

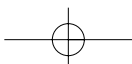
"...Integrated Water Resources Management (IWRM) and Water Efficiency Plans by 2005"

Why, What and How?

by

Torkil Jønch-Clausen

January 2004



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TEC BACKGROUND PAPERS

NO. 10

“...Integrated Water Resources Management (IWRM) and Water Efficiency Plans by 2005”

Why, What and How?

Torkil Jønch-Clausen

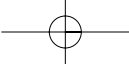
Professor Torkil Jønch-Clausen was the first Chair of the GWP Technical Committee, from 1996 to 2003. He is currently Director at DHI Water & Environment in Denmark, Senior Adviser to GWP, Secretary-General of the International Water Resources Association and Chair of the Danish Water Forum. Over the past 15 years he has been actively engaged in promoting and applying Integrated Water Resources Management (IWRM), including assistance to African, Asian and Central American countries in IWRM planning.



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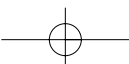
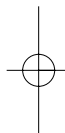
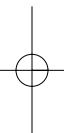
PREAMBLE

At the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002, the international community took an important step towards more sustainable patterns of water management by including, in the WSSD Plan of Implementation, a call for all countries to "develop integrated water resource management and water efficiency plans by 2005, with support to developing countries." This document, dated early 2004, attempts to describe the "Why, What and How" of the IWRM planning processes based on the current state-of-the-art. Many countries are taking the WSSD target very seriously and are now embarking on or accelerating their national IWRM processes. It is hoped that some of these countries will derive benefit from this document, and that a "taking stock" of target achievement, for example, at the 4th World Water Forum in Mexico in early 2006, will produce a wealth of experience that will significantly improve this first attempt to provide some guidance on this process.



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FOREWORD

At the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002, the international community took an important step towards more sustainable patterns of water management by including, in the WSSD Plan of Implementation, a call for all countries to “develop integrated water resource management and water efficiency plans by 2005, with support to developing countries.” But while the wording of the WSSD Plan of Implementation appears simple, major challenges remain. For example:

- What does the 2005 target really mean? Is it merely a plan or a first step in a longer process of institutional change?
- How can the process incorporate the obvious need for countries to act as well as plan in integrated ways, and to address both the demand-side issues of management and the efficiency *and* supply-side issues of infrastructure and development?
- Is the management, development and use of water in an integrated way truly a pre-requisite for achieving the Millennium Development Goals (MDGs) in developing countries? If so, what are the key steps needed to ensure that this target directly contributes to achieving the MDGs by 2015, especially those related to poverty, hunger, health and environmental sustainability?
- How specifically can countries begin moving towards more integrated approaches? How can some of the constraints involved in changing the way of doing business be overcome in practice? And can countries at one stage in the change process learn from other countries that have implemented change, even though the specific challenges that they face are substantially different?
- How can policy makers be persuaded that meeting this target is in their vital interest? In particular, what is the best way to make the case that integrated water resource management approaches can help decision makers make faster progress towards meeting their goals than traditional sectoral approaches?
- Is it possible to identify the essential elements for IWRM that, while avoiding rigid prescriptions and allowing for vast differences among countries, would help policy makers to be clear on the issues that need to be addressed as part of the process of change?

To help address these and other practical questions that arise in connection with the 2005 IWRM Target, the Technical Committee of the Global Water Partnership (GWP) has begun preparing a series of publications aimed at providing support to those responsible at all levels for the achievement of the target. The present document – TEC Background Paper Number 10 – is the first in this series. It is targeted at senior managers in ministries and agencies responsible for addressing national water resources management issues, and its principal aim is to help stakeholders implement reform processes in water resources management and to guide development towards more integrated approaches. It is also hoped that the document will contribute to the upcoming 12th session of the Commission on Sustainable Development (CSD-12) in April 2004.

In addition to the present document, the Global Water Partnership is preparing a range of supplementary products, reflecting an overall strategy to supplement the GWP's current flagship publication series – the TEC Background Papers series – with other kinds of publications that satisfy the specific needs of specific audiences. The first of these additional papers – to be released in early 2004 for immediate assistance to country efforts to meet the targets, as well as a contribution to CSD-12 – will elaborate on the “How-to” components of the present document. In particular, they will address in greater detail than is possible in an overview paper some of the implementation constraints that countries experience, with special emphasis on identifying the essential elements that need to be addressed as part of the process of change and providing practical ideas on how to deal with typical issues that arise in implementation. Other follow-up products may include additional technical notes for practitioners, one or more policy briefs aiming at politicians and high-level decision makers, and one or more papers outlining GWP's role and potential contributions and how the GWP network can facilitate country level processes aimed at the attainment of the target.

The author of the present document is Prof. Torkil Jønch-Clausen, Chair of the GWP Technical Committee from 1996 until mid-2003, and an internationally recognized authority in water resources management. Though successive drafts of the paper have been discussed extensively by the TEC and at recent major international meetings, the paper principally reflects the author's own vision and innovative thinking on this complex subject and draws on his vast experience, as well as that of his colleagues, in the field. We are grateful to Prof. Jønch-Clausen and his colleagues for their willingness to take on the exceptionally difficult task of preparing a useful and substantive publication

on a highly charged and controversial subject, and to complete the paper under very tight time deadlines. That he has been able to do so is testament to his extraordinary commitment and dedication to advancing integrated water resource management approaches around the globe.

Roberto Lenton

Chair, Technical Committee, Global Water Partnership

January 2004

PREFACE

This document has been written to support reform processes in water resources management and development, incipient or well underway, and to guide the development towards Integrated Water Resources Management (IWRM) as proposed in the Plan of Implementation of the World Summit for Sustainable Development (WSSD) in Johannesburg in 2002. Article 26 of this states that countries should “*Develop IWRM and water efficiency plans by 2005, with support to developing countries...*”¹ This guidance document discusses what these plans are all about under the overall umbrella of IWRM. Focus is on IWRM. The “water efficiency plan” is considered as an important component of IWRM, and hence as an integral part of the IWRM plan. As discussed in the document IWRM is a cyclic and long term “process.” Hence, the “IWRM plan” can be seen as a milestone in this process, where the status of the process is documented.

The present document has been prepared by the author in close collaboration with the GWP Technical Committee (TEC), the GWP Chair and Executive Secretary, and a Nordic “core team” consisting of Messrs. Jan Hassing, Palle Lindgaard-Jørgensen and Niels Ipsen (DHI Water & Environment, Denmark), Hans Olav Ibrek (Ministry of Environment, Norway) and Johan Kyulénsterna (Stockholm International Water Institute, Sweden). Their most valuable contribution is gratefully acknowledged.

A first “Discussion Draft” of the paper was produced in October 2003 and distributed for discussion and feedback to a number of important water conferences in October and November 2003. These included the West Africa

¹ Ref. 1: *World Summit on Sustainable Development - Johannesburg 2002*

IWRM Conference in Ouagadougou, the “Water for the Poorest” Conference in Stavanger, the GWP Technical Committee (TEC) Meeting in Madrid and the Southeast Asia Water Forum in Chiang Mai. It was also circulated to the GWP regional networks and to other interested individuals. Comments and suggestions from these meetings and persons are gratefully acknowledged. They have all been carefully considered in preparing the final version. However, the final version as presented is the sole responsibility of the author.

Torkil Jørch-Clausen

January 2004

INTRODUCTION

The experience

Several countries have started, or have already been through, the process of putting in place elements or substantial amounts of the Integrated Water Resources Management Process envisaged by the international community during the World Summit on Sustainable Development in Johannesburg 2002. Uganda and Burkina Faso have, with international assistance, gone through multi-year IWRM planning processes resulting in new national policies, strategies and laws for their water resources development and management; China and Quebec’s new water policies; Thailand and India’s water reform processes and Brazil’s wastewater reform are examples of IWRM processes. Many of these are now in the implementation stage or ready to start implementation. Other countries in Africa and elsewhere have responded to the WSSD call for action and have started IWRM planning processes.

Context is critically important

This guidance document is not intended to be prescriptive. It is not a “cook-book.” Water as a resource and its development and management is specific to the geographical, historical, cultural and economic context of any country. Hence IWRM processes will differ from country to country, and there is no “one size fits all.” To assure political interest and public support, the initial focus should be on crucial, urgent issues. Flood management, irrigation water disputes or other such issues may be entry points. For the poorest countries of the world the national IWRM planning processes may well focus strongly on how to attain the UN Millennium Development Goals on reducing poverty

and hunger, diseases and environmental degradation, including halving the proportion of people without access to basic drinking water and sanitation services. For the richer countries of the world, progress towards IWRM may be pursued by focusing on environmental maintenance and restoration, being the aim of the “Water Framework Directive” of the European Union (EU).

The present document builds on experiences from a number of diverse countries that have gone through such IWRM planning processes and attempts to incorporate the main lessons learned from these experiences.

IWRM PLANS – WHY?

Pressures and competition for water requires improved management

Public pressure caused by, for example, lack of safe and affordable drinking water and basic sanitation, pressure from national economic sectors like energy and agriculture due to lack of water for development, transboundary conflicts and crises and international agreements on water all open opportunities and provide incentives for governments to initiate processes leading to improved management of water resources. Such improvements can be achieved through Integrated Water Resources Management as detailed below and in the associated reference documents.

