have the responsibility of mobilising project beneficiaries. The Ministry of Local Government and National Housing, through the District Development Fund, is involved with the establishment of water points and the provision of wells, while the Department of Water Development supervises borehole drilling. Finally, the Department of Agricultural Extension is responsible for land use planning in the context of the siting of boreholes and wells.

are significantly different in concept from conventional mains connections and standard sewerage and drainage. They usually consist of low-technology installations: for water supply, handpump-tubewells, rainwater catchment tanks, gravity flow to standpipes; for sanitation, pit latrines, and where practicable, simplified sewerage systems and septic tanks.

Given that many such schemes are likely to be installed in areas where no existing services exist, preliminary activity may require data gathering, and the establishment of water monitoring systems. This activity is linked to the previous Focus Area (WRAP).

Most BWSS systems are much cheaper to install than standard public health engineering; but they are unconnected to a central operating system. Thus, their operation and maintenance requires very different arrangements from centrally-run systems, as does any system of charges to customers. The importance of gaining community participation and ownership to ensure O&M and cost recovery has led to innovatory approaches for management of community-based service schemes. This Focus Area therefore covers basic services schemes which have these common technological, management, financing,

social and economic characteristics, and can profit from the body of recent experience associated with such schemes.

While national governments need to be aware of the possibilities for basic services spread using innovatory approaches – innovatory not only in the context of technology, but as importantly in social, organisational, management, and financing dimensions – the main operational responsibility for basic services schemes is likely to rest with local authorities, local councils, NGOs and community groups. Many basic services programmes will depend for their successful outcome on an understanding of 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 the expression of views and decision-making. Hygiene education components should be included *(see Part III)*.

There should be local participation in settling issues as siting and responsibility, organisation of labour for ditch and tank construction, promotion of hygiene education and environmental cleanliness, local capacity-building in service management, and the collection of levies. In particular, clear responsibilities at the local level for systems of operation and maintenance of installations, and meeting their costs, need to be established. therefore, socio-cultural and information, education and communications issues will be particularly relevant.

Focus Area 3: Municipal water and wastewater services (MWWS)

This Focus Area covers major water- and sanitation-related activities undertaken within the municipal area, 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 areas covered in the previous Focus Area. But in BWSS 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 the Focus Area will therefore include water supplies, sewerage, urban drainage, and pollution control for 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 WRAP); the increasing distance of intakes from urban settlements is, in many cases, contributing to the escalation of costs, imposing a need for water-saving and efficiency. Rehabilitation and repair of existing systems, including the reduction of wastage from leaking pipes and reservoirs, will be an important area of activity. Optimal use of existing systems should be preferred to extension of new systems (unless the new systems are intended for unserved, especially low-income, populations).

Water quality is also a growing concern. Prevention of seawater intrusion into aquifers, wastewater treatment, and control of upstream and downstream pollution are becoming major issues in many developing country cities and towns. Innovative solutions such as recycling and re-use of

Typical project activities for Focus Area 3 include the following:

- Wastewater treatment plant, taking into account industrial uses
- Municipal sewerage installations
- Review of tariffs and introduction of new tariff structure/metering
- Re-orientation/retraining of municipal water authority staff
- Development of private sector partnerships in service management/extension
- Rehabilitation of existing systems
- Leakage control
- New system of tariff collection/penalties for non-payment

water and water saving strategies will be needed. Cost recovery, regulation and demand management will be key elements of programme and project design. Activities in this Focus Area will relate closely to those covered under EC Guidelines for Urban Development which are also under preparation.

The institutional responsibilities and type of agencies involved in provision and management will come under scrutiny in this Focus Area, probably to a greater extent that programmes and projects in the basic services Focus Area. There is likely to be more opportunity for the involvement of private sector companies or public/private partnerships in the management of programmes and projects. Reforms of the institutional framework for provision and maintenance of services may well be indicated, especially in order to effect efficiency savings and cost recovery; some projects may address such concerns directly.

A wide range of stakeholders, many

Project example: Extension of the sanitation network in Cairo

By the year 2000, Cairo's rapidly growing population will reach 16 million inhabitants. The sewerage network was built at the beginning of this century, and by the 1980s it was already clearly inadequate to cope with the growing strains imposed by an ever larger and rapidly growing population. It was regularly affected by overflows due to damaged pipes and overload.

To resolve this insanitary situation, the Government launched a sewerage extension programme aimed at providing Cairo with a sanitation network that would be sufficient to cope with the city's growing needs. The largest component of the programme consisted of the construction of five main waste water pipes, 11 km long in total. Responsibility rested with the Ministry for Reconstruction, Housing and Public Services, through the Organisation for the Execution of the Greater Cairo Wastewater Project.

A sanitation fee was introduced for the first time in the 1980s. Despite several increases, it remains low. More significant increases will be needed to cover construction and maintenance costs. The Government took this need into account in its 1992–1997 five-year plan.

The project, which is being supported by the EU through the European Investment Bank, will significantly improve the environmental situation of Cairo, alleviating the environmental and health risks in the town centre.

with considerable vested interests, may need to be involved; many customers are likely to be educated, articulate and organised and will demand a level of provision above the basic needs. In some instances, sophisticated and costly technical solutions may be indicated; but all potential solutions will need to be tested against efficiency and 'appropriateness' criteria.

Focus Area 4: Agricultural water use and management (AWUM)

Food security and agricultural development are closely linked to water resource availability, and the increasing pressure of population on food supplies means that many countries are interested in expanding their cultivable areas by recourse to irrigation. In many developing countries, irrigation is the main user of water, with almost 70% of the engineered supply absorbed by agricultural production. The construction and repair of reservoirs for storing and retaining surface water is a main irrigation activity; efficiency in the use of water in irrigation is a critical consideration. For the EC, irrigated agriculture forms a significant part of development co-operation, particularly in Asia.

In the past, many irrigation projects have inadequately taken into account potential negative environmental outcomes. The importance of drainage for salinity control and the prevention of water-logging should not be neglected. Similarly, the adverse environmental aspects of drainage, including the disposal of drainage water, are of great importance.

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 formal schemes requiring sophisticated engineering. In Asia, it is likely that the rehabilitation and modernisation of existing systems will take precedence over the development of new schemes. In Africa, new small-scale developments owned and run by smallholders will probably be more common.

Irrigated agriculture is a complex activity, and the water volumes and

Typical project activities for Focus Area 4 include the following:

- Development of agricultural sector policy on irrigated farming
- Small-scale storage systems for irrigation
- Flood control measures
- Drainage/prevention of water-logging
- Credit programmes for smallholder irrigation
- Rehabilitation/modernisation of irrigation systems
- Establishment of Farmer User Groups and Participatory Irrigation Management
- Means of improving irrigation efficiency
- Provision of water for livestock

flows it necessitates cannot be addressed in isolation from questions relating to land use, cultivation methods and cropping – issues not addressed in these Guidelines. Appropriate solutions must be developed in accordance with prevailing conditions, in relation to farming and to water resources practicalities. Livestock needs, and grazing practices and impacts, will also need examination, and conflicts between farmers and herders resolved. As a general principle, optimisation of existing systems to improve irrigation efficiency is preferred over new, large-scale irrigation schemes given all the environmental and other difficulties attendant on macro-interventions. In some instances, conjunctive use of surface and groundwater will need to be considered.

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 will be an important aspect of many activities, especially in Africa.

As competition between water user 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 foodstuffs and higher agricultural yields will continue to rise. Thus the challenge is raise crop production while consuming less water and operating within a more restrictive financial and economic regime.

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 for other Focus Areas, the need for re-orienting or

Project example: Irrigated citrus cultivation in Bali, Indonesia

Small farmers in the northern Buleleng District of Bali grow tangerines as a cash crop. With irrigation, the income generated by the crop can be multiplied by three. The purpose of the project, therefore, is primarily to increase farmers' incomes and provide job opportunities for the poor. The intention is to irrigate 1,575 ha. of citrus plantation by installing wells; drinking water facilities will also be provided.

Due to blight – now eradicated – the tangerine crop has recently deteriorated. Thus emphasis will be placed on reviving tangerine production by strengthening the extension service of the Ministry of Agriculture. Applied research will be undertaken to strengthen the extension package, and extension staff and farmers will undergo training. Rural institutions known as *subaks* (water user associations) will be given support, and the participation of women encouraged. Since it is intended that these *subaks* will become responsible for the effective functioning of the irrigation services after the completion of external assistance, the strengthening and training of these bodies is regarded as critical to project success.

The users will contribute to project costs through the provision of land for installations and the provision of labour for land-clearing. Farmers will also be expected to deposit in a blocked account in the name of their *subak* regular contributions to a fund for repairing and replacing irrigation equipment as and when necessary. The details of this repayment policy will be worked out with the *subaks* during the early phase of the project.

restructuring Government agencies involved in agricultural water use and management is likely to be a major issue 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 role in management and financing of Water User Groups and other private associations of farmers or other expressions of civil society.

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 necessarily include water-related components. Projects for the development of community vegetable gardens, aquaculture, or woodlots may involve land use changes that affect water resources. The social importance of irrigated agriculture is often neglected: it can be a motor for rural development, and may include non-water components such as feeder roads, electrification, and schools construction. All these kinds 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 include those for prevention of desertification, water harvesting, soil erosion control and flood control of agricultural land. In certain countries with special geographical characteristics (e.g. Bangladesh) flood control may have a special status.

Overview of actions implied by adopting the Strategic Approach

Chapter 4

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4

All priority themes for action are 'software' rather than 'hardware' themes, reflecting the greater difficulty of addressing human rather than technical issues in water resources management.

Overview of actions implied by adopting the Strategic Approach

Introduction

The application of the Strategic Approach presented in Chapters 2 and 3 leads to decisions concerning actions. This entails identifying problem areas and appropriate responses at every stage of the co-operation process. During the course of developing checklists for this purpose – which constitute the substance of Part II – a number of priority themes for action emerged. They are presented in this chapter as an additional aid to the user. Many priority action themes are cross-cutting, both with regard to the guiding principles and between Focus Areas; almost all include actions related to management and institutional strengthening.

Actions suggested will usually be carried out by governments, often with the support of donors; but many require partnership approaches, in which government agencies, the private sector, NGOs, community-based organisations, research organisations, and international, bilateral or NGO donors all have a part to play. The building of partnerships is an inherent characteristic of the Strategic Approach, and one of its modalities.

All the priority themes for action described below are 'software' rather than 'hardware' themes, reflecting the greater difficulty of addressing human rather than technical issues in water resources management and development – as in all development contexts. But it is worth noting that almost all water-related programmes (except in Water Resources Assessment and Planning) include engineering of some kind, and that 'hardware' will continue to consume a high proportion of water-related investment. Integrated management systems require that 'hardware' and 'software' should be interlinked.

Priority themes for action

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 favours efficiency. Devolution of some part of service delivery to the private sector may be one appropriate form of institutional development, along with the establishment of a suitable regulatory framework. The capacity of institutions needs to be enhanced by means of human resources development and training. The process should be continuous, and applies as much to formal as informal bodies, such as community groups.

Actions include:

- policy review and reformulation to meet requirements for 'integrated water resources management';
- review of existing laws and customary practices, with a view to establishing a rational legal regime and enforcement mechanisms, including over private sector service providers;
- establishment of mechanisms for inter-sectoral liaison and co-ordination, to ensure equitable allocation between competing users;
- advocating/supporting the reorientation of public water authorities towards adopting a facilitating and regulatory rather than a 'do everything' role;
- promote public-private sector partnerships;
- introduction of up-to-date concepts and techniques, such as environmental assessment, stakeholder analysis, participatory appraisal *(see Part III)*;
- setting up of river basin organisations where appropriate, within countries or transnationally; regional co-operation in this context;
- training and/or reorientation of managers at all administrative tiers; support for consultative mechanisms and information activity;
- help in establishing community-level bodies to play a role in the installation, management and maintenance of local 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 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 users, are needed. Within participatory management structures, the role of women in household water and food security needs to be recognised, and special attention paid to involving them at all decision-making levels.

Actions include:

- establishment of user groups, farmers associations, water and sanitation committees, and other expressions of civil society to participate in water resources management at local level; ensure that there are female as well as male members, and that they play a full part in decision-making;
- provision of funds and networking support for NGOs involved at local level in community water and sanitation service schemes and small-scale irrigation;
- gender-awareness training for personnel at all levels; gender-sensitive recruitment and promotion *(see part III)*;
- research activities targeted on meeting needs and demands of poorest users, ensuring that they have the opportunity to express their views and equitable access to service provision;
- basic education and technical training at the lowest stakeholder levels so as to develop demand for health- and livelihood-promoting water and sanitation services and participation in management;
- micro-project funds to enable community-based organisations and small NGOs to undertake local clean-up campaigns, establish artisanal enterprises and build small community installations (e.g. public latrines);
- surveys of local indigenous water management techniques and enterprises; develop ways to build on and legitimise sound local practice.

Natural resource management

The protection of the eco-system 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. Activities in this context have not, in the past, been given priority; since the 1992 Earth Summit, they are beginning to be given their due.

Actions include:

- advocacy on behalf of water as an essential resource with an economic value, particularly in areas of water scarcity; advocacy of policies and pricing regimes that discourage wastage and pollution;
- investments in environmental protection of vulnerable areas such as wetlands, coastal zones and fisheries, marginal farming lands, deserts, and areas vulnerable to flooding and/or soil erosion;
- support for measures which reduce environmental pollution by excreta-related bacteria (environmental sanitation, *see Part III*);
- promotion of clean technology (*see Part III)* to reduce water consumption and encourage recycling;
- training and material support to strengthen environmental agencies; support their role as watchdog to ensure that 'polluters pay';
- environmental impact assessments (*see Part III*) to measure the potential or actual effects of water-related projects on the eco-system;
- awareness-raising campaigns to educate government officials, professionals, communities and NGOs on the importance of natural resource management; ensure the incorporation of water-related environmental issues into education curricula.

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 knowledge and information, including: Knowledge of water resources availability: surface and groundwater; 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 productive sectors, and of society as a whole; water requirements of the eco-system, including the aquatic eco-system; knowledge of the good, bad or indifferent performance of water-related services, and their costs relative to water values.

Actions include:

- supply of equipment, instruments and training in hydrological, hydrometric and hydrogeological data collection, storage and analysis;
- surveys of water and wastewater service usage and potential demands, including willingness-to-pay and knowledge - attitude-practice surveys among potential users; capacity building in conducting the surveys (*see Part III*);
- equipment and training for baseline studies into ecological needs and for monitoring ongoing changes in the water-related environment;
- promotion of water quality monitoring, including provision of laboratory equipment and training; the establishment of local water quality standards;
- mechanisms for 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 and services in all sectors.

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 implacable 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. 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. (*See also Part III*.)

Actions include:

- advocacy and awareness-building activities to create the necessary political climate to accept the principle that water is an economic good and should be subject to equitable and adequate pricing for all uses, agricultural, domestic and industrial;
- studies and surveys to assess demand and willingness-to pay; support for the introduction of tariff reform and appropriate pricing regimes;
- feasibility studies to determine the system and levels of charges needed for financial viability;
- the establishment of a regulatory framework to monitor prices set by service providers (including autonomous public sector agencies) and protect the poor from exploitation;
- advocacy of reduction of subsidies, bearing in mind equity considerations regarding services for low-income communities and other clearly identifiable 'public good' considerations;
- promotion of economic analysis, 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 III*);
- introduction of water saving technologies, leakage control, rehabilitation and repair of existing systems.

Awareness-building and communications

Building political and public awareness of the need to value the economic, social, health 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 within programmes and projects is now widely recognised. Techniques of all kinds should be used to build awareness and provide for information exchanges between stakeholders. Without good communications, the development of strong participatory structures is likely to remain elusive. Policy- and decision-makers need to be made aware that supply-led service provision tends to enhance, rather than reduce, inequities because it leads to wastage. (*See also Part III*.)

Actions include:

- seminars and 'events' 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 stakeholders, all sectors and all levels of administration, in action to improve sanitation and public health;
- introduction of environmental and water-related components into education curricula and in information campaigns directed at the general public;
- educational campaigns on sanitary behaviour, water storage and use, directed at the public, especially women; campaigns directed at men to enhance respect for women's role in household water management;
- studies into existing knowledge, attitudes and practice (KAP – *see Part III)* regarding water collection, use and management and waste disposal;
- production of communications aids, and the use of TV, radio, advertising and other media for communication of public health messages;
- exchange of experience, project models and best practice among managers and operators in different countries and localities, by visits, newsletters etc.
- fostering inter-state and inter-country collaborative mechanisms where a river basin is shared and there are potential tensions over water usage.

Chapter 5

5

The application of the strategic approach entails identifying problem areas and appropriate responses at every stage of the programme process.

Introduction

Overview

The strategic approach presented in Part I of the Guidelines provides a framework of policy principles and programming contexts for water-related interventions. Planners, officials, and development workers are expected to use it as a guide to decision-taking. Part II of the Guidelines is designed to enable users 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 set out in Part I, at each of the different stages of the programme process, in each of the Focus Areas.

The user 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. 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 be impossible. It would, in addition, be neither efficient nor user-friendly. The whole emphasis of these Guidelines is to avoid prescription, and instead to facilitate a questioning mode of project development, in which sensitivity to changing trends, local variety of economic, social and environmental circumstance, and especially the input derived from stakeholder and user participation, can be reflected.

It is anticipated that the issues identified, and the possible responses described, will lead the user to pursue the most appropriate line of enquiry, and to perceive problems as soluble if all permutations of possible responses are systematically explored. Technical aids supplementary to the checklists which users can draw upon to assist this process are provided in Part III. In addition, initiative and imagination to put all pieces of the puzzle together, and bring the project to effective fruition, will certainly be needed.

The application of the strategic approach takes place at different stages of the programme process, which is identified here according to the Project Cycle Management (PCM) model used for EC development co-operation. (The next section contains a full description of PCM). In some parts of the PCM process, the problem issues and possible responses are similar for all Focus Areas, whereas in others they are different. For some

checklists, therefore, the material is generic and applicable for all Focus Areas, whereas for others, each Focus Area is presented separately.

Project Cycle Management (PCM)

PCM is the system for project development, funding and evaluation used by the EC for all its development co-operation. PCM incorporates two important ideas: the concept of a project proceeding through various stages from planning to evaluation, forming an identifiable cycle of development; and, secondly, the need for management of the project cycle through all its various stages. Central to PCM is the idea of managing a process, rather than contributing to a one-off event – such as a construction – with a beginning and end. This may be a characteristic of funding, but not of the larger process of development to which projects are intended to contribute.

Although the word 'Project' is part of PCM, it is worth bearing in mind that this term tends to carry restrictive connotations, and that the phrases 'programmes and projects' or 'water-related activities' have been preferred in these Guidelines. The word 'project', therefore, should be interpreted as broadly as possible. It might include the construction of a major installation or of multiple constructions such as boreholes or catchment dams; but equally it might not. Project components might be confined, for example, to research, systems assessment and institutional capacity building. In PCM, 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.

The EC approach to PCM

The EC practice of PCM is described in the 1993 manual, ***Project Cycle Management: Integrated Approach and Logical Framework***. The project cycle has six stages: **programming**, **identification**, **formulation, financing, implementation, evaluation.** For every project, a logical framework is prepared (see figure, at the end of this section) showing the intervention logic of the project as it evolves gradually through its various stages; it is a key part of all project documents. The approach is therefore constructed around the idea of carefully planned phases leading logically from each other, each with mechanisms of assessment and verification. The adoption of PCM by the EC is designed to improve and streamline its programmes of development co-operation, and make them more effective in realising their development objectives, including that of producing lasting benefits (sustainability).

Key concepts have been identified by PCM practitioners to improve the quality of judgment and decision making at all stages of the project cycle. These key concepts are:

Relevance: Are the project proposals relevant to the problem it is designed to address and to the beneficiaries?

Feasibility: Can the project idea be realised in practice?
Sustainability: To what degree will the assets (physical structures, institutional systems) created by the project continue to produce benefits after project funding is completed?

These three criteria are important measures of the quality of the project, and should inform judgments and decisions of managers and advisors not only during the planning stage, but at points during the project cycle when amendments and course corrections are indicated.

Reconciliation of PCM with key concepts for water-related activity

Recent thinking regarding development, stemming from lessons learnt during several decades of development co-operation, has brought to the fore certain key concepts; many of these have been explored with regard to water-related development co-operation earlier in these Guidelines (see Part I, under International thinking on water: the consensus). The reconciliation of these key concepts with the PCM process will require flexibility.

These concepts, all of which are inter-related, are as follows:

- **Development as a process:** Development is a process to which programmes and project contribute; programmes and projects alone do not themselves necessarily constitute development. A project can be immaculately executed in technical terms, but if it is out of line with social, economic or environmental realities, it may end up as a costly and irrelevant development failure. To try to ensure that programmes and projects do contribute effectively to development, a process of dialogue with stakeholders and beneficiaries is needed, not only in the planning and preparatory phase of a project, but throughout the entire project cycle. This process may throw up a need for longer time-frames, extra studies or experiments, even major project re-direction. Thus PCM should not be used as a rigid blueprint; no project cycle can be mapped out and set definitively in advance.

- **Ownership:** Evaluations show that many of the problems and failures in development programmes occur because the intended beneficiaries do not feel a sense of ownership of, or care for, the product. PCM articulates development co-operation from the funding perspective, with evaluation at the end of the cycle feeding back into programming and the identification of potential new projects for further funding. This perspective must be balanced with a user-beneficiary perspective which views the project as the creation of assets over which they hold responsibility, and which – if they exercise that responsibility – will yield sustainable benefits after funding has ceased.

- **Stakeholder involvement:** A sense of ownership cannot be created without the involvement throughout the project cycle of all actual or

potential stakeholders. These are individuals, groups or organisations who have an interest in a project (*see also Part III*). Beneficiaries and implementing organisations are the most important stakeholders, but others of significance might include religious groups, 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 suitable adjustments.

- **Participation:** All the above concepts entail a paramount 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 now recognised that effective participation, as opposed to an exercise in consultation or a communications campaign, can be a long process with unpredictable results. It is a vital component of the stages of identification and formulation, and should also be present to some degree in other stages of the project cycle. *(See also Part III.)*

It should be noted that **Decentralised Co-operation (DC)**, a form of development co-operation which has recently grown in popularity, and for which the EC has a special budget line *(see Part III)*, underscores the importance of the concepts noted above. Within Decentralised Co-operation activities, funds are channeled directly to agents of civil society, with the partner government acting as facilitator. In DC programmes, PCM has to be applied with special flexibility and imagination; although the central idea – of planned phases – is applicable in any project.

In summary, PCM is a tool designed to make more effective and efficient the delivery of development assistance. However, the application of this tool must be sensitive and flexible so as to prevent funding imperatives and procedures from taking precedence over development imperatives. At any time during the project cycle, adaptations may be needed to take account of changed circumstances or previously unknown factors. The criteria of relevance, feasibility and sustainability should be used to inform the judgments and decisions about changes to be made.

The six phases of PCM

1 **Programming:** The establishment of general guidelines and principles for EC support.

Purpose
The purpose of the programming phase is to assess whether, and in what form, EC development co-operation in water-related activity should be considered and what its role is likely to be within a country's national water plan. Programming helps to: establish what other assistance is being provided, from what sources and in what Focus Areas; review existing water policy; consider water-related activity across all development sectors; and identify the key Focus Area(s) for water-related projects. The programming exercise indicates ideas for projects and programmes.

Inputs
Sectoral plans and strategy documents; base-line data and situation analysis;
evaluations of past projects; demand analysis and resource assessment;
economic, financial, social, institutional and environmental analysis.

Activities
Sectoral and country/regional studies; dialogue with stakeholders; programming workshops and missions. A water resources country 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. A standard format for terms of reference for a country study is given in Part III, Chapter 15.

Outcomes
The development or further elaboration of a National or Regional Indicative Programme for water, consistent with development plans and with economic, social and environmental priorities; the identification of necessary supporting policy measures, and of complementary activities required in other sectors.

2 **Identification:** The initial formulation of project ideas.

Purpose
The purpose of the identification phase is to determine whether it is worth going ahead with a detailed study (feasibility study) to define the project more closely. The need or problem the project is intended to address, and its suitability, will be explored;
alternatives considered as well as the fit with other related project plans; base-line data will be reviewed; and thought given to the social, economic and environmental issues on which further research is indicated.

Inputs
National or Regional Indicative Programme (NIP and RIP); evaluation reports and reports from other projects; terms of reference for a pre-feasibility study.

Activities
Stakeholder analysis and consultation, including among proposed beneficiary groups and their representative organisations;
identification workshop;
pre-feasibility study. A standard format for terms of reference for a pre-feasibility study is given in Part III, Chapter 15.

Outcomes
A pre-feasibility report defining a project concept consistent with sectoral policy; assessment of the project concept for relevance, feasibility and sustainability; if further work on the project appears justified, definition of issues for the feasibility study and drawing up terms of reference.

3 **Formulation:** The detailed planning and preparation of the project.

Purpose
The purpose of the project formulation stage is to define all the components of the project in sufficient detail to support an informed decision on whether to proceed further and, if the decision is in favour, to facilitate implementation. During this stage, it will be necessary to revisit the broader picture of the project context and framework to see whether any changes have occurred, and make suitable adjustments based on new information. Estimates will be needed of capital and recurrent costs, and of how these are to be met from all possible sources. The institutional and management framework will have to be identified, and the likely social and environmental impacts.

Inputs
Pre-feasibility report defining key components of the proposed project; terms of reference for feasibility study.

Activities
Stakeholder participation; formulation workshop; feasibility study; supplementary studies (environmental impact assessment, social impact assessment, gender analysis, *see Part III*. A standard format for terms of reference for a feasibility study is given in Part III, Chapter 15.

Outcomes
Feasibility report; assessment of the project plan described in the feasibility study for relevance, practicality and sustainability; end of appraisal report;
project design, technical specification and tender documents; operational plan for project implementation and monitoring; definition of complementary policies or activities which are necessary to support project sustainability.

4 **Financing:** Securing of financial agreement for the project.

Purpose
The purpose of the financing stage in the project cycle is to reach an informed decision to implement the project and to secure funding for it through an agreement between the recipient country and the EC (perhaps in co-ordination with other donors). To achieve this, satisfactory answers will be needed to a number of questions, including its relevance, feasibility and prospects of sustainability; the accuracy of costings; and the level of commitment and sense of future ownership by the Government and stakeholders. Demonstration is needed that sufficient funding to complete the project, and maintain any installations in the future, will be available.

Inputs
Feasibility report; results from complementary studies (environmental impact assessment, social impact assessment see Part III, Aids).

Activities
Preparation of a Financing Proposal and supporting documentation; review and decision on the financing proposal.

Outcomes
Financing decision by appropriate EC body, followed by a Financing Agreement confirming project content and modalities; accompanying measures for project implementation and sustainability; definition of conditions for project financing; definition of monitoring indicators *(see also Part III)*.

5 **Implementation:** Execution of the project plan.

Purpose
Creating the project assets (physical structures, institutional systems) efficiently and effectively in order to yield a sustainable flow of benefits. Before implementation of the project activities, an assessment will be needed as to whether pre-conditions for implementation have been met; whether the schedule is realistic; whether all necessary mechanisms for disbursement are in place; and whether the agents responsible for implementation are well-prepared and performing satisfactorily.

Inputs
Financing Agreement; project implementation plan; detailed designs and tender documents; monitoring systems and indicators *(see Part III)*.

Activities
Dialogue with stakeholders and those administratively responsible; project start-up workshop; project execution; mid-term review, project supervision. A mid-term review can be particularly useful to help reformulate projects to take account of changes and the standard format for terms of reference for an evaluation study, given in Part III, Chapter 15, could be modified for use for a mid–term review.

Outcomes
Project executed as far as possible according to plan; drafting of further plans to ensure that project assets can be operated successfully to maintain a sustainable flow of benefits.

Monitoring

A key activity during implementation is the monitoring of actual events. Careful monitoring of the project process will enable remedial action to be taken to address problems or revisions that may be needed. The quality of the subsequent evaluation stage will be highly dependent on effective monitoring.

To facilitate monitoring, a set of indicators are needed as a basis for measurement of progress; indicators should include process indicators, for monitoring the actual project process, and outcome indicators for measuring its achievement against planned outcomes. *(See also Part III.)*

6 **Evaluation:** Analysis of activities and outcomes of the project.

Purpose
The purpose of the evaluation phase is to arrive at a clear and comprehensive view of how successful the project has been in meeting the needs and objectives originally identified; and to learn lessons for future projects. The evaluation may also contribute to improving or changing water policy, or institutional and management frameworks for water resources development and management.

Inputs
Project reports; results of monitoring surveys and audits; terms of reference for an evaluation study. A standard format for terms of reference for an evaluation study is included in Part III, Chapter 15.

Activities
An evaluation study carried out by an independent team (consultants, universities or others who have had no direct involvement with the planning or implementation of the project). Evaluations can be mid-term (during the lifetime of the project) or final, sometimes called ‘ex-post’, at the end of the project or some years after project completion.

Outcomes
An evaluation report giving (i) a clear picture of the achievements of the project or programme and (ii) lessons learned and recommendations for improvements.

PCM and EC Funding Instruments

Projects in which the EC co-operates are subject to administrative variation according to the funding instrument under which project support is provided. EC funding instruments allow for a range of different kinds of support, including the traditional study or project approach, sector investment programmes, fiscal support measures and policy or strategy development.

In the case of most funding instruments, the legal basis for such support requires that the agreement is between the EC and the central government of the partner country. However, some budget lines have been devised to allow for funds to be remitted directly to institutions of civil society, including NGOs, and semi-formal administrative entities at local level such as Community or Village Councils. These include the budget lines for micro-projects, NGO support, and Decentralised Co-operation (to which reference has already been made); thereafter in these Guidelines these forms of funding will be referred to as extra-governmental funding.

The two Directorates-General, DGIB and DGVIII, have different roles and procedures. Similarly, each partner country will have its own mechanism for managing externally funded support programmes. Such differences must be taken into account during the programming phase. Care is needed to ensure that the support to be provided satisfies all the players before proceeding to the identification phase.

A description of EC funding support for co-operation in water resources development and management through agreements with partner country governments is provided in Part III, Chapter 14.

How to use the checklists

The following six chapters contain the core material for the application of the strategic approach in the form of checklists for each project cycle management phase.

It is important to understand the organisation of this material. For some parts of the PCM – programming, financing, implementation and evaluation (stages 1, 4, 5 and 6) – there is virtually no variation between Focus Areas. For example, in the context of financing, the issues which have to be addressed and the actions taken to arrive at a financing agreement are the same independently of the Focus Area for which a project is designed. Similarly, issues and actions for programming, implementation and evaluation are the same across Focus Areas. The checklists for these activities, therefore, are generic and applicable 'for all Focus Areas'.

However, for the other two stages – project identification and project

formulation (stages 2 and 3) – the issues to be addressed and the corresponding actions differ from Focus Area to Focus Area. For example, the potential environmental and technical implications of the construction of a storage works for irrigation may be different from those stemming from the development of a gravity-flow safe water supply scheme to domestic standpipes. Therefore, there are separate checklists for project identification and project formulation for all Focus Areas.

Whether under a PCM stage treated generically, or under a PCM stage handled separately for a specific Focus Area, each category of guiding principles is worked through systematically. The order in which issues and responses are addressed is the same as the order of their elaboration in Part I: institutional and management principles; social principles; economic and financial principles; environmental principles; information, education and communications principles; and technological principles.

The checklists have been constructed in the following way. In the left-hand column, key issues or problem statements are identified, followed by examples of the kind of questions which the user may want to pose to the authorities, stakeholders, or to him- or herself, in order to assess whether and in what way this issue needs to be addressed. In the right-hand column, possible responses in the form of studies or other activities are suggested. The checklists for the programming and financing phases are the exception. This is because programming occurs before any projects have been identified and is therefore by its nature a different kind of exercise. Unlike the other PCM phases, programming entails a logical step-by-step sequence of actions to produce its outcome (the identification of Focus Areas in which co-operation might be proposed). Similarly, financing is a structured process to enable the EC to make a decision on a Financing Proposal.

As already stated in the Overview to Part II, the user should bear in mind that this is not a manual. The checklists are not meant to be exhaustive but to act as pointers. The emphasis of these Guidelines seeks to avoid prescription, but rather to facilitate a questioning mode of project development.

Example of a logical framework

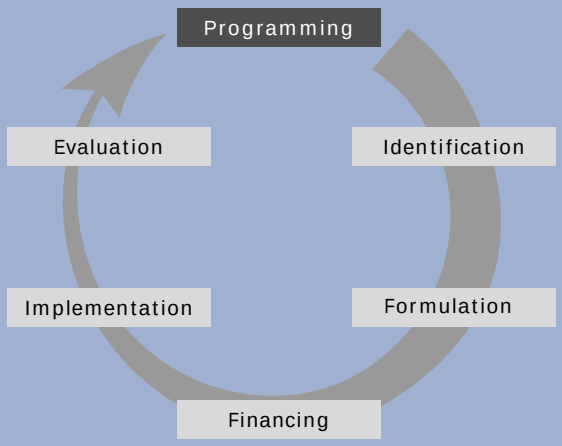
	Intervention logic	Objectively verifiable indicators	Sources of verification	Assumptions
Overall objectives	Food situation improved	Food situation improved. After 1997, 300kg rice or 60kg manioc consumed same (indexed) price as in 1992	Survey by Ministry of Agriculture in 1998	
Project purpose	Increased rice production in hill regions	increased rice production per ha 94 95 96 97 10% 20% 30% 10% (+/– 45% output sold)	Project report 94/95/96/97	Increased agricultural output on hills, with over 50% of rice crop consumed by prducers
Results	1 Irrigation network functioning	From 1995 all fields adequately irrigated	Survey of peasant fammer's 95/96/97 Reports from extension services and project team	No sabotage of irrigation system Farmer associations carry out maintenance of irrigation system Mechanised rice production Rice surplus covers production costs (inputs)
	2 More regular supply of inputs	A month before planting all peasant farmers have seedlings and 50 kg fertiliser per ha		
	3 Farmers using new farming skills	Farmers apply the agricultural calender and plant at right distance from 1996 onwards		
Activities	1.1 Organise rural farmers 1.2 Clear blocked channels 1.3 Raise dykes 1.4 Train farmers in management and participation	EC human resources ● 120 m/m means invested ● 3 cars/ 4 motorcycles ● 3 houses/offices ● Working capital Government human resources ● 240 m/m means invested ● 4 houses ● running costs	(x 1000 ECU) 1200 60 140 500 1900 120 40 40 200	Access roads in good condition Extension workers motivated by incentives Traders continue to supply inputs Extension workers able to establish dialogue with farmers Extension service meets changing needs of farmers Budget for training still available post-project
	2.1 Organise purchase of inputs 2.2 Organise inputs distribution			
	3.1 Organise extension service 3.2 Train extension workers 3.3 Train instructors (men & women) 3.4 Study effects of use of inputs on environment			**Preconditions** Disputes between hill farmers and lowland farmers are settled Official approval of organisational set-up

Source: EC Manual on Project Cycle Management

Programming

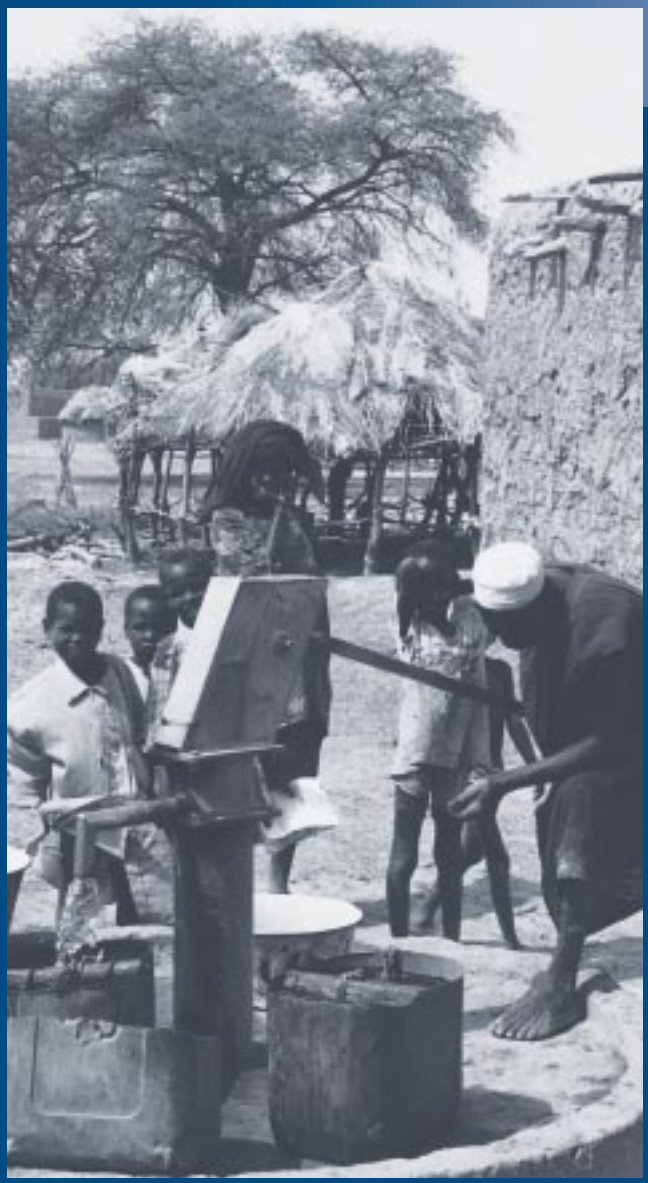
The establishment of general guidelines and principles for EC co-operation with partner countries

Chapter 6



6

The purpose of the programming stage is to assess whether, and what form, development co-operation should be considered. Programming analyses current needs and policies in a country or region, and identifies opportunities for EC support. As water is fundamental to social and economic development, this chapter sets out to decide on priority Focus Areas for support in order to achieve an integrated approach to water resources management.



Programming

The programming phase provides an opportunity to review all national, regional and local factors relating to water, and the policy and operational context for water-related development co-operation.

During this phase, priorities will be identified for potential water-related activities within the wider context of national development objectives, indicating which Focus Area(s) are most in need of support.

At the programming phase, a truly integrated approach which balances needs and possibilities within an overall water resources management framework is practicable and easy to apply. However, an integrated approach requires a wide range of information collection and analysis. A standard format for a country study is given in Part III, Chapter 15, which can be used together with the checklists given below.

The essential questions for the programming phase are:

- Is EC development co-operation needed for water resources?
- In which Focus Area(s) and by what kinds of support would development co-operation be most beneficial?

Checklists have been developed to correspond to the following four steps in the programming process:

Step 1: Assessing the need for water resources support;

Step 2: Determining the capacity of recipients to take on and manage programmes;

Step 3: Identifying complementary activities in other sectors and by other donors and assessing the compatibility of any proposed programme;

Step 4: Identifying the priority focus areas for support.

Checklist for Step 1: Assessing needs

All support should be demand-driven, fully endorsed by the partner country, and developed in consultation with 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, natural resources conservation or food production, even if they are not specifically stated?
- Is there adequate political support to make policy implementation feasible?
- Is there adequate conformity between Government policy at national level, and the local-level problems and needs being tackled by local and community-based organisations?
- What type of requests in the past has the partner government made to donors for support in issues related to water resources or where water may play a significant role?
- Are there indications that water issues are of concern to the people (through NGOs, media reports, pressure groups etc.) and how is the government responding to the people's concern?
- Are associated issues, such as land use, pollution, etc., prominent, and is the government committed to resolving constraints between water and other associated issues, such as energy, navigation and tourism?

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

- Is the country, or some regions, now facing water scarcity or stress or likely to do so in the near future?
- Does it appear that the country needs support in order to manage its water resources adequately?
- If no water policy exists, or is inadequate, should help be provided to prepare one?
- Do current government policies demonstrate an awareness of water resources issues and the possibility of conflicts between users?
- To what extent are people's wants and needs known and understood and is improved water resources management critical to the social well-being of the entire country or of specific regions within it?
- Does the government recognise the need for an integrated/over-arching water resources policy that ensures that water resource needs of different sectors are addressed?
- Is present legislation adequate to manage water resources effectively and, if not, can EC provide co-operation to rectify this?

In formulating any programme or action plan for water resources, care is needed to avoid contradictions between water-related sectoral policies such as those for agriculture, energy and transport, and environmental policies.

- What is the current level of commitment, both in policy and practice, to maintaining biodiversity and protecting the aquatic ecology?
- Is the government already committed to water resources development and management and does it appreciate the importance of an integrated approach?
- To what extent are the non-consumptive aspects of water resources, such as in-stream use, hydropower, flood control, recreation, and navigation taken into account in water policies or proposed development plans?
- Have proposed project plans or programmes been developed in consultation with the various sectoral and sub-sectoral agencies?

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

- Are there indications that the government policy and actions on water benefit the poor and disadvantaged rural or urban populations and that they are included in the development process?
- To what extent is there conflict between users (both consumptive and non-consumptive) and between use and conservation? Is attention/awareness paid to this?
- Are transboundary issues significant to water resources management and is the government party to treaties or agreements with neighbouring countries?
- Are there conflicts over water between neighbouring administrative regions of the same country?

Based on the above assessment of needs, decide whether:

1. There is a need for support to water resources in the country or region, *or*
2. Water resources do not appear to be a critical issue, or the country is confident that it can adequately manage water resources without EC development co-operation, *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.

Checklist for Step 2: Capacity to take on and manage programmes

A water resources programme can only be effectively implemented if there is adequate capacity within government and partner organisations to handle the institutional, technical and financial demands contained within it.

- What is the past record with EC and other donor supported programmes in water resources? Do evaluations of recent programmes/projects offer useful indications?
- Are customary rights, transboundary disputes or other legal issues a constraint to effective support to water-related activities?
- Is the institutional structure adequate for effective management and do the key organisations have clear, legally defined mandates?
- How many key agencies are there at the higher tiers of authority and are they capable of managing water resources in a holistic and co-ordinated way?
- Is institutional reform needed, and if so, is the government aware and supportive of reform?
- What is the present condition of the water resources infrastructure, and if it is in poor condition, why has this occurred?

There are a number of mechanisms for the provision of EC support. It is important to identify the most suitable mechanism during the programming phase and to ensure adequate local funding is available.

- How are different types of water-related activities presently financed, and to what extend is cost recovery considered?
- Is the country able and willing to support local recurrent costs and make adequate 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 EC 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?

Development co-operation can, in certain circumstances, be provided to agents other than central government under Decentralised Co-operation (see Part III EC Resources) and other budget lines for NGO support and micro-projects.

- Is the central government receptive to and supportive of direct donor partnership with non-governmental organisations?
- Do NGOs exist which are representative of civil society's interests and needs concerning water and can they reliably manage EC support?
- Do the identified organisations carry popular confidence and support, as well as respect from government?
- Does the government support the principle of devolving power, notably responsibility for operation and maintenance of service installations, to the lowest appropriate administrative level?

Many local organisations lack capacity, which has led in the past to successful participation but poor implementation, monitoring, and follow-up.

- Do the partner organisations have the technical and managerial capacity to manage projects and, if this is weak, is there adequate assistance locally to support them?
- What is the professional competence of the potential partner organisations involved in water resources, including local associations and NGOs, and do they understand EC requirements?
- Are all parties aware that project support through NGOs may require more operational flexibility and careful monitoring and management by the EC?

Based on the above assessment of capacity decide whether:

1. Policies and capacity are adequate for significant EC support to water resources development and management, *or*
2. Policies and capacity are adequate in general but there are specific weaknesses that would have to be addressed as part of any programme, *or*
3. Capacity is weak and support should be initially focused on dialogue with the country to determine ways to reform policies and strengthen capacity.

Also decide whether:

4. Indications are that direct support to NGOs (extra-governmental support) would be appropriate and bring additional benefits if used in conjunction with other types of support, *or*
5. Government capacity is weak but opportunities exist for extra-governmental support, *or*
6. Local conditions and government priorities do not favour extra-governmental support.

Checklist for Step 3: Compatibility and complementarity

Water resources development and management must be assessed with regard to compatibility with the overall development plans of the country.

- Do national development plans include measures to ensure the sustainable use of water resources?
- Are environmental aspects (including in-stream use) of water treated seriously and addressed in policies related to other sectoral activity?
- Is water a key element of many economic activities and becoming a constraining resource?
- What options are available for meeting current and future water needs, and have alternatives to supply augmentation 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 sustainable water resources development and management, as set out in the Guiding Principles?

The EC must ensure that any programme does not conflict with other donor activity and vice versa.

- What support are other donors providing in water resources or water-related activities and is water considered a high priority or taken for granted – is there coherence/co-ordination on water resources issues?
- What other assistance is presently being provided by EC in water resources development, and does it provide guidance on future programmes?
- Does support by the EC or other donors in other sectors complement or conflict with possible interventions for water resources?

Based on the above assessment of compatibility decide whether:

1. Activities in other sectors or by other donors can be effectively complemented by EC support to water resources; *or*
2. There is some overlap or other incompatibility with activities in other sectors or being undertaken by other donors; this should be resolved prior to EC support to water resources; *or*
3. Activities already underway in other sectors or by other donors suggest that EC support to water resources may be inadvisable under current circumstances.

Checklist for Step 4: Identifying priority Focus Areas

It is important to identify which Focus Area(s) is/are most in need of external support. This priority setting has to fit within an overall 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?
- What is the place of the different Focus Areas within existing national and regional plans and international co-operation?
- Do policy conflicts make holistic planning difficult or reduce the possibility of support to any of the Focus Areas?
- Does the government specify and apply priorities between domestic, agricultural, and industrial water use?
- Do existing laws relate to water, and if so, do they provide a basis for actions in improving water resource utilisation and management?

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

- Is technical information readily available on the quality and quantity of water sources, including surface water, soil moisture, and aquifers? If not, will lack of information constrain effective planning?
- Are predictions of future supply and demand being made on the basis of realistic assumptions, and do they take into account non-consumptive uses of water?
- Are the numbers of people in rural and urban areas without clean water or sanitation known, and is there adequate information on water- and waste disposal-related health issues?
- Is information available on the agricultural use of water and those served?
- What is the potential for increasing food productivity through irrigation, land drainage or flood control?
- Is the strategic role of 'virtual water' *(see Part III)* understood and taken into account in assessing the need for irrigated agricultural production?

Possible Responses to Assessment of Steps 1 to 4

Each partner country is unique and their categorisation should not be too prescriptive. However, as a guide, the responses to steps 1 to 4 can help to identify the priorities for EC support, which should be discussed with the country. The following sets out a general basis for selecting different programme responses based on the impression gained from the issues raised in steps 1 to 4. Three categories can be determined:

Category A:
A recipient country or region in this category is likely to have weak institutions, with minimal 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, EC Development Co-operation should focus on:

- projects or programmes which help the government to improve policy, and legislation, strategy formulation, and assistance to identify priority programmes;
- the provision of basic services, capacity building, and improvement and re-organisation of institutions. However, considerable care will be needed in preparing projects and require the judicious use of technical assistance. It is likely that such countries will be most in need of EC support and a decision to refuse investment in water-related interventions should only be taken if no suitable partners for development can be identified.

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. In this context community ownership may be critical and key partners need to be identified to help reduce the risk of unsustainable services. Indigenous local technology or the careful selection of appropriate modern technology will be needed.

The role of NGOs or community-based organisations and innovative funding instruments such as decentralised co-operation may have an important role. Support should be given to awareness-raising and knowledge generation, such as hydrological assessments, that will be useful for later, more extensive interventions and permit better planning and management of water resources.

Focus Area 1 (WRAP) will be important but appropriate support within Focus Area 2 (BWSS) and Focus Area 4 (AWUM) 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 development and management (including perhaps some 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 EC interventions fundable. EC support can be more extensive than for category A as the risk of a poor response to EC Development Co-operation is much reduced. Support may still be required for:

- improving policy, strategy, legal and regulatory frameworks to improve water resources management and build on any existing work;
- assistance to increase the participation of stakeholders and, in particular, facilitating the increased involvement of the private sector;
- encouraging capacity building and institutional improvements at all levels;
- giving increased importance to 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 as long as suitable partners can be identified that will take ownership of the projects or programmes.

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. EC Development Co-operation could provide support 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;

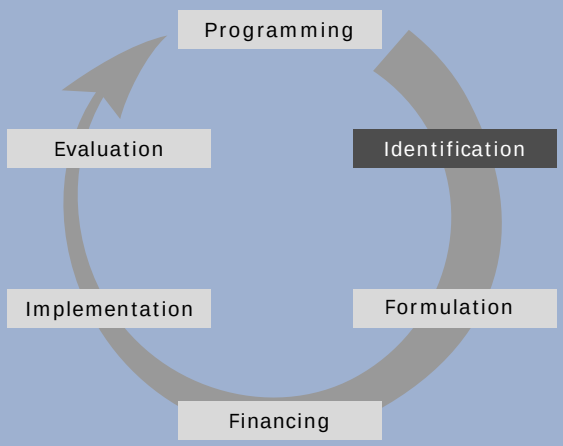
- assumption by central government of a planning, legal, regulatory, and facilitating role including re-allocation of water resources between sectors; and the establishment of a framework for increased public-private partnerships;
- measures to introduce pollution control, wastewater treatment and re-use, 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–sectoral linkages leading to a multisectoral approach to water resources development and management, including positive participation in managing transboundary waters;
- the provision of more sophisticated knowledge and data generation and computerised management information systems.

All Focus Areas should be considered for support.

Identification

The initial elaboration of project ideas

Chapter 7



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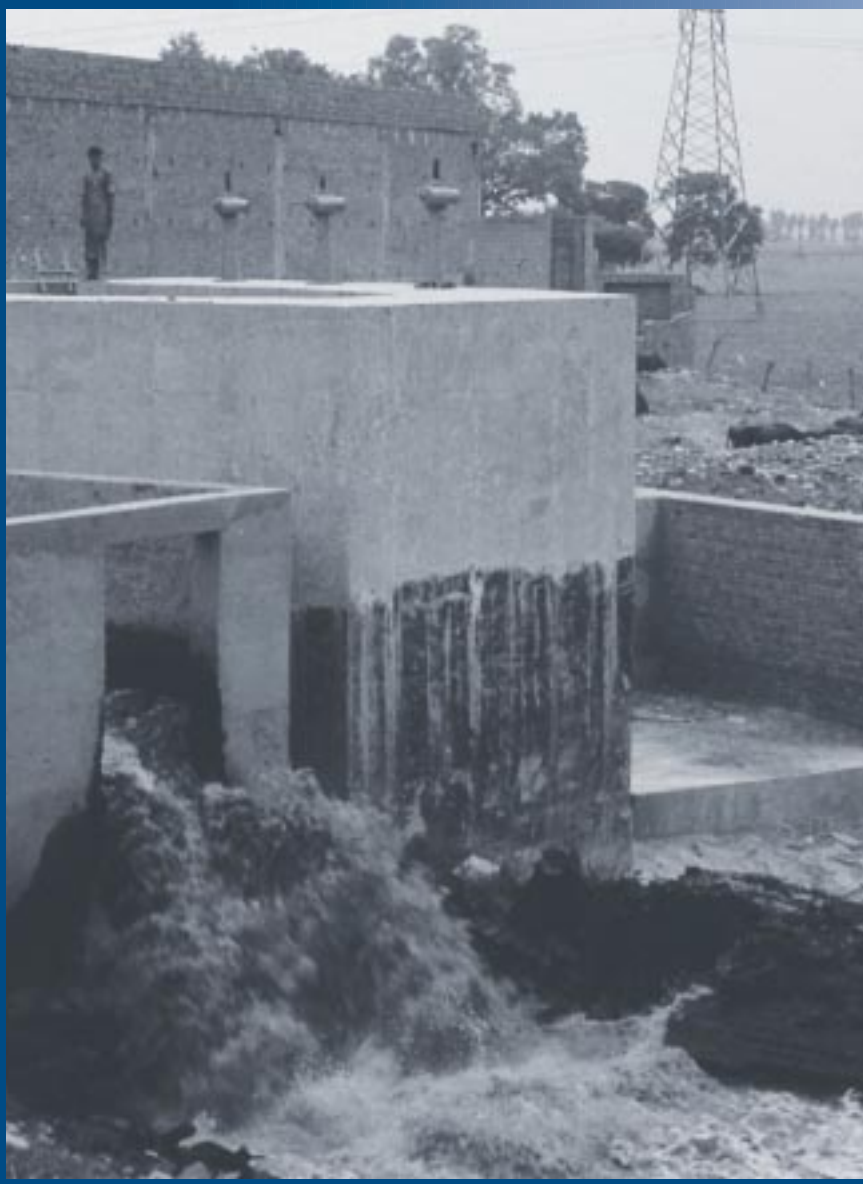
The purpose of the identification phase is to examine options and identify viable interventions that can address the priorities identified during programming. Identification determines whether it is worth going ahead with a detailed study (feasability study) to define the project more closely. Pre-feasability studies are the main outputs of the identification stage and there can be several issue-related studies or one comprehensive study.



For all phases of the project cycle other than programming, checklists have been prepared in the same format, to allow the user of the Guidelines 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 RESOURCE ASSESSMENT AND PLANNING

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 resource development?**
- **Does an up-to-date, comprehensive assessment of water resource development and management issues exist?**

- 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.

Fragmented planning functions and agency responsibilities lead to sector-based project-by-project development and inter-sectoral 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 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-sectoral co-ordinating bodies at national, regional, river basin and local levels (e.g. inter-ministerial commission, river basin committees etc.).
- Review lead and support agency 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 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 and clarify commitment to it within all policies.
- Undertake a Stakeholder Analysis to identify key stakeholders and their respective interests. (*see Part III*).
- 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 WRAP?**
- **What are the needs and demands of different social sectors with regard to water?**

- Assess compatibility of social development objectives with water resource policies.
- 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 III*).
- 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:

- **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) should be addressed?**
- **Which potential user groups are known to be particularly disadvantaged?**

- Work with Local Authorities, NGOs and community groups to establish an appropriate participatory approach (*see Part III*).
- 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 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 sectoral water use within the economy and establish water needs to support development objectives.
- Review water values in its different uses and consider the implications for future supply provision.
- Determine the effects of water shortages in 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 for re-allocating resources (from low- to high-value uses), and what would be the implications of any re-allocation?**

- 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 III*).
- Investigate the likely negative economic and social impacts of re-allocation, 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?**

- 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 *see Part III*).

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?**

- Undertake initial screening and, if needed, a Preliminary Environmental Assessment to identify potential environmental impacts associated with alternative interventions (*see Part III*).
- 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.

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 a constraint to informed decision-making?**
- **What are the constraints to information exchange and availability?**

- 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.

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 III*).

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 function?**
- **What is the level of awareness among key stakeholders?**
- **To what extent are planning processes transparent and information accessible to stakeholders?**

- Identify whether awareness-raising (*see Part III*) is clearly defined within planning agency roles and responsibilities.
- Encourage and support educational 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 sectoral uses and what demand assumptions are used?**
- **What is the amount of water unaccounted for at the basin level?**

- Establish current water allocation, actual use, and future demands for all sectoral 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 hydrogeological information form the basis of water resource assessments. High quality data is needed for reliable assessments. Therefore examine:

- **To what extent does the existing network adequately match the planning scale?**
- **To what extent does 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?**

- 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.
- Verify that technologies match the technical and financial resources of the responsible agencies.
- Help establish a disaster preparedness strategy including data management and early warning systems.

BASIC WATER SUPPLY AND SANITATION SERVICES

KEY ISSUES	POSSIBLE RESPONSES

Institutional and Management Principles

Basic water and sanitation 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?**

- Work with government to identify BWSS options consistent with national policies which follow WHO guidelines (*see Part III*).
- 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.

Effective inter-agency and inter-sectoral 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 inter-agency or inter-sectoral co-operation 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 co-operation.
- Bring other key agencies such as health and education into the planning process.
- Include support for measures to harmonise 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 BWSS 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 III*).
- 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 the principles of stakeholding and their expected role in the project.
- Assess the feasibility of devolving power to regional, district or sub-district level.

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

- **Does legislation exist to put BWSS policy into practice and are there means to enforce standards?**
- **Is there potential or actual conflict between national BWSS policies and regional or international legislation** (*see Part III*)**?**
- **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 BWSS and government is unwilling to change it, consider alternative modes of support (e.g. decentralised co-operation) (*see Part III*).
- 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.

BWSS projects have traditionally focused on design and construction and tended to neglect OSM 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 BWSS schemes to user groups?**
- **What are the current structures for O&M and management of BWSS activities?**
- **What scope exists for privatising some part of the delivery/management of BWSS services?**

- Assist government to carry out an institutional review and advise on appropriate restructuring.
- Ensure that pre-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 sub-contracted 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 BWSS services?**
- **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 III*).
- 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 (*see Part III*) and that their benefits are understood.
- Commission a training needs assessment to be carried out at the pre-feasibility level.

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 BWSS 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 during pre-feasibility studies 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 data management that is sustainable in the longer term.

Social Principles

BWSS 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 BWSS services?**
- **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 BWSS services.
- Conduct a preliminary Social Impact Assessment (*see Part III*) in the pre-feasibility study.
- Identify those not served by water and sanitation facilities, and make every effort to incorporate their needs into proposals

BWSS projects can bring great health and convenience benefits to communities, but without careful regard to 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?**

- Verify that Participatory Appraisal 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 III*).
- Include arrangements to educate users on the health and social value of safe disposal of human waste.
- Identify appropriate measures to collect data, including indicators to determine the level of uptake.

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 organisations 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 (*see Part III*).
- Check that the project structure allows time and resources for consultation with all stakeholders, and allow for information programmes 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 BWSS projects, not only as primary users, but to manage water resources. Their participation at all levels of planning is needed. Therefore examine:

- **Does the implementing agency apply the EC Women in Development guidelines?**
- **Are implementing agencies sensitive to women's role in water collection and use, and recognise the range of women's community roles, including management roles?**
- **What specific measure are included to increase women's awareness and involvement?**

- Verify that agencies responsible for project identification are applying the EC Women in Development Manual, and the Beijing Strategy for Action (*see Part III*).
- Include gender analysis (*see Part III*) 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 BWSS. 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 and who pays them by what methods?**
- **How far are 'basic needs' for water and sanitation (*see Part III*) currently being met?**

- Ensure that the economic aspects of water use are estimated 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 BWSS schemes, including O&M and management?**
- **Are charging levels 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 a willingness-to-pay study (*see Part III*).
- 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 BWSS services; what are the incentives for stakeholders to use and conserve water; and do these two concepts conflict?**
- **What practical market- and non-market-based incentives may be used to ensure sustainability of BWSS 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 and institutional obstacles to price and non-price instruments for demand management (*see Part III*).
- Ensure that project design uses optimum water conservation technologies.
- Ensure that any likely increase in micro-enterprise is properly assessed and costed.

Projects must demonstrate financial viability and accountability. Therefore examine:

- **What is the estimated total project cost?**
- **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?**

- Prepare cost estimates for each option identified during the identification phase.
- 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.

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, Preliminary Environmental Assessment (*see Part III*).
- Include a statement of environmental data availability and requirements in pre-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.
- Ensure that the need for treatment of human wastes created by new sanitation schemes has been taken into account.
- Ensure water quality is adequate.

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

- **What changes in water use are anticipated, and in human settlement and grazing?**
- **Will rainfall and groundwater given seasonal variation be sufficient over time?**
- **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.

Information, Education and Communication Principles

The development of a BWSS 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** (*see Part III*)**?**

- Review current data collection methods, analysis, storage and dissemination systems for BWSS 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.
- Ensure that, in addition to conventional statistical methods, participatory methods of data collection are incorporated.

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

- **What is the current understanding of the rationale for clean water and sanitation for health and better living?**
- **What is the current level of understanding of the concepts of participation and stakeholding?**
- **What are the linkages with Information, Education and Communications (IEC) activities by health and education agencies?**

- Ensure that an appropriate education campaign is developed, particularly for women and on health awareness.
- Include discussions and workshops and other extension activities to disseminate information.
- Identify training needs for information management in the public sector, and to strengthen the role of the NGO sector.

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 III*); **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 of appropriate technology (imported and indigenous** (*see Part III*)**?**
- **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 ability?**

- 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 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 WATER AND WASTEWATER SERVICES

KEY ISSUES	POSSIBLE RESPONSES

Institutional and Management Principles

MWSS 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 MWWS and what priority does it give projects?**
- **What is the municipal structure and institutional framework for MWWS?**
- **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 MWWS, or it is inadequate, commission a policy review.
- Advise relevant authority on steps to clarify the role and functions of each level of MWWS.
- Identify institutional deficiencies and address them. Consider a study to analyse the feasibility of establishing a national water agency.
- If MWWS are not considered a priority, assess the reasons and identify the implications for co-operation.

Effective inter-agency and inter-sectoral planning is essential. Therefore examine:

- **Which agencies, municipal, inter-municipal, governmental and non-governmental, 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 co-operation between the proposed agencies?**
- **How do policies address inter-sectoral co-operation between industry, domestic supply and water for agriculture?**

- Ensure that a comprehensive list of agencies is drawn up and that all agencies are consulted.
- Identify inter-sectoral 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 co-operation between them.
- If co-operation is not good, put in place mechanisms to resolve differences or find alternative agencies.

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 MWWS?**
- **What framework exists for allowing participatory management of MWWS schemes and sharing the benefits?**

- Seek ways to involve users and operators in the process, for example through advisory committees, workshops and discussion groups.
- Carry out a Stakeholder Analysis. *(See Part III.)*
- Design a consultative mechanism and incorporate within the management system.
- Clarify the broad framework, including legal, for participation and consultation.

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

- **What are the institutional provisions for MWWS installation, maintenance and management?**
- **How does MWWS management need to be restructured to improve maintenance?**
- **What are the tasks and responsibilities of each organisation and municipal department responsible for project management and maintenance?**

- Establish a network maintenance plan within an appropriate institutional framework as part of the pre-feasibility study.
- In the pre-feasibility study, assess existing shortcomings and identify improvement measures and costs.
- Consider whether restructuring could be included as special conditions and/or accompanying measures.
- Discuss 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 MWWS?**
- **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 III)*, and discuss ways to support the preferred option as part of the pre-feasibility study.
- Support measures to improve private sector involvement, such as changes to laws, training and structure contracts so as to provide sufficient working capital.
- 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 MWWS 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 are used for MWWS, from national to the user level?**
- **What policies and practices are used to motivate personnel, such as salaries, promotion, 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 and commercial requirements.
- Investigate ways of introducing policies and effective practices for staff motivation so that they remain in service.

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

- **What management information systems are in place at national and municipal levels?**
- **How can appropriate water and wastewater services be incorporated into the planning process?**

- In the pre-feasibility study, assess the shortcomings of the existing situation and identify improvement measures together with costs.
- Include provision of specialist training to assist staff in setting up monitoring and evaluation systems, including process and impact indicators (*see Part III*).

Social Principles

Municipal water and wastewater 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 Social Impact Analysis *(see Part III)*.
- Commission a baseline study.
- Specify quantifiable indicators in the pre-feasibility study or in a separate socio-cultural study.
- Plan to target all groups, especially the unserved and poorest.
- Consider tariff structures/cost recovery to meet the needs of poor consumers *(see Part III)*.

MWWS projects can bring great health and social benefits to urban areas. But without very careful regard to users' norms and needs, projects can be underused. Therefore examine:

- **What information exists on the groups of residents and their current problems?**
- **Have the preferences and needs of all consumer groups been tested (including those in micro-industries, crafts and horticulture)?**
- **How do townspeople get water? Who, within the family, is in charge of providing water and paying for it?**
- **Are marginal or peri-urban areas excluded from the municipal authority responsibilities?**

- Include a municipal review as part of the pre-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 for services or improvements *(see Part III)*.
- Investigate ways of working with informal service providers (see BWSS) 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.
- Examine the likely need for resettlement in the pre-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

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

- **Have the benefits of improved water services been fully investigated 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 the main social, economic and health benefits expected from the programme, in monetary terms where feasible *(see Part III)*.
- Review current water costs and update throughout the identification process; analyse the costs of production, treatment and distribution.
- Carry out a preliminary economic analysis in accordance with the EC Manual *(see Part III)*.

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 MWWS 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 commercialise 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 III)*.
- Estimate the marginal cost of increases in present consumption, and design tariffs accordingly. *(see Part III)*.
- Commission a willingness to pay study (*see Part III*).
- Investigate ways in which commercialisation could be introduced to improve cost recovery, e.g. in revenue collection.

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 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?**

- Conduct a preliminary environmental assessment *(see Part III)*.
- Include an environmental baseline study early in the project.
- Include preparation of guidelines during formulation or as an early project activity.

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

- **Is excessive groundwater withdrawal occurring? How can this be discouraged?**
- **Is fossil groundwater proposed as the water source?**
- **What are the dangers of pollution to the groundwater?**
- **What will be the effects on surface waters and, in particular, downstream users?**

- Assess aquifer depletion 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.

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 MWWS?**
- **What is the level of awareness and education concerning MWWS among consumers and other stakeholders?**

- Determine mechanisms for disseminating information to stakeholders.
- Assess the awareness of the importance of saving water and of environmental impacts in relation to MWWS.
- Prepare an appropriate strategy for health education and awareness raising (*see Part III*).

Technological Principles

MWWS 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?**
- **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?**
- **What quantity of storm water is to be disposed of and how will this be done?**

- Investigate the most appropriate modern technology and promote the use of clean technology *(see Part III)*.
- 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 is 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 analysed, 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 WATER USE AND MANAGEMENT

KEY ISSUES	POSSIBLE RESPONSES

Institutional and Management Principles

AWUM 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 AWUM 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 AWUM 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. If irreconcilable, abandon any intervention.
- Identify possible areas of conflict and initiate discussion to resolve issues.

Fragmented planning functions and agency responsibilities lead to sector-based, project-by-project development and potential inter-sectoral and inter-agency conflict. Therefore examine:

- **Which governmental and NGO agencies are or could be involved in activities relating to AWUM or flood control?**
- **How successful are similar activities implemented by the relevant agencies?**
- **What mechanisms exist for inter-sectoral co-operation?**
- **Do the mandates of agencies influencing irrigation, drainage and flood control foster competition or duplication rather than co-operation?**

- Ensure that a comprehensive list of agencies is drawn up and consulted.
- Review experiences of past projects 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 pre-feasibility studies, aim to identify possible conflicts between land and water use policies.

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 AWUM 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 pre-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 (subsidiarity, *see Part III*).

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 (*see Part III*)?**
- **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 privatising 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 advise 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 sub-contracted 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 III) *for government staff and user groups may be required to support new initiatives. herefore examine:*

- **Do implementing agencies have the human and physical resources required to identify and address national priorities for AWUM?**
- **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 pre-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 pre-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 analyse 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 AWUM?**
- **What are the potential social impacts of investment in AWUM?**

- Review social development policy for the region and determine its compatibility with possible actions.
- Conduct preliminary Social Impact Assessment (*see Part III*) in pre-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 co-operation 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 recognise the contributions and roles of women in AWUM?**
- **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 III*).
- Include gender awareness raising and gender planning training for staff.
- Include gender awareness raising in information packages for stakeholders.

Economic and Financial Principles

The economic value of land and water must be reflected in AWUM 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 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 prioritise water allocation within agriculture and between this and other uses.
- Review overall costs per ha. and carry out a preliminary economic analysis (*see Part III*).

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 AWUM 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 a willingness-to-pay study (*see Part III*).
- 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 maximise the value derived from its use?**
- **What practical market and non-market 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 (*see Part III*).
- 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 is 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.
- Allow for the establishment of financial and technical monitoring procedures.
- Assess the financial management and disbursement capabilities of the agency.
- 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 pre-feasibility reports indicate the accuracy and reliability of data sources?**

- Using the results of Initial Screening, undertake a Preliminary Environmental Assessment (*see Part III*) in accordance with EC Environment Manual.
- Include a statement of environmental data availability and requirements in pre-feasibility studies and make adequate provision for upgrading data collection.
- Indicate the source of data and their estimated accuracy and reliability.

AWUM 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.
- Use Checklist on Irrigation in the EC Environment Manual (*see Part III*) to review potential impact on human health, water quality and soil fertility.
- Verify that the prediction of supply and demand are based on realistic data.
- 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 AWUM data collection?**
- **What are the impacts of a location-specific project elsewhere in the basin?**

- Review data collection, analysis, storage and dissemination systems (see WRAP Checklists).
- 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 likely 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 analysed?**

- 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:

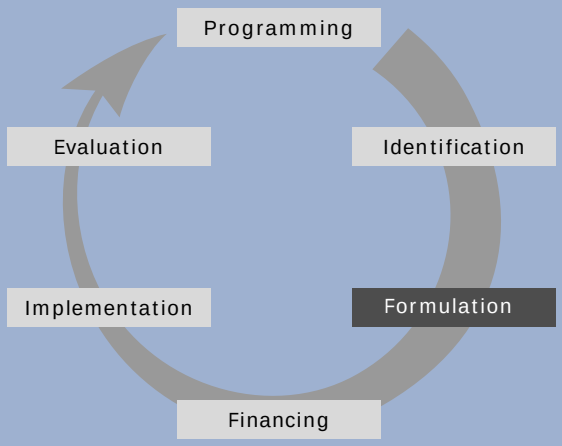
- **Is the scale and development frame of the project suited to users and will it be sustainable?**
- **How well do potential beneficiaries understand irrigation and drainage technology?**
- **Have water-saving and water-reuse technologies been considered?**
- **Do proposed irrigation/drainage technologies 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 (*see Part III*). If scarcity is likely to become a problem, reassess project.
- Identify possible mismatches between technology proposed and project context, and the scope for using indigenous techniques (*see Part III*).

Formulation

The detailed preparation and appraisal of the project

Chapter 8



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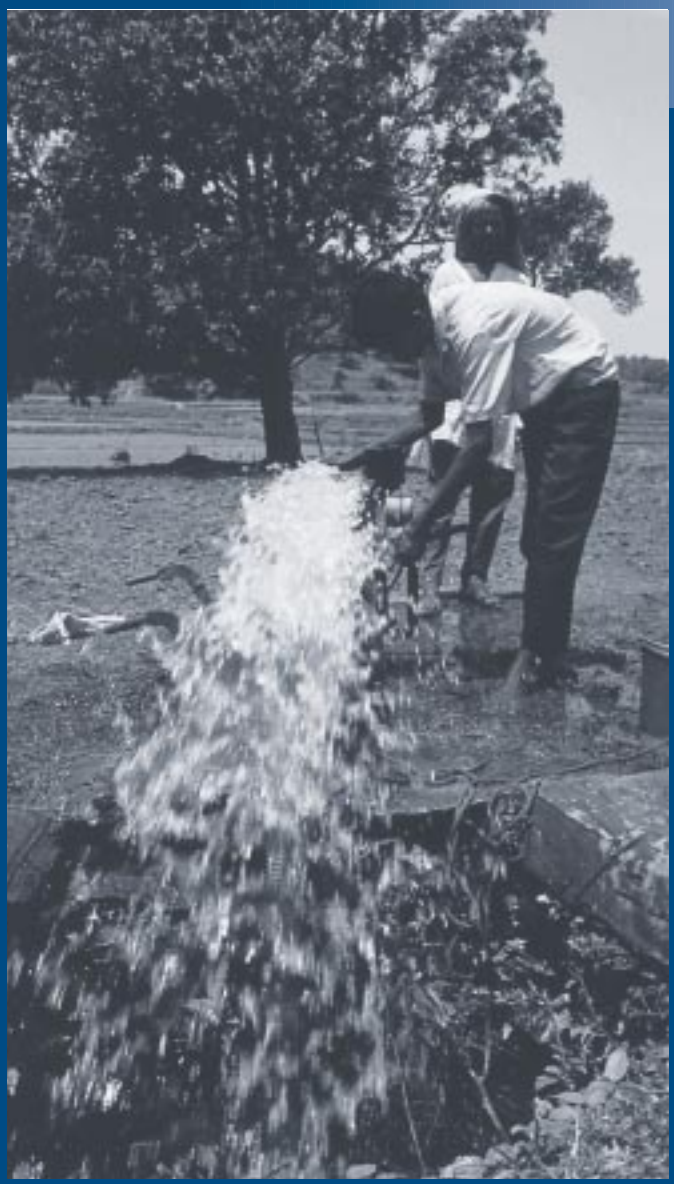
The purpose of the formulation stage is to define all the components of the project in sufficient detail to enable the preparation of a Financing Proposal. A major output during this stage is the feasibility study. All the issues critical to the viability and long-term sustainability of the project should be addressed.



For all phases of the project cycle other than programming, checklists have been prepared in the same format, to allow the user of the Guidelines 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 RESOURCE ASSESSMENT AND PLANNING

KEY ISSUES	POSSIBLE RESPONSES

Institutional and Management Principles

WRAP 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 have lessons and experiences from previous projects been taken into account?**
- **To what extent has an integrated approach been adopted?**

- Use the feasibility study to reassess the relevance and appropriateness of the project and, if necessary, reformulate.
- Ensure lessons from previous assessments and studies are taken into account.
- Assess commitment to an integrated approach and, where necessary, define conditionalities to ensure that a more integrated approach is adopted.

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

- **What organisational framework and mechanisms for inter-sectoral 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 encourage integration.
- Define conditionalities, requirements for institutional change and a timetable for their implementation.
- Review donor-supported, 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 (*see Part III*) 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 approach to the planning process?**
- **What will be the status of emerging water-related plans?**
- **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.

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

- **What is the level of co-operation 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 co-ordinating and co-operative mechanisms.
- 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 (*see Part III*) in project formulation.

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 and, where necessary, include components to strengthen them.
- Assess the practicality 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 be affected?**
- **To what extent will poorer sections of the community benefit?**
- **To what extent are traditional livelihoods threatened?**

- Specify indicators for social impact assessment and monitoring.
- Ensure that potential impacts, including health impacts, are examined and potential areas for conflict between users 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.

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?**

- Check that participatory techniques have been used to capture local knowledge, attitudes and practices (KAP, *see Part III*).
- Take into account findings from project identification and ensure formulation reflects demand-led interventions.

Economic 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?**

- Ensure the opportunity costs of water are included in the economic analysis (*see Part III*).
- 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 and environmental interests.
- 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 preliminary environmental assessment identified significant environmental impacts, and what level of Environmental Assessment is required?**
- **To what extent are environmental mitigation and enhancement measures specified?**

- Consider support for a specific project to develop an effective natural resource management strategy.
- Undertake either an Environmental Analysis or a self-standing Environmental Impact Assessment (*see Part III*).
- Incorporate all opportunities to enhance environmental quality and protect environmental assets.

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?**

- 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.

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.

Information, Education and Communication Principles

Effective WRAP 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 weaknesses in water-related information?**
- **Which aspects of water-related information will 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 rules 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 awareness-raising, education and capacity building as part of formulation.

Technological Principles

Hydrological and hydrogeological data should be selected in the light of 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 agency resources?**

- Assess benefits of additional data collection and ensure compatibility with existing systems.
- Verify that technologies match the technical and financial resources available within the implementing agencies.
- Consider funding a project specific to the assessment of resources, either nationally or for targeted river basins or aquifers.

BASIC WATER SUPPLY AND SANITATION 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 from other BWSS projects been taken into account?**
- **Has the unsatisfied demand for clean water and sanitation changed since identification?**

- 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 from relevant projects are taken into account.
- Ensure that both water and sanitation issues receive attention.

Effective inter-sectoral 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?**
- **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?**

- 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 BWSS projects, planned or underway.

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 and design?**

- Ensure that a participatory approach to BWSS 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 identification
- Offer management skills training to facilitate information exchange and devolution of power.

Sustainability of BWSS 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 non-governmental 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 pre-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 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 BWSS 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.
- 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 BWSS 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, and existing methods of human waste disposal, been explored?**
- **Will the introduction of alternative methods, such as pit latrines, require significant changes in social habits?**
- **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 BWSS projects.
- Consider a KAP study to document cultural norms, attitudes and behaviours concerning water and sanitation (*see Part III*).
- 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 are included in social studies.

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

- **Are the expected social, economic and environmental impacts on all stakeholders adequately quantified?**
- **Will poorer communities or minority groups derive equal benefits from the project as compared with wealthier groups?**
- **How will those whose traditional 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?**

- 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 water-using small enterprises in calculating likely demand for services.

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 BWSS 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 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?**
- **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 (*see Part III*) and a track record for gender sensitivity 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 exercises address issues specific to women and children including cultural attitudes towards women as providers of 'free' water.

Economic and Financial Principles

The economic value of water must be reflected in BWSS 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 in the feasibility study (*see Part III*) 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.
- Take into account existing systems for financial management and check the acceptability and reliability of those entrusted with financial management.

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 themselves and sell it to other sectors?**
- **Have traditional water sellers and waste collectors been adequately consulted?**

- Give priority to interventions that improve supplies to those underserved and investigate options for augmenting supplies.
- Assess the wider benefits of improving coverage in terms of likely health benefits.
- For areas with good coverage investigate options or demand management to improve efficiency.

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?**

- Include a financial analysis (*see Part III*) 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.

Environmental Principles

Projects in BWSS 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 possible health risks from increased areas of standing water been evaluated?**
- **Have the danger of land degradation and health risks from treatment and disposal methods been evaluated?**

- Undertake Environmental Assessment if appropriate, in accordance with EC Environment Manual (*see Part III*).
- 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.

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 health indicators been specified?**

- Specify indicators for monitoring environmental impact during implementation and subsequent operation.
- Verify that accessible 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 use will be made of the 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 accurately evaluated.
- Confirm that the concepts of treatment and disposal of waste water and slurry are understood and accounted for.

Information, Education and Communication Principles

An adequate knowledge base is a pre-condition for development of BWSS 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 derived from 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.

Education and awareness raising targeted at BWSS 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?**
- **Are essential concepts such as clean water/grey water/dirty water and bacterial contamination understood?**
- **Have linkages with health and education agencies been effectively established?**
- **Do community organisations/user groups understand technicalities of BWSS 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.

Technological Principles

Appropriate specification and design of hardware for BWSS depends on complete and reliable information. Therefore examine:

- **What confidence can be placed in the quantification of supply and demand? Are estimates of litres/day/person reasonable and commensurate with resources?**
- **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 III*) has been undertaken and results incorporated.
- Ensure the feasibility study addresses the risks of degradation around water sites and sets out appropriate ameliorative measures.
- Apply environmental sanitation principles (*see Part III*) 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, 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 gender-sensitive.

MUNICIPAL WATER AND WASTEWATER 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 MWWS 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 is needed 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 conditions.
- Institutional changes should form part of the project or be included as a condition.

Effective inter-agency and inter-sectoral 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 co-operation?**
- **What decision-making mechanisms for urban planning and water issues exist within the municipal board or council?**

- Define the roles and responsibilities of all involved parties, and allocate their tasks.
- Identify institutional deficiencies and address them through restructuring.
- Ensure that water and sanitation are included in overall urban planning and if co-operation between different services is inadequate, recommend improvements.

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 MWWS?**

- Ensure the project aims to build relationships between local communities and relevant government institutions.
- Review identified stakeholders and ensure all relevant groups are included.
- Identify specific areas 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 MWWS?**
- **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?**
- **Do existing municipal structures enable private sector involvement in O&M?**
- **Are there mechanisms for protecting the consumer?**

- Ensure that the project design and contract arrangements accommodate local private sector participation (*see Part III*).
- Develop programmes for hand-over or sub-contracting, 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.

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 do the key staff have the relevant skills?**
- **How able are local/community groups to undertake some of the tasks required for managing MWWS?**
- **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.
- Detail the training requirements of the municipality in the feasibility study.
- Clarify the terms of reference for local and/or external technical assistance and costs and include them in the overall project budget.

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.

Social Principles

MWWS 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 MWWS on health?**

- Ensure that the feasibility study maximises the range of beneficiaries.
- Use participatory methods to assess local knowledge, attitudes and practices (KAP) 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.

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

- **What are the opportunities for increased employment?**
- **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 MWSS 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 III*)?**
- **Are the benefits of the MWWS 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.
- Determine in detail the economic costs and benefits, and carry out a full economic analysis based on the EC Manual (*see Part III*).

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 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 scope at a level that appears sustainable and consistent with the agency's past performance in handling funds.
- 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 (*see Part III*).