Countries experience serious water resources issues

In an increasing number of countries water scarcity and deteriorating water quality have or will soon become critical factors limiting national economic development, expansion of food production and/or provision of basic health and hygiene services to the population. The recognition of the need to redress these weaknesses in their water governance structures has convinced many countries that a new water management framework is needed. Other common critical issues include:

- Awareness – and priority – at political level of water issues is limited.
- Institutions are rooted in a centralised culture with supply driven management and fragmented and sub-sectoral approaches to water management. Few water managers view water holistically, but the integrated approach is required, among others, because of the biophysical reality where water movement through the catchment links the livelihood and resource perspectives.

- Local governments lack capacity to manage pressures on water resources.
- Inappropriate pricing structures and hence limited cost recovery result in inefficient operation and maintenance of water systems, as well as in misallocation and loss of water.
- Investments in the water sector are low, and do not get sufficient attention in the national budgeting procedures.
- Information and data to support sound management of water is generally lacking.
- The often inadequate economic, social and environmental criteria for the approval of policies, plans and projects.

IWRM relates to the macro-economy

Poor management of water resources causes health, environment and economic losses on a scale that impedes development and frustrates poverty reduction efforts. Some examples are:

- *Water degradation, health and loss of productivity.* The often quoted global figures of 1.2 billion people without access to clean water, and more than double this figure without proper sanitation, are among the prime causes of one billion people being annually affected by water-borne diseases, primarily in the developing countries. The poorest segments of society and children are hit hardest with 3.5 million children dying each year from these diseases. The loss of productive ability in a situation of marginal income is often disastrous and hinders escape from poverty. Managing water resources wisely to prevent pollution of sources of domestic water is one of the most important preconditions for improvement.
- *Soil degradation and loss of productive land.* The way water is managed in coordination with land management has significant effects on agricultural production. Deficient management will often result in erosion, salinization and destruction of soil structure. Soil degradation presently affects 30% of the world's irrigated lands, 40% of rainfed agricultural lands and 70% of rangelands. Total agricultural productivity losses are experienced. Further decline in productivity will occur as new areas are no longer readily available as replacement.
- *Risk management, floods and droughts.* Economic losses from floods, droughts and climate variability are experienced at a very large scale globally. The drought in Zimbabwe in the early 1990s entailed a 45% decline in agricultural production and an associated 11% decline in gross domestic product (GDP). El Niño floods (1997–98) caused an estimated economic loss exceeding 1.7 billion USD in Kenya and 2.6 billion USD in Peru. Mozambique

suffered a 23% reduction in GDP following the floods in 2000. Integrated Water Resources Management including risk management, prudent co-ordinated management of land and water, monitoring, forecasting and contingency planning could have alleviated these grave economic consequences.

A good IWRM process can assist developing countries in achieving the MDGs

These address, among others, poverty, hunger, education, gender equality, health and environmental sustainability (see Annex 1). Good quality water availability and prudent water resources management are important contributions to achieving the goals. Striking examples are:

- *Poverty.* Water is basic to production, and production is clearly a factor in poverty reduction. The productivity of irrigated agriculture is particularly dependent on rational and wise water resources management. IWRM processes should contribute to a framework for investment in water infrastructure, such as irrigation and drainage canals and hydropower installations, which in turn are necessary for the community, regional and national development.
- *Major diseases.* Water related diseases are among the worst killers in developing countries and the poorest segments of the population are often hit hardest, not least the women who carry the daily responsibility of the health of their families. IWRM is a process through which water managers are assisted in making rational and balanced decisions on the water use, conservation and protection. Control of stagnant water for instance in reservoirs and irrigation systems as well as enhancing the quality of water for domestic use is important for prevention of malaria, bilharzia, cholera and other diseases.
- *Environmental sustainability.* IWRM processes by their nature address natural resources degradation as a result of unsustainable exploitation, often for short-term gains. The degraded systems can no longer retain their productivity and provide essential goods and services. Environmental flows need to be maintained. Thus, sound ecosystems have to be maintained and suitable planning of allocation/recycling should assist in this. Aquatic ecosystems are threatened around the globe and IWRM needs to be applied to protect, conserve and restore water resources.

Thus, at the national level IWRM provides a basis for harmonising the different demands on its water resources that will be required to achieve the MDGs. An IWRM approach will advance progress towards the sustainable development of a country and its achievement of the MDGs more rapidly than

traditional approaches. Investments in water infrastructure, water allocation decisions and water management actions and policies impact on a country's goals in multiple ways: IWRM is an approach that can capitalise on the opportunities for synergies and help reconcile difficult trade-offs in the achievement of these goals.

The eighth Millennium Development Goal calls for "Building a global partnership for development" with reference to the need for commitment to good governance, development and poverty reduction – both nationally and internationally. Hence the global community has made a commitment to which, clearly, good water governance through IWRM has an obvious contribution to make.

IWRM processes are needed to backstop the commitments to international agreements

Sub-regional or regional agreements, transboundary co-operation agreements and global/international action plans are among the triggers that prompt a decision to develop or extend the present water resources management framework. They may all comprise requirements or incentives for countries to establish national IWRM frameworks as exemplified below.

- *Regional/sub-regional agreements.* Regional/sub-regional agreements often trigger the development of National Integrated Water Resources Management frameworks. West Africa and Central America have assessed that regional co-operation would benefit the water resources situation of their respective regions.² Regional instruments like the European Union (EU) Water Framework Directive³ show the potential for developing regional agreements and dispute settlement procedures and for defining water management principles and monitoring and compliance mechanisms. This and other pieces of EU legislation have been important triggers of reform of the water sectors of the EU accession countries.
- *Transboundary visions and co-operation.* Almost half of the world's land area is situated in transboundary river basins. New co-operation arrangements

² Ref. 3: West African Regional Action Plan on IWRM and Ref. 4 on the Central American Action Plan for IWRM). The West African Plan on Integrated Water Resources Management agreed at Heads of State level, includes a number of targeted programme: Support to National IWRM Action Plans, Support to countries damaged by war, Capacity Building, Regional co-ordination of IWRM. Within the region, countries are at different stages in the development towards IWRM and countries less advanced in the process can learn from those more advanced. As a result important networks between policymakers and water practitioners have been established. Capacity building, development of guidelines and so on have been prepared more cost-efficiently at the regional level compared to the level of individual countries.

³ Ref. 5: European Union (EU) Water Framework Directive.

for transboundary water systems are emerging, like in the Nile Basin⁴ while the Mekong Basin⁵ co-operation agreements have existed for a longer time. While such agreements are made at the regional level, the actual policy changes, reforms and implementation of reforms need to happen at the national levels. Hence, such agreements provide encouragement and opportunities for riparian countries to reform their national water resources management frameworks, and promote developments towards the principles of IWRM.

IWRM PLANS – WHAT?

The WSSD 2005 target

The Plan of Implementation of the WSSD in 2002 proposes to reform the management of water resources by “Developing Integrated Water Resources Management and Water Efficiency Plans by 2005, with support to developing countries...” as a framework (see details in Annex 2). Properly developed these can become dynamic instruments that progressively identify necessary strategies and actions in water resources management, water infrastructure development, improved water efficiency and better water service provision. Milestones in the format of strategic action plans will mark critical points in the planning processes, unlikely to be completed “by 2005,” that is, just two years from now. *Hence the 2005 target should be interpreted to mean that all countries should have “IWRM and water efficiency planning processes completed or well underway by 2005.”* Hence the “plan” is part of this process, and should be seen as a milestone where the status of the process is documented.

IWRM definition

IWRM may be defined as: *a process which promotes the co-ordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising*

⁴ Ref. 6 The Nile Basin Initiative is a multilateral dialogue established in the late 1990s. A shared vision has been prepared between the riparian countries to achieve sustainable socio-economic development through the equitable use of and sharing of benefits from common water resources. In line with the vision of the Mekong River Basin, the development of a “Basin Development Plan” aims at sustainable development of the water resources and related resources and thus promotes a development towards Integrated Water Resources Management.

⁵ Ref. 7: Mekong Basin Development Plan.

*the sustainability of vital ecosystems.*⁶ IWRM is a comprehensive approach to the development and management of water, addressing its management both as a resource and the framework for provision of water services. The concept of IWRM was already recognised in Agenda 21 of the UN Conference on Environment and Development in Rio de Janeiro in 1992, to a large extent based on the four Dublin Principles developed earlier that year.⁷

IWRM is a political process and involves conflicts of interest that must be mediated. Effective water governance is crucial for the implementation of IWRM Plans. Awareness of this has been raised through a series of dialogues on "Effective Water Governance." The lessons from these dialogues (presented internationally at 3rd World Water Forum⁸) can assist the development and eventual application of the plans.

IWRM processes focus on the critical water resources issues of any country

The role of IWRM will vary depending on the development stage of the country. Developing countries, countries in transition and developed countries will all have different ways of implementing the IWRM process and derive different benefits. Developing countries will in particular see sound water resources management as a factor in addressing poverty, hunger, health and environmental sustainability – the Millennium Development Goals – including their particular challenge in providing full involvement and hence better livelihoods for women. Countries in transition may see IWRM as a rational approach to improvement of their resource management thus assisting the continued development of their economies. Developed countries may find valuable inspiration in the IWRM processes and sometimes chose to design their own variety as has happened in the case of the EU Water Framework Directive.

⁶ Ref. 8: *Integrated Water Resources Management - GWP Technical Committee (TEC) Background Paper No. 4.* This definition is supported for instance, by the World Bank in the call for "an integrated water resources perspective ensuring that social, economic, environmental and technical dimensions are taken into account in the management and development of water resources." The concept is further detailed in the IWRM ToolBox of the GWP through some 50 specific "tools" for IWRM, backed up by numerous practical case studies of IWRM implementation.