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

- **Has demand for MWWS 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 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 (based on EC Manual) 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 feasibility study or as a self-standing Environmental Impact Assessment (*see Part III*).
- 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.

MWWS 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?**

- Evaluate the potential impacts on water quality (*see Part III*) 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 III*).
- Opportunities for enhancement to the environment should be incorporated into the project design.

Municipal wastewater schemes present disposal problems.
Therefore examine:

- **What will be the effect of wastewater discharges 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 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 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 measure impacts on watercourses.

Education and awareness raising among municipal staff and other stakeholders on MWWS principles is needed to facilitate participation and exchange. Therefore examine:

- **Are the stakeholders aware of MWWS principles and how will the project enhance understanding?**
- **What mechanisms are in place for communication between the consumers, service providers 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 continuation.
- Strengthen or establish communication channels between stakeholders; include the use of mass media, radio and television.
- Set up a suitable consultative committee between the municipal or private sector entity and the 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 the technology already used in the country? Can the level be maintained?**
- **What mechanisms are in place to ensure MWWS maintenance?**

- Consider alternative project technologies (models, tools and methodologies) and gauge their cost-effectiveness.
- 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.

AGRICULTURAL WATER USE AND MANAGEMENT

KEY ISSUES	POSSIBLE RESPONSES

Institutional and Management Principles

Changes in policy objectives and economic factors may influence predicted project benefits; lessons from other AWUM 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 imports will affect local production

Effective inter-sectoral 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?**

- 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.

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.

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 (*see Part III*)?**
- **Is it clear to users who is 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 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.
- 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 (*see Part III*).

Requirements for training and capacity building, identified in the pre-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 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 of people?**

- Establish whether traditional land and water rights clash with the project. If so, consider changes to make the intervention acceptable to stakeholders.
- Use Social Impact Assessment (*see Part III*) to identify people affected by land use changes and agree 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.

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 greater 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 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 III*), 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 AWUM. 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 counter-productive.
- 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 (*see Part III*).
- Compare the intervention with others and ensure that it is realistic in its assumptions regarding incomes and cost recovery.
- Include educational programmes 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 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 for enforcement.

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?**

- Confirm the calculation of benefits and recommend changes to project formulation if appropriate.
- Ensure that economic analysis (*see Part III*) states the assumptions regarding future product prices, patterns of demand and opportunity costs.
- Where there are significant variations in costs between alternative interventions, ensure thorough review of cost predictions and investigate alternative approaches.
- Specify indicators for economic impact assessment and the data requirements for these indicators.

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 a single factor?**
- **Where assumptions are made regarding cost recovery, are these 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?**

- Identify the technical and financial risks associated with the intervention and outline appropriate mitigating measures.
- Identify the repayment capacity of users and use to 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 insufficient time and money are invested in 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?**

- 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.

AWUM 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 AWUM 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, and user participation and organisation.
- Confirm that indicators are appropriate and adequate.
- Review current data availability and sources and ensure implications of risk are reflected.
- If data quality or availability is a constraint, consider support for interventions described under the WRAP 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 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?**
- **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.
- 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 *(see Part III)*.

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 preliminary 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 system inefficiencies and management losses realistic?**

- Examine the methods and data used to determine supply and demand and, if necessary, recommend additional data collection.
- Confirm that the predicted water demand of the project can be met without conflict with 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 prevent water-logging and/or 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 waterlogging and salinisation and sets out appropriate drainage designs.
- Review environmental sustainability.

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 address these, rather than introduce new constructions.
- If technologies require specialised skills or facilities, look for alternative solutions.
- Include training programmes for users and managers.
- Ensure compatibility with existing technology.
- Ensure that indigenous techniques (*see Part III*) of water acquisition and control have influenced the selection of technology.

Simplicity and operational flexibility must be incorporated into the designs to account for likely changes in the operating environment. Therefore examine:

- **Is water distribution easily understood so that inequities of supply are clear?**
- **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 these conditions.

Sustainability requires that maintenance needs are identified and agreements for the technical performance of installations reached with agencies and farmers. Therefore examine:

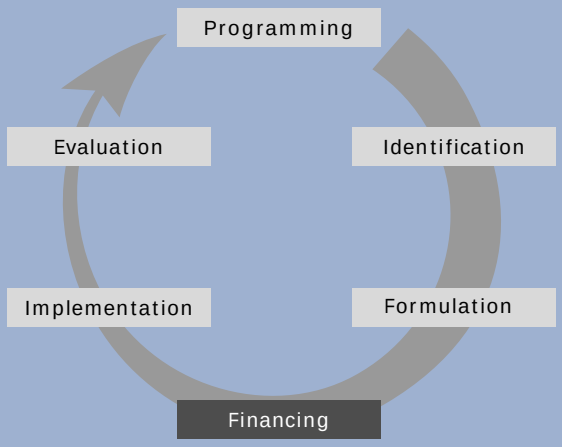
- **What are the tasks and commitments associated with the selected technologies?**
- **How will irrigation and drainage maintenance be organised?**
- **How will maintenance be financed?**

- 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.

Financing

Securing of financial agreement for the project

Chapter 9



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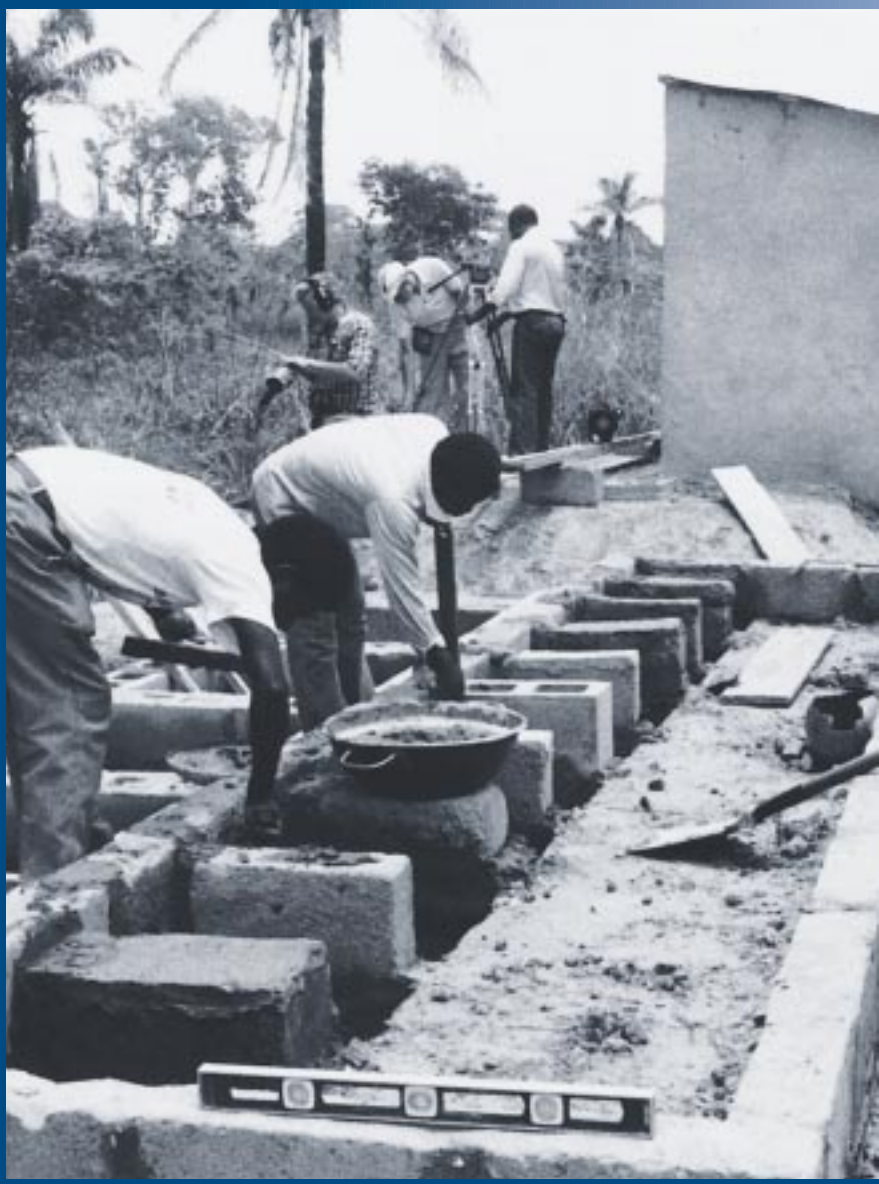
The purpose of the financing stage is to reach an informed decision to implement the project and to secure funding for it. The decision is taken on the basis of a Financing Proposal, which has a standard format for EC projects and includes the logical framework. The conclusion of the financing stage is a decision to grant funds by the EC, following the favourable opinion of the EU member states.



For all phases of the project cycle other than programming, checklists have been prepared in the same format, to allow the user of the Guidelines 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.

ALL FOCUS AREAS

Securing project financing requires the preparation of a Financing Proposal (FP), for water-related projects as for others. This is presented to the Commission for approval and agreement by the EU member states.

The information presented in the FP will be derived from studies carried out during the Identification and Formulation stages of projects in all Focus Areas. Reference to these studies, and their principal findings, should be included within annexes to the FP. The FP, excluding annexes, must be succinct with a maximum of seven pages plus a one page logical framework. For projects costing less than ECU 2 million the FP must be a maximum of three pages plus the logical framework. The standard formats for these Financing Proposals are set out in Tables 1 and 2 at the end of this chapter. Annexes should be added to the FP to give details of the responses presented in the Proposal.

The checklist presented below serves as a guide for effective drafting of a Financing Proposal for a water-related project. To help in the preparation of an FP, it is structured around the standard format for larger projects but applies equally to a project of less that ECU 2 million.

Checklist for Section 1: Summary

- Give a brief overview of the key project elements including the overall objective, the purpose, results, activities and overall costs, with a reference to the logical framework attached as an annexe.

Checklist for Section 2: Background

2.1 Governmental/sectoral policy

- State how the project/programme conforms to the relevant National Indicative Programme (NIP) or Regional Indicative Programme (RIP). Identify those international standards or targets to which the project/programme conforms or contributes.
- Verify that the project/programme is consistent with any recent changes in national policy
- Identify how the project/programme conforms to stated government policy relating to water.
- Summarise the government's attitude to any institutional, legal or policy reform that is required for effective implementation, ensuring that there is no contradiction between required reforms and government commitment to reform.

2.2 Features of the Sector

- Summarise the evaluations of previous projects/programmes and indicate how the lessons from these are incorporated in the proposed project/programme.
- Confirm that any pre-conditions for financing, identified during formulation, have been met. (Give details in an annexe)

2.3 Beneficiaries and parties involved

- Identify all the stakeholders in the project. Specify numbers and their geographic locations and state the nature of the intended benefits.

2.4 Problems to be addressed

- State the causes and effects of the problem(s) that the project/programme aims to address.
- Define the physical, institutional, social and/or managerial constraints that the project/programme aims to remove and, if relevant, what complementary actions must be taken before the full benefits of the intervention will be realised.

2.5 Other operations

- Identify other donor agencies and projects that are active in fields related to the proposed project/programme and specify what co-ordinating activities are proposed to avoid duplication of inputs.

2.6 Documentation available

- List key reports, sector reviews, policy statements and legal statutes that underpin the proposed project/programme. Highlight the most significant findings of the feasibility studies, environmental impact assessments, mission reports, economic evaluations etc. in an annexe.

Checklist for Section 3: Intervention

- Verify that the project's logical framework provides a clear and coherent resume of the details described in section 3 of the FP.

3.1 Overall objectives

- Repeat the goal or 'overall objective' stated in the project's logical framework that is annexed to the FP. The overall objective must be consistent with programming guidelines set out in the NIP or RIP.

3.2 Project purpose

- Repeat the project purpose statement set out in the project logical framework. Except in the case of highly complex projects or programmes, there should be only one project purpose which should be specified in quantitative terms wherever possible.

3.3 Results

- Quantify the expected physical and non-physical results or outputs of the project/programme, and wherever possible, value them.

3.4 Activities

- Specify the major activities necessary to accomplish each of the results.

Checklist for Section 4: Assumptions

4.1 Assumptions at different levels

- State the assumptions made in formulating the project which must be satisfied so that: (1) The activities yield the expected results; (2) The results lead to the expected project purpose; and (3) The purpose contributes to the overall development objective. Provide an assessment of the level of risk that any of the assumptions may not be fulfilled, and the likely impact of that on the benefits arising from the project.

4.2 Risks and flexibility

- Indicate what flexibility has been built into the project/programme structure to allow adjustments to be made as a consequence of changes in external factors; for example, allow for a mid-term review to revise the project plan.
- Specify the measures included to overcome any observed weaknesses in other projects/programmes that have been evaluated.

Checklist for Section 5: Implementation

5.1 Physical and non-physical means

- List the physical and non-physical inputs required to achieve the specified project results. This will be based on the findings of the feasibility study. Inputs should be categorised under the following headings: infrastructure, equipment, operational inputs, local personnel, services (external technical assistance), credit lines and contingency funds.

5.2 Organisation and implementation procedures

- Specify the public and private agencies charged with responsibility for project/programme implementation.

- While external advisory services and technical assistance may be essential for project implementation, they should not fill posts where local expertise already exists, and measures should be included to ensure sustainable services once the external assistance ends.
- Identify the process indicators to be used to monitor implementation and state what contingency plans exist if targets are not met.
- Identify where the data required to calculate the process indicators will be obtained and designate the agencies responsible for its collation, storage and processing; plan for adequate resources to be supplied for continued data collection.
- Justify the assumed institutional capacity of the implementing agencies to manage and disburse funds adequately.
- For Decentralised Co-operation interventions the FP should describe the relationship between local agents and central public authorities and the measures taken to ensure effective management by the local agents.

5.3 Timetable

- The timetable for implementation must be verifiable and should therefore contain quantitative targets or milestones to be reached at specified times.
- Detailed implementation and financial disbursement schedules will normally be included as annexes to the FP.
- The timetable must include a date for the start of the project, a definition of the action that constitutes the start of the project, and a date by which the project will be finished and all payments made.

5.4 Costs and financing plan

- Costs should be broken down by type of input and expressed in local currency and foreign exchange depending on the source of funding. Cost data will normally be presented in an annexe.
- All sources of funds have to be included in the FP, which should be designed in such a way that proposed disbursement targets cover all financing needs.
- Ensure that any resources to be committed by the commercial sector, NGOs or other stakeholders are fully quantified and are available on a sustainable basis.

5.5 Special conditions: accompanying measures taken by the Government

- State any special conditions (i.e. pre-conditions) entered into by government at the programming stage, the agreed programme for adherence to those conditions and the degree of compliance.
- State all accompanying measures (i.e. conditions to be fulfilled during or after implementation), that have been agreed with government with quantitative and time-bound measures to permit monitoring of compliance.

Checklist for Section 6: Factors ensuring sustainability

6.1 Policy support measures

- This relates to broad policy changes that are distinct from project specific 'accompanying measures' described at 5.5.
- No project or programme can be viable in an unsupportive policy environment. If the feasibility study identifies the need for changes in policy the nature and extent of such changes and any need for technical assistance should be stated. These may include:
  - Policy and legislative changes regarding cost recovery
  - Policy and legislative changes regarding land tenure reform
  - Policy relating to participatory project design and implementation

6.2 Appropriate technology

- Justify why particular technical and engineering approaches have been adopted. Demonstrate that they are compatible with the financial, technical, managerial and social capabilities and preferences of the operating agencies and final end users.
- Indicate where the selection of technologies is fully reviewed in the feasibility study.

6.3 Environmental protection

- If an Environmental Analysis or Environmental Impact Assessment *(see Part III)* was carried out in formulation, summarise the findings of the review detailing:
  - The key environmental concerns arising within the project.
  - Any specific environmental design, management, and monitoring of mitigation measures that are recommended to avoid unacceptable environmental damage.

6.4 Socio-cultural aspects/gender sensitivity

- State to what extent the users and other stakeholders have taken part in the identification and formulation phases of the project and how their support for the proposed intervention has been manifested.
- Refer to the conclusions of any Social Impact Analysis *(see Part III)* carried out during formulation.
- Indicate the extent to which users will effectively participate in project implementation.
- State how the specific needs of women have been identified during formulation and what measures are in place to ensure that women are empowered to influence project design, implementation and operation.

6.5 Institutional and management capacity, public and private

- Identify the public and private sector agencies, including user organisations and other participatory groups, that will be involved in project implementation and all aspects of subsequent operation. Summarise their capability to discharge their responsibilities and state the measures included in the project to raise the management capabilities of these agencies.

6.6 Economic and financial analysis

- Explain which economic entities were considered; upon which assumption the 'with' and 'without' scenarios are based; what benefits and costs were taken into account; what alternatives were considered and why they were rejected; and the project's sensitivity to change relating to key factors.
- Justify the form of economic and financial analysis applied to the project. Where appropriate, the findings of economic and financial analyses should be presented in an annexe *(see Part III).*
- State how the long term costs of the project – operation, maintenance and depreciation – will be met after implementation is completed.

Checklist for Section 7: Monitoring and evaluation

7.1 Monitoring indicators

- State, in quantitative and time bound terms, the results that the project/programme aims to achieve. Make sure a set of monitoring indicators and realistic targets have been set *(see Part III.)*
- Indicate what data will be collected, and which agency is responsible for its collection and processing, to permit objective monitoring of project progress and impact. These will be reflected in the project logical framework.

7.2 Reviews/evaluation reports

- Identify the agencies responsible for carrying out project reviews and preparing evaluation reports.
- Specify the frequency and timing of reviews, e.g. annual, mid-term, ex-post.

Checklist for Section 8: Conclusion and proposal

- The FP should conclude with a decision to approve the project financing.
- Following approval of the FP, a Financing Agreement should be drawn up and signed by the EC and Partner Organisation.

However, during the preparation of the Financing Proposal, if any weaknesses are identified in any of the above sections of the standard form, the project should be reassessed or redesigned, which may require further studies and a return to the formulation stage. If the weaknesses are insoluble the project should be rejected.

Table 1 - Basic Format for a Financing Proposal

(projects greater than ECU 2 million)

1 Summary

2 Background
- 2.1 Governmental/sectoral policy
- 2.1 Features of the sector
- 2.2 Beneficiaries and parties involved
- 2.3 Problems to be addressed
- 2.4 Other operations
- 2.5 Documentation available

3 Intervention
- 3.1 Overall objectives
- 3.2 Project purpose
- 3.3 Results
- 3.4 Activities

4 Assumptions
- 4.1 Assumptions at different levels
- 4.2 Risks and flexibility

5 Implementation
- 5.1 Physical and non-physical means
- 5.2 Organisation and implementation procedures
- 5.3 Timetable
- 5.4 Costs and financing plan
- 5.5 Special conditions; accompanying measures taken by the Government

6 Factors ensuring sustainability
- 6.1 Policy support measures
- 6.2 Appropriate technology
- 6.3 Environmental protection
- 6.4 Socio-cultural aspects/women in development
- 6.5 Institutional and management capacity, public and private
- 6.6 Economic and financial analysis

7 Monitoring and evaluation
- 7.1 Monitoring indicators
- 7.2 Reviews/evaluation reports

8 Conclusions and proposals

Annexes: To give supporting information

Table 2 - Basic Format for a Financing Proposal

(projects less than ECU 2 million)

Summary comprising the following information:

1 Recipient state

2 Project title

3 Type of project

4 Authority submitting the project

5 Registration number

6 Sectoral classification

7 Amount
EU delegation and official responsible

8 Background
- 8.1 Main features of the sector
- 8.2 Problems to be addressed

9 Objectives and expected results
- 9.1 Project purpose
- 9.2 Project results

10 Project implementation
- 10.1 Inputs
- 10.2 Time schedule
- 10.3 Accompanying measures

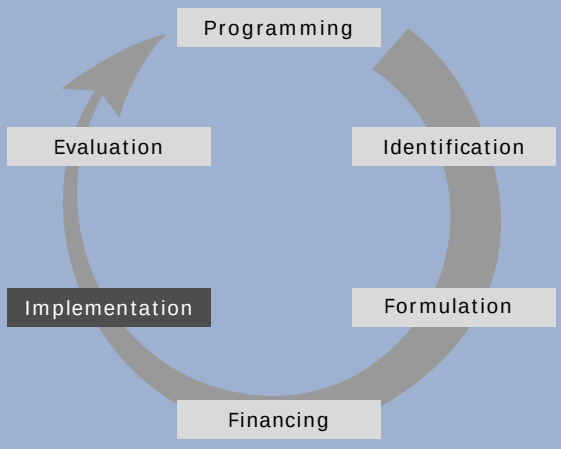
11 Factors ensuring sustainability

12 Monitoring and evaluation

Implementation

Execution of the project plan

Chapter 10



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The purpose of the implementation stage is the efficient creation of physical structures and institutional systems to yield a sustainable flow of benefits. During implementation, activities are carried out according to a timetable and financial plan. Special conditions must be satisfied, and regular monitoring and supervision conducted.

For all phases of the project cycle other than programming, checklists have been prepared in the same format, to allow the user of the Guidelines 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 **Formualtion** 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[1]

Effective control of costs, contracts, and budget disbursement are essential to ensure project compliance with implementation targets. Therefore examine:

- **Is the agreed local 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?**

- 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 to ensure correct, timely application of EC procurement procedures.
- Agree financial management procedures with the implementing agency.

Changes in policy objectives and economic factors external to the project may necessitate revision to reflect their influence on project benefits. 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.

1 **Monitoring of implementation addresses general issues that cut across the guiding principles.**

It is important that conditions built into the financing 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. Consider renegotiating the financing agreement.
- Monitor progress on all conditionalities and discuss any failings 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:

- **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 as necessary.
- 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 log frame.
- Discuss the need for further capacity building or external supervision to enhance project monitoring.

Institutional and Management Principles

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?**
- **Does the schedule of project activity 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-sectoral and inter-agency planning may meet with resistance, thereby hindering implementation. Therefore examine:

- **Are weaknesses in the strategic plan or developments in other sectors or other agencies affecting implementation?**
- **If the project was predicated on institutional reforms, have these been carried out?**
- **Are different agencies fulfilling their roles and responsibilities?**

- Identify weaknesses in existing procedures for integrated planning and recommend improvements.
- Identify what remedial actions may be taken to reduce inter-sectoral conflicts and integrate implementation with other programmes and projects.
- Monitor compliance with pre-conditions 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 operating agency and/or users well-defined and does it seem likely to work?**

- Ensure that the hand-over plan and associated training requirements are defined and running on schedule.
- Propose remedies where the strategy is not working well in practice.

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, user 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.
- 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.

Management information systems may need revision if the nature or scope 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 malpractice discuss practical 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.

Social Principles

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?**

- Ensure that affected parties have full information regarding expected project benefits. Consult with stakeholders, and improve compensation if necessary.
- Define 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?**
- **Is the participation of different stakeholder groups equitable, accountable and transparent?**
- **Are key target groups receiving benefits from the project as intended?**

- 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.
- 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.

The financing proposal may identify effective women's participation as central to the project's success. Therefore examine:

- **Are women centrally involved in implementation activities?**
- **Are women represented on a significant proportion of all committees at decision-making levels?**

- 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.

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 planned for during implementation. Therefore examine:

- **Are the mechanisms intended to ensure cost recovery and the financial sustainability of 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.

Co-ordination of funds from different sources is essential to avoid wastage and project delay. Therefore examine:

- **Are contributions from different government and donor sources well co-ordinated?**

- Initiate donor co-ordination meetings at an appropriate level.

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?**

- 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.

Information, Education and Communication Principles

Information obtained from project monitoring should be used to shape and direct the implementation process. Therefore examine:

- **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?**

- Use process and impact indicators to evaluate if project implementation is on schedule and meeting objectives.
- 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 verify:

- **Are implementing agencies providing adequate information to stakeholders and ensuring transparency of purpose?**
- **Are health education programmes 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.
- Use performance indicators to review health education efforts (*see Part III*) and make appropriate recommendations for change.

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?**
- **Have adequate repair provisions, including spare parts, been made?**

- Monitor the effectiveness of consultants and contractors against agreed performance indicators. Where necessary consider revoking contracts or applying penalties.
- Identify means of strengthening the technical supervision of construction.
- Put in place repair workshops, trained workers, spares, stock control, etc.
- 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 local agency staff understand the technology and know its operation and maintenance requirements?**
- **Is indigenous 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.
- 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 and recurrent cost items. Therefore examine:

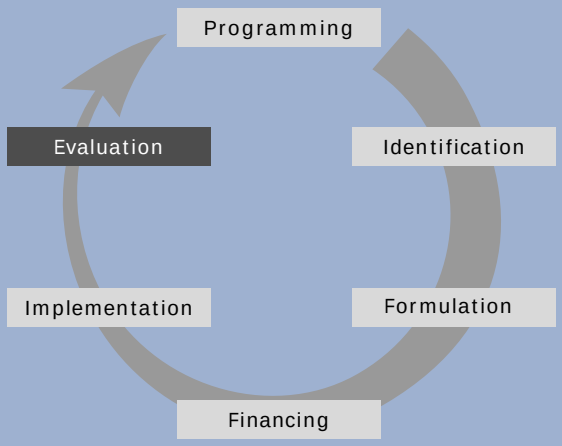
- **Are the implementation costs within budget estimates?**
- **Is the project delayed?**
- **Is the original design proving to be inappropriate or likely to result in high O&M or other recurrent cost problems?**

- Identify the reasons for higher than expected 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.

Evaluation

Analysis of activities and outcomes of the project

Chapter 11



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The purpose of the evaluation stage is to arrive at an assessment of how successful the project has been in meeting its stated objectives. Performance will be judged against indicators selected during the formulation stage, and results compared with baseline information. The evaluation must be independent and objective.

For all phases of the project cycle other than programming, checklists have been prepared in the same format, to allow the user of the Guidelines 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.

ALL FOCUS AREAS

KEY ISSUES | POSSIBLE RESPONSES

Operational monitoring1

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 project design, technical and non-technical, adequate? Did it take sufficient account of the guiding principles and the factors raised in the checklists from programming to implementation?**
- **Were sufficient monitoring indicators established during implementation and has data been collected to enable meaningful assessment?**

- Take account of any external change (positive or negative) that may distort 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.
- Review monitoring and evaluation procedures and determine whether support is needed to ensure their usefulness once evaluation is complete.

1 **Monitoring must continue through the operational period in order to assess long term sustainability.**

Institutional and Management Principles

Projects must have sufficient flexibility in their design, implementation schedule and subsequent operation to permit adjustments to be made. Therefore examine:

- **Do the project results comply with stated water policy?**
- **Are there lessons to be drawn from the project that should influence future policy?**
- **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?**
- **Were the special conditions and accompanying measures attached to the Financing Agreement adequately met?**

- If the project outcome is not consistent with policy, specify the reason.
- Ensure that lessons are presented to the bodies responsible for policy formulation.
- Determine how the project was adapted to respond to changes. Identify mechanisms that may be used in future projects to improve flexibility.
- If there was a failure to meet specified conditions, determine if this was because of unrealistic targets or deliberate decisions by government not to comply.

Provision should have been made for effective inter-agency and inter-sectoral planning. If this was weak, lessons should be learnt for the future. Therefore examine:

- **Was there effective co-operation between agencies?**
- **Were the institutions identified to implement the project appropriate?**
- **Was government 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?**

- Recommend improvements in co-operation mechanisms.
- If the institutions or their internal structures were inappropriate, identify alternative partners or make recommendations for institutional reform.
- Investigate the reasons for inadequate government support and make recommendations for change.
- Where agencies failed to perform adequately, identify the weaknesses and recommend necessary capacity building measures (*see Page III*).

The project should have been formulated and implemented in a way that ensured effective stakeholders participation. Therefore examine:

- **Were all stakeholders given the opportunity to participate in project/programme formulation?**
- **Were NGOs and private sector organisations 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 private sector?**
- **Has project implementation or subsequent operation been hindered by weaknesses in laws or regulations?**

- If groups were prevented from participating, determine the causes.
- Analyse the actual and potential involvement of NGOs and the private sector. If their involvement was ineffectual, suggest a better selection process and/or means to strengthen their performance in future projects.
- Identify indigenous knowledge and local institutions that contributed or could have contributed to the project.
- Discuss with the government possible modifications to legislation.

Sustainable hand-over of infrastructure and equipment depends on the training of users and organisations 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 the correct mix of skills?**
- **Where external technical assistance was used to provide training, was this cost effective?**

- Evaluate the effectiveness of hand-over. If there was no strategy, or it failed, remedy the situation, if still possible.
- Evaluate what level of skills transfer took place; identify weaknesses in training and make recommendations for the future.
- Determine whether there is now an adequate local or national skills base to avoid future external technical assistance in this area.

Transparent and accountable management information systems in which users and service providers have confidence are essential for operational efficiency. Therefore examine:

- **Are the management information systems used by the operating agency understood by all the stakeholders and providing relevant information?**
- **What systems have been established to monitor the social, economic and environmental impacts of the project?**

- Assess the effectiveness of the management information systems in place, taking account of the views of the different stakeholders. Discuss methods of improving procedures if necessary.

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 users 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?**

- Where data are unavailable or social impact indicators are inadequate, discuss with those responsible for monitoring. If necessary, use proxy indicators.
- Use Social Impact Analysis (*see Page III*) 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 is 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 income 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 profligate water use?**
- **Did the government meet its commitments to release local funds on time?**

- Evaluate cost recovery mechanisms and discuss any required improvements with government.
- Review tariff structures (*see Page III*) 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's performance relating to its disbursement of agreed matching funds.

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 close to or 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 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 accordingly.

Environmental Principles

Environmental damage may result because insufficient time and money is invested in collection and analysis of data during and after implementation. 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 impacts?**
- **Is an adequate level of environmental monitoring continuing after project completion?**

- 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 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?**

- Evaluate the impact of baseline data quality on the project outcome. If necessary make recommendations to establish better, and targeted, routine data collection.
- Review the performance of agencies responsible for monitoring progress and impacts, and discuss difficulties with the agencies involved.

Public education, awareness raising, and free availability of information to all stakeholders facilitate the sustainability of water projects. Therefore examine:

- **Has the government taken actions to improve the transparency of decision-making and contractual procedures?**
- **Is information made available to all stakeholders in a comprehensible manner?**
- **Were public education activities successful?**

- Assess improvements in the provision of accurate and understandable information by government and private sector agencies.
- Assess the effectiveness of education campaigns by means of impact indicators defined at formulation. If data is inadequate, make a rapid appraisal of impact amongst key stakeholder groups.

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?**

- Assess whether technical design 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 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?**
- **Is there evidence of 'cutting-back' or false economies on the original budget that may result in environmental damage or premature deterioration of infrastructure?**

- 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.
- 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

Aids for the application of the strategic approach

This part of the Guidelines is a supplement to Part II and contains material to aid those users who are endeavouring to put into action the Strategic Approach described in the previous chapters.

Both in the general text of the Guidelines, and in the checklists in Part II, references have been made to programming concepts and to research and data-collection methodologies, for which further explanations and descriptions are needed. Part III is intended to meet those needs, enabling the user to enhance his or her understanding of unfamiliar ideas, and gain a more complete picture of the range of tools available for undertaking assessments and analyses at various stages of the project cycle.

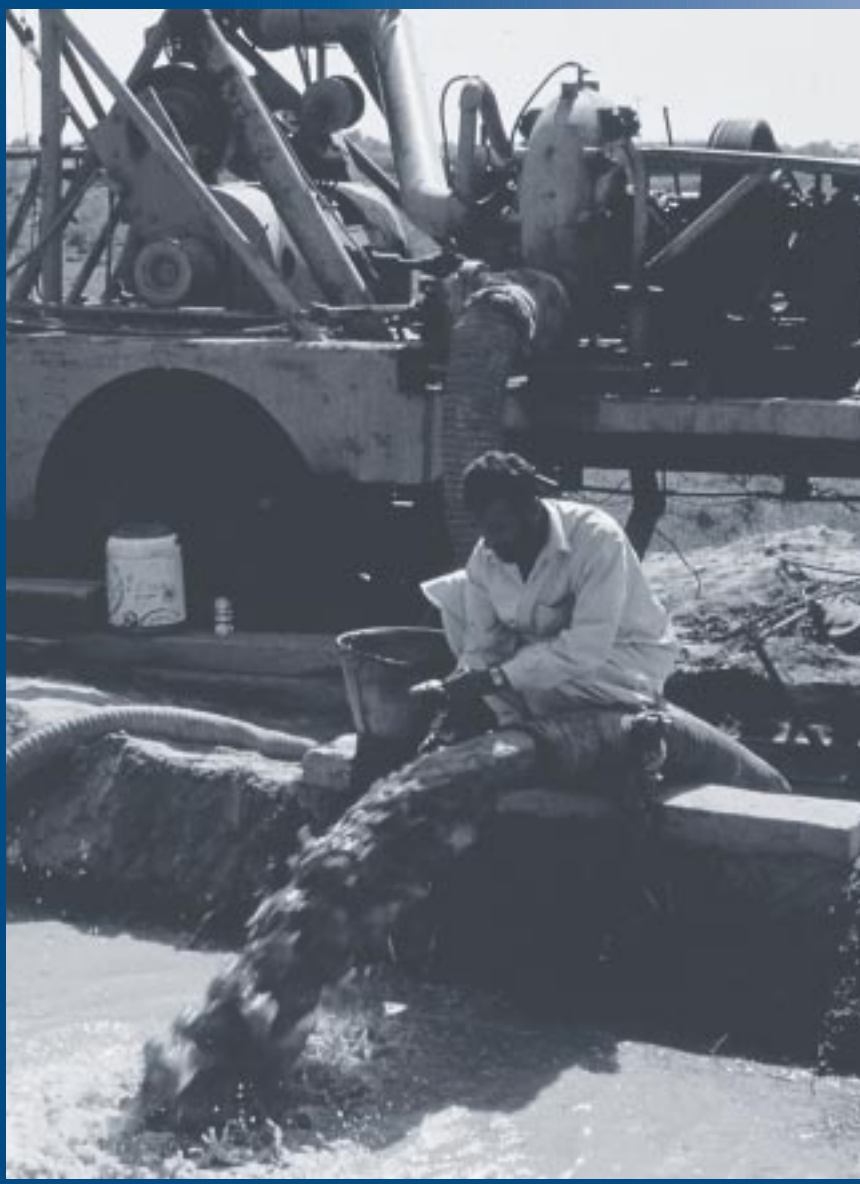
Contents

Glossary of key concepts

Chapter 12

12

Explanations of key water-related technical terms in current usage, many of which are central to the application of the strategic approach. Some are treated at greater length in Chapter 13.



Chapter 12

Glossary of key concepts

Appropriate modern technology
Awareness raising
Basic needs/Basic services
Beijing Global Platform for Action
Capacity building
Clean technology
Communications techniques
Decentralised co-operation
Demand management
Economic and financial analysis
Ecosystem management
Environmental analysis
Environmental economic valuation
Environmental sanitation
Gender
Hygiene (or health) education
Indigenous Technical Knowledge
Integrated water resources management
International water law
Knowledge, Attitude and Practice (KAP) studies
Marginal cost pricing
Metering
Monitoring Indicators
Non-governmental organisations
Participation
Participatory Appraisal
Participatory Irrigation Management
Participatory Technology Development
Policy Review
'Polluter pays' principle
Private sector participation
Ramsar Convention
Regulatory systems
Re-use and recycling of water
River Basin Organisations
Social data collection
Social Impact Assessment
Stakeholders
Social mobilisation
Subsidiarity principle
Tariffs
Tariff structures
Transboundary waters
Virtual water
Water-borne diseases
Water laws and legislation
Water markets
Water ownership
Water quality standards
Water User Associations
Willingness-to-pay surveys

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 handpumps, tubewell 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 co-operation. 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. *(See Chapter 13 for a description of methods of capacity building.)*

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. *Further information:* ***Clean Technology – An Introduction,*** Journal of Chemical Technology and Biotechnology, 1995.

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. *Further information:* ***Communication strategies for heightening awareness of water,*** *UNESCO, 1987.* ***Communication in Water Supply and Sanitation – a Resource Booklet.*** IRC, 1993.

Decentralised co-operation: Decentralised co-operation is the term used by the EC 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. *Further information:* ***Managing Water as an Economic Resource,*** ODI, 1991. ***Water: Economics, Management and Demand.*** ICID, 1997.

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 (*see Chapter 13 for a fuller description*).

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. *Further information:* ***Protection of water resources and aquatic ecosystems,*** *UN Economic Commission for Europe,* 1993.

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. Methodologies are explored in *Chapter 13 under Environmental Procedures.*

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). *(See Chapter 13, Environmental economic valuation.)*

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. *Further information:* ***Ecological Alternatives in Sanitation,*** SIDA, 1997; ***Sanitation Promotion Kit,*** WHO, 1997.

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. *(See also Gender Analysis in Chapter13.)*

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. *Further information:* ***Stir Gently! The Way to Mix Hygiene Education with Water Supply and Sanitation,*** IRC, 1994.

Indigenous Technical Knowledge (ITK): 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. *Further information: The Centre for Indigenous Knowledge on Agriculture and Rural Development,* Iowa State University, USA, and *The Leiden Ethno-systems and Development Programme (LEAD),* Institute of Social and Cultural Studies, University of Leiden, Netherlands.

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. *(See a fuller description of international legal instruments in Chapter 13.)*

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. *Further information:* ***Pricing of Water Services.*** OECD, 1987.

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. *(See also Chapter 13, Monitoring Indicators.)*

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 co-operation 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. *(See also Decentralised co-operation and Chapter 14.)*

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 handpump 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. *(See Chapter 13 for a description of methodologies.)*

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. *(See Chapter 13 for a fuller account of different approaches to PIM.)*

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.

Policy Review: A Water Policy Review is likely to be an important part of the PCM programming phase. In many countries, no existing machinery exists for a Policy Review at the national level; the task may therefore have to be undertaken by consultants, whose brief might include the setting up of a system which can subsequently be used in-country. The Policy Review should assess existing policy, its objectives, the status of water resources, the capacity and effectiveness of institutional mechanisms involved in their management and deployment, and potential sources of investment; and it should generate a matrix of problems and critical issues, including potential or actual conflicts between different water users. The review is likely to produce new goals and policies on which a detailed strategy can be based. This strategy, for application at national and sub-national levels, should be developed in tandem with any new policy to make sure that policy decisions are realistic. *Further information:* ***Water Sector Policy Review and Strategy Formulation,*** FAO, 1995.

'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. (*See Chapter 13, Public-private partnerships.)*

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 co-operation 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 co-

ordinated and enforced. *Further information:* ***Water Resources Management: A World Bank Policy Paper,*** World Bank, 1993.

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. *Further information:* ***The safe use of marginal quality water in agriculture: a guide for the water resource planner,*** HR Wallingford, 1997. ***Water quality for agriculture,*** FAO, 1989.

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; co-ordination between the various sectoral 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. To be effective, an RBO should have its own capacity to manage and regulate water resources and also to invest in studies, monitoring and research; it therefore needs an adequate budget. *(See also Transboundary waters.)*

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

which reflect the real needs and attitudes of local people include participatory rural appraisal (PRA) *(see above)*, rapid rural appraisal (RRA), and Knowledge Attitude and Practice (KAP) studies *(see above)*. 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. *(See Chapter 13 for a fuller description.)*

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 *(see Chapter 13 for a fuller description)*. 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

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. *Further information:* ***Pricing of Water Services,*** OECD, 1987.

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 co-operation. *(See also River Basin Organisations, and Chapter 13, National and International Water Law.)*

Virtual water: 'Virtual water' is the non-evident 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. *Further information:* ***Water Policy: allocation and management in practice,*** E & FN Spon/Chapman and Hall, 1996.

Water-borne diseases: The term 'water-borne 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. *Further information,* consult WHO and UNICEF;

also ***Guidelines for Forecasting the Vector-borne Disease Implications of Water Resources Development,*** WHO, 1991.

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-sectoral 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. *(See also Regulation and Water ownership; and Chapter 13.) Further information:* ***Water Resources Institutions,*** World Bank, 1992.