⁷ The UN Conference on Water and Development in Dublin in January 1992 consolidated the four "Dublin principles." (1) the holistic principle; (2) the participatory principle; (3) the gender principle; (4) and the economic principle, which provided an important "mind set" for water resources development and management.

⁸ Ref. 9: 3rd World Water Forum - Kyoto 2003.

The three pillars of IWRM

Implementing an IWRM process is in fact, a question of getting the “three pillars” right: moving toward an enabling environment of appropriate policies, strategies and legislation for sustainable water resources development and management; putting in place the *institutional framework* through which the policies, strategies and legislation can be implemented; and setting up the *management instruments* required by these institutions to do their job. The three pillars are illustrated in Figure 1 below. A ToolBox on IWRM has been developed by GWP to elaborate on this framework and illustrate the concepts and useful approaches through specific tools (“good practices”) as well as relevant references and case studies of IWRM experience (see Annex 3).

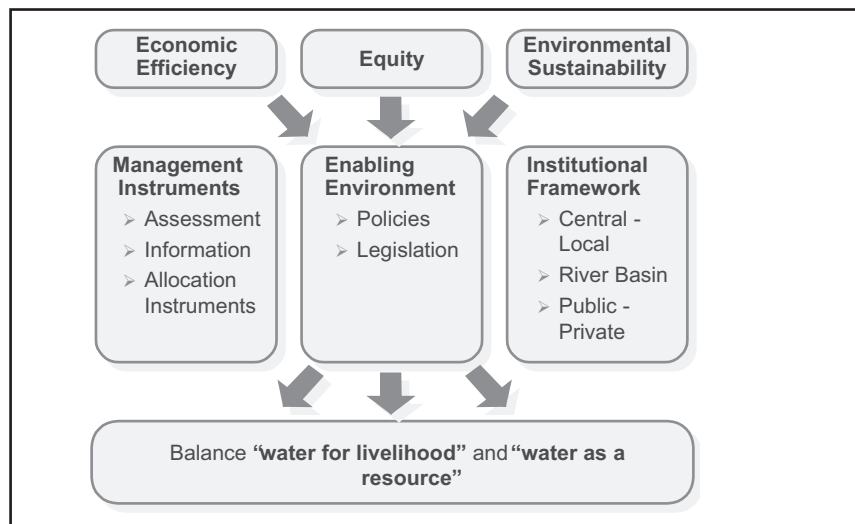


Figure 1. The “three pillars” of Integrated Water Resources Management: Enabling Environment, Institutional Framework and Management Instruments

Roles of the actors

Governments play a key role in the implementation of an IWRM framework such as the one illustrated in Figure 1. They must also be the main regulators and controllers in the water sector with its associated infrastructure. Further, governments promote improvements in the public sector, regulate private sector involvement, and decide on market mechanisms. But “*water is everybody’s business*” – a resource to be managed at the lowest appropriate level. It is governments working with civil society that must raise awareness of the importance of improved water resources management among policy makers and the general public. Dialogues will take place between the many stakehol-

ders involved including government, civil society and the private sector. Governments can only exercise their responsibilities of good water governance if they involve all relevant national (and if appropriate also regional/transboundary) stakeholders in the dialogue when the framework is developed and implemented. Governments must also ensure empowerment of the poor, not least poor women, as a precondition for their meaningful participation in IWRM contributing to poverty reduction. Without stakeholder support, government efforts to implement the framework will be frustrated. However, government's responsibilities may also be frustrated by the operation of conflict adjudication mechanisms created under international trade and investment agreements.

Cross-sectoral integration

A critically important element of IWRM is the integration of various sectoral views and interests in the development and implementation of the IWRM framework, as illustrated in Figure 2. Integration should take place within:

- *the natural system*, with its critical importance for resource availability and quality, and
- *the human system*, which fundamentally determines the resource use, waste production and pollution of the resource, and which must also set the development priorities and control associated infrastructure.

Integration within the natural system concerns for instance, the integration of land and water management, surface and groundwater, upstream and downstream water related interests recognising the full hydrologic cycle. Integration within the human system relates in particular to cross-sectoral integration of policies and strategies and integration of all relevant stakeholders in the decision-making processes. To secure the co-ordination of water management efforts across water related sectors, and throughout entire water basins, formal mechanisms and means of co-operation and information exchange need to be established. Such co-ordination mechanisms should be created at the highest political level and put in place in all relevant levels of water management.

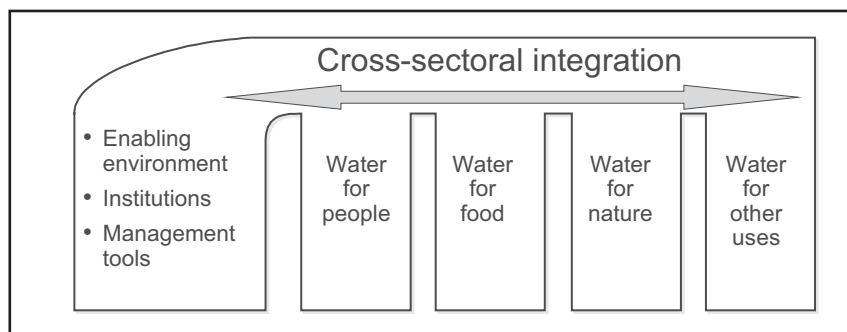


Figure 2. IWRM and its relation to sub-sectors

It is equally important that IWRM builds on and provides consistency with current government policies and national or sectoral development plans and/or budgets. It is therefore important to understand the links of IWRM with plans and processes at the national and sectoral level and take these into account in the planning process.

The water basin is the basic planning and management unit

Water follows its own boundaries – the river or lake basin, or the ground-water aquifer – and analyses and discussions of water allocation between user and ecosystem need make sense only when addressed at the basin level. Hence, a lot of the “integration” in IWRM takes place at the basin scale, whether at the local catchment or aquifer, or at the multi-state or multi-country river basin. Many countries have realised this and organised their water management at the basin level years ago (the Spanish river basin management structure recently celebrated its 75th anniversary; and the first Mekong River Basin structures were established in the 1950s). Several countries are now setting up various river and lake basin management structures. With the EU Water Framework Directive in Europe basin level management has become law for an entire region.

However, it is important to stress that “integrated river basin management” and “integrated water resources management” are different concepts. Many policy decisions affecting water management – within or between sectors (such as food, health, energy and so on) – can be taken only at the national level, not at the basin level and, within the “water sector,” policy decisions for example, on cost recovery are necessarily taken at the national level. So the two are complementary, strongly interrelated, and both aim at wise water governance.

IWRM is a rolling process

Uganda and Burkina Faso, India, China, Nicaragua and others have already integrated IWRM in their policies and water laws. They are continuing the IWRM process and review the status at regular intervals in order to deal with new or additional priority water resources issues, management and infrastructure requirements.

IWRM is a cyclical process. The IWRM process is illustrated in Figure 3 as the “Integrated Water Resources Management Cycle.” The cycle starts with the planning processes and continues into implementation of the frameworks and

action plans and monitoring of progress. At this stage – or indeed at any point in time – it can be decided whether new reform needs have appeared or whether the reform process has led to the expected improvements. If the latter is not the case then the cycle must be repeated. IWRM “plans” as foreseen in the WSSD target for 2005, are just one step in the process of improved water resources management.

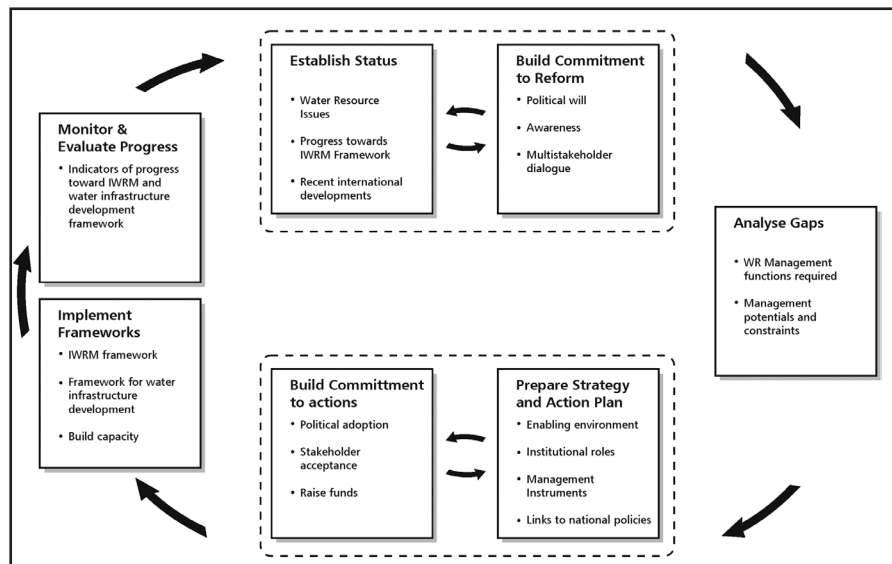


Figure 3. The Integrated Water Resources Management Cycle

Feedback loops in the process cycle

Active stakeholder involvement is key to providing feedback on any stage in the management of the process cycle and, in the light of new developments, may result in certain steps of the process having to be repeated. However, two feedback loops are particularly important. The first deals with prioritisation of the water resources issues and the status of the present water resources management system, including taking stock of those recent international developments of importance for the national water resources management process. Priority setting and commitment to reform requires political will, awareness to be raised and an active stakeholder dialogue. The cycle illustrates that before priorities for reform can be agreed there may be need for reviews, extended dialogue, bringing in new stakeholders and so on. The second feedback loop deals with the process of preparing the strategy and, in particular, the “plan.” This requires extensive policy consultations and stakeholder involvement. It illustrates that the final action plans need political agreements on the highest political level, acceptance from the main stakeholders and raising the necessary financial means from domestic and international resources.

IWRM can contribute to poverty reduction

Poverty Reduction Strategy Papers (PRSP) describe a country's macroeconomic, structural and social policies and programmes to promote growth and reduce poverty, as well as external financing needs. PRSP's are prepared by governments through a participatory process involving civil society and development partners. Since 1999, PRSP's have been developed in approximately 80 developing countries. PRSP's are the basis for lending by the World Bank and International Monetary Fund (IMF) and influence international donors' choice on which sectors to support. It is important that governments realise the significance of water and the management of water resources (IWRM) for poverty reduction and gender equality and prioritise water sector interventions in PRSP's⁹ where relevant.

IWRM is integrally linked to international processes underway

At the international level there are a number of important processes that the IWRM 2005 plan should link up with and where the IWRM approaches can provide significant input. Some of these processes concern:

- *CSD-12 process.* The Commission on Sustainable Development (CSD) decided at its eleventh session in 2003 that CSD-12 in 2004 and CSD-13 in 2005 should focus on water, sanitation and human settlements. CSD-12 will provide an opportunity to review the progress of implementation and good practices for implementation, while CSD-13 will focus on new policies. CSD-12 can therefore, review the progress towards the IWRM 2005 goal and discuss good IWRM practices. Assessments on IWRM are underway as a part of the CSD-12 process. The findings and conclusions from the CSD-12 meeting will be published by the UN CSD secretariat.¹⁰
- *World Water Forum process* with the three important dialogues on "Water and Governance," "Water, Food and Environment" and "Water and Climate." Governance, increasing needs for water for food production and challenges to improve efficiency through "more crop per drop," environmental flows to sustain ecosystem function and the effect of climate change on the hydrological cycle are all important elements to relate to in the IWRM planning process. The dialogues between researchers and water practitioners established in the World Water Forum process provide essential new information on best practices and solutions. Information from the dialogues has been presented at 3rd World Water Forum and will continue to be developed in the future World Water Forum process – initially the 4th World Water

⁹ Ref. 10: World Bank - Poverty Reduction Strategy Papers.

¹⁰ Ref. 2 Commission on Sustainable Development.

¹¹ Ref. 9: 3rd World Water Forum - Kyoto 2003.

Forum in Mexico in March 2006 – and through the dialogues.¹¹

- *The Panel on Financing Water Infrastructure* presented its report and recommendations at the 3rd World Water Forum in 2003. The Panel emphasised the importance of water in poverty reduction and development and the need to at least double the resources presently spent in the water sector to realise the Millennium Development Goals. The Panel concluded further, that governments should look for all available sources for funding to fill this gap. Governments should give higher priority to the water sector and the water sector's need for reform as a condition for generating and absorbing increased funds. In addition governments should fully accept that sustainable financing will require improved cost-recovery and increased management capacity. The Panel also had a number of recommendations for donors, international lending institutions, private sector participation, and community and grass-root involvement. The "Financing for All" process will be continued under the auspices of GWP and World Water Council.

IWRM PLANS – HOW?

The IWRM process: Start with the national context and urgent issues – be pragmatic



he generalised process leading towards Integrated Water Resources Management is envisaged to comprise the steps of the process cycle shown in Figure 3 above. The number of steps and the depth of the work will depend fully on the individual country's present stage of progress towards IWRM and the goals set. Some of the components may already be quite advanced, others hardly started. Although it is logical that creation of policies and institutional frameworks should precede the use of specific management instruments, in reality the steps are not fully sequential. Parts of the later steps may be started before policies, laws and organisations are in place. Institutional change, requiring new legislation, is typically a time consuming activity. It is often better to start somewhere, working as far as possible with existing arrangements, rather than waiting for the more wide-ranging reform measures to be enacted. The short case studies in Annex 4 illustrate how different countries actually undertook the steps and what worked in the context of their particular national circumstances. Many more IWRM cases are found in the GWP's IWRM ToolBox along with "good practices" and references.¹²

¹² Ref. 11: IWRM ToolBox.

SUMMARY OF IWRM PROCESS (SEE ALSO FIGURE 3)

Establish Status and Overall Goals. The starting point of the IWRM process is the burning and urgent water resources issue seen in the national context. Chart the progress towards a management framework within which issues can be addressed and agreed and overall goals be achieved. Do international agreements with the neighbours present potentials/constraints? Pragmatism is key.

Build Commitment to Reform Process. The political will is a prerequisite and building or consolidating a multi-stakeholder dialogue comes high on the list of priority actions. The dialogue need to be based on knowledge about the subject matter and awareness raising is one of the tools to establish this knowledge and the participation of the broader population.

Analyse Gaps. Given the present policy and legislation, the institutional situation, the capabilities and the overall goals, gaps in the IWRM framework can be analysed in the light of the management functions required by the urgent issues.

Prepare Strategy and Action Plan. The strategy and action plan will map the road towards completion of the framework for water resources management and development and related infrastructural measures. A portfolio of actions will be among the outputs, which will be set in the perspective of other national and international planning processes.

Build Commitment to Actions. Adoption of the action plan at highest political levels is key to any progress and full stakeholder acceptance is essential for implementation. Committing finance is another prerequisite for taking planned actions to implementation on the ground.

Implement Frameworks. Taking plans into reality poses huge challenges. The enabling environment, the institutional roles and the management instruments have to be implemented. Changes have to be made in present structures and building of capacity and capability also taking into account infrastructure development need to take place.

Monitor and Evaluate Progress. Progress monitoring and evaluation of the process inputs and outcomes serve to adjust the course of action and motivate those driving the processes. Choosing proper descriptive indicators is essential to the value of the monitoring.

Experience shows that the implementation processes are facilitated by:

- strong political will, often motivated by a need to address burning and high profile issues
- a clear distribution of roles and responsibilities among the stakeholders
- highly motivated drivers maintaining commitment throughout the process
- exchange of knowledge and experience between countries at various stages of the process
- setting clear milestones for the achievement
- monitoring and evaluation of progress, performance and impact.

Establish goals and agendas

Identify Integrated Water Resources Management and development issues

Priority issues in terms of significant and urgent water resources problems to be dealt with are part of the “need” based approach to building a management framework. The issues can conveniently be divided into livelihood/demand issues (e.g., meeting the increasing and often conflicting demands of different economic sectors) and resource-impact issues (e.g., impact of climate variability and changes, impact from human activities and land management).

Livelihood/demand issues

In many countries the challenges to be dealt with comprise issues such as securing access to safe drinking water and basic sanitation for the presently unserved; the challenge of rapidly growing urban water demands and wastewater discharges; securing water for increased food production; reducing vulnerability to floods and droughts (including considerations of possible impact of climate change); reducing risk to human health and production from diseases and hazards; meeting increased demands from irrigated agriculture, industry and other economic activities; protecting the resource base and vital ecosystems; and the prioritisation among these often conflicting demands. Providing equal opportunity for men and women in dealing with these issues is an important challenge.

Resource-impact issues

The above livelihood/demand issues need to be balanced based on an understanding of the resource base and the threats to this resource base: the impact of human activities and land management causing for instance deforestation, erosion and siltation, pollution and ecosystem deterioration, reduction of wetland areas, declining groundwater tables and salt water intrusion, the impact of natural phenomena such as climate variability and change, desertification, floods and droughts.

Chart existing progress towards a national IWRM framework, and set overall goals

Several important elements of a framework will already be in existence. It is however important to establish the starting point and identify gaps and areas needing review and strengthening in relation to agreed goals and objectives. The elements to consider will in particular include:

- *The enabling environment.* National water resources and water services policies, laws and regulations, as well as financing and incentive structures.

- *The institutional framework* in terms of transboundary organisations, national agencies, basin organisations, regulatory bodies, local authorities, private sector and civil society groups.
- *Management instruments* in terms of water resources and demand assessments, economic instruments and water resources information and monitoring.
- *National plans*, such as relevant Sector Reform Plans, Infrastructure Plans, National Environmental Action Plans, Water Action Plans and so on.
- *Endorsed international agreements* and processes.
- *Fora for cross-sectoral and multi-stakeholder dialogues*, such as partnerships at national and/or local level, active NGO's or other civil society organisations through which dialogues take place.
- *Capacity building and empowerment* activities to enable stakeholders at all levels, both men and women, and in relevant structures (public, private, civil society) to play their role.

Elements such as those above need to be amalgamated to form a basis for further progress towards the IWRM and water services framework.

Recent international developments

A national IWRM process should utilise and build on the political momentum generated by international processes like the Millennium Development Project, CSD-12, the World Water Forum and the ideas contained in the Financing Water Infrastructure report. These processes are briefly described above.

Build Commitment to reform process

Build political will and raise awareness about water management issues and solutions

Conscious actions to build consensus, also at the highest political level must be built into the process from the beginning, and be checked and enhanced at every stage. As the IWRM concept challenges existing ways of doing things, building awareness and understanding of the needs for change among the highest political decision-makers, managers, practitioners and other stakeholders is needed at this stage. Identification of national "champions" that will take responsibility for driving the planning process, and securing adequate human and financial resources is important at this stage.

Facilitate multi-stakeholder dialogue

Consolidation/development of partnerships is necessary to develop strong multi-stakeholder groups and fora that can play a role of interactive participation in the IWRM planning process, including frameworks for water service delivery and associated water infrastructure. The crosscutting nature of IWRM has to be reflected in the composition of the fora. The role and interests of the actors should be established through a stakeholder analysis. As awareness raising and multi-stakeholder involvement is critical to the success of IWRM planning processes, it will be necessary to put in place a communication strategy on the IWRM reform process and its results. The availability of timely and relevant information to all concerned is an essential precondition.