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 over the resource at law, which means that customary rights may be insufficient as a basis for a deal. In addition, for markets to operate in the public interest, the interests of third parties including environmental interests and those of populations living downstream of any large transfer need to be considered. *Further information (this mainly relates to Australia and New Zealand where considerable work has been done on water markets):* ***Water allocations and entitlements: a national framework for the implementation of property rights in water,*** *COAG, 1995.*

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

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 regarding water in the country or state concerned; WHO has issued international guidelines to facilitate this process although they can be demanding. 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. *Further information:* ***WHO, Guidelines for drinking water quality,*** 1993.

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. *Further information:* ***User Organisations for Sustainable Water Services****, World Bank, 1997.* ***Impacts of Irrigation Management Transfer: A review of the Evidence,*** *IIMI, 1997.*

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. *(For a fuller description see Chapter 13).*

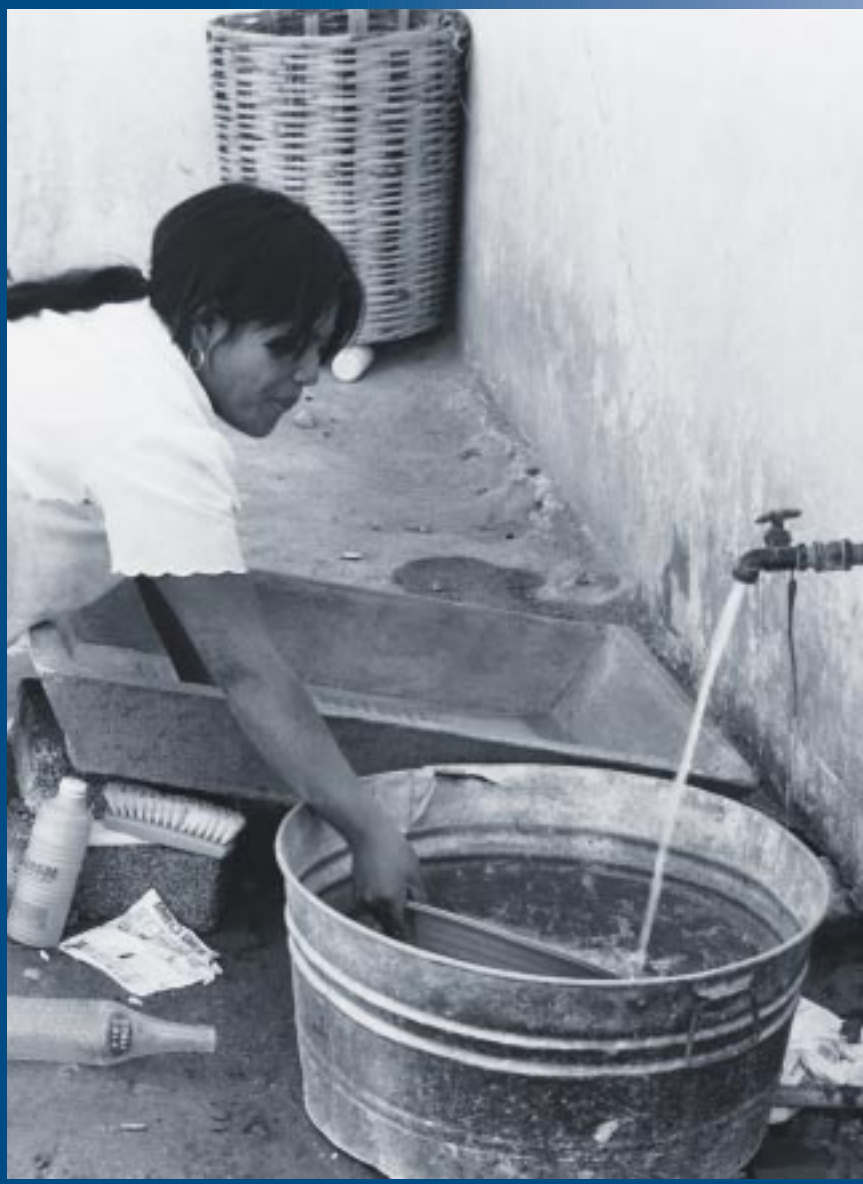
Programme and project aids

Chapter 13

Contents

13

The aids to programming and project development are complementary to the checklists and mainly consist of studies and methodologies to be used to build up the knowledge base at different stages of the project cycle.



Programme and project aids

Introduction

The following aids to programming and project development are supplied as complementary material to the checklists. They mainly consist of different types of studies and methodologies to be used to build up the information and knowledge base at different stages of the project cycle. Brief definitions of these aids appear in Chapter 12, the *Glossary of key concepts*.

The aim in this chapter has been to provide a reasonably full description of the aid in question. However, if – for example – a Stakeholder Analysis is thought desirable, it will probably be necessary to use consultants from a local organisation or institute with the relevant experience to carry it out. The information provided here is not as complete as it would be in a manual, and is not usually sufficient on its own. It aims to give programme managers and officers an indication of whether a particular exercise ought to be undertaken, and what its broad parameters would consist of and produce.

I. Stakeholder Analysis

The purpose of stakeholder analysis is to identify the various stakeholders who might have an interest in a potential project, either because they live in its neighbourhood and might be affected by its construction, or because they are in some way party to the project (government agencies, construction companies, local administrative bodies, citizen groups and NGOs, shareholders, landowners, etc.).

Stakeholder analysis is used not only to identify all the actors in the project environment but to assess the relationships between the project and those 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. For example, complementary or supporting actions can be described, and areas of potential conflict between the project and the stakeholders can be addressed.

Stakeholder analysis is particularly useful in developing participatory approaches in a project, since it helps to identify those who might participate. However, not all stakeholders will have a 'participatory' relationship with the project.

The outcome of the stakeholder analysis will provide information on the project's risks and assumptions.

Different types of stakeholders

Stakeholders may be differentiated in a number of ways. A common method is to distinguish between:

Primary stakeholders
This category comprises those whose main livelihood or interest is related to the project in some way. This would include, but not be limited to, the intended project beneficiaries.

Secondary stakeholders
Those whose interests are related to the project but in a less immediate or direct way than for 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.

Steps in a stakeholder analysis

Stakeholder analysis is not a formal methodology, and a variety of informal approaches can be successfully used. However, many sources are in general agreement on a process which contains the following main steps:

Step 1
Draw up a stakeholder table, listing all the project stakeholders, and defining:

- Whether they are primary, secondary or key stakeholders;
- The nature of their stake or interest;
- The basis on which they hold this stake (e.g. customary rights, ownership, administrative or legal responsibilities, intellectual rights, social obligations etc.);
- Whether the relationship with the project is positive or negative.

Remember that a stakeholder may have more than one stake in a particular project.

Step 2
Assess the relationship between each stakeholder and the project on the basis of their influence and importance.

Influence defines the significance of the stakeholder's potential actions in affecting project implementation. For example, landowners have great influence on a project which requires land.

Importance defines how critical the stakeholder is to the success of the project. The intended beneficiaries form a very important stakeholder group, but there may be others.

The assessment can be done on an ordinal scale of 1 (very low influence and importance) to 5 (very high importance or influence). The relative influence and importance of all stakeholders can then be shown on a two-dimensional matrix.

Step 3
Assess appropriate actions in relation to all stakeholders. Some sources suggest a range of actions from control (the project is in a position of authority in relation to the stakeholder), through information (the project informs the stakeholder), consultation (a two-way dialogue between the project and the stakeholder) to partnership (based on genuine participation of the stakeholders in the project).

Who should carry out stakeholder analysis, and when should it be done?

A variety of approaches are possible. Initially the project team will be responsible for the stakeholder analysis, but in particular circumstances it may be appropriate to involve some of the stakeholders themselves in the process. Stakeholder analysis should be undertaken first at project identification stage. If a logical framework is prepared, the stakeholder analysis will provide information for it. The stakeholder analysis should be repeated and refined as the project continues.

Further information: ***Technical Note on Enhancing Stakeholder Participation in Aid Activities,*** (including a guidance note on how to do Stakeholder Analysis). DIFD, UK, 1995.

2. Capacity building

Introduction

Capacity building should be 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 organisations. Capacity building should include utilisation of existing skills, since organisations frequently under-utilise the skills they have.

The concept of capacity building has been current since the UN Water Conference at Mar del Plata in 1977, and its importance has subsequently been reiterated in a number of international fora. Capacity building is among the seven areas for action within national water strategies identified by the UN Secretary-General for the 1990s, with the following aims:

- *To enhance the capacity for the development and management of water-related programmes, and to strengthen institutions and develop human resources at all levels;*
- *The provision of adequate human resources, with skills appropriate to many scientific, technical, managerial and administrative functions required for the assessment, development, conservation and management of water resources.*

An international post-Water Decade Conference in New Delhi in 1990 identified four guiding principles, of which two related to capacity building:

- *Strong institutions are essential for sustainable development;*
- *Capacity building is necessary to make community management effective.*

Most recently, the World Food Summit, Rome, 1996, touched upon aspects of capacity building in its conclusions:

- *The implications of neglecting food security can be serious, and investment in water infrastructure, continued reform of supporting institutions, and an enabling environment are necessary to improve food production.*
- *In many African countries, security and stability in food supplies in the next century will be closely linked to success in irrigation, and in the management of river basins including those which cross national borders.*

The Delft Declaration (IHE/UNDP, 1991) suggested that capacity-building should improve the quality of decision making, sector efficiency and managerial performance in the planning and implementation of programmes and projects, and should be aimed at three levels: sectoral, institutional and individual. It identified the three basic elements of capacity building as:

- *Creating an enabling environment with appropriate policy and legal frameworks;*
- *Institutional development, including community participation;*
- *Human resources development and strengthening of managerial systems.*

The commonly mentioned tools for capacity building include:

- *Development of tools for monitoring, analysis and management of data;*
- *Development of human resources, enhancement of skills, and adoption of up-to–date thinking;*
- *Reform of structures and systems;*
- *Improvement of the knowledge base.*
- *Capacity building is necessary at all levels in developing countries, but is becoming increasingly important at the local government and community level, as responsibility is devolved to the lowest appropriate level.*

Methods

Many methods of capacity building are available, suited to different countries and circumstances. Therefore an essential pre-requisite of capacity building in any area is an accurate assessment of the existing situation which can be achieved by undertaking social surveys of the areas concerned and assessment training needs.

Institutional development

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

- Review of work procedures, levels of community participation, and the weaknesses and strengths of institutions;
- Twinning between developing country and developed country institutions, similar sector agencies and universities, which will help in the provision of up-to-date material and information;
- Introduction of reasonable salary scales, incentives and career development opportunities. Professional and financial incentives are important to encourage motivation in staff and therefore promotion pathways in institutions should be understood and promotions encouraged;
- Segmentation of responsibilities within organisations to avoid duplication and low morale.

Training

Training programmes need to be seen as an investment in individuals. It is important to undertake a Training Needs Assessment prior to training. Training can be either provided on-the-job, or by using techniques such as: technology transfer activities, workshops, role plays, networking, seminars and short courses. Training should identify and upgrade under-utilised skills as well as provide new skills.

Education

Education should aim to increase the understanding of the local community through the development of useful skills, in conjunction with classroom-based learning. It should not be restricted to conventional methods as different types of education will be needed for different situations. For example, health and hygiene education *(see Chapter 12)* are important elements of water resources education. The capacity of local educational systems to deliver is the key, and there is a strong need for development of useful skills as well as factual knowledge.

Awareness building and information management

Integral to capacity building is the dissemination of and access to information; this implies improving communications channels and raising awareness. Pilot schemes can be used to demonstrate good practice to local communities and to increase their awareness of new technologies. This should not, however, be seen as a one-way process; communities should also make decision-makers aware of their problems and the constraints preventing effective water management. Information management is an integral part of any capacity-building programme and systems need to be kept up to date to permit an easier and more effective

flow of knowledge. A special focus is needed to ensure full community participation *(see Chapter 12)* with special attention to the involvement of women.

Provision of resources

Well-trained, educated and aware staff will need adequate resources to carry out their responsibilities. The concept of subsidiarity *(see Chapter 12)* cannot be made operational unless adequate resources are available. Typical resource shortages include transport, inadequate budgets for running costs, computers, software and communications equipment. Capacity building without the provision of resources will be ineffective.

Many models have been created for capacity building both at the institutional and the individual level. However, as all countries and needs differ, a generic model obviously cannot be prescribed which would be successful in all cases.

Studies will be needed to decide what form and mix of capacity building and human resource development will be the most effective in the different countries and circumstances. Information is needed on the existing situation through the use of surveys and assessment of future needs to determine the best interventions.

For example, community participation in development and operation of irrigation schemes or water supplies is important to the effective operation and maintenance of services. However, problems can arise from the fact that in many developing countries stakeholders in positions of authority do not have the capacity for working with the local people. Changes are therefore needed to improve their field approach. The nature of such changes will depend on various factors, including current behavioural norms and authority structures, the nature of the project and the beliefs and attitudes of users.

Further information: ***A Strategy for Water Sector Capacity Building,*** IHE/UNDP, 1991.

3. National and International Water Law

Water laws – which link water policy and water rights – have been in existence for many years. They are needed for the implementation and enforcement of policy, and to provide effective administrative and regulatory mechanisms at appropriate levels. The importance of water law was emphasised in Agenda 21.

Rights to water tend to be viewed differently in different societies, leading to a variety of water laws. Laws may be needed to protect the water rights of individuals – for example, access to a clean and adequate supply of water for basic needs – but can also be used to restrict water use or proprietary control and to introduce new policy initiatives deemed to be for the public good. The right to use water is a concept distinct from the ownership of water, and this distinction must be taken into account in the development of water law and the management of water resources.

Water laws also need to reflect changing circumstances. Permanent protection of historic rights will often not allow fair and efficient re-allocation of water. Priorities may also vary over time within states and regions, or depend on the level of economic development.

Water laws can take two forms: written and unwritten. Unwritten law is **'customary law'** which has evolved over the centuries from social customs and traditions designed to govern relationships between individuals. Unwritten law can also take the form of **'common law',** where a body of precedent informs the judicial decision taken in a given dispute. Such law is not 'passed' or 'enacted' by any legislative body, but forms a group of general legal principles upon which judges rely in making their decisions. Written 'statutory' law or 'legislation' is promulgated by a duly authorised law-making body.

In many countries several bodies are empowered to make legislation relating to water. A water law establishes fundamental principles and distributes powers relating to the management of water. As a general rule, matters which do not relate to fundamental policy, principles or rights, but which need to be governed by detailed regulations are not included in the main water law and instead form subsidiary legislation or regulations.

The main task of any government in revising or drafting new legislation is to make sure that it will be socially acceptable and administratively feasible. In deciding who shall have the ultimate authority to control and distribute water and how existing laws and customs should be modified, consideration needs to be given to a wide variety of political, social, economic and administrative aspects. National water laws must also take into account any International Conventions (see below) accepted by that country.

Water legislation should result from, rather than be imposed upon, the

situation prevailing in a given country. This is especially true of a law that deals with fundamental issues, such as the respective rights of individuals and government in land and water, and which is thus basic to the particular society's structure. Preparation of water law must involve technical experts, for example, hydrologic, engineering and economic experts, as well as lawyers.

The primary task of a water law is to give the Government or its appointed agencies sufficient power to undertake various tasks relating to the investigation, use, control, protection, management and administration of water. At the same time the rights of individual users to take and use water should be defined and protected.

A water law, therefore has two basic functions:

- It must confer certain powers for control of water and land upon the Government, whilst preserving or granting such rights to individual users as are consistent with the social, political, economic and developmental goals of the country.
- It must establish a basic administrative framework and the necessary institutions to execute the various functions assigned under the law.

The areas which should be covered by a water law, are therefore as follows:

Rights in natural waters

These provisions should establish the relative rights, powers and duties of individual users, private operators and the Government over naturally occurring water in its various forms. It should define those sources and matters subject to administrative control and those which are free of administrative intervention. Responsibilities for service provision should be distinct from those relating to resource management or regulation.

Necessary powers relating to land

Certain ancillary powers to undertake or control acts on land are essential to effective water management. Action may be necessary to protect the beds and banks of rivers and lakes, and to prevent erosion or pollution of adjacent land.

Registration and licensing of rights to use water

In order to formulate realistic plans for the sustainable development of water resources, information is needed about the availability of water. This information should cover quantity and quality, existing utilisation, and future requirements. It is therefore important to make provision for the proper certification, protection and measurement of the various consumptive uses of water. Other uses such as effluent disposal also have to be controlled.

Administrative structure
It is necessary to designate the administrative agencies responsible for developing and controlling water, to define their aims and objectives, to award them the necessary powers and to provide for their organisation.

Other issues
Water laws should address many issues apart from water rights, including: protection of the environment, waste and misuse of water, recycling and re-use of water, health promotion and pollution control.

Example of issues relating to groundwater to include in a water law:

- Designation of areas in which the search for and extraction of underground water is subject to control;
- Licensing of drillers;
- Obligations to recharge groundwater aquifers;
- Limitation of consumption through various means, including the installation of water meters;
- Procedures and requirements in the case of water found incidentally;
- Interference with mineral and oil deposits.

In zones which have been declared protected, restricted or rationed, the water administration may choose to impose limits to water withdrawals or diversions, prohibition of certain uses, and other limitations or obligations dictated by the public interest.

International water law

The need for effective regulation of international waters has become increasingly acute as supplies from water sources shared between two or more countries become stretched and quality deteriorates. Water can be a significant source of conflict between neighbouring states; equally, however, as nearly half of all river basins in the world are shared, the rationale for finding modalities for water-sharing and water protection between riparian states is compelling. Although there is a large body of law on international watercourses, no universal legal principles have yet been agreed.

Until recently, the legal basis for most negotiation on international rivers has been The Helsinki Rules on the Uses of the Waters of International Rivers. The Rules were formulated in 1966 by the International Law Association, an NGO, and the International Law Commission, a subsidiary organ of the UN General Assembly. The Helsinki Rules embrace the concept of the international watercourse, for which water resources, whether passing international boundaries or entirely within one country, are treated as the common property of all

basin states. The Rules contain two substantive principles: a prohibition of appreciable harm by way of deprivation of water rights, pollution or other means; and the right of each basin state along an international waterway to a reasonable and equitable utilisation of its waterway.

More recently, Agenda 21 set out a general statement of principles for protecting the quality and supply of freshwater. The UN Economic Commission for Europe established the Convention on the Protection and Use of Transboundary Watercourses and International Lakes which came into force in Europe in 1996. In May 1997 the UN General Assembly adopted the Convention on the Law of the Non-navigational Uses of International Watercourses which drew on the earlier European Convention. This Convention remains open for signature by countries until the year 2000 and requires 35 signatories to enter into force. Further information on the Convention can be obtained from the Office of Legal Affairs, UN, New York.

There are numerous regional agreements for specific river basins or lakes, including the Indus, Niger, Zambezi and Lake Victoria. The Global Environment Facility provides assistance for transboundary water projects in order to protect international waters.

There are also other International Agreements of importance to water resources management. These include those on Climate Change, Biological Diversity, Wetlands *(see Ramsar Convention, in Chapter 12)*, and Desertification/Drylands.

The Convention on Law of Non-navigational Uses of International Watercourses

While the Convention represents an important step towards international agreement on the use of transboundary waters, many states with strong vested interests either abstained or voted against it. The main disagreement occurs on the balance between the rights and obligations of upstream and downstream states. Some States felt the provisions for the settlement of disputes and regarding groundwater were unsatisfactory.

The Convention aims to ensure the promotion of optimal and sustainable utilisation of international watercourses. It states that countries along international watercourses shall utilise such waters in an 'equitable and reasonable manner'. This requires that all relevant factors and circumstances be taken into account including geographic, hydrographic, hydrological, climatic, ecological and the social and economic needs of the states concerned. The effects of use in one state should take into account uses in another, as well as protection for the whole watercourse and the costs and availability of alternatives to a planned or existing use. The Convention requires prior notification of measures that are expected to alter the watercourse, and arbitration should states disagree on any planned measure.

Fundamental to preparing legal agreements between states is the need for improved scientific understanding, information dissemination and research; in many countries, little is known of the hydrological or other scientific aspects of water resources. The differing capabilities of co-riparian states for regulation and monitoring can be a hindrance to effective agreement. The Convention recognises the need for water to be treated as an economic good and states that no water use enjoys inherent priority over other uses unless there are agreements or customs to the contrary.

Obtaining international agreement over watercourses is difficult but essential to equitable and sustainable use of shared waters. Doctrines such as absolute sovereignty over water within a state (prior appropriation or a first-come-first-served system), or its opposite (downstream users have the right to full flow of water of natural quality), are untenable. Countries need to adopt new principles outlined in the Convention, such as the doctrine (sic utere) that one should not use one's property to injure others. The essence of this principle is that State A is entitled to exercise its rights, but cannot ignore the interests of State B. This principle was used to form the basis of an agreement between France and Spain on the use of transboundary water for hydropower.

Further information: ***Guidelines on water and sustainable development: principles and policy options,*** UNESCAP, 1996. ***International Agreements***, World Bank, 1997.

4. Public-Private Partnerships (PPP)

Inviting the participation of the private sector has recently been recognised as a means of making water supply and sanitation services more efficient and cost-effective, while raising revenue to improve long-term sustainability and generate investment for new infrastructure. Privatisation of public water companies can release funds for other development activities and reduce administrative burdens. Developing countries can also benefit from the know-how of commercial companies specialised in public services management. The involvement of the commercial private sector can help to underline the value of the natural resource and – given appropriate incentives – can also encourage measures to protect and conserve freshwater supplies.

A balanced partnership between public authorities and the private sector requires that their respective roles be clearly defined within a legal framework. The level of development in the country including the level of skills and capacities within the commercial sector, and the nature of institutions in water-related sectors will strongly influence the form of public-private partnerships. There are opportunities for the involvement of small-scale manufacturing industries and entrepreneurs in all water, irrigation and sanitation-related activities, but the involvement of the private commercial sector as a major partner in construction and administration of services is particularly important for the MWWS Focus Area. This was recognised in the Capetown Declaration, adopted by 20 African Ministers at the UNHCS International Consultation on Partnerships in Water for African Cities.

The two main objectives of private sector participation are: (1) to ensure improved management and higher efficiency for service delivery; (2) to promote long-term viability; and (3) to acquire the capital needed for investments. These two objectives interact. Improvements in efficiency result in cost savings that can generate investment funds, and the incorporation of private capital creates an additional incentive for improving operational efficiency. However, introducing marketplace economics into public health engineering has implications which have provoked considerable controversy, especially after a long period in which provision of water and sanitation infrastructure have been primarily regarded throughout the world as a public service to be provided from the public purse, or at least be heavily subsidised.

The key issue is how to set up institutional arrangements which allow the commercial sector freedom to introduce marketplace efficiencies while guaranteeing access to services to those communities – by definition the poorest and least able to exercise influence politcally or in the marketplace – who are already underserved and most at risk from public health hazard. In many poor urban areas, the poor already pay relatively high rates for water supplies to informal vendors and for waste removal to nightsoil removers. However, they are likely to remain outside the reach of any adequate form of engineered water or sanitation system unless there is affirmative action on their behalf. It is unrealistic to entrust the task of meeting their requirements to the commercial private

sector, at least within the foreseeable future. The risk of private sector exploitation of their survival needs is very real. Thus, any set of institutional arrangements between the public and private sectors needs to address this reality as a priority.

Models of public-private partnerships

The following discussion of models mainly relates to activities within the MWWS Focus Area, but the responsibilities of municipal authorities and government to address the needs of all citizens within a comprehensive framework should not be ignored. Thus, even where a project or programme is not intended for a low-income area for which a BWSS scheme is more appropriate, the need to generate funds for such schemes by tariff structures which take into account the need for subsidies elsewhere, should not be ignored. The form of public-private partnership should, in other words, recognise the totality of needs and requirements even if what follows mainly relates to commercial private sector participation in medium- or high-technology schemes.

There are many models of public-private partnerships including those employed by other utilities, for example electricity. The models range from contracting out the management of certain major installations, to full divestiture to autonomous water companies of responsibility for capital investment, operations, and commercial risk. When considering which model to use, a decision is required about the ownership of existing and future fixed assets: i.e. public ownership or private ownership. Under public ownership, public assets will be leased or rented to the private sector for a periodic fee. For private ownership, public assets are sold to a private sector utility company for a lump sum. The model of private sector involvement will vary according to infrastructure and institutional capacity. However, full privatisation of all assets is not suitable for most developing countries since an extremely rigorous legal and regulatory framework, with enforcement, is needed to make it workable in the public interest.

Various models of public-private partnerships are outlined below; these can be divided into models in which assets are retained in public ownership (1–4) and those in which assets are privately owned (5–7). Appropriate models should be selected to suit local conditions.

1 Concession

A private contractor or 'concessionaire' is responsible for the realisation of all new capital works including their operation, maintenance and management, as well as capital investments for expansion of services. Fixed assets remain the property of the government or public authority, and must be transferred to the public authority at the end of the concession, subject to exceptions specified in the contract. The concessionaire is fully responsible for maintaining and operating all fixed assets and other equipment. Concessions are long term (10–30 years) and tariffs are set by the concessionaire based on full cost recovery and may include a contribution to government (e.g. to cover historic debt). Financing and implementation of capital works are undertaken at the concessionaire's risk.

2 Lease (Affermage)
The assets are placed at the disposal of the operator for a fixed period of time through a leasing or rental contract with the public authority owner. The operator is not responsible for capital investment for new or replacement works, which remain the responsibility of the public authority, who also retains responsibility for debt service, water rates and cost recovery policies. The operator is fully responsible for maintaining and operating all fixed assets and other equipment. Leases are for a medium- to long-term period of at least seven years. Tariffs are fixed by the operator and normally include remuneration to the operator to cover management costs and a contribution to the public authority towards asset depreciation. Commercial risks associated with the operation of the water system are carried by the operator and capital risks by the public authority.

3 Performance Management Contract
The assets are placed at the disposal of the operator but the operator is not responsible for capital works and carries no equity risk. The management company is paid a fee to manage the operation and for routine maintenance of equipment. The effectiveness of arrangements can be enhanced if funding and subsidy guarantees are provided to implement recommendations of the manager or technical consultant. Contract duration is usually for two to five years. The management fee contains a performance-based incentive element and tariffs are agreed between the operator and public authority. A variation of this type of arrangement is the Management Contract which is for a shorter term (one to three years) without a performance-based incentive and with no involvement by the operator in setting tariffs.

4 Service (Technical Assistance)
The assets and responsibilities remain with the public authority with technical assistance contracted from the private sector to provide advice on asset and capital programme management, metering, maintenance, emergency repairs, upgrading or construction of new facilities. The contractee provides technical or managerial advice to existing public sector management, but has no management responsibility and no equity. The effectiveness of arrangements is enhanced if funding and subsidy guarantees are provided to implement recommendations of the manager or technical consultant. Contracts are usually short term (one to three years).

The following are models in which assets are privately owned:
5 Joint ownership
With joint ownership a private sector company and public authority incorporate a firm in accordance with the normal commercial code of the country. A corporate agreement is required that spells out the objectives of joint ownership, the rights and obligations of each partner, and how profits will be shared between partners. The private partner typically has majority representation on the board of directors of the joint firm and prevails in its day-to-day management. Public and private expertise is brought together to the benefit of all.

6 Full privatisation
In this model the government sells all assets to a private sector utility company. The proceeds of the sale help the public sector to raise revenues. The attractiveness to private buyers depends mainly on the rates that they would be permitted to charge since the installations themselves have virtually no alternative value. Good communications and a very strong legal framework and regulation is required. This is the model that has been adopted by the UK.

7 BOOT (Build-Own-Operate-Transfer)
Under a BOOT contract, the private partner finances, builds, operates and owns a specific new facility or system. After a predetermined period of time, ownership of the facility is transferred to the public authority. There are many variations on this system, for example the reverse BOOT, where the public sector finances the new facility and then contracts a private firm to operate it over a long period of time with eventual transfer of ownership. This system encourages the private operator to maintain the facility well because it will become the owner at some point in the future. Other variations are the BOT (Build-Operate-Transfer) in which the ownership is transferred to the public sector as soon as the facility is completed.

The table below is a summary of the various options outlined above.

Option	Ownership	Financing	Management
Concession	Public	Private	Private
Lease (Affermage)	Public	Public	Private
Management contract	Public	Public	Private
Service (Technical Assistance)	Public	Public	Public & private
Joint ownership	Private & public	Private & public	Private & public
Full privatisation	Private	Private	Private
BOOT	Private then public	Private	Private

Risks implicit in all models
Private sector involvement in public utilities in developing countries offers constraints from the point of view of both the government and the private sector company related to the political, economic and regulatory environment. These combine to make any long-term programme uncertain. In any private sector activity, investors have to be prepared to take risks; but there are also risks to the government and to users that are multiplied in countries with weak or under-developed institutional structures. Some of these have already been outlined above, and relate to access by the poor; there are also questions surrounding the capacity of the private sector to meet quality standards, safeguard public health and support long-term environmental protection of the resource.

Some of the common risks to investors are outlined below:

Monopoly risk
Water supply is a natural monopoly and it is uneconomic to duplicate a water and sewerage network. As a consequence, competition is difficult to achieve. Thus regulation is necessary in order to protect the consumers from possible monopolistic behaviour of the private contractor.

Commercial risks
Companies/contractees may not be paid for services at all times, nor be able to recover costs in the long term, or unable to make a reasonable profit. Financial risks such as currency devaluation or convertibility of local to foreign currency need to be taken into consideration. Revenues are usually in local currency and some of the investments are in foreign currency.

Technical risks
There may be lack of sufficient knowledge about the state of existing installations, the need for replacement or rehabilitation, and the expansion needs and priorities. These may result in operational risks that the installations will not perform as expected.

Political risks
These are associated with the reliability of payment by the government of its water bills or subsidy payments; they could also relate to public expectation that services be provided at low cost and therefore company activities may provoke resistance and even sabotage.

Policy risks
These relate to the adverse conditions that may arise due to arbitrary or ad hoc changes in the regulatory, legal and economic policy framework.

It is important that all risks are evaluated and mitigated. Risks should be shared between the private and public sector and whoever can control the risk best should assume it and receive adequate compensation for doing so.

Measures to protect vulnerable groups
Measures to protect vulnerable groups must be clearly set out in any contract between government and private operators. Tariff structures to cover subsidies for low-income areas from low-value uses of water by well-off groups may be involved; or government may provide subsidies for coverage to low-income areas. There may also be opportunities to link basic services provided and/or run by NGOs and community groups with commercial operators.

Contracts and regulatory activity

One of the most important factors to determine the success or failure of privatisation is a well-defined contract. This should state the relationship between, for example, the concessionaire and the regulatory body and define the roles, functions and responsibilities of all the actors including consumers. A successful public-private partnership will maximise benefits to consumers. It is important that consumers are informed and educated about the reasons for involving private operators in what is generally perceived as a natural, public monopoly.

An effective regulatory system is necessary to facilitate financial viability of projects and services and to oversee compliance with the contract. The regulatory body should be transparent and independent and should have access to legal recourse, whenever this becomes necessary. In some cases a newly established regulatory agency will need to be strengthened institutionally in order to be able to deal with experienced private operators.

The main objectives of the regulatory body are to: (1) ensure compliance with standards of acceptable service as established in the contract; (2) protect the customer from possible monopolistic behaviour of the private contractor; and (3) create a business environment which promotes commercial viability and is attractive to the private sector. It is also important that there are institutional incentives that include performance evaluation systems under the contractual arrangement. These arrangements should enforce a more effective use of investments. The main characteristics of a regulatory regime would be: to ensure a clear separation of operating and regulatory functions, establish investment and maintenance responsibilities, establish a tariff structure based on efficiency criteria, incorporate a system of direct subsidies for low-income consumers and to implement a long-term capital cost recovery concept.

5. Monitoring Indicators

Monitoring, the systematic and continuous observation of actual events and comparison with the planned situation, provides information about project performance to those responsible for project management.

In order for monitoring to be successful, clear, concise and relevant objectives are necessary against which to measure achievements. It is also necessary that monitoring is carried out at regular intervals under the responsibility of the project management team.

During implementation a mid-term review may be necessary; usually when project implementation is not proceeding according to plan. This allows a more thorough diagnosis of project progress. The continuing intervention logic of the logical framework can be checked and the project may be re-orientated if necessary.

End-of-project monitoring, in order to confirm that the planned assets have been created, and to record lessons from the implementation phase should mark completion of implementation.

Monitoring indicators are essential components of the monitoring system. They provide the basis of the measuring system, used to assess the actual situation and compare it against specified targets. Indicators are used to measure a project's progress periodically against both short- and long-term objectives. They provide feedback to decision makers, who can use the information to improve project performance. Indicators therefore assist in assessing progress towards achievement of objectives.

As individual projects have unique objectives, performance indicators should be based on the logical framework for the project. The logical framework should link project objectives with project components and their respective inputs, activities and results at different times during implementation and beyond. Defining appropriate indicators begins at the identification stage and must be fully developed during formulation and set out in the Financing Proposal. The selection of appropriate monitoring indicators will be determined by the development objectives of the project. An agreed set of indicators is thus established for use during implementation.

Performance indicators should, wherever possible, be quantitative but qualitative measures may be necessary in some cases. Qualitative measures are used if a project's outcomes and impacts are not directly measurable. In this case, techniques such as rapid rural appraisal, beneficiary assessments or focus group interviews with structured questions can be used to gain information on the attitudes of the beneficiaries. This information can then be used to calculate nominal measures, rank orderings of categories, and frequency counts.

Results indicators

Performance is most effectively measured using results indicators which measure actual results relative to target objectives. There are three types:

Input indicators measure the quantity of resources provided for project activities: for example, training, human resources, equipment.

Output indicators measure the quantity of the goods or services provided through the use of inputs: for example, installation of pollution control measures in a water quality project. They can also indicate how many people involved in the project are moving from their initial state at the start of the project towards the final envisaged 'goal'.

Impact indicators measure trends at a higher level, i.e. national or sectoral, which project impacts are expected to influence: for example, improved national health as measured by health indicators. They can also measure the impact on people benefiting from the project: for example, a rise in agricultural productivity or a decrease in malnutrition, or how many additional families are served by clean water.

Another type of indicator – *risk indicators* – measure the status of factors identified as critical during the risk and sensitivity analysis performed as part of the project's economic analysis. These are the factors that are thought to be the most likely to have a direct influence on the outcome of various aspects of the project. Risk indicators can provide a measure of changes that may not have been envisaged in the original project proposal.

Monitoring should continue after completion of the project and it is important to use simple, easily measured indicators. Different indicators should be identified at each level of the logical framework:

Overall objectives

At this level, indicators measure the achievement of overall sectoral goals, such as improving health, raising living standards, reducing gender inequalities, stimulating exports, maintaining water quality in regional catchments. Precise indicators for these goals may be difficult to define and the information may be costly to collect. Therefore proxy measures are often used, such as housing quality as a proxy for living standards. In addition, the project may be only one contributor to the overall goal - for example, transport networks may need to be upgraded to serve an irrigation system if export crops are to be promoted - thus, indicators for overall goals may be established as part of monitoring of national or regional development progress.

Project purpose

At the level of project purpose, indicators must assist in answering the question: have the assets created by the project been successful in achieving the project's development objectives, for example, reduction of rural poverty, improved human health? These indicators will be specific to the project and will vary considerably between the different Focus Areas for water development.

Results

At this level, indicators measure the quantity and quality of the assets created by the project. For example, improved data management systems, number of water points constructed, treatment plants completed, kilometres of canals.

Activities

At this level, indicators generally measure quantity and thus focus on the efficiency of project implementation, without necessarily providing any information about the quality of the activities. The indicators measure the progress towards completing the activity, and are obtained from internal project reports.

Examples of areas where indicators may be required in the water sector are shown in the table below, in all cases the indicators should be a ratio of the planned (targeted) outcomes and the actual outcomes.

Further references: ***Performance Monitoring Indicators Handbook***, World Bank, 1997. ***Indicators of Sustainable Development***, EC, 1997.

1 Input indicators:
Costs: disbursement against budget
Number of units constructed or purchased
Number of people trained/educated (overall, men, women, poor, ethnic)
Area of agricultural land served (ha)
Area of land reclaimed from water logging and salinity (absolute and command)

2 Output indicators:
Currency unit per cubic meter of water abstracted
Number of new water supply points (service coverage)
Number of persons per water supply point
Number of new latrines (sanitation facilities)
Number of persons per latrine (sanitation facility)
Degree of utilisation of sanitary facilities
Reliability of water supply
Changes in water quality
Quality of effluent discharge (compared with legal limits)
Discharges of human and industrial waste (eg BOD, faecal coliform count)
Relative water supply (total supplied/demand)
Relative irrigation supply (total supplied/demand)
Average irrigation water delivery per ha.
Conveyance efficiency
River or groundwater withdrawal

3 Impact indicators:
Changes in health (overall, children, men, women, poor, ethnic)
Levels of employment (overall, men, women, poor, ethnic)
Economic and financial viability (project, organisation)
Technical sustainability of project results or assets
Yield per ha
Yield per unit of irrigation water supply
Changes in income (all stakeholders)
Average tariff compared with incremental costs
Number of beneficiaries from the project (overall, men, women, poor, ethnic)
Fees collected (cost recovery) compared with fees due
Establishment of Water User Associations (ratio of area transferred to total area)
Concentration of pollutants in water bodies

6. Participatory (Rural) Appraisal – PRA

The purpose of PRA is to gather information in a non-extractive way. This will mean that the information is owned by the local people and its analysis is also theirs. The function of the participatory facilitator is to help them to analyse and understand their situation so that they can plan for the future.

The most important issue for stakeholders is **information**. The more and the better the quality of information available, at the earliest possible stage, the more effective the participatory process will be. Planners and designers should therefore make certain that accurate information is available to all stakeholders from the very beginning of the project.

The following guidelines are helpful for giving information:

- Give information about the proposed project to stakeholders and user groups at the earliest opportunity and before any major decisions are taken.
- Use national and local media to publish information - newspapers, radio, TV.
- Set up consultative committees before any decisions are taken.
- Involve existing groups as well as setting up new groups.
- Be certain that both women and men are involved on an equal basis. Ideally each committee and group should have equal numbers of men and women.
- Be sure that there are gender-aware women in the planning team, and that the planning and design team has had gender training.
- Use Participatory Appraisal methods to gather information.

PRA draws upon the following menu of sources and activities:

- Use of secondary data, maps and reports for background information;
- Direct observation;
- Case studies and stories from local experts;
- Semi-structured interviews using key probing questions;
- Transect walks: systematically walking through an area with local guides, observing, asking, listening, discussing, learning about different soil zones, land uses, vegetation, crops, livestock, technologies etc.
- Group discussions of various kinds (casual, random, focus, representative, community);
- Mapping and modelling: people mapping with sticks, stones, coloured paper etc. to show their view of their world;

- Time-lines, trend and change analysis: chronologies of events; accounts of the past, to analyse causes of change and local trends;
- Seasonal calendars: to show distribution of climate data, crop cycles, work patterns;
- Daily time use analysis: showing amounts of time and degrees of drudgery;
- Well-being (or wealth) grouping (or ranking): local criteria to establish poorest, worst-off, most deprived etc.;
- Matrix scoring and ranking: using matrices and counters to compare preferences and conditions.

Further references: ***Participatory Rapid Appraisal for Community Development:*** IIED and SCF, 1991. ***Introduction to Rapid Rural Appraisal for Agricultural Development***, IIED, 1988.

7. Participatory Irrigation Management (PIM)

The concept of Participatory Irrigation Management (PIM) has gained wide acceptance in recent years. The incentives for governments and donors to promote user participation are both philosophical and pragmatic. Early work in the late 1970s was driven by the recognition that scheme design and management was not sufficiently responsive to local conditions and needs. More pragmatic incentives include the poor performance of many public sector agencies and the drive to reduce government expenditure on operation and maintenance.

Although there is a general consensus amongst governments and donors that PIM is a desirable objective there exists a wide variety of approaches and emphases in different country programmes.

While the emphasis and form of PIM programmes varies significantly between countries, effective user participation in irrigation management implies that key stakeholders have ownership of and influence over the assessment of alternative designs, investment decisions and management policy, and operational decisions.

In some approaches to PIM, farmer participation is encouraged but scheme ownership and management responsibility remains with the government agency. In other instances, responsibility for management is transferred to the users but it resides in the hands of a few influential members of the community and participation by the majority of key stakeholders remains at a very low level.