Analyse Gaps

Identify required Water Resources Development and Management Functions

A number of functions are required to deal with the prioritised water resources management and development issues. These functions would typically include:

- *Resource management functions* such as formulation of policies for international co-operation on transboundary waters, water allocation and wastewater discharge permits, water resources assessments, monitoring, enforcement, mediation, training and information.
- *Water services and infrastructure management* functions including such items as frameworks for water services with the associated policies, laws, regulations and enforcement. Outlines of infrastructural requirements with associated social and environmental impacts, as well as water use efficiency standards are also included.
- *Financing functions and mechanisms* including items such as national and local capital markets and mechanisms like grants and internal sources, user payments, subsidies, loans and equity capital.

Identify management potentials and constraints

Identification of potentials and constraints should take place at all levels: central (including transboundary issues), local and community levels based on the functions required to handle the main water resources management and development issues.

THAILAND'S IMPORTANT EXPERIENCE ON THE IWRM PLANNING PROCESS – REF. ANNEX 4.1

A road map or action programme to put IWRM into practice takes time. There is a need for a group of key players who can act as catalysts for change, and who should be motivated and influential enough to obtain government endorsement of the road map/action programme. GWP and its regional partnership played a significant catalytic role in this case. The critical factor is to be consistent in pursuing the IWRM objectives and have patience in pursuing the same. IWRM can be implemented or institutionalised through a step-by-step process. There is no fixed procedure on which should start first as long as the key elements under the three basic IWRM components are gradually put into place. In the preparation of river basin plans, the application of the IWRM process is far more important than having a plan per se. Public awareness and multi-stakeholder participation is a must to ensure acceptance by the public and the various government levels.

Prepare Strategy and Action Plan

Prepare the IWRM 2005 “plan”

The milestone in the process where actions to improve the IWRM framework have been identified will be documented in an IWRM 2005 Plan. Actions will address the gaps in the framework and aim at reform of *policies, legislation and financing frameworks, institutional roles and capacities, and enhanced management instruments* required to deal with the priority water resources issues. The links to other *national plans and international processes* are additional important components.

Prepare plans for water services and infrastructure development framework

These plans include, among others, guidelines for balancing public/private sector involvement, amending regulatory frameworks accordingly and identifying financing and tariff options.

Prepare portfolio of implementation projects/actions

The planning process has to be accompanied by parallel implementation in order to become useful. Implementation of needed projects/actions can be commenced at an early stage for the most obvious high priority projects/actions and “hot spots.” Also, some of the required changes in institutional structures, capacity building, improved knowledge and a capability to use the appropriate management instruments may well start implementation in paral-

led with the planning process, as well as changes following from water services reforms and envisaged infrastructural requirements. Proposals and project documents ready for consideration by funding agencies and donors can be prepared and a portfolio of projects/actions built up as part of the process.

THE IWRM PROCESS IN BURKINA FASO PROVIDES IMPORTANT LESSONS LEARNED – REF ANNEX 4.2

In Burkina Faso, water policy reforms were initiated in 1995 and new policies were adopted in 1998. A more comprehensive IWRM process was started in 1999 with a four-year time perspective and with international financial and technical assistance.

The lessons learned from the process included, among others:

- political will at highest levels should be established at an early stage
- the process should be firmly anchored in the responsible ministry and ministry staff should be involved in all activities
- the planning process should be supported by a communication strategy for involvement of stakeholders, technical and financial partners
- institutional reform possibilities should be considered during the process
- IWRM principles need to be studied and adapted to the national context
- form stakeholder groups to discuss the plan and allow enough time to get their comment and endorsement
- decision makers at many levels should participate in the consultative processes
- prioritisation of issues need to be based on rational methodologies
- proposals and approaches need pilot testing in a basin where economic, social and environmental stakes are high.

Build commitment to actions

Ensure adoption at the highest political level

An IWRM plan will typically suggest actions that go well beyond the responsibility of a particular ministry or department, and it may propose changes of central government institutions. It is essential therefore, that the plan is adopted at the level where inter-ministerial co-ordination takes place, and ultimately – as in the case of national water legislation – with the Parliament.

A "NATURE ELEMENT" OF THE IWRM PROCESS REQUIRED A
COMPREHENSIVE MULTI-STAKEHOLDER DIALOGUE IN POLAND –
REF. ANNEX 4.3

In Poland, work on identification of nature protection sites (NATURA 2000) has been carried out on the basis of the environmental criteria set up in EU directives. It became clear that NATURA 2000 sites located in the river valleys impose new challenges for water resources management (especially flood management). The Ministry of Environment agreed to undertake a joint project for the solution of these problems and the project named "Establishing water management rules in the river valleys declared as NATURA 2000 sites" was initiated. The main objective of the project is to facilitate the process of consensus building between nature protection professionals and water managers. To achieve this objective, three working groups were established for Water Resources, Nature Protection and Consensus Building. The work should be completed in early 2004. Results will be used by the Ministry of Environment, on one hand to establish guidelines for co-ordinated management of NATURA 2000 sites, and on the other to improve the process of the implementation of the EU Water Framework Directive that stresses the importance of nature protection. The project demonstrates that multi-stakeholder dialogue is a basic requirement for the solution of problems involving different perspectives and priorities. The process of developing the consensus is difficult to build, but usually this is the most important product of a study.

Stakeholder acceptance

Dialogue and acceptance by stakeholders for the IWRM planning process is crucial. Social acceptance is mostly generated through the acceptance of local differences and the fact that actions can be seen to lead to real improvements for people, both men and women. Important for the acceptance of actions is that political feasibility, ideology and cultural aspects have been incorporated into the management strategies and plans. A strategy on how messages on necessary changes are communicated is therefore, very important for the process.

Identify financing

There are important linkages between implementation of the water resources management strategy and plan and the government's annual budget cycle. Thus it is important that water resources management become institutionalised in domestic budget preparation and policy and programme formulation practices.

Implement Frameworks

IWRM framework

The implementation of an IWRM framework can start at different points depending on the national preferences and priorities. Implementation activities can take place in parallel or sequentially and the duration of the activities is often dependent on the dynamics of “champions” driving the processes.

THE MURRAY-DARLING BASIN COMMISSION PROVIDES THE STRONG DRIVE AND FACILITATION NEEDED FOR THE IWRM PROCESSES IN THIS LARGE BASIN IN AUSTRALIA – REF ANNEX 4.4

The Murray-Darling Basin Commission (MDBC), a river basin management organisation, uses IWRM as a foundation guiding principle and practice. The broad range of activities relevant to river basin management illustrates the planning processes and demonstrates that IWRM application is universal but context dependent. The case demonstrates that:

- The Commission has been successful in winning and maintaining community interest, involvement and support because of the participatory approach used with its Community Advisory Committee.
- The strategies for action, programmes and frameworks have benefited from intergovernmental approaches to IWRM (including realignment of State Government policies according to the MDBC strategies), coupled with bottom-up actions (programmes and projects implemented through the Murray-Darling 2001 funding programme and the Federal Government’s Natural Heritage Trust, in which State governments match Federal funds dollar for dollar to provide financial support to local action programmes developed within the framework of regional/catchment plans, using cost-sharing arrangements between community organisations, private sector organisations and governments).
- The challenge has been in this process to specify who pays for what: how an equitable cost-sharing arrangement can be determined, implemented and maintained.

Reform often means considerable changes in established structures and roles and is likely to meet friction. In a situation where a centralised water resources management has taken place, decentralisation of responsibilities to river basin agencies, or other structures at the basin level, will mean a shift in power and there will also be implications for employment and positions. Implementation of strategies for reallocation of water in order to maximise benefits to the society will inevitably meet with resistance from individuals who will see a change in what they perceive as their rights.

Framework for water infrastructure development

The IWRM framework is developed to manage resources in such a way that economic and social welfare is improved. The framework also becomes a framework for water infrastructure development being a factor in welfare. The IWRM framework may for instance, prioritise water for domestic water supply, set “game plans” for water user groups and include regulations that prevents pollution of sources. Water supply infrastructure will thus be developed in ways that are consistent with the IWRM framework and there will be a close link and a sliding transition between the IWRM framework and the more specific, technical water supply acts.

Framework for water efficiency

The language “IWRM and water efficiency plans by 2005” of the WSSD stresses the importance of improved water efficiency as part of national water strategies, and thus as part of the IWRM plans. Throughout the world large amounts of water are wasted in poorly constructed or managed irrigation systems, through leakage in urban water systems, in wasteful industrial practices and so on. Water efficiency must be addressed at all levels in water management, through both technical means (as for example, in drip irrigation and dry sewerage) and improved management practices. An equally important aspect of water efficiency relates to the amounts of water abstracted, treated and provided for wasteful or unnecessary uses. Before simply “providing more water” (often implying construction of new and expensive infrastructure) the first approach should be to address the demand side, that is, move from “supply management” towards “demand management.”

“WATER EFFICIENCY PLANS”**HIGHLIGHTING DEMAND AND SUPPLY MANAGEMENT ARE IMPORTANT ELEMENTS OF AN IWRM PROCESS**

Water efficiency in the broad sense ranges from use efficiency, recycling and reuse to supply efficiency. Use efficiency is often achieved through changes in the behaviour of the users for instance through information campaigns, economic incentives and technological means (e.g., metering and retrofitting), generally referred to as “demand management.” Recycling and reuse are options requiring fairly advanced technologies and the capacity to manage these. Supply efficiency is relating to the functioning of capture and distribution infrastructure. The most significant area of supply efficiency improvements in a global perspective is irrigation efficiency, where large amounts of water may be saved. Water efficiency considerations reflect a major shift in approach to water resources management away from traditional supply development (construction of physical infrastructure to capture more water for direct use) to demand management through changes in use, conservation and supply. Water efficiency can help reduce wasteful use of the resource, which represent an opportunity lost as well as use of water without an economic or social purpose. Efficiency measures can often obviate or delay the need for physical infrastructure investments, providing real gain to society and is part of an IWRM framework that looks across sectors and makes proper links between policy instruments and impacts. The IWRM ToolBox, ref. /11/, provides some entry points to more knowledge on water efficiency.

Capacity building

High priority areas for capacity development within existing institutions are identified at an early stage and initial capacity building can be undertaken. Once the IWRM planning process is well underway, then further capacity and human resource development can be undertaken.

UGANDA HAS REACHED FAR INTO IMPLEMENTATION OF THE IWRM FRAMEWORK – REF ANNEX 4.5

An IWRM process was started in Uganda in 1993, at a time when civil strife had caused the breakdown of all water monitoring and information systems, when institutional capacity was at a record low and when water policy and legislation was rudimentary. Ten years later, the IWRM framework has been built up to a degree where Uganda has asserted its role in the Nile Basin, where a consistent policy and legislation provides the guidance and rules for priorities of water use, allocation and wastewater discharge and where stakeholder participation and decentralisation provides local level involvement. The identified programme activities in the Water Action Plan 1994 has provided the road map for this development which has resulted, among others, in empowerment both at local, regional and international level.

Monitor and evaluate progress

Indicators for IWRM

Indicators are necessary tools for elucidating developments, identifying challenges and monitoring implementation and results. Indicators contain information in a less detailed and often more aggregated form than data and statistics. IWRM indicators should be able to illustrate improvements in the water and sanitation situation for people (impact indicators), progress in the process towards IWRM (process indicators) and the function of the IWRM management system (performance indicators). An IWRM indicator system should be developed and adopted as part of the IWRM process, and each system should reflect the actual situation in a given country.

There is a need for globally coordinated universal indicators to be used for worldwide joint assessments. In addition, IWRM indicator systems will comprise more detailed indicators tailor-made to the country context. Examples of indicators for implementation are given in the following list:

- *Impact indicators on water resources availability and trends.* Demand and development trends for major uses; demand-livelihood challenges; threats to water resources from pollution, challenges for water resources management; user conflicts and competition for water.
- *Process indicators of where a country is in the IWRM process.* Awareness about IWRM and political will to support the process; framework for stakeholder participation, water resources management issues prioritised; roles and functions within water resources management identified and defined; management potentials and constraints identified; stage of development of IWRM framework.

- *Performance indicators on how the IWRM framework works.* National policies – water goals, use, protection and conservation; integration of water concerns into national policies and sector policies; legislative framework for policies and goals; financing and incentive structures; organisations set-up – forms and functions; management capacity.

IWRM PROCESSES ALSO TAKE PLACE AT THE REGIONAL LEVEL – CENTRAL AMERICA – REF ANNEX 4.6

The seven countries of Central America realised that the challenges posed by the regional economic integration process, the transboundary water issues, the increasing pollution especially in relation to urban areas and the flood disasters all required improved and integrated water resources management. Conflicts have affected the region in the past 30 years and only after the peace agreements in the late 90s came a basis for prioritising environmental and water issues. In the period from 1997 Action Plan for the Integrated Management of Water Resources in the Central American Isthmus (PACADI-RH) was set in motion in order to create public awareness on IWRM, develop regional structures to facilitate consensus on water issues and to promote regional action on IWRM whenever regional activities could add value to national efforts. The lessons learned about critical factors for success were that adequate and often fairly long time should be allowed for the consultative processes, and that the institutional anchoring and ownership is of paramount importance. In this case the process was anchored in the water group of the System for Central American Integration (SICA), an intergovernmental organisation for regional co-operation in Central America.

Repeat the IWRM cycle at regular intervals

A number of countries have brought the IWRM process into their water laws and governance systems including the demand to review the process at regular intervals. This enables them to deal with new or additional priority water resources issues, management needs and infrastructure requirements as they arise.

No country ever “completes” the cycle – it is an ongoing learning and development process in which countries find themselves at different stages. According to a recent survey by the Global Water Partnership of approximately 100 developing countries and countries in transition, around 20% would be considered “well advanced” in national IWRM planning, 50% had hardly begun and would require external support, and 30% were “in between.”¹³

¹³ Survey dated November 2003 by GWP, Ref. 12.

References

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- 2 Commission on Sustainable Development (www.un.org/esa/sustdev/csd/csd12).
- 3 West African Regional Action Plan on IWRM, July 2001.
- 4 Central American Action Plan - Plan de Acción para la Gestión Integrada de los Recursos Hídricos del Istmo Centroamericano.
- 5 European Union Water Framework Directive (www.europa.eu.int/comm/environment/water/water-framework/index_en.html).
- 6 Nile Basin Initiative (www.nilebasin.org).
- 7 Mekong Basin Development Plan (www.mrcmekong.org).
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- 9 3rd World Water Forum - Kyoto 2003 (www.world.water-forum3.com).
- 10 Poverty Reduction Strategy Papers, World Bank (www.worldbank.org).
- 11 IWRM ToolBox, Global Water Partnership (www.gwpforum.org).
- 12 Preliminary survey of progress towards IWRM, Global Water Partnership, November 2003 (www.gwpforum.org).

Annexes

Annex 1 – Water and the Millennium Development Goals

Annex 2 – WSSD Plan of Implementation, Para 26

Annex 3 – Content of GWP's IWRM ToolBox

Annex 4 – Case studies

4.1 Thailand

4.2 Burkina Faso

4.3 Poland

4.4 Australia

4.5 Uganda

4.6 Central America

Annex 5 – List of acronyms

Annex 1

Water and the Millennium Development Goals¹⁴

Millennium Development Goal by 2015	Contribution of Improved Water Resources Management and Access to Water Supply and Sanitation
<p>Poverty To halve the proportion of the world's people whose income is less than \$1/day</p>	<ul style="list-style-type: none"> • Water is a factor of production in agriculture, industry and other economic activities • Investments in water infrastructure/services as a catalyst for local/regional development • Reduced vulnerability to water-related hazards reduces risks in investments and production • Reduced ecosystems degradation makes livelihood systems of the poor more secure • Improved health increases productive capacities, reduces burden on those who care for the sick
<p>Hunger To halve the proportion of the world's people who suffer from hunger</p>	<ul style="list-style-type: none"> • Water is a direct input to irrigation for expanded grain production • Reliable water for subsistence agriculture, home gardens, livestock, tree crops • Sustainable production of fish, tree crops and other foods gathered in common property resources (also affects poverty when such goods are sold for income) • Reduced urban hunger due to cheaper food prices • Healthy people are better able to absorb the nutrients in food than those suffering from water-related diseases, particularly worms
<p>Primary Education To ensure that children everywhere complete a full course of primary schooling</p>	<ul style="list-style-type: none"> • Improved school attendance from improved health and reduced water-carrying burdens, especially for girls • Having separate sanitation facilities for girls and boys in schools increases girls' school attendance
<p>Gender Equality To ensure girls and boys have equal access to primary and secondary education</p>	<ul style="list-style-type: none"> • Community-based organizations for water management improve social capital of women • Reduced time, health, and care-giving burdens from improved water services give women more time for productive endeavours, adult education, empowerment activities, leisure • Water sources and sanitation facilities closer to home put women and girls at less risk for sexual harassment and assault while gathering water and searching for privacy • Higher rates of child survival are a precursor to the demographic transition toward lower fertility rates; having fewer children reduces women's reproductive responsibilities
<p>Child Mortality To reduce by two-thirds the death rate for children under five</p>	<ul style="list-style-type: none"> • Improved quantities and quality of domestic water and sanitation reduce main morbidity and mortality factor for young children • Improved nutrition and food security reduces susceptibility to diseases
<p>Maternal Mortality To reduce by three-fourths the rate of maternal mortality</p>	<ul style="list-style-type: none"> • Improved health and reduced labour burdens from water portage reduce mortality risks • Improved health and nutrition reduce susceptibility to anaemia and other conditions that affect maternal mortality • Sufficient quantities of clean water for washing pre-and-post birth cut down on life-threatening infections • Higher rates of child survival are a precursor to the demographic transition toward lower fertility rates, and fewer pregnancies per woman reduce maternal mortality
<p>Major Disease To halve, halt and begun to reverse the spread of HIV, malaria, other major diseases</p>	<ul style="list-style-type: none"> • Better water management reduces mosquito habitats • Better water management reduces incidence of a range of other water-borne diseases • Improved health and nutrition reduce susceptibility to/severity of HIV/AIDS and other major diseases
<p>Environmental sustainability To stop the unsustainable exploitation of natural resources and to halve the proportion of people who are unable to reach or afford safe drinking water</p>	<ul style="list-style-type: none"> • Improved water management, including pollution control and water conservation is a key factor in maintaining ecosystems integrity • Development of integrated management within river basins creates situation where sustainable ecosystems management is possible and upstream-downstream effects are mitigated • Biodiversity conservation, combating desertification furthered by sound water management

¹⁴ This information was drawn from the Interim Report of the Millennium Project Task Force on Water and Sanitation.