The potential benefits of PIM include:

- Reduced government expenditure on O&M costs;
- Improvements in system productivity per unit of land and water;
- Reduced infrastructural deterioration due to inadequate maintenance;
- Improved equity and system sustainability as a consequence of participative planning, design and construction;

Whilst these are expected or 'hoped for' benefits, there is still a paucity of quantitative data that can substantiate anecdotal evidence or unquantified assessments. Quantifying the true benefits of PIM is also complicated where it is introduced a single component in a much wider ranging reform of the agricultural sector.

The costs of PIM:

Where PIM is introduced to an irrigation scheme after construction, the major costs arise from mobilising field staff to carry out necessary studies and introduce the ideas of participatory management to key stakeholders, plus the costs of training those stakeholders so that they can organise themselves and establish effective management. Where a participatory approach is adopted from the outset of a new construction or rehabilitation project, in addition to the costs of staff mobilisation, awareness raising and training, the most important factor to recognise is the need for additional time to be allowed during project identification and formulation. This extra time is essential to permit farmers and other stakeholders to influence the planning and design stages.

Approaches to implementing PIM
Based on the experience of many initiatives to establish PIM, the following offers a classification of approaches that work best, and those that are ineffectual:

Approaches that work best:
- Government must have a strong commitment to PIM;
- Opportunities for re-deployment of government staff displaced by PIM should exist;
- Strong incentives exist for farmers to take responsibility, for example, current water delivery is poor, high water charges, and deteriorating infrastructure;
- Schemes should be financially viable;
- Existing associations exist and can be strengthened;
- Create large user associations which permit economies of scale, hiring of technical staff and purchase of equipment and materials;
- Transfer complete schemes;
- Promote partnership rather than paternalism.

Approaches that are unproductive:
- Creation of user associations that do not have responsibility for or control over operation and maintenance;
- Pursuing PIM primarily as a means of reducing government expenditure;
- Transfer of financially or technically non-viable schemes;
- Transfer in the face of strong opposition from government agency staff;
- Extension of a PIM approach from small schemes to large schemes;
- Promoting PIM on technically complicated schemes
- Treating water user associations as extensions of the government agency;
- Adopting a gradual approach;
- Spreading pilot PIM projects.

Further information: ***Irrigation Management Transfer.*** FAO, 1995. *INPIM, International Network on Participatory Irrigation Management, Network established by the Economic Development Institute of the World Bank.* **Network Coordinator:** *EDIEN, Rm M-5041, World Bank.* ***Impacts of Irrigation Management Transfer: A Review of the Evidence.*** IIMI , 1997.

8. Social Impact Assessment (SIA)

Development interventions do not take place in isolation, but have to be placed within the context of the lives of the people who will be affected or influenced by the intervention. All development interventions have significant social contexts, but the social context of water projects calls for special care and consideration in analysis.

It is especially important to understand the ways in which different communities and groups manage their social living, and to be able to assess the impact that any changes may have on the way of life.

The main objectives of a Social Impact Analysis are to determine:

- which projects need further consideration of social issues;
- which projects should be eliminated because the potential for negative social impact is too great.

SIA is based on a set of key questions:

1. Which populations are intended to benefit from support to a given development activity?
2. Do they really need the project? What advantages will it bring them?
3. Will other, perhaps more needy, populations be excluded from benefiting, or do so only indirectly? Could they be incorporated?
4. Will any group be negatively affected? Could anything be done to mitigate negative impacts?
5. Will women benefit as well as men?
6. What level of participation by the target population in planning and implementation is possible and appropriate for this project?
7. Is the project technically and culturally appropriate?
8. Is it essential that target populations change their behaviour to benefit from this project, if so how will this be achieved?
9. Is the project affordable by user groups?
10. Are social issues adequately reflected in judgments on project viability?
11. Are arrangements for project management appropriate?

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.

The broad social issues which relate particularly to water interventions fall into three main categories: water and land use, water for food production and water and health

Within those categories there are a number of other key issues such as: water and nutrition, water for food processing and preparation, water for irrigation and non-irrigated crops, water for vegetable gardens, water-borne and water-related disease, water for animals, water and culture.

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.

Identification and analysis of key water users is an important feature of Social Impact Assessment, and the SIA should incorporate data on modes of collection, carrying and use, and purposes of use, ensuring that data is disaggregated by gender.

SIA should explore the traditional idea of water as a 'free' good. Where water has traditionally been regarded as a free natural resource, the introduction of the idea of an economic value for water and of possible water charges will affect household and agricultural management, and require new social arrangements for collection of dues. Poorer households may not be able to afford water charges, or in the case of water supply, connection charges.

The impact on traditional water-sellers, or owners of traditional wells and sources of water, is an important consideration for an SIA. Traditional owners and sellers may lose status in society, as well as income, and may seek to dominate community groups and committees.

Exploration of the understanding of the relationship water and well-being is an essential feature of SIA, and any benefits and dis-benefits should be highlighted. There is considerable evidence to show that the introduction of clean water does not necessarily lead to an improvement in community health unless attention is paid to certain issues in the SIA; also that the introduction of irrigation can lead to increased health problems.

Therefore the SIA should consider:

- Perceptions about the health attributes of traditional well water, especially it's taste, smell and health-giving properties;
- Perceptions about the benefits of irrigation, levels of cropping, seasonality, etc.;
- Perceptions that children's excreta is 'clean' and whether it is therefore handled differently and unhygienically;
- Perceptions that animals especially dogs and pigs clean up excreta.
- Level of understanding of the concept of clean/grey/dirty water;
- The possibility that 'project' water will be used for small enterprise development, and that traditional wells and streams will continue to supply family needs;

- Analysis of the likely health hazards following from the creation of lagoons, reservoirs, and other areas of standing water, as well as the effects of treatment works and sludge disposal;
- The likelihood of greater water availability increasing the incidence of water-borne disease if the water supply is not kept pathogen-free.

The SIA should also take into account the social customs relating to water use – such as:

- Customary methods of collection/storage and hygienic practices;
- The importance of the social groupings that develop around traditional wells and other water sources;
- Customary methods of watering crops, and other farming activities;
- Customary uses of water sources for religious and other ritual activity;
- Customary perceptions of 'clean' and 'unclean' water;
- Customary sites for washing clothes and bathing;
- Customary intervals for bathing for women, men and children;
- The use of water from different sources for different cooking, brewing and other food processing activities;
- The use of different sources for watering and washing animals.

Analysis of social norms and customs will enable the preparation of proposals for the siting of new water installations to be sensitively managed in co-operation with the stakeholders and the users.

User preference for technological options should also be explored in an SIA (e.g. pit latrines, communal toilets, and different irrigation methods).

The SIA should seek to identify community groups which have a particular relationship to traditional water sources, and if possible use those groups as the basis for management and maintenance of the 'new' water projects. The identification of female and male community leaders, within as well as outside the groups, is a key to effective management.

Women's groups often have responsibility for water management and maintenance of installations within the community and the SIA should ensure they are included. This is not necessarily the case with irrigation projects and extra care needs to be taken to ensure that women are included in water-user groups for irrigation.

The identification of levels of understanding of the benefits of water for human uses and agriculture is an important strand of analysis for an SIA. The SIA should identify gaps in understanding and possible topics for community education. Schools as well as water extension organisations should be available to deliver water-awareness programmes. *(See also Gender Analysis, which should be incorporated into SIA).*

Further information: ***A guide to Social Analysis for Projects in Developing Countries,*** ODA, 1995.

9. Gender Analysis

The acknowledgement of women as important agents in mainstream development necessitated a descriptive word that could encompass all aspects of development, which arose from the social differences between women and men. Hence the word 'gender' came to be used to denote the social roles of women and men as opposed to their biological difference. (Sex does not change, social roles and relationships can and do change.)

The movement away from a 'women in development' (WID) approach to a gender and development (GAD) approach was an important step towards the recognition of women as mainstream development agents. The GAD approach recognises that 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. 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. Analysis of gender differences entails identifying the distribution of tasks, activities and rewards associated with the gender division of labour as well as the relative positions of women and men.

Gender planning methodology identifies several roles of women: household and domestic managers; economic producers (e.g. in farming); and community leaders. Increasingly, the role of women not only as water-haulers for the family but as managers and maintainers of community water supplies is being recognised.

Gender planning methodology 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.

A Gender planning checklist is set out in the EC Gender and Development Manual, and there are numerous reference books and checklists available on Gender issues and Gender Planning Methodology.

There is a clearly defined and linked sequence of terms that describe the level of understanding of gender concepts within an organisation or institution. These are: gender-aware, gender-sensitive, gender-incorporated. An organisation which could be described as 'gender incorporated' would have gender issues, analysis and activities embedded in the culture and methods of the organisation at all levels.

Issues related to gender within water resources management and use

Many issues relating to water resources management, especially basic water supply and sanitation services and agricultural water use, have special gender connotations. Gender analysis will help identify them.

General issues include:

- Time spent in water-hauling and other water-related tasks; projects that increase demands on women's time without saving time from their existing daily round will be unpopular with women;
- Effort, energy, burden: water hauling is heavy work as well as time-consuming. For women, the reduction of this burden is often of paramount importance.

Specific issues include:

- Distance travelled in fetching and carrying water;
- Provision of water in sufficient quantity at a nearby location for all household tasks;
- Provision of slabs and platforms for washing clothes;
- Providing drinking water for animals and washing animals;
- Provision and use of water for small enterprises especially in food processing;
- Provision of water for small-scale irrigation (vegetable gardens and field crops);
- Standing in water for crop production activities such as planting rice and in processing activities such as jute retting;
- Irrigation activities which increase women's work in planting, hoeing, weeding and harvesting.

Women and Irrigation

The benefits of irrigation to women may be reduced if their role in agricultural activities is not understood. Increasing land in production may simply increase the volume of work for women where women's work is deemed to be planting, hoeing, weeding and harvesting and crop processing. Increases in production, without attention to the volume of women's work, their available time and the burdens they carry, will mean that maximum productivity cannot be achieved.

Irrigation may also bring about a decline in subsistence agriculture or family food production (traditionally women's activity) if available time is taken up with irrigated agriculture. This will in turn affect nutritional levels. Irrigation technologies which may not be suitable for use by women may lead to marginalisation of women in user committees and other decision-making forums and thus to lack of control over benefits and resources.

Gender analysis and the SIA (see above) should seek to identify the allocation of tasks to women and to men, and to measure time and burdens in relation to women's and men's activities, and to calculate the likely benefits and dis-benefits to women and men.

Women, Water and Health

This is an important relationship which water project planning needs to explore. Based on the concept of the triple role of women, it follows that:

- Any increase in water-borne disease will impact on women's reproductive and caring role;
- Any increase in production will impact on her productive role, particularly if production methods involve standing in water which can lead to an increase in water-borne diseases contracted from vectors which penetrate the skin;
- Any increase in productivity may also lead to improved nutritional status, or it may bring about a decline in nutritional status if family food production is neglected for market-driven agriculture;
- An increase in water hauling will lead to an increase in the incidence of back and limb problems and accidents in slippery descents to wells and water sources;
- New systems of water supply will impact on women's community role in terms of increased time needed for participation in planning, management and maintenance activities and these will bring with them related stress factors.

Further information: ***EC Manual: The Integration of Women in Development,*** EC, 1991. ***Participation of Women in Water Supply and Sanitation.*** IRC, 1995. ***Handbook for Mainstreaming: A Gender Perspective in the Water Resources Management Sector.*** SIDA, 1996. ***Gender Issues, Water Issues, A Gender Perspective to Irrigation Management.*** IIMI, 1994.

10. Willingness-to-pay 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.

The accumulating evidence on WTP makes it possible to plot demand curves for water, which allow planners to design systems that are more responsive to what users really want, and improve the prospects of adequate cost recovery.

Conclusions to be drawn

It is difficult to generalise about the actual WTP values emerging from a variety of studies: the numbers depend on specific circumstances. However, the studies do agree on the factors that influence the demand for improved water supplies, and therefore WTP. These include:

- Socio-economic and demographic characteristics: incomes, occupation, purposes for which water is used, family size and composition, water use customs, etc.
- Quality, reliability and cost of proposed water, compared to existing sources. In this context, quality includes appearance, taste and smell, as well as its microbiological composition. Cost takes into account the time and effort involved in carrying the water from a distant source, or queuing for it, and current cash outlays to private vendors, etc. The cost of connecting to the system is another factor.
- Attitudes to government policy, and sense of entitlement. Stated government policies on water supply and pricing may define users' attitudes – e.g. if politicians have promised free water, or if there is a clear and effective policy on subsidies. Various factors may lead people to feel they are entitled to free or cheap water.

Using WTP surveys for water is controversial, and their results can be challenged, e.g. for people with very low cash incomes, or where male and female members of the family have different attitudes. In addition there are the familiar criticisms of contingent valuation surveys (see below), of which WTP is a type, e.g. 'strategic behaviour' by respondents wishing to have the service, but either exaggerating, or understating, the amount they are willing to pay.

Acknowledging these problems, it can nevertheless be concluded that WTP evidence is useful, and provides an empirical basis for planning and cost recovery in this sector. It suggests that water is indeed an economic commodity in the eyes of many consumers, and that they are in principle prepared to pay for an improved service.

Data collection
Evidence on WTP is collected through Contingent Valuation (CV) surveys, so called because their replies are 'contingent' on the description of the (usually) hypothetical service or improvement being proposed. Conducting CV surveys is highly specialised and they should be contracted out to experienced practitioners. The growth of interest in CV in the USA led to the production of authoritative guidelines for the conduct of CV in a report to the US National Oceanic and Atmospheric Administration. The guidelines were drawn up principally for the estimation of non-use values of natural habitats, though they apply generally to other issues such as water. The CV method may be used in litigation, and substantial resources are required to conduct such a study. This should be borne in mind while reading the guidelines below, not all of which may be appropriate in their full rigour.

Samples
A professional statistician should be involved in the choice of the type and size of the sample. The sample size must be statistically significant, especially where split-samples are used.

Non-responses
A high non-response rate would make the survey results unreliable.

Interviews
Face-to-face interviews are usually preferable to other types, and telephone interviews are better than mail surveys. Major CV surveys should also pre-test for the effect of the interviewer. The effects of photographs on the respondents should be carefully explored.

Reporting
The survey report should contain information on the population sampled, the sampling frame used, sample size, the overall non-response rate and breakdown of non-responses, a copy of the questionnaire, and all communications with respondents. Data should be archived and accessible to interested parties.

Questionnaire design
Questionnaires should be piloted and pre-tested. There should be evidence that respondents understand and accept the description and questions in it. In general, the structure of the survey should err on the conservative side, i.e. options which underestimate WTP should be preferred to those which risk overestimating it, in order to improve the credibility of results. There should be a place for 'no-answers', the reasons for which should be explored.

Cross-tabulations
The survey should include a variety of other questions that help to interpret replies to the primary valuation question. These might include income and other socio-economic indicators, location, awareness of environmental issues, etc.

Elicitation procedure
The WTP format is preferable to questions about compensation required, e.g. in the event of a withdrawal, or denial, of services. The valuation questions should be posed as a vote on a referendum ('yes/no', rather than an open-ended question about WTP). The mode of payment should be clear, realistic and acceptable.

Accurate description of issue
Sufficient information should be provided about the proposed change in service to enable respondents to frame realistic answers.

Expenditure implications
Respondents should be reminded that their WTP for the programme in question would reduce their ability to spend on other goods and services.

Further information: ***The Economic Appraisal of Environmental Projects and Policies: A Practical Guide,*** OECD, 1995. ***Values for the Environment,*** ODI, 1991.

11. Financial and Economic Analysis

Water-related projects should be the object of a financial and economic analysis (FEA). The European Commission has published a reference manual that summarises the main recommended techniques for undertaking such an analysis (***Financial and Economic Analysis of Development Projects,*** EC, September 1997).

The first step of Financial and Economic Analysis (FEA) is to determine the economic entities involved (i.e. stakeholder groups that incur costs or receive benefits as a result of the project), all of which should be taken into account in the analysis. The presentation of a partial picture of the project should be avoided; for example, the FEA should not examine only the part financed by the EU, if there is evidence that other sources of funds will be needed from government or obtained from beneficiaries/users.

Some of the major economic entities need to be analysed separately. These include the relevant ministry or ministries; public/private entities, such as water authorities, utilities and companies; and beneficiaries/user groups who are expected to contribute and for whom costs may appear to outweigh benefits. It is especially important to concentrate on the lowest-income groups among the beneficiaries, as improvement of their health, economic status and quality of life is often a high priority for water projects. If one of the stakeholder groups does not benefit from the project, the project may have to be redesigned to address this problem or the project may fail. Most importantly, if the objective is to help the poorest, the affordability for low-income groups of the water supply or other benefits produced by the project must be clearly shown.

The second step (closely linked with the first) is to define the 'with project' and the 'without project' scenarios. Note that the 'without project' scenario is not the same as a 'before project' scenario; it should reflect the evolving situation in the proposed project area over the life of the project. The project lifetime should be regarded as the period during which project benefits and costs will accrue, not the period of project implementation or donor investment. The 'with' and 'without' scenarios should be quantified over the project lifetime in order to determine the 'incremental' scenario – the 'with project' minus the 'without project'. This scenario forms the basis of the decision of whether or not to finance the project.

These three scenarios should be summarised in three cash flows. An 'incremental' scenario should not be compiled without this exercise as this risks the omission of certain elements. Assumptions should be clearly stated and realistic, and sensitivity analyses should be used to determine their relative importance. A sensitivity analysis consists of changing the value of key factors such as the duration of the project, the main benefits and costs, and the discount rate, in order to assess their impact on the overall worth of the project and hence approximate the degree of risk of a project. The 'without project' scenario should be compared with relevant alternative options which should be adequately quantified. Justification should be provided for the selection of the preferred option.

This second step enables classification of the project either as one with predominantly tangible products (the majority of costs and benefits can be quantified and valued) or as one with predominantly non-tangible benefits (the majority of costs and benefits cannot be quantified and valued, although some of them can). This classification is important as it determines the type of possible analysis. In the case of a project with tangible benefits, a cost/benefit analysis can be performed, whereas in the case of a project with non-tangible benefits, a cost/efficiency analysis is required. If components of the project are not linked they should be assessed separately (i.e. a separate net present value (NPV), internal rate of return (IRR) or cost/efficiency measure needs to be computed).

The type and extent of financial and economic analysis to be performed needs to be adapted to the main issues of each project. For example, if institutional aspects are central to the project, the analysis will have to be adapted accordingly.

Main issues specific to water-related projects are as follows: (1) To determine which benefits and costs should be quantified: willingness-to-pay or sale of water; financial outlays; production gains; amenity; reduction of diseases and mortality; time savings; convenience; and environmental costs and/or benefits (these last four items may prove to be hard to quantify and even more difficult to value); and (2) The type of cost recovery policy to adopt. Ideally, this should allow for the recovery of operating costs, maintenance costs and depreciation, and should apply different prices for low-income groups, higher-income groups, and companies.

The third step is the financial analysis, which builds on the first two steps. The analysis starts with a financial analysis, never directly with an economic analysis. The financial analysis focuses on individual economic entities or stakeholder groups, whereas the economic analysis focuses on the country or region as a whole. A financial analysis allows an assessment of the intrinsic worth of a project — its value before financing — and the financial worth of a project — its value after financing — at constant market prices (i.e. excluding inflation and without adjustment for market price distortions), using a justified discount rate (a rate which reflects the time preference, excluding inflation).

In the case of a project with tangible benefits, the financial analysis uses the payback period (the number of years needed to recover the initial investment without discounting), the Net Present Value (NPV) (the net value of the project after applying discount rates over the life of the project), or the Internal Rate of Return (IRR) (the discount rate such that the NPV is nil). The NPV should be the main decision criteria as it makes it possible to rank projects (divide NPV by the initial investment in the case of alternative projects with different investment amounts).

For projects with non-tangible benefits, the financial analysis should focus on the determination of a realistic budget and the determination of a benefit indicator (for example, the cost per litre of drinking water to communal standpipe users), and the comparison of these two elements, to assess cost-efficiency. At this stage, assessing the acceptability of underlying assumptions and the performance of relevant sensitivity tests

are of utmost importance.

The fourth stage is the economic analysis. To move from the financial analysis to the economic analysis, a consolidation of the various economic entities (stakeholders) is performed and a number of adjustments are made. An economic analysis is only required when: (1) The project is of a size that will have a significant impact on the national economy, which can be the case with very large water-related projects. In this case, the 'economic effects' analysis allows emphasis on the effects on economic growth (in the case of the project with tangible benefits), foreign exchange, budget and income distribution (in all cases). This analysis is carried out at constant market prices and should preferably be performed over the life of the project and not over one year. It consists of disaggregating costs and benefits to determine their components (operating margin, imports, taxes, wages, and financial charges). (2) There are important distortions in the pricing system which justify a valuation based on the opportunity cost for labour, property, natural resources and foreign exchange. The international viability method eliminates all transfers (such as taxes paid by the consumer and collected by the government) to show the overall picture from the national point of view and converts prices to their opportunity cost (shadow pricing) to account for distortions and externalities. This method allows the determination of the economic worth of the project. The economic net present value, the economic internal rate of return as well as the domestic resource cost should be the main decision criteria.

The fifth stage is the synthesis of findings and the recommendations. At the end of the analysis, it should be possible to assess the relevance of the project (for projects with tangible benefits), its efficiency, its effectiveness and its viability, and recommend whether or not to go ahead with the project. This assessment should be related to the recipient government's policies and to EU policies. One of the main issues is viability: a good financial and economic analysis should quantify the recurrent costs generated by the project during its lifetime and after the end of the project, as well as the adequacy of the financing.

If some project components are not satisfactory, the financial and economic analysis should be undertaken again, using appropriate alternatives. Financial and economic analysis is an iterative process, not a sequential one.

It should, however, be remembered that while financial and economic analysis is a very important element of project preparation, it does not provide the only basis for judging whether a project should go ahead. Projects may provide significant non-tangible benefits which cannot be included in any calculation of Net Present Value or Internal Rate of Return, and some aspects of an appraisal — such as social and environmental aspects — are very difficult to integrate in financial and economic analysis. This is particularly the case with water-related projects where — for example — the purpose is to improve health and free women from water-hauling so that they have more time to devote to economically productive activity. This is why a financial and economic

analysis should always be performed in close co-ordination with other analyses, such as socio-cultural and gender analyses, never as a stand-alone exercise.

Efficiency — comparison of the results obtained with the resources used;
Effectiveness — comparison of the project's purpose with its results;
Viability (or **sustainability**) — (1) the solvency of the project over its lifetime; and (2) whether net benefits will continue to flow after project completion;
Relevance — the extent to which the project fits with and contributes to the economic and structural reform objectives of the partner country and the EU.

12. Estimating benefits from water resources investments

The traditional approach to estimating the benefits of the various types of water and wastewater projects is to regard the financial revenue from the sale of services as a minimum proxy of benefits. This is now regarded as unsatisfactory, since water is often underpriced and subsidised, and financial revenue may greatly understate the real benefit of the service. The problem is compounded in the case of wastewater services because of their implications for public health and environmental protection. The consequence is that it is often difficult to demonstrate the true economic benefits of water resources projects.

The broad choice is between asking water consumers what they would be willing to pay for improved services, and to try to estimate these benefits directly by other means. In theory, WTP provides a more comprehensive answer, because only consumers themselves know the full benefits they can expect, and what these are worth to them. However, WTP answers may not be reliable, for various reasons. WTP exercises take time and absorb resources, and are not always feasible. More fundamentally, individual statements of WTP for benefits will omit the social benefits (externalities) of improved services, notably public health and amenity.

For these reasons, it is sometimes preferable to break down the various benefits, and estimate them directly. Care should be taken to avoid double counting, e.g. including both individual WTP and savings of consumers' resources and time. Likewise, benefit estimates relying on enhanced local property values are likely to duplicate benefits derived by other routes.

The main types of benefit, for both fresh water and wastewater services, are as follows:

Resource cost savings
These arise as consumers' savings in cash or kind from improved water services. They can be further divided into time savings, financial outlays, and production gains.

Time savings and convenience
These consist of reduced time spent (especially by women and children) in queuing for water at public outlets, and carrying it back from distant sources. Alternatively, it may apply to the use of sanitation in the residence rather than in public areas. Convenience is partly a matter of time savings, partly a lessening of worry and effort.

Financial outlays
Use of the improved service may reduce private outlays on substitutes or fall-backs, e.g. purchase from water vendors, cost of private water treatment (filtering, boiling, etc.) or the use of private wells. Sewerage connections will remove the need for septic tanks. The benefit may accrue to public authorities, as where improved wastewater treatment reduces the cost of freshwater treatment, where it is drawn from the same source.

Production gains
A greater volume and more reliable supply of clean water may reduce costs for farmers and industrial/commercial operators for whom water is a major input. For some enterprises, a water supply may be the key factor in viability.

Health benefits
A greater volume of water can help to change household habits, with potential gains to health – e.g. more frequent and more thorough washing, more careful cleaning of utensils and clothes. More reliable supplies can have similar effects, and may remove the need for storage, which itself can carry health risks. Improved water quality can reduce the risk of ingesting contaminated fluid. These benefits are partly private, partly public. The latter consist of reducing the incidence of diseases transmitted from one person to another. In practice, the main health gains are likely to come from improved sanitation and waste disposal, especially the avoidance of faecal contamination.

Amenity
A neighbourhood with good water and wastewater services will, other things being equal, have a higher property value than one without. The reduction of pollution and local flooding from proper sewerage will also improve local amenity. The cumulative impact of all the individual and social benefits from improved water services will be a better neighbourhood, from which all benefit.

The above types of benefit can be converted to economic values, using various methods:

- Contingent valuation and willingness-to-pay surveys, applicable to the various kinds of private benefits, and to some aspects of public health and amenity;
- (Hedonic) property method, in which increases in property values are regarded as capturing household, health and amenity benefits;
- Avertive behaviour and defensive expenditure, in which peoples' spending on alternative sources and safety procedures is used to illustrate what they would save by using improved services;

- Loss of production method, or the market valuation of physical effects. This approach measures the likely impact of improved water services on output (e.g. irrigated crops, fisheries, laundry services), or on the use of marketed inputs and services (e.g. health facilities, cost of private water treatment). The valuation of time saving is a special case: where the time in question is 'productive' it can be measured by prevailing wage rates, but this is more problematic where the beneficiaries are not in the wage-earning labour force (e.g. children, old persons, unpaid women).

Further information: ***Measuring economic benefits for water investments and policies,*** World Bank, 1996. ***The Economic Benefits of Potable Water Supply Projects to Households in Developing Countries***, Asian Development Bank, 1994.

13. Environmental Procedures

Legal Background

The EU aims to integrate environmental aspects into all development activities. This became a legal obligation under the Treaty on European Union (Maastricht Treaty). The protection and enhancement of natural resources is recognised as an important dimension to the development support provided by the EU. The intention is: (1) to avoid harmful effects to the environment as a result of any programme or operation; (2) to maintain ecological viability through all the stages of the project cycle; and (3) to take account of direct and indirect consequences of operations that may affect other sectors.

Several Council Regulations and Resolutions of the Council and Member States place importance on environmental protection in all regions of the world. Sustainable management of natural resources is among the policy priorities.

Environmental Appraisal

An Environment Manual (Environmental procedures and methodology governing Lomé IV development co-operation projects, June 1993, DG for Development) has been produced by the EC. Its aim is to assist partner countries and the EC to incorporate environmental considerations into Project Cycle Management (PCM). The procedures provide an effective system of environmental appraisal for development projects. The manual, as written, refers to the project level. During 1998, the commission will revise and update the 1993 Manual, which will then be applicable to all development co-operation activities.

Environmental appraisal of proposed projects can be broken down into six basic components:

- **Initial screening:** this determines whether projects are likely to cause significant environmental effects and therefore need further environmental consideration; to be applied at programming and identification stages.

- **Preliminary Environmental Assessment:** this gives an early cost-effective indication of the level of environmental analysis that will be required; to be undertaken at identification stage.
- **Environmental Assessment:** this depends upon earlier screening. The purpose is to determine the environmental consequences of a project, and the environmental protection measures which should be incorporated into its design, implementation, and operation. The assessment can be carried out as part of the Feasibility Study or as a separate Environmental Impact Assessment (EIA).
- **Review of Environmental Results:** this uses the outcome of the Environmental Assessment to identify environmental measures for incorporation into the Financing Proposal. These include Environmental Management Plans, Environmental Monitoring Systems or Environmental Audits.
- **Environmental Monitoring:** this shows how to incorporate an environmental component into monitoring so as to ensure continuing environmental monitoring and the adequacy of environmental mitigation measures.
- **Evaluation:** this shows how to include an environmental component to ensure that general environmental lessons are learned for future projects.

The Manual shows the linkages between the PCM stages, the environmental procedure and responsibilities of the various bodies involved. It also gives a schedule of procedures and actions/decisions as a checklist. It is recommended that the completed checklist is submitted once the Feasibility Study is accepted.

Projects can be placed into three categories for Environmental Analysis (EA) and the Manual clearly sets out the methodology for each. Examples of projects falling into the different categories, with indicative Focus Areas, are:

1. **Projects not requiring an EA:** These include projects unlikely to have significant environmental impacts, such as technical assistance, education, training, and institutional strengthening, data collection and desk studies.
2. **Projects requiring a Preliminary Environmental Impact Assessment:** These include projects whose type, scale, or other relevant characteristics have potential to cause some environmental impact. These are not likely to warrant an EIA but will require a Preliminary EA. **WRAP:** development of freshwaters for recreation and amenity purposes, significant land-use changes on (a) known aquifer recharge areas; (b) flood plains; and (c) riparian areas. **BWSS:** rural water supply and sanitation, land drainage (small scale), small-scale sewerage systems and sewerage-sludge disposal. **MWSS:** urban water supply and sanitation, urban surface drainage disposal, sewerage systems, installations for the disposal of sewerage sludge. **AWUM:** catchment management and rehabilitation, surface-water irrigation projects between 100 and 500 hectares, groundwater irrigation projects between 200 and 1000 hectares, aquaculture

(coastal zone and freshwater), agricultural development on sensitive aquifer recharge areas and riparian land. **Trans-sectoral:** mini-hydro, tourism involving the amenity use of water and the provision of potable supplies and sanitation.

3. **Projects requiring a full EIA:** These include projects that, because of their type and size, are highly likely to lead to significant environmental impacts. Environmental Assessment will be needed either as part of the feasibility study or as a self-standing EIA. **WRAP:** dams, river regulation, water transfer, embankments, regional flood relief, and rural flood protection. **BWSS:** boreholes, well construction, wastewater disposal systems (small scale), rural flood protection, and flood relief schemes, resettlement. **MWSS:** wastewater treatment plants (large scale), water treatment works (large scale), urban surface drainage disposal, canalisation of rivers through urban areas, urban flood protection and flood relief works, water supply dams, barrages and reservoirs. **AWUM:** drainage of wetlands, surface-water irrigation projects more than 500 hectares, ground-water irrigation projects more than 1000 hectares, water conveyance systems including headworks, canals and pipelines (large scale), soil conservation and land reclamation. **Trans-sectoral:** coastal development due to tourism, resettlement schemes, hydropower schemes (large scale).

Initial Screening is important during project identification. It should be noted that:

- The Screening Lists assume that environmental improvement and protection projects may have adverse environmental impacts in some cases. The provision of water for human, animal, and crop consumption may be an improvement in the environment but bring with it adverse affects that could out-weigh the benefits.
- The use of water for environmental purposes, (i.e. to sustain wetlands, nursery fisheries, recreation, amenity and cultural practices) is now recognised as important in water-related projects. The impact of a proposed project on the provision of 'environmental flows' of sufficient quantity and quality has to be accounted for in the Screening process.
- Environmental protection for projects not covered in the Screening Lists needs to be addressed under normal project preparation procedures by the partner country authority and EC Delegations.
- Screening lists should be annexed to the Project Identification Sheet.

Preliminary EA checklists are provided in the Manual. The objective is to guide the user as to the level of further environmental analysis likely to be required.

- The 16 lists can be used with a minimum of specialised technical input and can be completed within 30-45 minutes. In comparison with an EIA study, completion of a checklist is simple, and cost efficient.
- This tool can be used to compare other options for projects at the Pre-

Feasibility (identification) stage.

- The checklists on 'Rural and Urban Water and Sanitation' and 'Irrigation' are most relevant for water related projects. However, the user is also recommended to examine other relevant checklists such as 'Waste Disposal and Treatment', 'Ports and Harbours', 'Energy', 'Agriculture', 'Forestry', 'Fisheries and Aquaculture'.
- The Preliminary EA checklists will result in (a) no further environmental analysis being needed; (b) further assessment of some significant environmental issues within the Feasibility Study; and (c) a self-standing EIA study to investigate serious environmental issues or (d) a Strategic Environmental Assessment for sectoral programmes.
- The relevant checklists should be annexed to the Financing Proposal.

The methodology for the **Environmental Assessment (EA),** either as Environmental Analysis in the Feasibility Study, or as a self-standing **EIA** study is given in the User's Guide. This process will be required when the partner country requests a Feasibility Study. In either case, the practical objective is to predict likely environmental impacts of the project, find ways of mitigating unacceptable impacts, and present decision makers with the predictions and appropriate mitigation options. The analysis or study will involve public consultation with interested parties and the affected population. Project planners can then shape the project to achieve and sustain the predicted benefits with minimal unacceptable environmental consequences.

EA involves:

- Identification of alternatives (environmental consequences of different project options should be contrasted with the 'do nothing' situation);
- Scoping (the identification and narrowing down of potential environmental impacts to those that are significant);
- Prediction of impacts;
- Evaluation of impacts;
- Identification of mitigation measures (changing sites, methods, design; introducing controls and standards; offering restoration and compensation; institutional strengthening and capacity building);
- Presentation of results;
- A one-page summary should be attached to the Financing Proposal.

A model Terms of Reference (TOR) for **EIA** is given in the User's Guide. This ensures that the methodology for each **EIA** Study is complete and uniform.

The **Review of Environmental Assessment** deals with integrating the recommendations of any EA or EIA with the Financing Proposal. The significance of the potential environmental impact of the project within the wider project-planning framework will be reviewed. The review should incorporate an economic evaluation of the potential environmental impacts and mitigation measures, decisions on concrete action that will prevent or reduce adverse environmental impacts. The selection of preferred mitigation measures will require an evaluation of

the capacity of the country's institutions to implement them. Where appropriate, environmental conditionalities will be included in the Financing Proposal.

Monitoring. Any project underway will always have some environmental consequences (contamination of watercourses due to spoil from construction sites, access roads for construction, etc.). The purpose of monitoring is to assess the environmental impacts during the usual project monitoring process. This allows for (a) an evaluation of the environmental impact of the project and of the effectiveness of mitigation measures; (b) advance warning of adverse changes due to project implementation; and (c) assessment and evaluation of any unforeseen environmental impacts.

Evaluation studies are undertaken during the project's implementation, particularly at the mid-term but also at the end, or a short time after the end, of the project. If the environmental issues are particularly prominent, it may be appropriate to commission an Environmental Audit.

Sourcebook
A Sectoral Environmental Assessment Sourcebook accompanies the Environment Manual. For each of the 16 main development sectors the sourcebook contains a detailed Checklist and Background Notes. It is available on diskette. This edited compilation of environmental guidelines published by leading organisations in the donor community, (e.g. WHO, World Bank, FAO, UNEP, UNESCO AsDB, USAID) is to provide assistance, explanations, and sources of information to:

- Prepare EIA TORs and EA components within Feasibility Studies
- Place monetary values on the costs and benefits of environmental impacts
- Review and appraise the results of EIA or EA studies.

Sections on 'Rural and Urban Water Supply and Sanitation' and 'Irrigation' are directly relevant to environmental issues in water-related projects. Sections on 'Waste Disposal and Treatment', 'Ports and Harbours', 'Energy', 'Agriculture' are also important.

Further information: ***Environmental procedures and methodology governing Lomé IV development co-operation projects,*** EC, 1993, ***ICID Environmental checklist to identify environmental effects of irrigation, drainage and flood control projects,*** HR Wallingford, 1993.

14. Environmental economic valuation

The three main approaches to valuing environmental impacts are:

1. Using market prices for the physical effects of environmental change on production;
2. The use of stated preferences (what people say their environmental values are);
3. Various kinds of revealed preferences (inferences drawn from peoples' actual behaviour).

Market valuation of physical effects (MVPE).

This method values environmental change by observing physical changes in the environment and estimating what difference they will make to the value of goods and services. Water pollution may reduce fishing catches, and air pollution can affect the growth of crops. In these cases, environmental changes reduce marketed output. In other cases, such as clearing silt from reservoirs and ditches, environmental change raises costs. In either event, the change costs someone money.

Within the MVPE category, several techniques are available. Dose-response measures estimate the physical impact of an environmental change on a receptor, such as air pollution on materials, corrosion, acid rain on crop yield, or water pollution on the health of swimmers. Damage functions use dose-response data to estimate the economic cost of environmental change. The physical impact caused by environmental change is converted to economic values using the market prices of the units of output.

Under the production function approach, environmental 'inputs' such as soil fertility and air and water quality can be related through econometric techniques to output, showing how output varies according to changes in the various kinds of input. The human capital method estimates the cost of bad health resulting from environmental change, according to its effect on the productivity of the worker.

The replacement cost method estimates the cost of environmental damage by using the costs which the injured parties incur in putting the harm right, either by observing what the victims actually spend or by consulting expert opinion on what it would cost to remedy the problem.

Stated preference methods

In certain situations it is appropriate to ask people directly what their environmental valuations are. The contingent valuation method (CVM) is the term given to a form of market research where the 'product' is a change in the environment. People are asked what they would be willing to pay for a hypothetical environmental improvement, or to prevent a deterioration, or what they would be willing to accept in compensation.

CVM may apply equally to changes in public goods, such as air quality, landscape, or the existence values of wildlife and to goods and services sold to individuals, such as improved water supply and sewerage. It may apply both to use values (e.g. water quality, viewing wild animals, direct enjoyment of a view) or non-use values (existence values).

Revealed preference methods

Under this group of techniques, peoples' preferences for the environment are inferred indirectly by examining their behaviour in markets that are linked to the environment. Some goods and services are complements to environmental quality, others are proxies, surrogates or substitutes for it. By examining the prices they pay, or the benefits they apparently derive, in these closely-related markets, peoples' environmental preferences can be uncovered.

There are three techniques. The travel cost method (TCM) uses the time and cost incurred in visiting and enjoying a natural site as a proxy measure of the price of entering it. Avertive behaviour (AB) and defensive expenditure (DE) obtain information from what people are observed to spend to protect themselves against an actual or potential decline in environmental quality.

The hedonic pricing method (HPM) is based on the fact that the price of a property reflects, amongst other things, the quality of the environment in which it is located. Applied to property, it uses econometric analysis of large data bases to unbundle environmental attributes from the various other factors making up the price of a dwelling or piece of land. The same basic approach can be used to infer the value of different environmental health risks from systematic differences in wages. All three methods estimate people's revealed preferences from data on their observed market behaviour.

Environmental impacts can be summarised as four types: productivity, health, amenity and existence values. The latter are impacts which threaten the very existence of species or environmental assets and are independent of their use values to humankind. The following table illustrates how the various valuation methods can be applied to these four types of impact.

Environmental impacts and valuation methods

Impact	Valuation methods
Productivity	Market valuation of physical effects (MVPE) Avertive behaviour (AB) Defensive expenditure (DE) Replacement cost (RC)
Health	Human capital (HC) or cost of illness (COI) Contingent valuation (CVM) Avertive behaviour Defensive expenditure
Amenity	Contingent valuation Travel cost (TCM) Hedonic property method (HPM)
Existence values	Contingent valuation

For an impact on productivity, the most obvious method is MVPE, which places a market value on the physical effect on production (e.g. loss of crops from acid rain). However, for those impacts that entail increasing costs, AB, DE and RC could also be suitable (e.g. cost of relocation to

avoid pollution, double glazing to reduce ambient noise, cost of repairs after floods).

For impacts on health, including safety, HC and COI provide minimum estimates, based on the loss of earnings and direct medical outlays. AB (e.g. relocation by asthmatics to avoid air pollution) and DE (installation of private water treatment to safeguard against contamination) can give additional pointers. The full health impact may be captured by CV surveys, which measure willingness to pay to avoid or reduce the risk of pain and discomfort, as well as monetary losses. The above applies to morbidity. For mortality risks, it is now usual to infer the value of a statistical life by examining insurance outlays, or other kinds of defensive expenditure.

To measure amenity effects, TCM and HPM provide data based, respectively, on the cost of travel to a site, and differences in property values due to environmental causes. CV can also be used to probe public preferences.

CV is the only practical method of uncovering existence value (e.g. preservation of rare species, biodiversity for its own sake), since all the other methods are concerned with various kinds of direct user benefits and costs. It is also the only source of evidence on the value of future changes in environmental quality.

Obviously, not all these methods should be pursued in each case; the choice should be made according to:

- which type of impacts are more prominent;
- what information is available and feasible;
- resources available to the analyst.

Further information: ***The Economic Appraisal of Environmental Projects and Policies: A Practical Guide,*** OECD, 1995. ***Values for the Environment,*** ODI,1991.

EC Funding Sources for the Application of the Strategic Approach

Chapter 14

Contents

14

This part of the Guidelines describes the EC financing structures for development co-operation, and the various funding instruments through which support can be obtained for water-related activity.

EC Funding Sources for the Application of the Strategic Approach

The EC and Development Co-operation

The European Commission operates its programme of development co-operation alongside those of EU member countries and with their support. Co-operation is provided in the form of direct grants based on partnership agreements with recipient countries. EC co-operation has evolved over the 30 years since the Treaty of Rome embodied the principle of co-operation through partnership with Sub-Saharan African, Caribbean and Pacific (ACP) countries. The Treaty also established the European Development Fund *(see below)*. The EC is presently the fifth largest DAC donor.

The EC's grouping of recipient countries does not match those established by other international bodies or used by other donors or the OECD; their basis is purely historical, depending on links created by EU members with specific countries in the pre-independence past. The 70 ACP states do not form a geographically contiguous group and are all members of other geographically based regional organisations.

Within the EC, responsibility for managing development co-operation is divided between three regionally defined Directorates-General (DGIA covering Eastern Europe and the former USSR; DGIB covering the Southern Mediterranean, Middle and Near East, Latin America and South and South-east Asia; and DGVIII covering the ACP states). Their mandates also cover foreign relations and trade which gives them a wider remit than other donor agencies. All the Directorates-General are organised slightly differently, and as already noted their regional coverage is unusual. Co-operation, which takes the form of grants, is provided through a wide range of funding instruments *(see below)* and extends beyond project assistance to cover 'programmable aid' which includes structural adjustment, risk capital, commodities support (Stabex and Sysmin)[1], emergency aid and food aid.

There has been a general lack of public awareness of the value of EC assistance. As an innovative model of North-South co-operation, the Lomé Convention *(see below)* is little understood outside the European donor community. Because of the complexity and fragmentation of the

1 Stabex provides compensation for losses of export earnings from non-metal commodities and Sysmin for mining.

programme, the influence of the EC in development issues may not have been as strong as that of other donors, even though its level of funding is relatively high. This chapter aims to provide an explanation of the EC approach to development co-operation and gives examples of the financial support available.

The Lomé Convention

EC development co-operation started in 1958 with a five-year programme, followed in 1964 by the first Yaounde Convention between the EC and 18 associated states in Africa. A second Yaounde Convention was agreed in 1970, followed in 1975 by the first Lomé Convention which considerably extended EC assistance to cover the ACP countries. The Lomé Convention is an international aid and trade agreement between the ACP group and the EU, designed to support the development efforts of the 70 ACP states. Four such Conventions have been signed to date, at five-year intervals: Lomé I was signed in 1975, Lomé II in 1979, Lomé III in 1985, and Lomé IV in 1990.

The current Convention, Lomé IV, covers the ten-year period 1990-2000 and is the most extensive development co-operation agreement in existence, both in terms of scope (aid and trade), and in the number of signatories. ACP co-operation, according to the Convention, is to be based on partnership, equality, solidarity and mutual interest. The Convention also recognises the principle of sovereignty and the right of each ACP state to define its own development strategies and policies, as well as its situation regarding the respect and promotion of human, social, political and economic rights.

Debate has now opened on future EU-ACP relations for the 21st century as the present Lomé Convention terminates in 2000. The conclusion of the GATT Uruguay Round and the creation of the World Trade Organisation have opened up world trade, making it necessary to review the preferential trade agreements negotiated under Lomé. Other international developments, notably the end of the Cold War and subsequent geo-political shifts have had a profound effect on all international activities including development co-operation. The long-term implications of these upheavals are still not fully assimilated or even understood, but they will have a bearing on the negotiations for any new Lomé Convention. This will ultimately rebound on programme and project funding, in the field of water resources management as in others.

The EU has grown since Lomé IV was signed; three new countries with established commitments to developing countries have joined (Austria, Finland and Sweden). Further countries may join in the next few years; monetary union will also have an as yet unknown impact. Under the Maastricht Treaty, the EC and Member States are required to increase the co-ordination and complementarity of their respective aid programmes.

Priorities for the new programme are set out in the EC Communication to the Council and European Parliament (October 1997), which identifies three priority areas for support: growth, competitiveness and employment; social policies and cultural co-operation; and regional integration. In all areas of co-operation there are three principles to be applied: strengthening institutional support and helping build local

capacities; adopting a gender-sensitive approach; and integrating the principles of conserving natural resources and protecting the environment. These Guidelines have included all these aspects as related to water resources.

Development co-operation with other regions

Although the ACP group is by far the largest recipient of EC co-operation, the EC also provides assistance to Asia, Latin America, the Mediterranean and Middle East (including parts of Southern Europe) and the Central and Eastern Europe and the Newly Independent States of the former Soviet Union (CEES/NIS).

In the 1990s EC co-operation with the southern Mediterranean countries and the Middle East increased significantly. A new regional Mediterranean Policy was adopted and the level of co-operation increased from ECU 1.8 bn (1986-90) to ECU 4.1 bn (1991-95, just over 12% of the total for this period). Co-operation in municipal water and wastewater treatment is important in this region.

The EC provided no development co-operation to Asia and Latin America (ALA) until the late 1970s. The European Council Regulation of 1981, revised and strengthened in 1992, is the official basis for budgetary allocations to ALA. Development co-operation with ALA is thus relatively recent. The level of commitments has grown from ECU 2.4bn (1986–90) to ECU 4.4 billion (1991–95, just over 13% of the total for this period). This is modest for the size of the region and amounts to only one third of resources allocated to the ACP countries. The main focus of water-related development activity in Asia has been irrigated agriculture and flood control. In Latin America, water-related activity includes water supply and sanitation, wastewater treatment, and irrigation. Framework Agreements are negotiated on an annual basis with ALA countries and these form the basis for action.

In the late 1980s, as the Cold War came to an end, the EC became a major donor to the Central and Eastern Europe and the Newly Independent States of the former Soviet Union (CEES/NIS) through the PHARE and TACIS programmes respectively and several budget lines. This region is of significant strategic importance to Europe and the volume of co-operation grew rapidly to ECU 9.7 billion during 1991–95 (29% of the total EC co-operation in that period). The EC contribution together with bilateral assistance from member countries accounts for 70% of all co-operation in this region.

The EC Financing Framework for Development Co-operation

These Guidelines apply in particular to EC development co-operation as administered by Directorates-General IB and VIII but most aspects are also relevant to DGIA and other EU institutions such as the European Investment Bank. The funding mechanisms relevant to programmes and projects can be divided into three categories: European Development

Fund (EDF) grants administered by the Commission; Budget Lines; and EDF subsidised loans through the European Investment Bank. The box provides a breakdown of EC development co-operation according to funding instrument and region for the period 1991–1995.

European Development Fund

The European Development Fund is the principal EC funding instrument for the 70 ACP states, many of which are among the poorest in the world. The EDF has been in operation for 40 years and is a unique partnership between the EU member states and the ACP countries and a major mechanism of North-South co-operation. The Lomé Convention forms its basis.

Finance for the EDF is provided directly by the EU member countries and not from the EC Budget. The EDF is mainly administered by DGVIII with a small sum allocated to the EIB *(see below)*. The Fund is replenished every five years following EU-ACP negotiations. In 1995, agreement was reached on EDF8 with a slight increase in the total contribution from EU member countries from ECU12,000 million (1991–95) to ECU 14,625 million (1996–2000). The EDF accounts for approximately 41% of the total EC development co-operation budget. Half of this is for project assistance; the remainder covers programme co-operation as shown in the box opposite.

EDF resources are committed to meeting priority needs relating to human development including food security, infrastructure development and industrial development. The fourth Lomé Convention refers to water in several Articles (14, 44 and 54 to 57)[2] although there is no specific water policy. Water management and the use of water for human and economic needs is relevant to most priority areas outlined in the Convention.

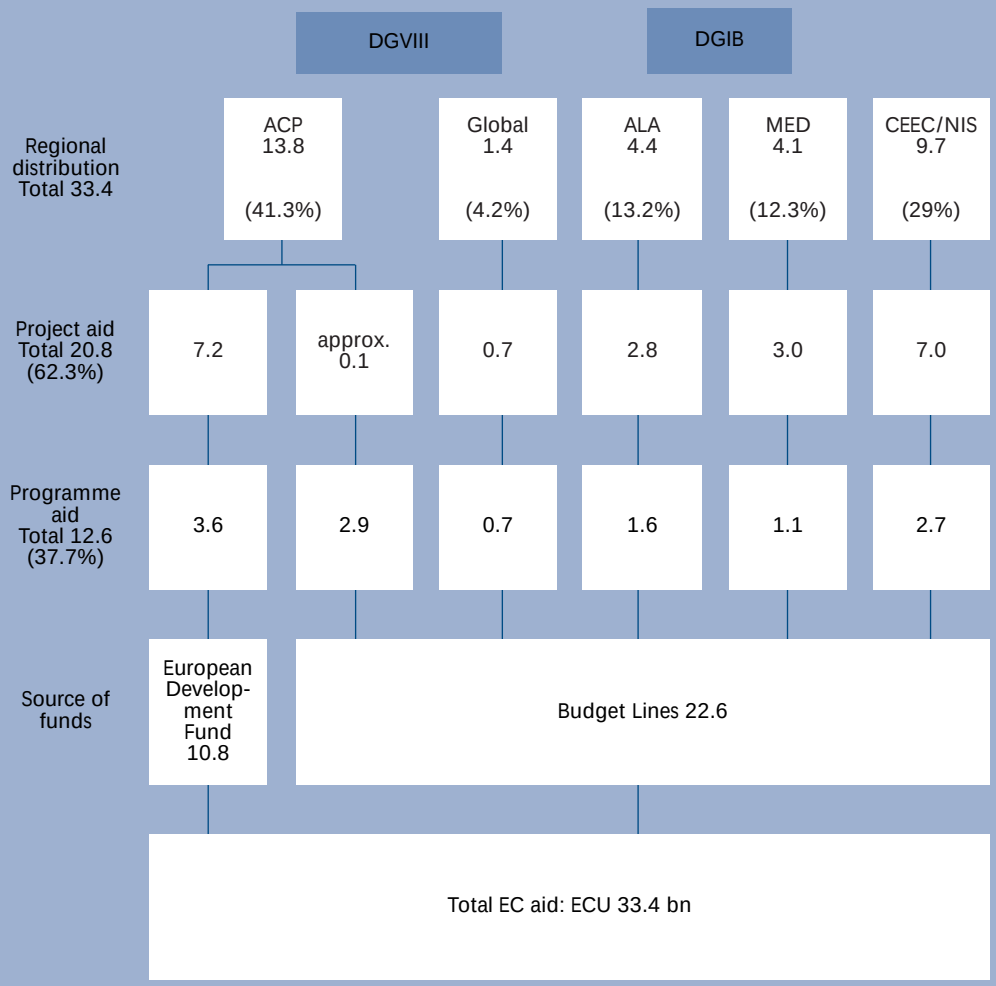
The level and utilisation of allocations to each recipient country is based on individual agreements called National Indicative Programmes (NIP) between the EC and the country concerned. In the present NIPs, water-related investments are considered important to a majority of ACP states. A significant portion of the EDF funds, 9% of EDF8, are allocated to regional co-operation and this is given special coverage in Title XII of the Lomé Convention; support is given to recipient countries in this context under Regional Indicative Programmes (RIP). Natural resources management through regional co-operation is specifically mentioned and this is particularly pertinent for transboundary river problems.

Budget Lines

These are allocations of funds written into the EU budget targeted at specific types of activities or locations and covered by a legal framework such as a Council Regulation, a decision of the European Council, General Conditions or Community budget allocations. Each budget line is allocated a sum for disbursal, in the form of grants over a specific time frame. There are no Budget Lines specific to water resources but several

2 Lomé Convention Art. 14: objectives and guidelines of the Convention in the main areas of co-operation, Art. 44, agricultural co-operation and food security, Art. 54–57, drought and desertification control. *ACP-EU Courier, No 155, January-February 1996.*

Diagrammatic summary of EC aid (period 1991–95 inclusive)



1 All figures are in ECU billion and rounded.
2 EIB, which also manage funds from the EDF are excluded from this summary.
3 Project aid: mainly grants for projects under NIP and RIP
4 Programme aid includes: Structural adjustment (inc. Stabex and Sysmin for ACP region), food aid, support to NGOs, humanitarian aid, risk captial.

Source: ODI Inventory of EC aid, 1996

In the light of the importance of BWSS projects, a 'Global evaluation of rural water supply projects in West Africa' was carried out in 1996–97. It examined in particular the role of different actors in water points management and financing aspects. Recomendations from this study have been taken into account in the preparation of the Guidelines.

budget lines provide funding for water. These Guidelines provide a strategic basis for support to water resources within the budget lines.

All DGIB funding is through budget lines; there is no equivalent to the EDF for non-ACP countries. There have been many budget lines for the Mediterranean region. The most important are B7-4051 for the Maghreb and Mashreq countries and B7-4080 for horizontal co-operation between non-state actors and the EU. The latter provides a mechanism, under the new Mediterranean policy to provide support to local authorities and water agencies other than central government. For example, the MED-URB programme covers support for co-operation between local authorities in the EU and Mediterranean countries to improve urban management including water-related issues. The two most important budget lines for the ALA region are B7-300 (Financial and Technical Assistance to Developing Countries of Asia – previously B7-3000), and B7-310 (Financial & Technical Assistance to Developing Countries of Latin America – previously B7-3010).

DGVIII also provides funds via budget lines. One of these is B7-6000 which is designed for the provision of grants to NGOs working at the community level to build up community capacities for managing and financing their own development schemes. The EC partnership with NGOs is reviewed below.

Another budget line – which also indicates the importance attached in DGVIII to the need to reach out into grassroots communities and improve participatory frameworks – is budget line B7-5077: Decentralised Co-operation with Developing Countries. Although the level of funding for this budget line is modest, it is innovative and has interesting potential in relation to the international consensus related to water, given its stress on user participation in service delivery. For this reason it is described more fully below.

Another budget line pertinent to water resources is B7-6200 whose designated purpose is for environmental activity in developing countries. This budget line is jointly managed by DGIB and DGVIII and is used to promote policy development and the implementation of pilot projects. The funds available are relatively small as the activities it supports are intended to complement or help facilitate projects funded under the much larger EDF or other budget lines.

Apart from DGIA, DGIB and DGVIII, other Directorates-General have budget lines that include funding for water-related activities. The most important is DGXII (Science Research and Development) where a proportion of the funds is allocated for collaborative research between European and developing country researchers. There are budget lines in other Directorates-General such as DGXI (Environment) and DGIII (Industry) that have direct relevance to water but not necessarily to development co-operation.

Decentralised Co-operation

Decentralised Co-operation (DC) is a funding instrument designed to enable the EC to contribute to the development process outside the conventional development co-operation frameworks. DC emerged in the 1980s as a result of several interconnected phenomena. Increased

enthusiasm for democracy and human rights had brought fresh insights into the role of civil society and its representatives in the development process. More attention was therefore being paid to the role of non-governmental and community groups as organised expressions of civil society, and to their potential role in participatory development designed to achieve lasting social and economic benefits among low-income groups. At the same time, ways were being sought to reduce the role of formal state institutions in the management of services and increase the emphasis on good governance and subsidiarity.

In DC activities, the central government facilitates but does not have a direct involvement in the programme or project. DC funds are channelled directly to NGOs and organisations outside the formal governmental apparatus, and to local public authorities. However, DC cannot work effectively unless central government is fully committed and supportive. Local government institutions, co-operatives, NGOs, companies and business interests, both in the North and South, which are capable of contributing to the social and economic growth of developing countries can all be involved.

There are four strategic principles on which DC should be based:

- A wide range of players should be included in the development activities in such a way that they participate in the decision making and management process at each stage of the activity;
- A programmatic approach should be adopted aiming at implementing a coherent set of complementary actions;
- A support process should be established for capacity building and control of local development initiatives by decentralised actors;
- A redefinition of the roles is needed of the different actors to permit the transition in the role of the state towards the facilitation of a process and an enabling environment.

DC is therefore primarily designed to enhance the role of civil society in the development process. It also enables resources to be spent in such a way as to help popular institutions in partner countries become more autonomous. The use of DC aims to achieve the following: (1) Ensure collaboration at different levels of the various economic and social players and agents; (2) Encourage the active participation of direct beneficiaries in decision-making and at all stages of programmes which concern them; (3) Foster equitable and sustainable social and economic development through participation; (4) Involve a wide range of both Northern and Southern NGOs in co-operation programmes and thus spread the impact of EU activities; and (5) Incorporate the local dimension in development activity, with increasing attention to decentralisation and regionalisation. The EC has had considerable success with this innovative funding source but it is important that unrealistic demands are not be placed upon the agents, and that DC itself not be regarded as a panacea.

DC uses flexible forms of administrative and financial management. It is thus adaptable to the existing capacities of partner organisations and their financial or technical limitations. At its core is a strong commitment

to participation, not as a peripheral activity whereby communities contribute to programmes in the form of free labour or one-off levies, but as a built-in programme design and management feature. Full participation, which the partner group or agent is expected to engender, applies to the whole 'project cycle' from the initial idea through identification, planning, preparation, implementation and evaluation. The quality and degree of participation at each level will determine how 'decentralised' the management of the project actually is in practice.

The formal concept of DC was first introduced in articles 20 to 22 of the fourth Lomé Convention. These articles concern the objectives and principles of co-operation, the objectives and orientations of the Convention in the main co-operation fields, the agents of co-operation and their eligibility for funding. Likewise, DC is included in Council Regulation 443/92 relative to economic co-operation with Asia and Latin America. A specific DC budget line has been introduced, and a special unit established within the EC to provide a clear incentive for DC and to draw in local authorities, universities and NGOs. The budget is small; it supports micro-projects and preparatory projects to strengthen appropriate organisations in developing countries and in Europe, and to create North-South and South-South partnerships and networks.

DC is applicable in all EC's target regions for development co-operation. Regional and country differences mean that there are different DC priorities and emphases in different settings, reflecting the level of development, the range and effectiveness of existing social and economic structures, the relative importance of the public and private sector, and their social and political systems. DC can be applied in numerous situations, either as a component of a larger programme, as support to nascent local authorities to reinforce capability and promote local governance or simply as a mode of implementation of targeted actions such as basic water supply and sanitation services.

In the preparation phase of a DC activity, the central issue is not the actions to be undertaken but the identity of the agents involved, their roles and their responsibilities. Identifying the key institutions (institution mapping) is therefore very important. Partnership should not be limited to recognised organisations, which means that partner organisations will be at varying levels of competence, experience, capacity and structuring. Care is needed to ensure adequate technical support is available, as often the enthusiasm of local agents is not matched by professionalism, leading to inappropriate or poorly designed technical solutions.

DC relies less on regulations and specific procedures and more on a process which entails dialogue, consultation with and participation of the agents. Because of the variety of partnership organisations and their own varying capacities and agendas, DC requires flexibility and cannot be applied within a rigid formula. For this reason, a rigid application of PCM procedures is difficult to achieve in DC. An approach is needed which

allows for readjustments during the different phases of the cycle and more delegation of power to the operator during implementation.

An EC manual on Decentralised Co-operation is presently under preparation.

Review of EC partnerships with NGOs

Apart from the specific interventions under the Decentralised Co-operation budget lines, the EC attach importance to their work with NGOs. Co-operation with development NGOs started in 1976 and applies to the co-financing of development actions in developing countries and to public awareness actions in Europe. The corresponding Budget Line (B7-6000) has increased from ECU 2.5m in 1976 to ECU 200m in 1997, excluding NGO activities in food and humanitarian aid and special programmes.

NGO activities are particularly important in the provision of basic water supply and sanitation services (BWSS). Between 1990 and 1997, the EC funded 655 BWSS projects in 42 ACP countries through NGOs. In West Africa, NGO projects represent about 40% of the total EC investment in BWSS projects. A wide diversity of NGO projects are supported either directly for infrastructure or equipment (wells, boreholes, water supply networks and sanitation facilities) or for other activities such as education, health or awareness raising.

As NGOs tend to work at the grassroots level with the local populations, their involvement in water-related projects have many advantages over projects carried out without NGO involvement. In particular, participation by the local population in infrastructure construction is increased, resulting in more motivation for equipment maintenance and sustainability. An NGO can also create a more stable environment leading to further projects and continuity in development and monitoring.

NGOs often rely on beneficiaries and local community organisations for execution of work. This participatory form of development must be well managed and selection of the NGO is important; they should have adequate experience in BWSS and be apolitical. Traditionally NGO activities result from user demand; their projects may remain unrecognised in formal planning procedures and there may be little or no co-ordination with government or with other local projects. It is therefore necessary to ensure that policy conflict does not occur; for example official efforts to encourage beneficiaries to pay for their water supply may be in vain if an NGO provides services without payment requirements (or vice versa).

Experience has shown that a partnership between NGOs, local authorities and technical experts provides the best platform for providing services of adequate technical quality, safe water of adequate quantity and infrastructure that is appropriate and sustainable. In particular, NGOs have proven their ability to obtain local acceptance of paying for water

services, both for maintenance and the eventual replacement of equipment. In West Africa, this has come about as a result of insuring that there is a high return from the collected funds. Experience has also shown that capacity building takes time, and a long-term commitment to training beyond the project cycle period often proves necessary.

An assessment of the NGO capacity before and after the financing stage is needed to ensure adequate human, financial and technical means to undertake projects. Knowledge of the growing difficulty of water management in rural areas is more important than the volume of finance or the number of employees. As part of an evaluation of rural water supply and sanitation projects in West Africa, the importance of NGO co-financed BWSS projects was highlighted. A specific evaluation of NGO co-financed projects has therefore been undertaken.

Further References: ***EU-ACP Co-operation in 1995.*** EC, 1995. ***EC-ACP Lomé Convention*** ACP–EU Courier, No. 155, January–February 1996. ***Challenges and options for a new partnership.*** *Green Paper on relations between the European Union and the ACP Countries on the eve of the 21st century.* EC, 1997. ***Guidelines for the negotiation of new co-operation agreements with the African, Caribbean and Pacific (ACP) countries,*** Communication to the Council and European Parliament, 1997. ***Evaluation Globale des Projets d'Hydraulique Villageoise en Afrique de l'Ouest,*** Hydro R&D, 1997.

Standard formats for terms of reference

Chapter 15

Contents

15

Standard formats for terms of reference

1 Standard format terms of reference for a Water Resources Country Study

A water resources country study is required during the Programming phase to ensure at an early stage in the Project Cycle that the programming of EC support is based on a realistic assessment of the national problems, opportunities, priorities and constraints, and of the role of the donors.

Guide for preparing Terms of Reference

This standard format is for use in preparing Terms of Reference for a water resources country study. It is based on the logical framework and provides an outline of the approach and the issues for study. For more information on these issues, see Chapter 6 (Programming).

This standard format should be used to prepare the detailed Terms of Reference for individual country studies, in each case filling in and describing the specific requirements. The text in shaded boxes will assist in identifying the individual requirements for the study. It should be stressed that clear formulation will help ensure that all relevant issues are considered, thus enabling informed decision making.

The Terms of Reference are to be drawn up by the EC Unit/Delegation in collaboration with the partner country.

A Study background

The co-operation agreement [……., e.g. National/Regional Indicative Programme (NIP/RIP)] signed by the Government of [……] and the European Commission (EC) in [……../……] reflects the EC's willingness to support water resource development co-operation in [……] as a means to develop the economic, social and environmental potential of [……].

Within the framework of this agreement, the EC has received a request from [……., e.g. the National Authorising Officer] to help identify priority areas for support by the EC and to help prepare a coherent strategy for water resources development co-operation to ensure maximum effectiveness, efficiency and sustainability of future support by the EC.

The study is required as part of the **Programming** phase to ensure at an early stage in the Project Cycle that EC support is based on a realistic assessment of the national problems, opportunities, priorities and constraints. It will complement and deepen the initial assessment which was made by using the checklists presented in Chapter 6 (Programming).

This section should contain further detailed information or reference to relevant documents such as studies and evaluation reports.

B Study objectives

The study will provide decision makers in the [……] Government and the European Commission with a proposal for a coherent country strategy for Water Resources Development Co-operation. It will give sufficient background information and justifications to enable the Government and the EC to make an informed decision on future co-operation. The study should facilitate the continuous policy dialogue between the partners and improve the participation of all stakeholders in this process. This will strengthen the country's capacity to implement its National Water Resources Programmes or other broader planning frameworks.

C Study results

The study will deliver the following:

- An EC water resources development co-operation strategy for [……], including:
  i. background information on water resources,
  ii. definition of water resources issues (constraints and opportunities)
  iii. definition of priority areas for EC co-operation, and their assessment with regard to the EC's strategic approach and general principles of Water Resources Development Co-operation,
  iv. definition of mechanisms for improved co-ordination between the European community, the Member States of the Community and other donor and financing agencies,
  v. definition of policy and operational constraints which need to be resolved before assistance can be initiated;
- Recommendation for the next steps and further action to be taken [possibly, outline for new project/programme ideas, detailed Terms of Reference for pre-feasibility or feasibility studies];
- Strengthened national capacity in sectoral analysis and programme identification through active participation of the major stakeholders concerned.

D Issues to be studied

This section of the Terms of Reference should contain information (where known) about the broad issues, or gaps in present knowledge, to be studied. Use Chapter 6 (Programming) and elements of Chapter 7 (Identification) to identify the main issues.

The main issues to be studied are outlined below. Detailed analysis is presented in Appendix I: Format for the Water Resources Country Study Report.

- An analysis of water resources, identifying the main characteristics in and contribution to the economic, social and environmental development of the country. The analysis will include an assessment of:
  i. macro-economic setting, development objectives and policies;
  ii. institutional settings and processes;
  iii. the principal stakeholders, their roles and interests, and possible conflicts between these stakeholders;
  iv. the resource base and its potential, including access to transboundary waters and considerations of 'virtual water';
  v. current and estimated future demand and supply of surface, soil and ground waters;
  vi. regional and international agreements;
  vii. relevant revenues and financing;
  viii. cross-sectoral links.

- Based on the above, an analysis of the principal issues in development, including issues relating to (i) production and trade, (ii) protection and conservation, and (iii) participation of the various stakeholders in development. The analysis will result in the identification of a set of national priorities (constraints and/or opportunities) for water resources development and management.
- An assessment of the compatibility of national priorities with the strategic principles of EC assistance, as defined in these Guidelines (using the principles set out in Chapter 2 as the point of reference). This assessment will lead to the identification of shared priority areas for co-operation.
- An assessment of the possibilities and mechanism for improved co-ordination and coherence with on-going and planned assistance from the Member States, other bilateral and multilateral donor agencies and international financing institutions. This will help to avoid overlaps and improve the efficiency of external assistance.
- An assessment of policy (including legal), institutional and operational constraints to the co-operation in the identified priority areas and the water resources in general. Based on this assessment, a proposal will be developed on the issues which need to be resolved, before co-operation begins. This is a necessary step towards developing a coherent approach.

The more detailed issues to be included in the Terms of Reference will be identified during a preliminary assessment, using the checklists presented in Chapter 6 (Programming). If possible, this preliminary assessment and the establishment of the Terms of Reference should be done in collaboration with the main water resources institutions of the country.

These lists of issues are not exhaustive. The consultants are required to use their professional experience to review and bring to the attention of the Government and the EC all relevant factors.

E Work plan

This section suggests an approach to the study, and lists key resource persons and organisations to be consulted. The consultants may propose alternative approaches to collecting information and carrying out the study.

On the basis of the proposed time schedule outlined in the Terms of Reference, the consultants will prepare a work plan for the study, present this in their offer, and report on the approach taken in the study report.

The work plan should set out the consultants' approach to the following activities:

- fact finding/data collection/surveys;
- local/national/regional workshops and consultations to be held during the process with stakeholders at various levels; training to be given to local/national/regional counterparts during the process;
- co-ordination of the activities of the European Community with those of Member States, and bilateral and multilateral aid/financing institutions;
- identification of possible options for the proposed strategy;
- analysis of options and constraints;
- preparation of the draft and final country study report.

F Expertise required

This section specifies the expertise (qualification, experience) required for each person assigned to the study.

Country studies require multidisciplinary analysis at all levels and for all relevant sectors, demanding at least the following areas of expertise: policy, planning, resource economics, institution and capacity building. Technical specialists (in water resource management, industry, environment/conservation etc.) should be included as indicated by the preliminary assessment of priorities, using, where possible, local/national experts.

For each expert proposed, a curriculum vitae, of no more than four pages, should be submitted.

G Reporting

This section specifies the types of reports required, the language in which they should be written, the date of submission, the number of copies required and the recipients. The format of the report for a water resources country study is presented in Appendix I.

The consultants will present the briefing report (10-15 pages) within [.....] weeks. This report will set out the various options in sufficient detail to enable an informed decision to be made on the preferred option. The conclusion of the study should be presented in a report in the format set out in Appendix I. The underlying analysis is to be presented in the appendices of the report.

A draft water resources country study ([.....] copies) will be presented to [.....] for comments by [date]. Within [.....] weeks, comments on the draft country study report will be received from [list of authorities].

The consultants will take account of these comments in preparing the final water resources country study report (30-40 pages excluding appendices). The reports will be in [language] and [……] copies will be submitted to [……..] by [date].

H Time schedule

A time schedule should be prepared for each element of the work plan (section E) and of the reporting requirements (section G).

The consultants should respond to this timetable in their offer, indicating whether and how they can adhere to or improve on it.

I Assistance to the consultants by the Contracting Authority

This section specifies assistance to be made available by the Contracting Authority to the consultants including data, documents, offices, transport, counterpart staff, facilitation of the entry and exit of expatriate personnel and any study equipment required.

The Contracting Authority will make available the following information and facilities to the consultants' staff:

- All relevant report, documents, maps and data;
- Where available, office space, furniture, and access to computers and communication facilities;
- Where available, the use of vehicles and drivers;
- Counterpart staff.

The Contracting Authority will facilitate:

- Entry and exit visas for the consultants' expatriate staff;
- Any permits required for the consultants' staff to carry out their duties within the country;
- The import and export of personal belongings of the consultants' expatriate staff during the execution of the contract, and of equipment for the study in accordance with the provisions of the [……; specify the co-operation agreement, e.g. Lomé Convention or similar agreements].

Appendix I: Standard Reporting Format for a Water Resources Country Study

Maximum length excluding appendices: 30-40 pages.

The report must be structured using the headings given below. Under each heading, a list of key words and explanatory notes is given to indicate the topics to be handled in that part of the report. These key words and explanatory statements refer to the main issues considered in Chapter 6 (Programming). It is essential, therefore, to use these guidelines to gain a full understanding of the reporting requirements.

The following text should be appear on the inside of the cover:

This report is financed by the [……..; source of financing, e.g. European Development Fund] and is presented by [name of consultant] for the Government of [……..] and the European Commission. It does not necessarily reflect the opinion of the Government or the European Commission.

1. Summary

2. Background

For example:

- macro-economic setting, development objectives and policy,
- institutional settings and processes,
- the principal stakeholders, their roles and interest, and possible conflicts between them,
- the resource-base and its potential,
- current and estimated future demand and supply and balances,
- regional and international agreements,
- relevant revenues and financing,
- cross-sectoral links.

3. Main issues and priorities for co-operation

Identification of principal issues in water resources development, including issues relating to:

- the institutional environment for water resources development and management,
- water resources and its sustainable use,
- participation, knowledge and expertise linked to water resources.

Part I of the Guidelines gives more information on these issues. The analysis will result in the identification of a set of national priorities (constraints and/or opportunities) for water resources development co-operation.

4. Compatibility of national priorities with EC principles

Compatibility of national priorities with the strategic approach and general principles of EC assistance, as defined in the Guidelines (using Part I as the point of reference). Identification of shared priority areas for co-operation.

5. Co-operation and co-ordination

Possibilities and mechanism for improved co-ordination and coherence with the on-going and planned assistance from Member States, other bilateral and multilateral donor agencies, and international financing institutions. This will help to avoid overlap and improve the efficiency of external assistance.

6. Constraints to co-operation

An assessment of policy (including legal), and operational constraints to co-operation in the identified priority areas and water resources use and management in general. Based on this assessment, a proposal will be developed on issues which should be resolved before co-operation begins, or during the initial stages.

7. Proposed co-operation strategy

Description of:

- objectives;
- priority areas (Focus Areas) for co-operation;
- co-operation arrangements, including those for counterpart institutions and any mechanism to be used in providing EC assistance;
- specific interventions to be supported (project briefs to be presented in Technical Appendix 1);
- estimation of the overall budget for co-operation.

8. Proposed next steps

Suggested action, e.g. pre-feasibility and/or feasibility studies (Draft Terms of Reference to be presented in Technical Appendix 2), issues to be negotiated between the EC and the government, action needed by the government, issues relating to donor co-ordination, etc.

Administrative appendices to the water resources country study report

1. Study methodology/work plan (2-4 pages).
2. Itinerary (1-2 pages).
3. List of persons/organisations consulted (1-2pages).
4. Literature and documentation consulted (1-2 pages).
5. Curricula vitae of the consults (1 page per person).

Technical appendices to the water resources country study report

1. List of proposed action to be taken (1-2 pages per action).
2. Outline of the respective Terms of Reference.

2. Standard format Terms of Reference for a Pre-feasibility Study

A pre-feasibility study is required in the Identification phase of the project cycle to ensure all problems are identified, alternative solutions are appraised and the preferred solution meets the sustainability criteria. The pre-feasibility study should determine whether the proposed water resources intervention is well founded and likely to fulfill the needs of the productive and social sectors.

Guide for preparing Terms of Reference

This standard format is for use in preparing Terms of Reference for a pre-feasibility study in water related projects and programmes. It is based on the logical framework and provides an outline of the approach and issues for study. For more information and understanding of the issues, see Chapter 7 (Identification).

Use this standard format to prepare the detailed Terms of Reference for pre-feasibility studies, in each case filling in and describing the specific requirements. The text in shaded boxes will assist in identifying the individual requirements for the study. It should be stressed that clear formulation will help ensure that all relevant issues are considered, thus enabling informed decision making.

The Terms of Reference are to be drawn up by the EC Unit/Delegation in collaboration with the partner country.

A water resources country study was carried out during the Programming phase to ensure at an early stage in the Project Cycle that the programming of EC support is based on a realistic assessment of a country's national problems, opportunities, priorities and constraints. It complemented and deepened the initial assessment which was made by using the checklists presented in Chapter 6 (Programming).

Comments on the findings of the study, decisions taken and the report are attached to the Terms of Reference. The pre-feasibility study ensures that, for a proposed water resources intervention, all problems are identified, alternative solutions are appraised and the preferred solution meets the sustainability criteria. The pre-feasibility study should determine whether the proposed project or programme is well founded and likely to become economically, socially and environmentally sustainable.

A. Study background

The European Commission (EC) has declared its willingness to provide water resources development co-operation in [……] region of the country, as a means to develop the economic, social and environmental potential of this region. This is reflected in (i) [……., e.g. co-operation agreement, National/Regional Indicative Programme (NIP/RIP)] and signed by the Government of [……] and the EC in [……../……], or (ii) in response to a project proposal presented by [……. NGO or other institution] to the EC.

The EC has received a request from [……, e.g. the National Authorising Officer, NGO or institution] to [describe the proposed water resources intervention].

A pre-feasibility study is required in the Identification phase of the Project Cycle to ensure all problems are identified, alternative solutions are appraised and the preferred solution meets the sustainability criteria.

This section should contain further detailed information or reference to relevant documents such as studies and evaluation reports.

B. Study objectives

The study will provide the decision maker in the [……] Government and the European Commission with sufficient information to justify acceptance, modification or rejection of the proposed [water resources intervention] for further formulation.

C. Study results

The study will deliver the following:

- An analysis of the role of the proposed [water resources sector intervention] in the economic, social and environmental development of [……. country];
- An analysis of the relevance of the proposed [water resources intervention] and identification of possible options to address the existing economic, social and environmental problems;
- An assessment of the feasibility of the proposed [water resources intervention] with regard to technical, economic and financial, institutional and managerial, environmental, and socio-cultural aspects compared to other options;
- The selection of the preferred option, detailing the expected benefits to the people of [……. region], a preliminary indication of the project results and activities, required resources, timing/phasing and estimated costs, and a preliminary logical framework;
- An assessment of the potential sustainability of the project results after completion, including, for example, maintenance and secure financial resources for continued operation;
- Recommendations for the following steps and further action for project formulation [possibly, detailed Terms of Reference for the feasibility study incorporating a Draft Financing Proposal].

D. Issues to be studied

This section of the Terms of Reference should contain information (where known) about the broad issues, or gaps in present knowledge, to be studied. The specific problems which may be tackled by the proposed water resources intervention should be presented here. Use Chapter 7 (Identification), or the Country Study Report, if available, to identify the following issues:

- policy framework and support measures;
- appropriate technology and technical matters;
- environmental protection;
- socio-cultural and gender aspects;
- institutional and management capacity, public and private;
- economic and financial aspects.

The main issues to be studied are outlined below. Detailed issues for analysis are presented later in Appendix I: Standard reporting format for the pre-feasibility study. The logical framework approach set out in the EC manual Project Cycle Management (PCM Manual) should be applied.

The study will assess these issues and provide information on and analysis of the relevance, feasibility and sustainability of the proposed [water resources intervention].

(i) The relevance of a possible intervention, as determined by: its coherence with the country's macro-economic environment, and the economic, social or environmental sector demanding additional water resources intervention; the consistency with the overall national/regional development objectives specified in the [.....e.g. National Water Resources Programme, National Environmental Action Plan, National or Regional Indicative Programme]; and the compatibility and complementarity of these projects with other projects relevant to water.

The consultants will study:

- How the proposed [water resources intervention] responds to the demands of the economic, social and environmental sectors as expressed by [..... specify the potential beneficiaries and target groups];
- How the proposed [water resources intervention] is coherent with the overall framework of national development objectives and the economic, social and environmental development polices of the relevant ministries of the Government of [.....];
- The nature, number and type of beneficiaries the proposed [water resources intervention] potentially affects;
- All organizations and agencies affected by or involved in the proposed [water resources sector intervention] and the intended improvement of the social, economic and environmental situation;
- All major problems experienced by the supposed beneficiaries of the project and by any other parties likely to be involved, the causal interrelationships of these problems and the intersectional links;

- Other interventions or priorities of ministries, agencies and donors that may affect or be affected by the proposed [water resources intervention];
- Information from previous studies and evaluations relevant to the proposed [water resources intervention].

This information is to be presented in Section 2 (Background) of the pre-feasibility study report (see Appendix I).

(ii) The feasibility of the proposed [project outline] determined by an analysis of the technical options consistent with the economic, environmental, social and institutional framework. This analysis is presented in Technical Appendix 4 to the study report. From a comparison of these options, the consultants will prepare a recommendation for the project to be structured as follows:

- *Overall objectives:* Why is the project important to the target groups and beneficiaries, the region and the government? What is the desired economic, social and environmental development/impact [as possibly expressed in the Indicative Programme]?
- *Project purpose:* Why do the target groups and beneficiaries need the project?
- *Project results:* What products and services will the project deliver to the target groups and beneficiaries? What assumptions are required to achieve the project purpose?
- *Project activities:* What is the broad scope of activities to be undertaken and what are the associated assumptions for achieving the project results.