Annex 2
Paragraph 26 of the WSSD Plan of Implementation
Johannesburg, September 2002

26. Develop integrated water resources management and water efficiency plans by 2005, with support to developing countries, through actions at all levels to:

- (a) Develop and implement national/regional strategies, plans and programmes with regard to integrated river basin, watershed and groundwater management, and introduce measures to improve the efficiency of water infrastructure to reduce losses and increase recycling of water;
- (b) Employ the full range of policy instruments, including regulation, monitoring, voluntary measures, market and information-based tools, land-use management and cost recovery of water services, without cost recovery objectives becoming a barrier to access to safe water by poor people, and adopt an integrated water basin approach;
- (c) Improve the efficient use of water resources and promote their allocation among competing uses in a way that gives priority to the satisfaction of basic human needs and balances requirement of preserving or restoring ecosystems and their functions, in particular in fragile environments, with human domestic, industrial and agriculture needs, including safeguarding the drinking water quality;
- (d) Develop programmes for mitigating the effects of extreme water-related events;
- (e) Support the diffusion of technology and capacity-building for non-conventional water resources and conservation technologies, to developing countries and regions facing water scarcity conditions or subject to drought and desertification, through technical and financial support and capacity-building;
- (f) Support wherever appropriate, efforts and programmes for energy-efficient, sustainable and cost-effective desalination of seawater, water recycling and water harvesting from coastal fogs in developing countries, through such measures as technological, technical and financial assistance and other modalities;
- (g) Facilitate the establishment of public-private partnerships and other forms of partnership that give priority to the needs of the poor, within stable and transparent national regulatory frameworks provided by the Governments, while respecting local conditions, involving all concerned stakeholders, and monitoring the performance and improving accountability of public institutions and private companies.

Annex 3

Content of the IWRM ToolBox prepared by GWP offering detailed guidance on IWRM

A THE ENABLING ENVIRONMENT

A1 Policies – setting goals for water use, protection and conservation.

This part of the framework deals with water policies and their development. Policy development gives an opportunity for setting national objectives for managing water resources and water service delivery within a framework of overall development goals.

A2 Legislative framework – the rules to follow to achieve policies and goals.

The required water laws covers ownership of water, permits to use (or pollute) it, the transferability of those permits, and customary entitlements. It underpins regulatory norms for e.g. conservation, protection, and priorities.

A3 Financing and incentive structures – allocating financial resources to meet water needs.

The financing needs of the water sector are huge, water projects tend to be indivisible and capital-intensive, and many countries have major backlogs in developing water infrastructure. Financing approaches and incentives are required to achieve the development goals.

B INSTITUTIONAL ROLES

B1 Creating an organisational framework – forms and functions.

Starting from the concept of reform of institutions for better water governance, the practitioner needs to create the required organisations and institutions – from transboundary to basin level, and from regulatory bodies, to local authorities, civil society organisations and partnerships.

B2 Institutional capacity building – developing human resources.

Upgrading the skills and understanding of decision-makers, water managers and professionals will take place in all sectors, and capacity building for regulatory bodies and for empowerment of civil society groups will need to be undertaken.

C MANAGEMENT INSTRUMENTS

C1 Water resources assessment – understanding resources and needs.

A set of tools are assembled to assist water resources assessment, starting with the collection of hydrological, physiographic, demographic and socio-economic data, through to setting up systems for routine data assembly and reporting.

C2 Plans for IWRM – combining development options, resource use and human interaction.

River, aquifer and lake basin planning entail a comprehensive assembly and modelling of data from all relevant domains. The planning process must recognise social, economic and environmental needs using a range of assessment tools.

C3 Demand management – using water more efficiently.

Demand management involves the balancing of supply and demand focusing on the better use of existing water withdrawals or reducing excessive use rather than developing new supplies.

C4 Social change instruments – encouraging a water-oriented civil society.

Information is a powerful tool for changing behaviour in the water world, through school curricula, university courses on water and professional and mid-career training. Transparency, product labelling and access to information are other key instruments.

C5 Conflict resolution – managing disputes, ensuring sharing of water.

Conflict management has a separate focus as conflict is endemic in the management of water in many places and resolution models must be at hand.

C6 Regulatory instruments – allocation and water use limits.

Regulation in this context covers water quality, service provision, land use and water resource protection. Regulations are key for implementing plans and policies and can fruitfully be combined with economic instruments.

C7 Economic instruments – using value and prices for efficiency and equity.

Economic tools involve the use of prices and other market-based measures to provide incentives to all water users to use water carefully, efficiently and avoid pollution.

C8 Information management and exchange – improving knowledge for better water management.

Data sharing methods and technologies increase stakeholder access to information stored in public domain data banks and effectively complement more traditional methods of public information.

Annex 4.1

Putting IWRM into practice – a case from the national IWRM planning process in Thailand

<p>Case title Thailand – The National IWRM planning process.</p>
<p>Subtitle Thailand realised at an early stage that there is no blueprint for IWRM for each and every country. Rather, the IWRM process has to be adjusted according to the socio-economic, political and cultural conditions in each particular country. An IWRM plan can therefore, be interpreted as preparing a road map or action programme to put IWRM into practice but not in the sense that it is a physical plan in itself.</p>
<p>Description In Thailand, the IWRM process was started by building consensus among the various stakeholders, including government officials, academia, private sector, water user groups and NGOs. The main objective was to put the key elements (enabling environment, institutional roles and management instruments) into the national water resource management system thus institutionalising IWRM. A draft National Water Vision was endorsed by Government (July 2000) and translated into a National Water Policy with full stakeholder participation. River Basin Committees (RBCs) became a key ingredient in the IWRM implementation. Fourteen out of the planned twenty-five RBCs have been established today. Capacity building in IWRM and basin management included standard activities to strengthen the RBCs. At the same time the organisational structure and role of the various subcommittees and working groups have evolved such that grassroots participation in the RBCs is now an integral part of the system. A comprehensive budgetary procedure was established aiming to strengthen the role of RBCs in developing river basin plans. These plans aim to put IWRM in practice at basin level. Two basin plans have been completed so far. An institutional reform resulted in consolidation of water-related agencies and establishment of Ministry of Natural Resources and Environment in October 2002. The Ministry was made responsible for regulatory functions for national water resources management. Drafting of a national water law is currently being undertaken including a review of the various fragmented water-related laws. A “framework water law” is under preparation through an open and participatory process seeking the views of the stakeholders before a final version is drafted and presented to government for endorsement.</p>
<p>Lessons learned A road map or action programme to put IWRM into practice takes time. There is a need for a group of key players who can act as catalysts for changes, and who should be motivated and influential enough to obtain government endorsement of the road map/action programme. GWP and its regional partnership played a significant catalytic role in this case. The critical factor is to be consistent in pursuing the IWRM objectives and have patience in pursuing the same. IWRM can be implemented or institutionalised through a step-by-step process. There is no fixed procedure as to which should start first as long as the key elements under the three basic IWRM components are gradually put into place. In the preparation of river basin plans, the application of the IWRM process is far more important than having a plan per se. Public awareness and multi-stakeholder participation is a must to ensure acceptance by the public and the various government levels.</p>
<p>Importance of case for demonstration of IWRM The case of Thailand demonstrates that IWRM is a dynamic process, which has a seamless transition from conceptualisation to planning and implementation and that it has no fixed endpoint. It also demonstrates that IWRM is actually a process for better management of water resources and encompasses governance, stakeholder participation and balancing development with resource sustainability.</p>
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Annex 4.2

A national IWRM planning process – a case from Burkina Faso

<p>Case title Burkina Faso – Action Plan for Integrated Water Resources Management (PAGIRE).</p>
<p>Subtitle Confronted with serious water resources problems constraining development, Burkina Faso decided to prepare an action plan setting out the future framework for integrated water resources management and identifying the specific actions and means for their implementation.</p>
<p>Description The elaboration of an Action Plan for IWRM in Burkina Faso reflects the country's determination to address its severe water resources management issues as well as its will to take part in the global commitments made in international conferences in Dublin and Rio. The Action Plan has as its overall objective to contribute to the implementation of IWRM adapted to the national context and the national policies, at the same time reflecting the principles of sustainable and ecologically viable rational water resources management. The underlying broad strategies of the planning process was to: implement an integrated approach rather than a sectoral approach; support the disengagement of the Government from water production and services and management of irrigation schemes; propose an institutional and human resource plan for the public administration of water resources; develop an efficient and stable management framework at appropriate ministerial levels and propose a staged restructuring process. The process has been marked by certain characteristics contributing to its success: it has been conducted as a structured process with several key steps – assessing the status, adaptation of the legal framework to IWRM principles, identification of key water resources management issues and development of an action plan. Further characteristics of the process were: the involvement of a highly multidisciplinary team; sensitisation and information of stakeholders throughout the process; the inclusion of the Action Plan framework in the law and its elaboration and implementation in decrees; support from a consultative, multi-stakeholder process and actions that clearly address the key water resources management issues. A permanent secretariat has been created to implement the decisions of the management committee of the Action Plan. It has the mission to define operational strategies for implementation, elaborate annual activity programmes and to mobilise and manage financial resources necessary to implement the PAGIRE.</p> <p>Lessons learned</p> <ul style="list-style-type: none"> • political will at highest levels should be established at an early stage • the process should be firmly anchored in the responsible ministry and ministry staff should be involved in all activities • the planning process should be supported by a communication strategy for involvement of stakeholders, technical and financial partners • institutional reform possibilities should be considered during the process • IWRM principles need to be studied and adapted to the national context • stakeholder groups should be formed to discuss the plan and allowed enough time for comments and endorsement • decision makers at many levels should participate in the consultative processes • prioritisation of issues need to be based on rational methodologies • proposals and approaches need pilot testing in a basin where economic, social and environmental stakes are high. <p>Importance of case for demonstration of IWRM PAGIRE represents a recent (1999 – 2003) case of an IWRM planning process prompted by severe water resources problems, strongly institutionally anchored, with multi-stakeholder involvement and tangible outputs at all milestones in the process. The implementation process has started and continues within specific action areas in stages with 2015 as the horizon.</p>
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Annex 4.3