The project purpose and results should be measurable by objectively verifiable indicators, and project activities should be quantified wherever possible. This information is to be presented in Section 3 (Intervention) and Section 4 (Assumption) of the Pre-feasibility Report (see Appendix I).

(iii) A preliminary indication of any pre-conditions, an initial cost estimate, and possible project phasing and organisation. This information is to be presented in Chapter 5 (Implementation) of the Pre-feasibility Report (see Appendix I).

(iv) Potential sustainability of the proposed project as determined by an assessment of the key sustainability factors listed in the PCM manual.

This information is to be presented in Section 6 (Factors ensuring sustainability) of the pre-feasibility report (see Appendix I). Use Chapter 7 (Identification), or the Country Study Report, if available, to identify the issues relating to these factors. These lists are not exhaustive. The consultants are required to use their professional experience to review and bring to the attention of the Government and the EC all relevant factors.

E. Work plan

This section sets out the approach for the study and key resource persons and organisations to be consulted. The consultants may propose alternative approaches to collecting information and to carrying out the study.

On the basis of the proposed time schedule outlined in the Terms of Reference, the consultants will prepare a work plan for the study and include this in their offer, and report on the approach taken in the study. The work plan should set out the consultants' approach to the following activities:

- fact finding/data collection/surveys;
- workshops, consultations and other means of ensuring local participation;
- identification of possible options for the proposed [water resources intervention];
- analysis of options;
- a briefing report summarising the analysis of the options;
- consultation meetings with decision makers to identify the preferred option;
- preparation of the draft and final pre-feasibility study report.

F. Expertise required

This section specifies the expertise (qualifications, experience) required for each person assigned to the study. Pre-feasibility studies require multidisciplinary and inter-sectoral analysis. The consultants should not propose purely technical experts but should endeavor to provide the range of expertise needed to address the issues.

For each expert proposed, a curriculum vitae, of no more than four pages, should be submitted.

G. Reporting

This section specifies the types of reports required, the language in which they should be written, the date of submission, the number of copies required and the recipients. The format for a Pre-feasibility Report is presented below.

The consultants will present a briefing report (10-15 pages) within [.....] weeks [after signature of the contract, or after the start of the study]. This report will set out the various options in sufficient detail to enable an informed decision to be made on the preferred option. The

study's conclusions should be presented in the pre-feasibility report in the format specified below, with the underlying analysis included in the appendices.

A draft pre-feasibility study report ([.....] copies) is to be presented to [.....] for comments by [date]. Within [.....] weeks, comments on the draft pre-feasibility study report will be received from [list of authorities].

The consultants will take account of these comments in preparing the final pre-feasibility study report (30-40 pages excluding appendices). The reports will be in [language] and [.....] copies will be submitted to [.....] by [date].

H. Time schedule

A time schedule should be prepared for each element of the work plan (Section E) and of the reporting requirements (Section G).

The consultants should respond to this timetable in their offer, indicating whether and how they can adhere to or improve on it.

I. Assistance to the consultants by the Contracting Authority

This section specifies assistance made available by the Contracting Authority to the consultants, including data, documents, offices, transport, counterpart staff, facilitation of the entry and exit of expatriate personnel and any study equipment required.

The Contracting Authority will make available the following information and facilities to the consultants' staff:

- all relevant reports, documents, maps, data;
- where available, office space, furniture, and access to computers and communication facilities;
- where available, the use of vehicles and drivers;
- counterpart staff.

The Contracting Authority will facilitate:

- entry and exit visas for the consultants' expatriate staff;
- any permits required for the consultants' staff to carry out their duties within the country;
- the import and export of personal belongings of the consultants' expatriate staff during the execution of the contract, and of equipment for the study in accordance with the provisions of the [.....; specify the co-operation agreement, e.g. Lomé Convention or similar agreements].

Appendix I: Standard Reporting Format for a Pre-Feasibility Study

Maximum length excluding appendices: 30-40 pages.

The report must be structured using the headings (chapters, sections and subsections) given below. Under each heading, a list of key words and explanatory notes is given to indicate the topics to be handled in that part of the report. These key words and explanatory statements refer to the main issues considered in Chapter 7 (Identification). It is essential, therefore, to use these guidelines to gain a full understanding of the reporting requirements.

The following text should appear on the inside cover:

This report is financed by the [……; source of financing, e.g. European Development Fund] and is presented by [name of consultant] for the Government of [……..] and the European Commission. It does not necessarily reflect the opinion of the Government or the European Commission.

1. Summary

2. Background

2.1 *Government/water resources policy*
National policies/strategies affecting water resources, programmes (including water-related sectoral objectives, strategies, priorities and implementation mechanisms), international agreements relating to water which the country has signed, policy links (including land-use policies), and legal aspects linked to water.

2.2 *Features of water resources in the country*
Institutional and administrative setting, role of water resources and linkages with other sectors in the national and local economies, all relevant revenues and financing, role of water in environmental conservation and protection, and key intersectoral links, (for example with agriculture and health), condition of infrastructure in the relevant Focus Area.

2.3 *Beneficiaries and parties involved*
Principal stakeholders and their roles, including: water resources users (farmers, local communities), non-governmental organisations (including community-based organisations and service NGOs), private sector organisations, and relevant Government institutions. Also analysis of institutional arrangements and co-ordination mechanisms.

2.4 *Problems and opportunities to be addressed*
Problems/opportunities of target groups and beneficiaries and of the water resources interventions to be addressed by the project.
Analysis/review of problems/opportunities described in the Terms of

Reference, Section D (Issues to be studied):

- policy, co-ordination and legal issues described in Section 2.1;
- demand for water resources services, including any regional aspects;
- alternative solutions and options to address problems and opportunities;
- the sustainability of the sector in:
  - economic and financial terms (structural adjustment impact, water resources financing, operating and maintenance budget and revenues),
  - institutional and management terms (institutional structure, responsibilities and capacity, involvement of beneficiaries, role of the private sector),
  - environmental and socio-cultural terms (potential conflicts between the stakeholders, gender issues),
  - technical terms (use of appropriate modern technologies).

2.5 *Other operation/interventions*
Relevant interventions by the Government, the EC, other donors to water resources or relevant sectors served by the proposed project.

2.6 *Documentation available*
Key documents for the study such as previous studies and evaluation reports.

3. Intervention
3.1 *Overall objectives*

This section outlines the justification for the selected option, with reference to the analysis in Technical Appendix 4.

Why is the project important to the target groups, beneficiaries and Government?

3.2 *Project purpose*
Why do the target groups and beneficiaries need the project?

3.3 *Project results*
What services will the project deliver to the target groups and beneficiaries?

3.4 *Project activities*
What are the activities that will be carried out?

4. Assumptions

This section contains preliminary assumptions required to achieve the project activities, results and purpose.

4.1 *Assumptions at different levels*
Action by other agencies required to support the achievement of the project activities, results and purpose.

4.2 *Risks and flexibility*
Capacity of the project to respond to the non-realisation of crucial assumptions that could jeopardise the project's success, and the extent to which these risks have been taken into account.

5. Implementation

This section contains preliminary information on the project implementation. Further information will be provided in the feasibility study during the Formulation phase.

5.1 *Physical and non-physical means*
Preliminary indication of physical works, equipment, supervision, technical assistance, policy or technical studies, monitoring and evaluation.

5.2 *Organisation and implementation procedures*
Choice of implementation agency, initial assignment of responsibilities, and definition of procedures.

5.3 *Time schedule*
Expected project duration and phasing.

5.4 *Cost estimate and financing plan*
Preliminary costs by component and input, in foreign exchange and local currency, indicating the financing source where possible.

5.5 *Special conditions and accompanying measures taken by the government*
Preliminary action for government and parties involved, including the private sector, possibly even prior to launching the feasibility study.

6. Factors ensuring sustainability

This section should provide confirmation that key sustainability issues have been incorporated either in the project or as external assumptions. Use the checklists provided in Chapter 7 (Identification), to assess whether the project outline covers the issues appropriately.

6.1 *Policy support measures*
The extent to which implementation of existing policy requires modification or additional policy measures at a national and/or regional level.

6.2 *Appropriate technology*
The extent to which the technology and the standards proposed are compatible with: those already in use in the country, the use of local materials and skills, the physical and financial resources of private sector.

6.3 *Environmental protection*
The extent to which the impact of the project on people, land use, water, air, noise, flora and fauna and cultural heritage is consistent with agreed environmental standards and practices. Refer to the Commission of the European Communities (1993): Environmental Manual and Chapter 13 of these Guidelines.

6.4 *Socio-cultural and gender aspects*
The degree to which the project is consistent with present socio-cultural norms and practices. Refer to the Commission to the European Communities (1991): The Integration of Women in Development and Chapter 13 of the Guidelines.

6.5 *Institutional and management capacity, public and private*
The extent of efficiency with which relevant institution, public and private, fulfill their responsibilities.

6.6 *Economic and financial analysis*
Description of economic entities included in the analysis; definition of the 'with' and 'without project' scenarios and underlying assumptions; analysis of relevant alternative scenarios; description and calculation of benefits and costs; detailed analysis and justification of affordability of water for low-income groups; description and justification of type and analysis performed and of the results of the analysis; assessment of project relevance, effectiveness, efficiency and viablity from the financial and economic perspective. Refer to the Manual ***Financial and economic analysis of development projects***, EC 1997 and Chapter 13 of these Guidelines.

7. Monitoring and evaluation

This section will contain preliminary information only. Further information will be provided by the feasibility study during the Formulation phase.

7.1 *Monitoring indicators*
Initial identification of key indicators for monitoring project progress, results, activities and assumptions (see Chapter 13).

7.2 *Review/evaluations*
Preliminary schedules of project reviews and ex-post evaluation.

8. Conclusions and proposals

Technical appendices to the pre-feasibility report

1. Logical framework matrix of proposed project/programme design, including intervention logic, indicators, assumptions and preconditions.
2. Map of the project area.
3. Analysis of the relevance of the preferred option (the project), which is the basis for the conclusions presented in Section 2.
4. Analysis of the options for the project/programme design, incorporating feasibility and sustainability, with the preferred option presented in Sections 3, 4 & 6.
5. Other technical appendices, if any.
6. Terms of Reference.

Administrative appendices to the pre-feasibility report

1. Study methodology/work plan (2-4 pages).
2. Consultants' itinerary (1-2 pages).
3. List of persons/organisations consulted (1-2 pages).
4. Literature and documentation consulted (1-2 pages).
5. Curricula vitae of the consultants (1 page per person).

3 Format Terms of Reference for a Feasibility Study

The feasibility study should establish whether the proposed project identified in the pre-feasibility study is well founded and likely to fulfill the needs of the economic, social and environmental issues. The feasibility study should detail the technical, economic and financial, institutional and management, environmental and socio-cultural, and operational aspects of the projects.

Guide for preparing Terms of Reference

This standard format is for use in preparing Terms of Reference for a feasibility study for water resources interventions. It is based on the logical framework and provides an outline of the approach and the issues for study. For more information on these issues, see Chapter 8 (Formulation). Use this standard format to prepare the detailed Terms of Reference for feasibility studies, in each case filling in and describing the specific requirement. The text in shaded boxes will assist in identifying the individual requirement for the study. It should be stressed that clear formulation will help ensure that all relevant issues are considered, thus enabling informed decision making.

Terms of reference are to be drawn up by the EC Unit/Delegation in collaboration with the partner country.

A pre-feasibility study carried out in the Identification phase identified the key problems, appraised alternative options and checked that the preferred solution meets the sustainability criteria. Comments on the findings of the pre-feasibility study, decisions taken, and the report are attached to the Terms of Reference. The feasibility study will formulate the project components in detail.

A. Study background

The European Commission (EC) has declared its willingness to provide water resources development co-operation in [.....] region of the country, as a means to develop the economic, social and environmental potential of this region. This is reflected in (i) [....., e.g. co-operation agreement, National/Regional Indicative Programme (NIP/RIP)] and signed by the Government of [.....] and the EC on [...../.....], or (ii) in response to a project proposal presented by [..... NGO or other institution] to the EC.

The EC has received a request from [....., e.g. the National Authorising Officer, NGO or institution] to [describe the proposed water resources intervention].

On the basis of the findings of the pre-feasibility study, the [……..; authorising partner, e.g. National Authorising Office] and the European Commission decided on [date] to carry out a feasibility study of the proposed project. A copy of/summary of the pre-feasibility study is attached to these terms of reference.

This section should contain further detailed information or reference to relevant documents such as studies and evaluation reports.

B. Study objectives

The study will provide the decision makers in [……] Government and the European Commission with sufficient information to justify acceptance, modification or rejection of the proposed [project or programme] for further financing and implementation.

C. Study results

The study will deliver the following:

- A verification of the relevance of the proposed project or programme in addressing the existing problems in economic, social and environmental terms, suggested in or in addition to the options studied in the pre-feasibility study;
- A detailed assessment of the technical, economic and financial, institutional and managerial, environmental and socio-cultural feasibility of the proposed project in addressing the identified economic, social and environmental problems in […… Region];
- A detailed assessment of potential sustainability of the project results after completion, based on factors ensuring sustainability defined in the PCM manual;
- The detailed plan for the project activities, including indicators for project objectives and results, design specifications, required resources, the institutional structure for implementation stipulating the responsibilities of various bodies, project timing/phasing, estimated costs and a logical framework planning matrix;
- Details of engineering designs, technical specifications and tender documents for any physical works and supplies;
- A draft Financing Proposal (see Chapter 9 (Financing);
- Recommendation for the next steps and any further actions necessary to secure project financing and implementation and, possibly, draft tender documents for the selection of consultancy services.

D. Issues to be studied

This section of the Terms of Reference should contain information (where known) about the broad and more specific issues, or gaps in present knowledge, to be studied. The specific problems and opportunities relating to the proposed water resources intervention should be included in the Terms of Reference. Use Chapter 8 (Formulation) to identify the following issues:

- Water resources policy framework and support measures,
- appropriate technology, technical matters and technical assistance;
- environmental protection;
- socio-cultural and gender aspects;
- institutional and management capacity and arrangements, public and private;
- economic and financial aspects.

The main issues to be studied are outlined below. Detailed issues for verification and further analysis are presented below in Appendix I: Standard Reporting Format for a Feasibility Study. The logical framework approach described in the EC Project Cycle Management (PCM) manual should also be applied.

The study will address these issues, and verify the relevance of the project determined by the pre-feasibility study. The study will also detail the feasibility and potential sustainability of the proposed [project].

(i) The **relevance** of a possible intervention as determined by: its coherence with country's macro-economic environment, and the economic, social or environmental sector demanding additional water resources intervention; the consistency with the overall national/regional development objectives specified in the [..... e.g. National Water Resources Programme, National Environmental Action Plan, National or Regional Indicative Programme]; and the compatibility and complementarity of these projects with other water-related projects or programmes.

The consultants will verify and confirm the analysis presented in the pre-feasibility study with regard to:

- The nature, number and type of beneficiaries and other stakeholders that the proposed project will potentially affect;
- All organisations and agencies affected by or involved in the proposed project;
- All major problems experienced by the supposed beneficiaries of the project and by any other parties likely to be involved, the causal interrelationships of these problems, and the intersectoral links;
- Other interventions or priorities by any national organisation or donor which may be affected by the proposed intervention;
- Information from previous studies and evaluations relevant to the proposed project.

The extent of work required for this part of the study will vary according to the time since completion of the pre-feasibility study, changes in the assumptions on which the proposed project is based, and any major changes in the political, economic, social or environmental conditions of the country.

This information, largely based on Section 2 of the Pre-feasibility Report, will form Section 2 (Background) of the Feasibility Report (see Appendix I below).

(ii) The **feasibility** of the proposed project determined by an analysis of the alternative technical solutions consistent with the economic and financial, institutional and management, environmental and socio-cultural framework. This analysis is presented in Technical Appendix 4 to the study report.

The consultants will give a detailed recommendation for the project design, to be structured as follows:

- *Overall objectives:* Why is the project important to the target groups and beneficiaries, the region and the Government? What is the desired economic, social and environmental development/impact, as possibly expressed in the Indicative Programme?
- *Project purpose:* Why do the target groups and beneficiaries need the project?
- *Project results:* What products and services will the project deliver to the target groups and beneficiaries? What assumptions are required to achieve the project purpose?
- *Project activities:* What is the precise scope of activities to be undertaken and what are the associated assumptions for achieving the project results.

The project purpose and results should be measurable by indictors, and project activities should be quantified wherever possible. This information, which details and updates Sections 3 and 4 of the pre-feasibility study report, will form Section 3 (Intervention) and Section 4 (Assumptions) of the feasibility study report (see below).

(iii) The feasibility study will detail any *pre-conditions* necessary for the start of project activities, any project phasing and organisation necessary and will provide cost estimates. This information, which details and updates Section 5 of the pre-feasibility study will form Section 5 (Implementation) of the feasibility study report (see Appendix I).

(iv) The potential *sustainability* of the proposed project as determined by an assessment of the key sustainability factors listed in the PCM manual. This information, which details and updates Section 6 of the pre-feasibility study report, will form Section 6 (Factors ensuring sustainability) of the feasibility study report (see below). These lists are

not exhaustive. The consultants are required to use their professional experience to review and bring to the attention of the Government and the EC all relevant factors.

E. Work plan

This section sets out the approach for the study and key resource persons and organisations to be consulted. The consultants may propose alternative approaches to collecting information and to carrying out the study.

On the basis of the proposed time schedule outlined in the Terms of Reference, the consultants will prepare a work plan for the study and include this in their offer, and report on the approach taken in the study report. The work plan should set out the consultants' approach to the following activities:

- fact finding/data collection/surveys omitted in the pre-feasibility study or requiring updating;
- identification and analysis of alternative solutions for the proposed project;
- analysis of alternative technical solutions;
- additional workshops and consultations to ensure local participation;
- a briefing report summarising the analysis;
- consultation meetings with decision makers/stakeholders to identify the preferred technical solutions;
- preparation of engineering, design and tender documents;
- preparation of the draft and final feasibility study report.

F. Expertise required

This section specifies the expertise (qualifications, experience) required for each person assigned to the study. The experience required depends on the type of project, and may include technical, economic and financial, institutional and management (public and private), environmental and social, and regulatory expertise which should be country specific.

For each expert proposed, a curriculum vitae, of no more than four pages, should be submitted.

G. Reporting

This section specifies the types of reports required, the language in which they should be written, the date of submission, the number of copies required and the recipients. The format for a feasibility study report is presented in Appendix I.

The consultants will present a briefing report (10-15 pages) within [.....] weeks [after signature of the contract, or after start of the study]. This report will set out the alternative technical solutions for the project in sufficient detail to enable an informed decision to be made on the preferred solution.

The draft tender documents in [.....] copies are to be presented to [.....] for comment by [date]. Within [....] weeks, comments on the draft tender documents report will be received from [list of authorities]. The consultants will take account of these comments in preparing final tender documents ([.....] copes) by [date]. The study conclusions should be presented in the feasibility study report which must be presented in the format given below. The underlying analysis is to be presented in appendices to this report.

The draft feasibility study report ([.....] copes) is to be presented to [.....] for comments by [date]. Within [.....] weeks, comments on the draft feasibility study report will be received from: [list of authorities].

The consultants will take account of these comments in preparing the final feasibility study report (30-40 pages excluding appendices). The report will be in [language], and [.....] copies will be submitted by [date].

H. Time schedule

A time schedule should be prepared for each element of the work plan (Section E) and of the reporting requirements (Section G).

The consultants should respond to this timetable in their offer, indicating whether and how they can adhere to or improve on it.

I. Assistance to the consultants by the Contracting Authority

This section specifies assistance to be made available by the Contracting Authority to the consultants including data, documents, offices, transport, counterpart staff, facilitation of the entry and exit of expatriate personnel and any study equipment required.

The Contracting Authority will make available the following information and facilities to the consultants' staff:

- all relevant reports, documents, maps, data;
- where available, office space, furniture, and access to computers and communication facilities;
- where available, the use of vehicles and drivers;
- counterpart staff.

The Contracting Authority will facilitate:

- entry and exit visas for the consultants' expatriate staff;
- any permits required for the consultants' staff to carry out their duties within the country;
- the import and export of personal belongings of the consultants' expatriate staff during the execution of the contract, and of equipment for the study in accordance with provision of the [……..; specify the co-operation agreement, e.g. Lomé Convention or similar agreements].

Appendix I: Standard Reporting Format for a Feasibility Study

Maximum length excluding appendices: 30-40 pages.

The report must be structured using the headings given below. Under each heading, a list of key words and explanatory notes is given to indicate the topics to be handled in that part of the report. These key works and explanatory statements refer to the main issues considered in Chapter 8 (Formulation). It is essential to use these guidelines to gain full understanding of the reporting requirements.

The following text should appear on the inside cover:

This report is financed by the [……; source of financing, e.g. European Development Fund] and is presented by [……] for the Government of [……..] and the European Commission. It does not necessarily reflect the opinion of the Government or the European Commission.

1. Summary

2. Background

2.1 *Government/water resources policy*
National polices or strategies affecting water resources, programmes (including objectives, policies, strategies, priorities and implementation mechanisms), international agreements relating to water which the country has signed, intersectoral policy links (including land-use polices), and legal/regulatory aspects linked to water and related sectors.

2.2 *Features of water resources in the country*
Institutional and administrative setting, role of water resources in the national and local economies, relevant revenues and financing, role of water in environmental conservation and protection, key intersectoral links, (for example with agriculture and health), and condition of infrastructure in relevant Focus Areas.

2.3 *Beneficiaries and parties involved*
Principal stakeholders and their roles, including: water resources users (farmers, local communities) governmental organisations (including community-based organisations and service NGOs), private sector organisations, and relevant Government institutions. Also analysis of institutional arrangements and co-ordination mechanisms.

2.4 *Problems and opportunities to be addressed*
Problems/opportunities of target groups and beneficiaries and other stakeholders to be addressed by the project. Analysis/review of problems/opportunities described in Terms of Reference, Section D (Issues to be studied):

- policy, co-ordination and legal issues described in Section 2.1;
- demand for water resources services, including any regional aspects;
- alternative solutions and options to address problems and opportunities;
- the sustainability of the sector in
  - economic and financial terms (structural adjustment impact, water resources financing, operating and maintenance budget and revenues);
  - institution and management terms (institutional structure, responsibilities and capacity, involvement of beneficiaries, role of the private sector);
  - environmental and socio-cultural terms (potential conflicts between the stakeholders, gender issues);
  - technical terms (use of appropriate modern technologies).

2.5 *Other operations/interventions*
Relevant interventions by the government, the EC, other donors to water resources or other closely-linked sectors.

2.6 *Documentation available*
Key documents for the study such as previous studies and evaluation reports.

3. Intervention

This section outlines the justification for the selected option, with reference to the analysis in Technical Appendix 4.

3.1 *Overall objectives*
Why is the project important to the target groups, beneficiaries and the Government?

3.2 *Project purpose*
Why do the target groups and beneficiaries need the project?

3.3 *Project results*
What services will the project deliver to the target groups and beneficiaries?

3.4 *Project activities*
What are the activities that will be carried out?

4. Assumptions

The consultants should update the assumptions of the pre-feasibility study and formulate additional assumptions where necessary to reflect any changes.

4.1 *Assumptions at different levels*
Action by other agencies required to support the achievement of the project activities, results and purpose.

4.2 *Risks and flexibility*
Capacity of the project to respond to the non-realisation of crucial assumptions that could jeopardise the project's success, and the extent to which these risks have been taken into account.

5. Implementation

This section should detail fully the project implementation.

5.1 *Physical and non-physical means*
Detailed indication of physical works, equipment, supervision, technical assistance, policy or technical studies, monitoring and evaluation.

5.2 *Organisation and implementation procedures*
Details of the assignments to be given to the agencies involved, project organisation, responsibilities and definition of procedures.

5.3 *Time schedule*
Excepted duration and phasing of the project.

5.4 *Cost estimate and financing plan*
Cost estimate by component and input, in foreign exchange and local currency, including financing source.

5.5 *Special conditions and accompanying measures taken by the government*
Action for Government and involved parties, including the private sector, to be undertaken prior to, and during, project implementation.

6. Factors ensuring sustainability

This section should provide confirmation that key sustainability issues have been incorporated either in the project or as external assumptions. Use the checklists provided in Chapter 8(Formulation), of the Guidelines to assess whether the project design covers the issues appropriately.

6.1 *Policy support measures*
The extent to which implementation of existing policy requires modification or additional policy measures at a national and/or regional level.

6.2 *Appropriate technology*
The extent to which the technology and the standards proposed are compatible with: those already in use in the country, the use of local materials and skills, the physical and financial resources of the private sector.

6.3 *Environmental protection*
The extent to which the impact of the project on people, land use, water, air, noise, flora and fauna and cultural heritage is consistent with agreed environmental standards and practices. Refer to the Commission of the European Communities (1993): Environment Manual and Chapter 13 of these Guidelines.

6.4 *Socio-cultural and gender aspects*
The degree to which the project is consistent with present socio-cultural norms and practices. Refer to the Commission of the European Communities (1993): The Integration of Women in Development and Chapter 13 of these Guidelines.

6.5 *Institutional and management capacity, public and private*
The extent and efficiency with which relevant institutions, public and private, fulfill their responsibilities.

6.6 *Economic and financial analysis*
Description of economic entities included in the analysis; definition of the 'with' and 'without project' scenarios and underlying assumptions; analysis of relevant alternative scenarios; description and calculation of benefits and costs; detailed analysis and justification of affordability of water for low-income groups; description and justification of type and analysis performed and of the results of the analysis; assessment of projedct relevance, effectiveness, efficiency and viablity from the financial and economic perspective. Refer to the Manual ***Financial and economic analysis of development projects***, EC 1997 and Chapter 13 of these Guidelines.

7. Monitoring and evaluation

This section should establish the project's monitoring system.

7.1 Monitoring indicators
Identification of key indicators and systems for monitoring project progress, results, activities, assumptions, sustainability and impact (see Chapter 13). Assignment of responsibilities to Government, involved agencies and the private sector.

7.2 Review/evaluations
Schedules of project reviews and ex-post evaluation.

8. Conclusions and proposals

Technical appendices to the feasibility report

1. Draft Financing Proposal with a logical framework planning matrix of the proposed project/programme design, including intervention logic, indicators, assumptions and preconditions.
2. Map of project area.
3. Analysis of the relevance of the preferred solution (the project) with the final conclusions presented in Section 2.
4. Detailed analysis of the technical and institutional alternatives of the project/programme design, incorporating feasibility and sustainability, with the preferred solution presented in Sections 3, 4 & 6.
5. Detailed technical specifications and design sites of the recommended solution.
6. Other technical appendices, if any.
7. Terms of Reference.

Administrative appendices to the feasibility report

1. Study methodology/work plan (2-4 pages).
2. Itinerary (1-2 pages).
3. List of persons/organisations consulted (1-2 pages).
4. Literature and documentation consulted (1-2 pages).
5. Curricula vitae of consultants (1 page per person).

4. Standard format Terms of Reference for an Evaluation [1]

An evaluation study is required to analyse how successful a programme or project has been in meeting the needs and objectives originally identified as its justification. In the case of a mid-term review, the purpose is to analyse progress during the implementation phase and determine whether the original programme/project objective or design require revision.

An evaluation report should look at the project's impact (intended or not), its contribution to the overall objective and performance thus far in terms of project purpose and results. In this respect the monitoring indicators identified in the financing plan should be used to measure success.

Apart from specific variants, the terms of reference for an evaluation study will for the most part follow the format used for the feasibility study, and the reader is directed towards Section III of this chapter.

The evaluation issues should be analysed on the basis of the format below and the Project Cycle Management method. The scope of analysis may, however, be widened or focussed on more specific issues depending on the consultant's experience and the particular requirements of the study.

Guide for preparing Terms of Reference for an Evaluation.

This standard format is for use in preparing Terms of Reference for an evaluation. It is based on the logical framework and provides an outline of the approach and issues for study. For more information on these issues, see Chapter 11 (Evaluation). This standard format should be used to prepare the evaluation, in each case filling in and describing the specific requirements. The text in shaded boxes will assist in identifying the individual requirements for the study. It should be stressed that clear formulation will help ensure that all relevant issues are considered, thus enabling informed decision making.

The terms of reference are to be drawn up by the Unit/Delegation requesting the evaluation.

A. Study background

The European Commission (EC) provided support for [project/programme title……] in the [……] region of […the country], as a means to develop the economic, social and environmental potential of this region. This is reflected in

(i) [……, e.g.,. co-operation agreement, National/Regional Indicative Programme (NIP/RIP)] which was signed by the Government of [……] and the EC on [……/……], or

[1] This section can also be used for preparing terms of reference for a mid-term review but will require modification as the contents may be less comprehensive and more focussed on circumstances unique to the project/programme.

(ii) in response to a project proposal presented by [.....NGO or institution] to the EC.

The EC has decided to undertake a study to evaluate the outcome of the [project/programme].

This section should contain further detailed information or reference to relevant documents

B. Study objectives

The evaluation study will provide the [.....] government and the EC with sufficient information, as to the outcomes of the programme or project and provide lessons learned for future project design. Identify key issues of special importance in the study objectives. (Note: If it is a mid-term review it may suggest modifications.)

C. Study results

The study will deliver the following:

- The principle features of the project/programme at the time of the evaluation – to include objectives, components, location, commitments/disbursements, important dates, timetable;
- An assessment of the planning and design phases of the project from the initial project idea to the final financing proposal;
- An assessment of the problems to be identified and the project objectives against their physical and policy environment;
- An assessment of the relationship between the activities and the results of the programme in the logical framework terminology;
- An assessment of the relationship between the results of the project and the project purpose referred to in the logical framework terminology;
- An assessment of the relationship between the project purpose and the overall objectives;
- An economic/financial analysis for an appropriate period (the entire duration, current year);
- An assessment of the sustainability/replicability of the project's activities and results where relevant;
- Overall outcomes and lessons learned for future actions.

D. Issues to be studied

The main issues to be studied are outlined below. Note that some issues need not be included in the study if irrelevant to the specific project. A fuller description is given in Appendix I.

i Project preparation and design
ii Relevance
iii Efficiency
iv Effectiveness
v Impact
vi Economic and financial analysis

E. Work plan

This section sets out the approach for the study and identifies key resource persons and organisations to be consulted. The consultants may propose alternative approaches to collecting information and to carrying out the study.

The work plan should set out the consultants' approach to the following activities:

- comment on the methodology proposed;
- propose methods of data collection and analysis;
- present a detailed timetable for the study.

F. Expertise required

This section specifies the expertise (qualifications, experience) required for each person assigned to the study. The experience required depends on the type of project being evaluated, and may include technical, economic and financial, institutional and management (public and private), environmental and social, and regulatory expertise. Experience may also need to be country specific.

For each expert proposed, a curriculum vitae, of no more than four pages, should be submitted.

G. Reporting

This section specifies the types of reports required, the language in which they should be written, the date of submission, the number of copies required and the recipients. The format for an evaluation report is presented in Appendix I.

The consultants will present a final report of [……] pages, within [. ……..] weeks after [……]. The final report will set out the findings and conclusions of the evaluation. It will contain no more than [……] pages and annexes and shall be in [language] and submitted by [date].

H. Time schedule

A time schedule should be prepared for each element of the work plan (Section E) and of the reporting requirements (Section G).

The consultants should respond to this timetable in their offer, indicating whether and how they can adhere to or improve on it.

I. Assistance to the consultants by the Contracting Authority

This section specifies assistance to be made available by the Contracting Authority to the consultants including data, documents, offices, transport, counterpart staff, facilitation of the entry and exit of expatriate personnel. Adequate funds should be made available to the consultants to ensure their independence as regards local travel, office space and necessary equipment.

The Contracting Authority will make available the following information and facilities to the consultants' staff:

- all relevant reports, documents, maps, data;
- where available, office space, furniture, and access to computers and communication facilities;
- counterpart staff.

The Contracting Authority will facilitate:

- entry and exist visas for the consultants' staff to carry out their duties within the country;
- any permits required for the consultants' staff to carry out their duties within the country.

Appendix I: Standard Reporting Format for an Evaluation Study

The Evaluation Report should mirror the basic project format, taking into account the nature of the project and the stage at which evaluation is taking place. It should focus on the soundness of the choices made in relation to the context, objectives, means, likelihood of sustainability, etc., and include brief remarks on any adjustments made in response to developments up to the moment of evaluation.

The report should be structured using the headings given below. Except in exceptional circumstances, the report should not exceed 100 pages + Annexes.

The following text should appear on the front cover:

> *This report is financed by the [……; source of financing, e.g. European Development Fund] and is presented by [……] for the Government of [……..] and the European Commission. It does not necessarily reflect the opinion of the Government or the European Commission.*

Preamble (Maximum 2 pages)
The preamble should briefly describe:

- The principal features of the project/programme as at the time of the evaluation (including objectives, components, location, commitments/disbursements, important dates, timetable);
- The objectives and plan of work of the evaluation study itself (names of evaluators, dates and principal methods used).

1. Summary

2. Project preparation and design
This chapter assesses the planning and design phases of the project from the initial project idea to the final financing proposal. It establishes which preparatory activities have been undertaken by which actors and how the results of such activities (pre-feasibility and feasibility studies etc.) have been incorporated into the final project document. The chapter also assesses the internal characteristics of the project that can be discerned from the analysis of the preparation and design phases.

3 Relevance of the project
This chapter assesses the problems to be solved and the project objectives against their physical and policy environment, i.e. the main macro-economic and sectoral features of the country and pertinent policies (explicit and implicit) of the various actors: government, EU, other donors and interest groups. The evolution of the context over time and its consequence for the project should also be reviewed.

4 Efficiency
This chapter relates to what is known as the relationship between the activities and the results of the programme in the logical framework terminology. It is devoted to the evaluation of the efficiency with which the activities have been undertaken in order to yield the project results. Have the means of the project been efficiently transformed through the project's activities into the various project results? Could the same or similar results have been achieved at lower costs? This will require an assessment of the following factors that affect efficiency.

5. Effectiveness
This chapter relates to the relationship between the results of the project and the project purpose referred to in the logical framework terminology. It gives an assessment of the extent to which the project results have contributed towards the achievement of the Project Purpose, or whether this can be expected to happen in the future on the basis of the current results of the project (unplanned results should also be analysed). Particular attention should be given to the beneficiaries of the project.

6. Impact
This chapter, applicable in the case of completed projects or projects which have been running for several years, assesses the contribution of the project in a broader context (the relationship between the project purpose and the overall objectives). Both qualitative and, where possible, quantitative assessment should be made. 'With/without' analysis, if not treated here, might be dealt with in Chapter 6.

7. **Economic and financial analysis**
Description of economic entities included in the analysis; description of the actual 'with' project situation compared to the planned situation; description and calculation of benefits and costs; detailed analysis and justification of 'affordability' of water for low-income groups; description and justification of

type of analysis performed and of the results of the analysis; assessment of the project's relevance, effectiveness, efficiency and viability from the financial and economic perspective. Refer to the Manual ***Financial and economic analysis of development projects***, EC, 1997, and Chapter 13 of these Guidelines.

8. Factors affecting sustainability/replicability.

This chapter assesses the sustainability/replicability of the project's activities and results where relevant. The evaluator should, in the first instance, give an assessment in global terms of the sustainability prospects for the project. The weighting of the six principal sustainability factors referred to below will depend upon the nature of the project. It would also be useful to examine the manner in which the concern for neglect of one or other of the six factors may have affected the achievement of sustainable results. The possibility of replicating successful outcomes should also be analysed.

8.1 Policy support measures; correspondence between priorities of donor and recipient country; extent to which project has support in the recipient country's budget, price and subsidy policy.

- Regional/district policy, sectoral policies, etc.;
- Changes in overall priorities and policies: how have they (or will they) affect the project;
- Degree of agreement on objectives;
- Support from relevant organisation (political, public, business, etc.);
- Willingness to provide resources (financial and personnel).

8.2 Appropriate technology

Did the technology offered correspond to needs (problems to be solved, technological environment, level of technological skills of the beneficiaries and technical support services)? In particular, will the intended beneficiaries be able to adapt to and maintain the technology acquired without further project assistance?

8.3 Environmental protection

Verify whether the environmental effects of the project's activities and results could jeopardise the sustainability of the project itself and/or reach levels which are unacceptable for long-term environmental protection and management.

8.4 Socio-cultural and gender issues

Verify whether social-cultural and gender aspects could endanger the sustainability of the project interventions during project implementation or, especially, after termination of assistance. The issue of 'ownership' of the project activities by the various beneficiary groups and implementing agencies should also be discussed.

8.5 Institutional and management capacity, public and private

The commitment of all parties involved, such as government (e.g.through policy and budgetary support), counterpart institutions and beneficiaries should be examined. To what extent have the project activities been

embedded in local institutional structures to ensure sustainability? Were counterparts adequately prepared for the hand-over of the project and continuation of the project activities (technically, financially, managerially)?

9. Conclusions and recommendations

Under this heading the evaluator should, drawing on the conclusions, summarise the overall outcome and formulate proposals for future actions. The conclusions should cover all-important aspects requiring action identified under points 2 to 8. Each conclusion should lead to a corresponding operational recommendation.

9.1 Overall outcome

- What were the main successes/failures of the project to-date? What were the causes underlying the outcome?
- Do the effects/impacts identified justify the costs involved?
- Were the objectives achieved within the specified time and budget?

9.2 Sustainability

Conclusions should be drawn and recommendations made regarding the key sustainability factors relevant to the project, for example,

- Is post-project maintenance of infrastructure and support for institutional structures likely to be adequately funded and executed?
- Is the policy environment likely to ensure the sustainability of the project's benefits?

9.3 Alternatives

- Could the same effects/impacts have been achieved at lower costs?
- Would there have been different ways of achieving the same outcome?
- Should the project be re-oriented and, in particular, should all activities continue? If not, describe how the project should be re-oriented and summarise the proposal in the form of a logical framework

10 Lessons learned

The main value of Evaluation is to learn lessons that can be applied to future projects, such as;

- What policy, organisational (e.g. for EC) and operational lessons can be drawn specifically from the project?
- What pre-conditions might be recommended prior to deciding on the financing of similar projects?
- What general development lessons' can be drawn from the Evaluation in relation to policies and instruments; and sectoral, country or regional strategies?

Technical and administrative appendices to the evaluation report

- Original logical framework:
- Original Financing Proposal;
- Other technical appendices, if any;
- List of persons/organisations consulted;
- Documents consulted for the evaluation.

Selected Bibliography

Abbott, C.L. and Hasnip, N. (1997) The Safe Use of Marginal Quality Water in Irrigation: A guide for the water resource planner. HR Wallingford Report OD 140, Wallingford, UK.

This guide has been prepared to help planners successfully integrate marginal quality water supplies in to regional water use strategies. The users are guided through procedures to identify and assess potential marginal quality water supplies, and provided with tools to evaluate the impacts on crops and human health. Management options to maintain long-term sustainable agriculture are presented.

ADB (1996) Towards Effective Water Policy in the Asian and Pacific Region. Proceedings of the Regional Consultation Workshop, ADB, Manila, Volume 1.

These proceedings are the outcome of the Regional Consultation Workshop held at the Asian Development Bank (ADB) in Manila, 10-14 May 1996. The proceedings are divided into three chapters; 1) Introduction, 2) Understanding the water sector and 3) Directing ADB's role in the water sector. (Volume 2 – Country papers, Volume 3 – Theme papers and comments).

Allen, J.A. (1996) Policy Responses to the Closure of Water Resources: Regional and global issues. Water Policy: Allocation and Management in Practice, Howsam, P. and Carter, R.C. (ed), E & FN Spon/Chapman and Hall, London, UK.

This paper demonstrates that a number of steps have been taken by governments to meet provision of water. The concept of 'virtual water' is discussed and examples drawn from the Middle East, where international trade in cereals has enabled the region to import 'virtual water'. The paper also discusses the pressures on policy makers at the macro, national, level. Highly principled economically and environmentally sound solutions may be advocated but political imperatives often overwhelm the decision-making process.

Backer, P. (1993) La Mondialisation du Management Environnemental: La Dimension GATT. Environ., 3, No. 36. 11-13.

This publication describes the need for responsible environmental management in the world, the strategic importance of European investments, with a particular focus on France.

Black, M. (1994) Mega-slums: The coming sanitary crisis. A special report for WaterAid, UK.

This report examines the rapid pace of urbanisation in the developing world

and its implications for access to water and sanitation services by low-income populations. The report argues for a radical overhaul of conventional public health engineering wisdom in technological and service management responses to the growing threat of epidemic in Third World cities.

Biswas, A. K. (1992) Water for Third World Development, a Perspective from the South. Water Resources Development, Vol. 8, No. 1.

Perspectives from the South on water issues, with emphasis on international rivers and environmental considerations, and on where international governance can have major impacts on national water policies and institutions.

Biswas, A. K. (1992) Sustainable Water Development: a Global Perspective. Water International, 17, 68-80.

This paper provides a global perspective of sustainable water development over the past two decades. The paper covers development and management practices, some of which have had positive environmental impacts, and others which have had negative impacts.

BMZ (1996) Sector Concept: Drinking Water Supply and Sanitation. BMZ, Bonn, Germany.

This sets out the general principles for planning and implementing development co-operation projects for drinking water supply and sanitation. It is a decision-making tool for use in German development co-operation programmes.

BMZ (1998) German Development Co-operation in the Water Sector. BMZ, Bonn, Germany.

This sets out the concepts for development co-operation in the drinking water supply and sanitation sector with particular emphasis on the function and delimitation of the sector, sector goals, project selection and design, and criteria. Types of co-operation and use of bilateral funds are discussed. A number of project examples from a range of countries are included.

Brundtland, G. H. (1987) Our Common Future. The World Commission on Environment and Development.

Landmark publication setting the international agenda on environmental issues, although concern for freshwater resources is a serious omission.

Centre for Water Policy Research (1991) Towards Introducing Markets for Riverine Resources. Report to the Department of Water Resources New South Wales, Kaine, G., Burton, J. and Bryant, M., University of New England, Australia.

The scope for reforming and extending property rights to facilitate the allocation of the resources to the riverine environment is presented. Difficulties due to the shortfall in knowledge and understanding are documented and suggestions made for investigations to help alleviate these problems.

Cités Unies Developpement. (1990) Rapport, la Coopération Internationale d'Aide au Développement et les Collectivités Locales. Les acteurs, les instruments et les circuits de financement.

This discusses the importance of solidarity between communities and the role of an NGO, 'Cités Unies Developpement', and its programme of social and economic help to Third World cities.

CIWEM, Bailey R (ed) (1996) Water and Environmental Management in Developing Countries, Chartered Institute of Water and Environmental Management, sponsored by DFID (formerly ODA).

This book, aimed at water and environmental managers in developing countries, is in two parts. Part 1 contains up-to-date information on the environment including philosophy, politics, and social and economic factors; part 2 contains up-to-date information for solving practical problems.

Clift, R. (1995) Clean Technology – An Introduction. Journal of Chemical Technology and Biotechnology, No.62, pp321-326.

This paper provides an introduction to the concept of Clean Technology, with particular reference to the collection and treatment of domestic and industrial wastes.

COAG (Council of Australian Governments) (1995) Water Allocations and Entitlements: A national framework for the implementation of property rights in water. Task Force on Council of Australian Governments, Occasional Paper No.1.

A number of themes have been investigated by working groups reporting to COAG on measures designed to improve the efficiency of sectors of the Australian economy. This report focuses on the clarification of property rights to water and recommends a national framework for their implementation. Other task forces have considered pricing reform, asset refurbishment, water allocation to the environment, trading arrangement in water, institutional reforms and community consultation and education.

CWC (1992) Guidelines for Sustainable Water Resources Development and Management. Central Water Commission (CWC), New Delhi, September 1992.

These guidelines are intended to help project authorities plan and manage water resources taking into account environmental concerns. They focus on methodologies for Environmental Assessment (EA) of water resources projects which can be easily transferred to developing countries.

DANIDA (1992) Water Supply and Sanitation. Ministry of Foreign Affairs. Danida Sector Policies.

This describes the policies of the Danish International Development Assistance of the Danish Ministry of Foreign Affairs in the water supply and sanitation sector ie. water supply, primarily for domestic use, in rural and urban areas; sanitation and sewerage services; health/hygiene promotion; water resources assessment and protection.

Deval, H. (1994) Lutte Contre la Désertification. Coopération Française en Afrique. Coopération française en Afrique.

This describes the fight against desertification in Africa and the support provided by French aid to support various demand-driven, village-based initiatives.

DFID (1995) Technical Note on Enhancing Stakeholder Participation in Aid Activities. Department for International Development, UK.

This technical note reviews and recommends methods of enhancing stakeholder participation. A guidance note on the how to do a Stakeholder Analysis is included.

DFID (1997) Evaluation Synthesis of Rural Water and Sanitation Project. White J., DFID Evaluation Department: Evaluation Report EV:596, London, UK.

This evaluation is a synthesis of six evaluation studies and one review from:

CARE International in Sierra Leone; WaterAid in Uganda; Nepal Eastern Region Water Supply project; Madura Groundwater Irrigation project, Indonesia; Lesotho Village Water Supplies; and the Gurkha Welfare Trust project, Nepal. It summarises the consensus from research concerning the relationship between the prevalence of diseases associated with poor water and sanitation facilities and provision of services.

DFID (1997) Priorities for Irrigated Agriculture. Water Resources Occasional Paper No 1, London, UK.

This paper sets out the importance of irrigated agriculture to developing countries. It highlights the paradox that a serious decline in donor support for irrigation has occurred at the same time that water shortage, poverty and food security have become major international concerns. The paper promotes five priority themes: improved water use efficiency, enhanced productivity of small-scale smallholder schemes, an integrated approach to water use, capacity building and support for innovation.

DSE (1998) Global Water Politics: Co-operation for Transboundary Water Management. 1st Petersberg Round Table, International Dialogue Forum, Petersberg/Bonn, 3-5 March 1998, German Foundation for International Development.

This international forum drew up recommendations concerning the German Government's position within the international debate on transboundary water management. The outcome of the meeting is presented as the Petersberg Declaration which provides recommendations for further actions regarding transboundary water management.

Dublin Statement (1992) International Conference on Water and the Environment: Development issues for the 21st century. 26-31 January 1992, Dublin, Ireland. The Dublin Statement and Report of the conference.

The Dublin Statement and Report of the Conference present the problems highlighted at the International conference on Water and Environment in Dublin, Ireland, and highlight the critical nature of the global water resources situation. The report identifies four guiding principle since regarded as the centrepiece of water-related activity.

EC (1991) EC Manual: The Integration of Women in Development. European Commission, Brussels.

The EC has developed a specific policy focusing on Women in Development (WID). The policy recognises the productive roles played by women and their contribution to economic growth, and is based on an evaluation of nine EDF-financed projects.

EC (1993) Environmental Procedures and Methodology Governing Lomé IV Development Co-operation Projects. European Commission, Brussels.

This manual describes a methodology for environmental assessment of Lomé IV development projects. It looks initially at the legal background before describing the various stages of an assessment from the initial screening through preliminary assessment up to a full Environmental Impact Assessment (EIA) before describing the reviewing process and the need for monitoring.

EC (1997) Indicators of Sustainable Development. European Commission, Brussels.

Following on from the 1992 Rio de Janeiro declarations, which have been incorporated into the core of European Policy, the EC is creating a statistical information system through Eurostat to help in evaluating progress towards the 1992 Rio objectives of sustainable and balanced development. This report

looks at the initial trials using 40 indicators.

EC (1997) EC Manual: Financial and Economic Analysis of Development Projects. European Commission, Brussels.

This manual looks at how financial and economic analysis can ensure that aid is planned and delivered as effectively as possible. It concentrates on how such analysis can inform the decision-making process throughout the project cycle, shedding light on how to estimate planned or actual effectiveness in attaining key objectives such as poverty reduction.

FAO (1989) Water Quality for Agriculture. FAO Irrigation and Drainage Paper No.29, Rome.

This paper provides guidance to farm and project managers, consultants and engineers in evaluating and identifying potential problems related to water quality. Possible restrictions to water use are discussed and management options presented which may assist in farm or project management planning and operation.

FAO (1995) Irrigation Management Transfer. Selected papers from the International Conference on Irrigation Management Transfer, Wuhan, China, 20-24 September 1994. FAO Water Report No.5, Rome.

The Irrigation Management Transfer conference was the first major international meeting to be held on this topic. The proceedings include a summary of ideas and experiences drawn from the conference papers. The papers address a number of issues including the reasons for management transfer, variations in management transfer approaches, and the effects of management transfer on irrigation performance.

FAO (1995) Reforming water resources policy: a guide to methods, processes and practices. Winpenny, J.T. FAO Irrigation and Drainage Paper 52, Rome.

This guide was first written against the background of growing pressure on farmers to make more efficient use of irrigation water, to release more for other farmers, and to avoid conflicts and competition for the resource from potential users in other sectors. The report has a number of aims: to indicate the size and complexity of the water sector, to spell out the ramifications throughout the economy of water management, introduce some of the methods and processes involved in a water policy review, and illustrate how different countries have gone about such a review.

FAO (1995) Water Sector Policy Review and Strategy Formulation: a general framework. FAO Land and Water Bulletin 3, Rome.

This paper is an attempt to synthesise the FAO's approach with that of the World Bank and the UNDP. It responds to a request from the Sub-Committee on Water Resources of the UN Administrative Committee for Co-ordination to these three agencies to prepare a joint guide on water resources policy review, reform, and strategy formulation. The report covers institutional and human resource issues, stakeholder participation, information systems, the role of economics, environmental and health considerations, and international issues.

FAO (1996) Guidelines for planning irrigation and drainage investment projects. FAO Investment Centre Technical Paper 11, Rome

The Guidelines are divided into two parts. The first part briefly discusses the main lessons learned in recent years and their implications for the project planning process. The second part describes the process itself, the roles of the borrowers, lenders and planning team and the activities and outputs expected. The remainder of the document presents checklists, which seek to be fully comprehensive and include both new and perennial issues in irrigation planning.

IADB (1996) Workshop on Strategies for Integrated Water Resources Management in Latin America and the Caribbean. San José, Costa Rica, May 6-7, 1996. Proceedings. Social Programs and Sustainable Development Department, Environment Division.

This report summarises the results of a Consultation Workshop on Strategies for Integrated Water Resources Management and the Caribbean. The Workshop was part of a multi-step action plan developed by the Bank to prepare its strategy for integrated water resources management.

IADB (1997) Integrated Water Resources Management Strategy Background Paper. Inter-American Development Bank, Social Programs and Sustainable development Department, Environment Division.

This draft strategy presents the intended approach of the IADB to water resources management. It is gives an overview of the water resources in Latin America and the Caribbean, stresses the need for an integrated approach, essentially calling for a change of paradigm in order to achieve sustainability. It presents the main focus for IADB investments.

ICID (1993) Environmental Checklist to Identify Environmental Effects of Irrigation, Drainage and Flood Control Projects. HR Wallingford for the International Commission on Irrigation and Drainage, Wallingford, UK.

A procedure for identifying environmental effects of new or existing projects, intended for use by engineers and planners who are non-specialists in the environmental sciences. The procedure includes practical guidance on its use and is supported by a range of tools for its application.

ICID (1997) Water: Economics, Management and Demand. Kay, M., Franks, T., Smith, L., Proceedings of the18th European Regional ICID Conference, E & FN Spon (pub), UK.

The papers presented at this International Commission on Irrigation and Drainage (ICID) conference focus primarily on the role of irrigation and drainage in the debate on water use as an economic good. They highlight experiences in both developed and developing countries in six areas: the value of water for irrigation; the value of drainage and flood control; the social and environmental value of water; paying for services; management systems; and policy, legal and institutional issues.

ICID (1997) Water: Economics, Management and Demand, Edited by Kay, M., Franks, T. and Smith, L. E & FN Spon, UK.

A collection of the papers presented at the International Commission on Irrigation and Drainage conference on 'Water – an economic good?' held in Oxford, UK, in September 1997.

IHE/UNDP (1991) A Strategy for Water Sector Capacity Building. IHE Report Series 24, Alearts, G.J. and Hartvelt, F.J.A., The Netherlands.

This book reports on the UNDP Symposium 'A Strategy for Water Resources Capacity Building', held in Delft, The Netherlands, 3-5 June 1991. The meeting dealt with two main challenges to water-related activities: the need for a greater use of comprehensive and integrated methods; and methods to address institutional weaknesses.

IIMI (1994) Chapter 3, Gender Issues and Water Issues in A Gender Perspective to Irrigation Management. IIMI Working Paper No.32, Zwarteveen, M.Z., Columbo, Sri Lanka.

Within a wider report on the role of gender within irrigation, this chapter deals in depth with the causes of the absence of gender in most irrigation management studies. It examines how male and female needs differ and proposes the use of tools for identifying gender considerations.

IIMI (1997) Impacts of Irrigation Management Transfer: A review of the Evidence. Research Report No.11, Vermillion, D.L., International Irrigation Management Institute, Columbo, Sri Lanka.

This report synthesises and evaluates the most significant evidence available to-date about the impacts of management transfer programmes on the financial viability of irrigation systems; the quality of irrigation operations and maintenance; the physical sustainability of irrigation infrastructure; agricultural and economic productivity; and the environment.

IRC (1985) Participation of Women in Water Supply and Sanitation. Technical Paper No. 22. International Water and Sanitation Centre, The Hague, The Netherlands.

The book aims to present a simplified framework for gender analysis which can be used in rapid participatory assessments and planning. It also gives an overview of developments at policy level on integrated water resources management, and aims to link this to gender analysis. Finally, it summarises and analyses the operationalisation of gender in drinking water and sanitation.

IRC (1993) Communication in Water Supply and Sanitation – a Resource Booklet. International Water and Sanitation Centre, The Hague, The Netherlands.

This booklet outlines the steps that need to be taken to develop and implement a communication strategy for the water and sanitation sector, based on the experiences of many people in many countries. Includes suggestions for advocacy at national and global level, and basic elements for messages on water supply and sanitation to priority target groups.

IRC (1994) Stir gently! The Way to Mix Hygiene Education with Water Supply and Sanitation. Marieke Boot, Paper No. 29. International Water and Sanitation Centre, The Hague, The Netherlands.

Methods for integrating hygiene education in water supply and sanitation programmes. Numerous programme examples are provided demonstrating changes of attitude, behaviour and practice relating to water and waste disposal; also of planning, organisation, implementation and evaluation of training in health education.

IRC (1997) Linking Technology Choice with Operation and Maintenance for Low-Cost Water Supply and Sanitation. Operation and Maintenance Working Group, Water Supply and Sanitation Collaborative Council, WHO & International Water and Sanitation Centre, The Hague, The Netherlands.

This manual is designed to help planners and project staff in the selection of rural and low-income water supply and sanitation technologies. It is divided into two parts: Part 1: Operation and maintenance and technology choice: the technology selection process; the assessment of O&M implications. Part 2: Fact sheets: water supply technology (water sources, water lifting devices, power systems, water treatment, storage and distribution systems); low-cost sanitation technology.

IRC (1997) Water Supplies Managed by Rural Communities. Country Reports and Case Studies from Cameroon, Colombia, Guatemala, Kenya, Nepal and Pakistan. International Water and Sanitation Centre, The Hague, The Netherlands.

Community water management experiences and management reports, conclusions and lessons learned. This document is the result of a collective effort by six teams from organisations operating in the water supply and sanitation sectors in Cameroon, Colombia, Guatemala, Kenya, Nepal and Pakistan, carrying out a four-year research project on the role of community participation in the management of rural water supplies.

ISPAN (1993) Water Resources Policy and Planning. Towards Environmental Sustainability. Irrigation Support Project for Asia and the Near East (ISPAN).

This report is based on a study of environmental sustainability of water development and use. The study, conducted in four medium-sized cities and their surrounding agricultural areas, collected information on the extent to which water development and use were consistent with, or detrimental to, maintenance of the long-term adequacy and quality of water resources.

Ministry of Housing, Spatial Planning and Environment (1994) Conference Report: Ministerial Conference on Drinking Water and Environmental Sanitation, Noordwijk, March 1994. The Hague, The Netherlands.

This Conference report highlights changes to improve both public health and international co-operation. Based on the background papers of the Ministerial Conference, a series of three publications under the title 'Water and Sanitation for All: A World Priority' were prepared: 1) A Developing Crisis, 2) Achievements and Challenges, and 3) No More Business as Usual.

NEDA (1998) Water Supply and Sanitation in Developing Countries, Netherlands Development Assistance, Ministry of Foreign Affairs,

This document provides sector policy and guidelines for implementation of development co-operation. The report draws on experiences from past involvement in water and sanitation and highlights the key elements for success. Guidelines for implementation of policy focus on identification, assessment, implementation and evaluation in relation to aspects such as national policy, participation, environment, organisations, and monitoring.

ODA (now DFID) (1996) A Guide to Social Analysis for Projects in Developing Countries. HMSO, London, UK.

A guide for qualified social analysts – sociologists, anthropologists and human geographers – to help them apply their expertise in practical development work. The guide describes the functions and responsibilities of social analysts working in multi-disciplinary teams; and provides useful materials and an extensive bibliography.

ODA (now DFID) (1996) Water and NGOs, Workshop organised by WEDC on behalf of ODA, 10 June 1996.

The workshop aimed to explore how to expand community-based approaches and strengthen the role of NGOs working in the water sector. The report contains five papers which were presented at the workshop: 1) Overview of NGO involvement in the water sector; 2) ODA synthesis evaluation of rural water projects; 3) Technical and management issues; 4) Social issues; 5) Policy issues.

ODI (1991) Values for the Environment. Winpenny, J., Overseas Development Institute, London, UK.

This book deals with how environmental concerns can be taken into account in choosing and appraising projects. It sets out, for each of a number of representative sectors, a role for environmental economics, which is intended to be feasible, plausible and useful.

ODI (1994) Managing Water as an Economic Resource. Winpenny, J., Overseas Development Institute, London, UK.

This book emphasises the need for both suppliers and consumers to treat water as a scarce commodity with an economic value. Policies for the improved management of existing supplies are evaluated based on case studies from different countries.

ODI (1997) Understanding European Community Aid: Aid Policies, Management and Distribution Explained, A Cox et al, Overseas Development Institute, London.

This book was funded by the Evaluation Unit (DGVIII) of the European Community. It describes the institutions, policies and legal basis of EC aid, together with a detailed inventory which analyses all EC aid flows on a sectoral as well as geographical basis. The publication sets out to provide a baseline for the evaluations of EC aid as well as to serve as a public information document in its own right.

OECD (1987) Pricing of Water Services. Paris, France

The report assesses the contribution of economic techniques, in particular water pricing, for developing practical options for the efficient management of demand and supply of appropriate quality of water. The report presents guidelines for promoting conservation, reallocation and re-use of water resources through the combination of regulatory and economic instruments.

OECD (1992) Directory on Non-Governmental Environment and Development Organisations in OECD Countries. Paris, France.

This publication provides an index and directory of Non-governmental Organisations in OECD countries working in the field of environment and development. Over 300 NGOs are listed under categories such as country, regions, fields of activity, etc. Text is in English and French.

OECD/DAC. (1996) Shaping the 21st Century: The Contribution of Development Co-operation. Paris, France.

This sets out the recommendations for development co-operation among the OECD members and focuses on poverty elimination, setting a target to reduce absolute poverty by 50% by 2015.

Office International de L'Eau (1996) Conférence Euro-Méditerranéenne sur la Gestion de L'Eau. Marseille 25-26 Novembre 1996, France.

This conference was organised by the EU and France with the support of the city of Marseille on the management of water in the Mediterranean region.

Parey, V. P., (1993) DVWK Bulletin. Ecologically Sound Resources Management in irrigation, Berlin, Germany.

This booklet contains the reports presented at the 10th International DVWK Irrigation symposium, Ecologically Sound Resources Management in Irrigation held in 1993 in the framework of WASSER BERLIN 93. Three papers are relevant to water resources planning. These are: 1) Water Management and the Environment; 2) Water and Sustainable Development; 3) Water and Land Management Associations as a Tool of Resource Conservation.

Pearce, D. W. and Turner, R. K. (1990) Economics of Natural Resources and the Environment. Harvester Wheatsheaf, Herts, UK.

A grounding in the economics required to understand national, international and global environmental problems which methodically examines the much discussed concept of 'sustainable development'. This discussion is set in the wider context of environmental and ethical values and concerns, including the implications of resource depletion and degredation for future generations and the special problems of the Third World.

Rogers, P., (1993) Comprehensive Water Resources Management. A Concept Paper. The World Bank, Washington, USA.

This paper is a joint product of the Water and Sanitation Division, Infrastructure and Urban Development Department, and the Agricultural Policies Division, Agriculture and Rural Development Department, and is part

of a larger effort to define a Bank water resources management policy. The report discusses new approaches that are needed to integrate water resource use among different users and different economic sectors.

SEI (1997) Comprehensive assessment of the freshwater resources of the world, Stockholm Environment Institute, Sweden.

This was prepared for the United Nations Economic and Social Council as a key resource document for the UN General Assembly Special Session of June 1997 (UNCED 2). It includes a set of scientifically based background papers which discuss a range of key issues related to water quality and quantity.

SIDA/IRC (1994) Towards Better Water Resources Management: A catalogue of policies and strategies of external support agencies. Ref. Series 10, Viisscher, J. T. and Soresson, M., SIDA, Sweden.

A comprehensive review of the different water resources policies and strategies of donors.

SIDA (1996) A Gender Perspective in the Water Resource Management Sector. Publications on Water Resources No.6, SIDA, Sweden.

The book aims to further the development of awareness, commitment and capacity for working with a gender perspective in water resources management. The first part analyses the linkages between gender equality and water resources management; the second looks at 'talking points' to guide policy dialogue; and finally it provides guidance for mainstreaming gender in different parts of the planning cycle.

SIDA (1997) Ecological Alternatives in Sanitation, Proceedings from SIDA Workshop, Balingsholm, Sweden, 6-9 August 1997. Publications on Water Resources, No. 9, Department for Natural Resources and the Environment, SIDA, Sweden.

The purpose of this workshop was to widen the range of policy options in sanitation by presenting and discussing ecological alternatives in urban sanitation with special reference to the possibility of reusing human excreta, particularly urine, for agricultural purposes. Important aspects of ecological sanitation, case studies, background papers and recommendations are included.

UNCED (1992) Agenda 21, Chapter 18. Protecting the Supply and Quality of Water Resources.

In Chapter 18 of Agenda 21 over 270 recommendations are made for action, under seven main priority programme areas: 1) Ensuring the integrated management and development of water resources; 2) Assessing water quality, supply and demand; 3) Protecting water resource quality and aquatic ecosystems; 4) Improving drinking water supply and sanitation; 5) Ensuring sustainable water supply and use for cities; 6) Managing water resources for sustainable food production and development; 7) Assessing the impact of climate change on water resources.

UNCED (1994) Water and Health in Underprivileged Urban Areas, United Nations Conference on Environment and Development, Sophia Antipolis, February 1994

This Conference looked primarily at how the commitments made at Rio de Janeiro in 1992 could be formulated into specific programmes with reference to urban underprivileged community health and water problems. Four perspectives for analyses were chosen: the role of institutions; community participation; appropriate technologies and know-how; financing and management.

UNCSD (1998) Strategic approaches to freshwater management, Report of the 6th Session of the United Nations Commission for Sustainable Development, New York.

This report is the culmination of a series of international events between July 1997 and April 1998 and presents recommendations for a programme for the further implementation of Agenda 21. The document summarises the findings of the Expert Group Meeting in Harare, Zimbabwe, in January 1998; the International Conference on Water and Sustainable Development, Paris, March 1998; and the Petersburg Round Table on Global Water Politics, Germany, March 1998.

UNDP (1990) Tools for Community Participation, L. Srinivasan. PROWESS/UNDP Technical Series, Involving Women in Water and Sanitation, New York.

The report looks firstly at how to start a community participation programme looking at planning a programme, organising and designing workshops and using simple daily evaluation techniques and activities.

UNDP/World Bank (1996) An evaluation of the UNDP-World Bank Water and Sanitation Program: a Forward-looking Assessment. Report of an Independent Team. World Bank, Washington, USA.

The evaluation team looked at capacity-building, promotion and support of sustainable investments, the use of alternative approaches and the learning process of the joint UNDP–World Bank Water and Sanitation Program.

UNECE (1993) Protection of Water Resources and Aquatic Ecosystems, Water Series No.1, UN Economic Commission for Europe, Geneva, Switzerland.

Based on the experiences gained with the implementation of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Helsinki, 1992. Part I provides guidelines on the ecosystem approach in water management; Part II relates to the water quality criteria and objectives; and Part III is on the prevention and control of water pollution from fertilisers and pesticides.

UNEP (1996) Proceedings from the UNEP workshop on Rapid Integrated River Basin Assessments. February 20-22, 1996, Stephenville, Texas. Hosted by Tarleton State University, USA.

This report describes the Rapid Integrated River Basin Assessment (RIRBA) process, which was developed at the workshop. The report describes the two phases of RIRBA: 1) collection and analysis of data; 2) development of policy scenarios and analysis of potential futures; followed by appendices, workshop hand-outs and summaries from conference presenters.

UNESCAP (1995) Integrated Water Resources Management in Asia and the Pacific. United Nations, Economic and Social Commission for Asia and the Pacific, Water Resources Series No. 75, Bangkok, Thailand.

This report contains the proceedings of the Expert Meeting on the Implications of Agenda 21 for Integrated Water Management in Asia and the Pacific held in Bangkok from 13 to 15 September 1995. It is presented in four parts: 1) Report of the meeting; 2) Background papers presented by the ESCAP secretariat and a consultant; 3) Selected country papers submitted by the participants; 4) Selected papers submitted by representatives of international organisations and agencies.

UNESCAP (1997) Guidelines on Water and Sustainable Development: Principles and Policy Options. Economic and Social Commission for Asia and the Pacific. Water Resources Series No. 77, Bangkok, Thailand.

These Guidelines address all aspects of protection of freshwater resources outlined in Chapter 18 of Agenda 21, namely, legal aspects, water protection and conservation, water pollution prevention, groundwater protection and conservation, freshwater living resources, application of clean technology, and monitoring and surveillance of water bodies. The guidelines recognise that because there is increasing competition for finite water supplies on the global scale and a growing risk of water pollution, suitable policies and actions are needed to ensure sustainable development through an approach which integrates development and environmental objectives.

UNESCAP (1997) Guidebook to Water Resources, Use and Management in Asia and the Pacific. Volume One: Water Resources and Water Use. Economic and Social Commission for Asia and the Pacific. Water Resources Series No. 74, Bangkok, Thailand.

This report is a synthesis of data available in numerous publications concerning the Asian and Pacific region as a whole or for specific countries and areas within the region. The data concerns: physiography, climate, water resources, water quality and pollution, water availability patterns, water use patterns and water demand projections.

UNESCO (1987) Communication Strategies for Heightening Awareness of Water. Report No.2 of IHP II Project C1, Studies and reports in hydrology No.47, ed Sadler, B.S., UNESCO, Paris.

This report focuses on the need for recognising the relationships between water and socio-economic development. It reviews the need for communication, examines the problems and techniques of communication, and discusses means for heightening awareness among planners, decision-makers and the general public.

UNESCO (1991) Approaches to Integrated Water Resources Management in Humid Tropical and Arid and Semiarid Zones in Developing Countries. Maynard M. Hufschmidt and Janusz Kindler. UNESCO, Paris.

This report is the result of activities under two International Hydrological Programme projects, both concerned with development of methodologies for integrated water resources planning and management based on case studies. The main report is in four parts describing the planning and policy setting for water resources management, the conceptual statement for analysis, experiences with water resources management in developing countries, and a proposed management approach for 1990 to 2010.

UNESCO/WHO/UNEP (1996) Water Quality Assessments. Chapman, D. (ed), Geneva, Switzerland.

This book gives comprehensive advice on designing and setting up monitoring programmes to obtain valid data for water quality assessments in all types of freshwater bodies. Advice is given on the selection of variables to be measured in water, sediment and biota, concentrating particularly on current water quality issues in different parts of the world.

UNICEF. Waterfront. msaintlot@unicef.org, New York, USA.

This biennial publication of the UNICEF Water, Environment and Sanitation cluster contains news of significant international developments in water and sanitation, information exchange, and useful low-cost BWSS project and programme profiles from around the world.

UNICEF (1995) Strategies in Water and Environmental Sanitation. E/ICEF/1995/17, New York, USA.

The UNICEF 1995 policy document on water and sanitation, setting out the organisation's strategies and approaches for promoting coverage of basic water and sanitation services within an environmentally sustainable framework, and promoting the necessary behavioural changes to realise health benefits, especially for children, from services.

WHO/FAO/UNEP (1991) Guidelines for Forecasting the Vector-bourne Disease Implications of Water Resources Development. PEEM Guideline Series No.2, PEEM Secretariat, Geneva, Switzerland.

These guidelines are aimed at anyone who wishes to make a rapid assessment of the health risks associated with a water development project in the tropics or sub-tropics at an early planning phase. The format is such that a minimum number of questions allow a knowledgeable person to obtain approximate answers based on existing information.

WHO (1992) Our Planet, Our Health: Report of the WHO Commission on Health and Environment, WHO, Geneva.

A comprehensive and practical study of the ways in which the environment interacts with public health in the development context. Includes chapters on food and agriculture, water, human settlements and urbanisation, and transboundary and international problems.

WHO (1993) Guidelines for Drinking-water Quality, Volume 1: Recommendations, Geneva, Switzerland.

This sets out guideline values for a large number of water contaminants relevant to the quality of drinking water. The book also provides an explanation of how the guideline values should be applied, the criteria used in selecting the various chemical, physical, microbiological, and radiological contaminants considered, a description of the approaches used to derive the guideline values, and brief summary statements supporting the values recommended or explaining why no health-based guideline value is necessary at present.

WHO (1994) Financial Management of Water Supply and Sanitation A Handbook, Geneva, Switzerland.

This describes a range of financial principles and methods for improving the management of water supply and sanitation services of all types. It is aimed at decision-makers and shows how financial mechanisms, such as cost recovery, cash raising, and cost containment, can be used to ensure that services are financially sustainable and able to meet users' needs.

WHO (1996) Guidelines for Drinking-water Quality. Volume 2: Health Criteria and Other Supporting Information, Geneva, Switzerland.

The book has 17 chapters presented in three parts. The first, on microbiological aspects, addresses the common and widespread health risks associated with the direct or indirect contamination of drinking-water with human or animal excreta, particularly faeces. Separate chapters review data on the health hazards posed by selected bacteria, viruses, protozoa, helminths, toxins from cyanobacteria, and nuisance organisms.

WHO/WSSCC/UNICEF (1996) (WHO/EOS/96.15) Water Supply and Sanitation Monitoring Report 1996; Sector Status as of 31 December 1994. Geneva, Switzerland.

This valuable publication was set up after the Water Decade and is issued every two years. It monitors progress on providing safe water supply and sanitation

to the unserved population providing co-ordination for an international programme of data collection based on a set of well-defined and generally used terms to ensure high standards and comparable information.

WHO/WSSCC (1997) Sanitation Promotion Kit. Water Supply Sanitation Collaborative Council, WHO/EOS/97.12, Geneva, Switzerland.

This publication examines the need for a sanitation promotion kit looking not only at the present problems of sanitation but those likely to appear in the next century. The report examines ways of getting sanitation onto the political agenda and how to gain more effective co-operation within and between sectors. In subsequent sections the report examines best sanitation practices, looks at the needs and roles of various stakeholders and examines a number of case studies.

WMO/UNESCO (1991) Report on Water Resource Assessment, London.

A number of needs for improvement in water resource assessment were identified in the 1997 Mar del Plata Action Plan. This report discusses progress in the implementation of Mar del Plata Action Plan and presents a strategy for the 1990s.

WMO (1995) African Conference on Water Resources: Policy and Assessment. Report of the Conference, Addis Ababa, Ethiopia, 20-25 March 1995. World Meteorological Organisation and UN Economic Commission for Africa, Addis Ababa, Ethiopia.

The objective of the conference was to to prepare a Strategy and Action Plan within the context of water resource assessment in Africa. Thematic areas include the economic challenges in relation to water scarity and stress, institutional arrangements for integrated water resource assessment, capacity building, and policy, strategy and action plans for water resource assessment. The report is divided in to two parts: I) Report of the Conference, II) African Water Resources Assessment Programme – Policy, Strategy, and Action Plan.

WMO/IADB (1996) Conference on Water Resources Assessment and management Strategies in Latin America and the Caribbean. San José, Costa Rica, 6-11 May 1996. Report of the Conference.

The objective of the conference was to prepare an Action Plan within the context of sustainable development, ensuring that integrated and comprehensive assessment and integrated management of water resources reflects the socio-economic needs of the country and its citizens and the preservation of the environment.

World Bank (1989) Sub-Saharan Africa from Crisis to Sustainable Growth. A Long Term Perspective Study, Washington, USA.

This report provides a long term perspective on the economy of Sub-Saharan Africa. Building on many studies, it assesses the policies and measures needed for Africa to achieve a sustained and sustainable improvement in well-being. The report highlights the fact that sound macroeconomic policies and an efficient infrastructure are not sufficient to transform African economies, but that major efforts are needed to strengthen the institutional framework within which development can take place.

World Bank (1992) Water Resources Institutions: Some Principles and Practices. World Bank Technical Paper No. 191. Frederiksen, H.D., Washington, USA.

This paper presents institutional principles found to be effective for the successful management of water resources. These principles are drawn from a range of physical and institutional settings where countries have shown positive results in addressing difficult water management issues.

World Bank (1993) A World Bank Policy Paper. Water Resources Management, Washington, USA.

The policy paper is a landmark statement of the World Bank's policy on water, reflecting a co-ordinated view of several different strands in the Bank's operations: irrigation, watershed management, flood control and hydropower, environmental protection, and drinking water and sanitation services. The paper admits problems in its past operations in these areas, causing vicious circles and unreliable services, unwillingness to pay, inadequate funding, and a further deterioration in services.

World Bank (1993) Balancing Water Demands with Supplies. The Role of Management in a World of Increasing Scarcity. World Bank Technical Paper No. 189, Frederick, K.D., Washington, USA.

This paper deals with the increasingly important topic of how to balance water demands with supplies. It examines the experience of OECD countries in influencing the behaviour of water users, and draws lessons from attempts to manage demand by imposing water use regulations and employing economic incentives.

World Bank (1993) Water Resources Management in Asia, Volume 1, Main Report. World Bank Technical Paper 212, Frederiksen, H.D., Berkoff, J., and Barber, W. , Washington, USA.

This report presents a management framework to address the demand for water in Asia, which has been caused by rapid population growth and economic development. Ways of improving planning and long-term management are suggested, and a general strategy for future World Bank lending and involvement is described.

World Bank (1994) A Strategy for Managing Water in the Middle East and North Africa. Directions in Development, Washington, USA.

This booklet highlights the implications of a new Bank policy for the Middle East and North Africa (MENA) regions, where water is of central concern to life. It proposes a practical step-by-step approach to tackling water resources problems in a co-ordinated and sustainable manner.

World Bank (1994) A Guide to the Formulation of Water Resources Strategy. World Bank Technical Paper No. 263. le Moigne, G., Subramanian, A., Xie, M., and Giltner, S., Washington, USA.

This report, aimed at policy makers in the developing world, addresses the issue of increasing the capacity to manage water resources through the process of strategy formulation. The report incorporates the elements of holistic water resources management, institutional and human resources, information systems, stakeholder participation, economics, environment and health.

World Bank (1994) Principles and Practices for Dealing with Water Resources Issues. World Bank Technical Paper No. 233, Frederiksen, H.D., Berkoff,J., and Barber, W., Washington, USA.

This report identifies the common issues that countries face when attempting to regulate, plan and manage their water resources. The issues are grouped into four main categories: Institutions; Resource Planning and Long-Term Management; Real-Time Management of Water Resources; and Financial Aspects of Water Resources Activities.

World Bank (1996) Measuring Economic Benefits for Water Investments and Policies. World Bank Technical Paper 338, Young, R.A., Washington, USA.

Reviews and assesses the concepts and methods for estimating the economic benefits of investment and allocation decisions involving water, and describes the operational uses of these methods.

World Bank (1996) African Water Resources. Challenges and Opportunities for Sustainable Development. World Bank Technical Paper No. 331. Africa Technical Department Series, Washington, USA.

This document proposes that water resources management in African countries should be integrated, cross-sectoral, and based on catchment area. It recommends key strategic interventions for African consideration and discusses the operational implications for the World Bank.

World Bank (1997) User Organisations for Sustainable Water Services. World Bank Technical Paper 354, Subramanian, A., Jagannathan, N.V. and Meinzen-Dick, R., Washington, USA.

Water users' organisations are one example of community participation at work in the sectors of irrigation, drinking water supply, and sanitation. This paper looks at the conditions under which these organisations are most effective in managing water systems. It identifies key external factors and internal structures for sustainable user associations, as well as the conditions for partnership between government agencies and the associations.

World Bank (1997) International Agreements. Fifth World Bank Conference on Environmentally and Socially Sustainable Development. Washington, USA.

This meeting drew together leading scientists, government ministers, economists, lawyers and environmentalists to look both at immediate environmental concerns and the need for closer ties between the world's scientific, economic and legal communities. While many countries have signed environmental treaties such as the UN Framework Convention on Climate Change and other agreements governing seas and oceans, forests and hazardous waste, few signatories have so far carried out their legal obligations.

World Bank (1997) Performance Monitoring Indicators Handbook. World Bank Technical Paper No.334, Mosse, R. and Sontheimer, L.E., Washington, USA.

This handbook introduces and supplements notes developed by World Bank staff on suggested performance monitoring indicators for each of the main sectors in which the Bank is active. The notes provide a framework for use by task managers, borrowers, and project implementation units inside the Bank in analysing the relationship between objectives and monitorable outcomes and impacts.

Acronyms

ACC	Administrative Committee on Coordination (UN)
ACP	(Sub-Saharan) African, Caribbean and Pacific
ADB	Asian Development Bank
ALA	Asia and Latin America
AWUM	Agricultural water use and management
BWSS	Basic water supply and sanitation services
CEC	Commission of the European Community
CEES/NIS	Central and Eastern Europe and the Newly Independent States (of the former Soviet Union)
COI	Cost of illness
CV	Contingent valuation
CVM	Contingent valuation method
DAC	Development Assistance Committee
DANIDA	Danish International Development Assistance
DC	Decentralised co-operation
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
ECU	European currency unit
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
EXACT	Executive Action Team
FA	Focus Area
FAO	Food and Agriculture Organisation
FEA	Financial and economic analysis
FIRR	Financial internal rate of return

FP	Financing Proposal
GAD	Gender and development
GATT	General Agreement on Trade and Tariffs
GWP	Global Water Partnership
HC	Human capital
HPM	Hedonic property method
HYCOS	Hydrological Cycle Observing System
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
INPIM	International Network on Participatory Irrigation Management
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
LEAD	The Leiden Ethno-systems and Development Programme
M&E	Monitoring and evaluation
MED	Mediterranean and Middle East
MED-URB	Mediterranean and Middle East – Urban Programme
MENA	Middle East and North Africa
MVPE	Market valuation of physical effects
MWWS	Municipal water and wastewater services
NGO	Non-governmental organisation
NIP	National Indicative Programme
NPV	Net present value
O&M	Operation and maintenance
ODA	Official development assistance
ODI	Overseas Development Institute
OECD	Organization for Economic Co-operation and Development
PCM	Project Cycle Management
PEEM	Panel of Experts on Environmental Management
PIM	Participatory Irrigation Management
PRA	Participatory rural appraisal
PSC	Project support communications
PTD	Participatory Technology Development
RBO	River basin organisations
RC	Replacement cost
RIP	Regional Indicative Programme
RIRBA	Rapid Integrated River Basin Assessment
RRA	Rapid rural appraisal

SADC	Southern African Development Community
SIA	Social impact assessment
SIDA	Swedish International Development Co-operation Agency
SSA	Sub-Saharan Africa
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
WHYCOS	World Hydrological Cycle Observing System
WID	Women in development
WMO	World Meteorological Organisation
WRAP	Water resources assessment and planning
WSS	Water supply and sanitation
WSSCC	Water Supply and Sanitation Collaborative Council
WTP	Willingness to pay
WWC	World Water Council

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