IWRM and Nature – An element in a national IWRM planning process – a case from Poland

<p>Case title Poland – NATURA 2000 implementation as an example of the IWRM process in an EU accession country.</p>
<p>Subtitle NATURA 2000 comprises a designation of nature sites of EU Community importance based on EU Habitats Directive and the EU Birds Directive. Implementation of the NATURA 2000 programme raises some concerns among water administrations on the future water management principles in river valleys declared as elements of the NATURA 2000 network. In Poland, practically all main river valleys are proposed to be declared as such.</p>
<p>Description In Poland, work on identification of the NATURA 2000 sites has been carried out on the basis of the environmental criteria set up in the two EU directives, 79/409/EEC (so called, “bird directive”) and 92/43/EEC (so called, “habitat directive”). The work has been done mostly by the environmental and nature consultants under the overall guidance of the nature protection administration. Regardless of some consultations with water managers, it became clear that NATURA 2000 sites located in the river valleys impose new challenges for water resources management (especially flood management). The seminar organised in July 2003 jointly by GWP-Poland and WWF-Poland “NATURA 2000 – chance or threat for water management in the river valleys,” resulted in the letter inviting the Ministry of Environment to undertake a joint project for the solution of these problems. A positive response of the Ministry initiated the project named “Establishing water management rules in the river valleys declared as NATURA 2000 sites.” The Steering Committee includes representatives of two departments of the Ministry of Environment (Nature Protection and Water Resources), GWP-Poland and WWF-Poland. All three parties finance work. The main objective of the project is to facilitate the process of consensus building between nature protection professionals and water managers. To achieve this objective three small working groups were established for Water Resources, Nature Protection and Consensus Building. The work should be completed early 2004. Results will be used by the Ministry of Environment to establish guidelines for co-ordinated management of NATURA 2000 sites and to improve the process of the implementation of the EU Water Framework Directive that stresses the importance of nature protection.</p>
<p>Lessons learned The project demonstrates that multi-stakeholder dialogue is a basic requirement for the solution of problems involving different perspectives and priorities. The process of developing the consensus is difficult to build, but usually this is the most important product of a study.</p>
<p>Importance of case for demonstration of IWRM In Poland, the principles of IWRM already have a strong basis in the stipulations of the State Ecological Policy, National Water Law, and Environmental Protection decree. But still, practical implementation of these principles raises several challenges. The case study provides a good illustration of how effective co-operative links can be established between the government and the non-government organisations for the solution of a problem involving, by definition, different perspectives and priorities. The IWRM cycle does not have to always be concerned with the entire river basin. Problem orientation is also fully justified in some cases.</p>
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Annex 4.4

Organising and managing a major basin IWRM process – a case from Australia

Case title

Australia – Operating Integrated Water Resources Management processes in Murray-Darling Basin.

Subtitle

The Murray-Darling Basin Commission (MDBC), a river basin management organisation uses IWRM as a foundational guiding principle and practice. The broad range of activities relevant to river basin management illustrates the planning processes and demonstrates that IWRM application is universal but context dependent.

Description

The Murray-Darling Basin is located in South Eastern Australia. It covers 1,061,469 km², 14% of Australia's total area and comprises a variety of humid and sub-humid to semi-arid environments. The comprehensive Murray-Darling Basin Commission operates under the Murray-Darling Basin Agreement (an interstate ministerial agreement between five State governments each with strong natural resources management governance). The Commission guides the processes in the basin through:

- Natural Resources Management Strategy – which outlines resource management objectives, broad responsibilities for governments, communities, the Murray-Darling Basin Commission and Ministerial Council and the Murray-Darling Basin Community Advisory Committee, and actions necessary to implement the strategy.
- Basin Sustainability Plan – provides the framework for the co-ordination of planning, monitoring, evaluation and reporting of natural resources management in the Murray-Darling Basin.
- Strategic Plans – to guide priority activities towards achieving the long-term objectives of the Basin Sustainability Plan.
- Operational projects for the development of policies and strategies.
- Operational plans for generating and sharing knowledge (information exchange and education) and for on-ground works and measures.

Lessons learned

- The Commission has been successful in winning and maintaining community interest, involvement and support because of the participatory approach used with its Community Advisory Committee.
- The strategies for action, programmes and frameworks have benefited from intergovernmental approaches to IWRM (including realignment of State Government policies according to the MDBC strategies), coupled with bottom-up actions (programmes and projects implemented through the Murray-Darling 2001 funding programme and the Federal Government's Natural Heritage Trust, in which State governments match Federal funds dollar for dollar to provide financial support to local action programmes developed within the framework of regional/catchment plans, using cost-sharing arrangements between community organisations, private sector organisations and governments).
- The challenge has been in this process to specify who pays for what: how an equitable cost-sharing arrangement can be determined, implemented and maintained.
- The MDBC has established cross-border arrangements between the States to share water resources through a water trading scheme and increased water use efficiency.
- The sustainability of the MDBC and its programmes is still dependent on government funding, and will continue to be so.

Importance of case for demonstration of IWRM

- A very large scale interstate IWRM organisation whose lessons in transboundary water resources management experience using negotiation and legislative tools are impressive.
- The majority of the Basin has a sub-humid environment and its work on salinity management, water caps (reduction of further extractions), water quality management strategies (including point source and diffuse source pollutants) sets a good example.

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Annex 4.5

A national IWRM planning process – a case from Uganda

<p>Case title Uganda – National integrated water resources management planning process.</p>
<p>Subtitle An IWRM process was started in Uganda in 1993, at a time when civil strife had caused the breakdown of all water monitoring and information systems, when institutional capacity was at a record low, when water policy and legislation was rudimentary and consequently when water resources management was seriously constrained.</p>
<p>Description The first milestone in the IWRM process was the development of the Water Action Plan (WAP) – the first of its kind following the internationally agreed principles from the UN Conference on Environment and Development in Rio de Janeiro in 1992. The WAP outlined a framework for water resources management based on identification of the key water resources issues set against the background of gaps and constraints in the enabling environment, the institutional roles and the management instruments. The action plan assisted the development of the water resources policy and the legislative framework, defined short term and long-term roles and responsibilities of the involved institutions and assessed their needs for capacities, capabilities and management instruments. Cross-sectoral aspects were dealt with in a committee with representatives from a number of relevant ministries, from districts, from water services providers and from private sector. A number of actions were programmed all aiming at supporting the overall policies and strategies. Among these were the “Strengthening of the Water Resources Monitoring and Assessment Services in Uganda,” the “Water Sector Capacity Building, Water Resources Management” and the “Water Sector Reform Studies” linking water resources management to reform requirements for water services delivery. Over the last ten years the IWRM framework has been built up to a degree where Uganda has asserted its role in the Nile Basin, where a consistent policy and legislation provides the guidance and rules for priorities of water use, allocation and wastewater discharge and where stakeholder participation and decentralisation provides local level involvement. The identified programme activities in the Water Action Plan 1994 has provided the road map for this development which has resulted, among other things, in empowerment both at local, regional and international levels.</p> <p>Lessons learned</p> <ul style="list-style-type: none"> • The key water resources issues are the determinants for development of a management framework. • Classification of issues into livelihood/demand issues and resource-impact issues provides a very useful typology. • A high level inter-ministerial water resources committee is required to deal with cross-sectoral issues and situations of competition for water resources. • An agreed set of coordinated, prioritised actions provides a firm basis for cooperation with funding agencies. • Balancing complexity of management and regulatory systems with human and financial resources is essential. • Though management of water resources is based on basins as the unit, it is not always necessary or feasible to establish river basin agencies in situations of scarce human and financial resources. • Decentralisation of certain water resources management responsibilities will give increased “ownership” at local levels and will also reduce logistic pressures. <p>Importance of case for demonstration of IWRM WAP demonstrated clearly how the four Dublin principles (water as a finite and vulnerable resource, participatory approaches, women’s central role, water as an economic good) could be applied in practice in the development of an integrated water resources management framework. WAP laid the foundation for the further development of the IWRM planning process and implementation has been ongoing in several important areas (allocation and regulation, monitoring, water resources assessment, capacity building and so on)</p>
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Annex 4.6

A regional IWRM process – a case from Central America

Case title

Central America – Action Plan for Integrated Water Resources Management.

Subtitle

Realising the need for joint approaches and cooperation on issues such as management of transboundary water bodies, capacity building, and increasing regional economic integration, the seven countries in Central America agreed to develop a regional action plan for integrated water resources management.

Description

The Central American countries are at different stages in their institutional and capacity building process within the water sector and in the development of their national water management plans. As a result of the conflicts that affected the region in the past 30 years, the allocation of public funds to the sector practically stopped during that period after the significant progress that had been achieved during the 70s. The peace agreements of the late 90s and the on-going modernisation of the states, however, have changed the situation once again, providing a new basis for prioritising environmental and water issues. Thus, all the Central American countries are in a transition phase towards new efforts to strengthen human resources and institutional capacities.

Acknowledging their physical interdependencies (shared river basins) and to share experiences and exploit economy-of-scale effects, the Central American countries decided in 199 to address regional issues by establishing a regional water action plan.

The objectives of the plan were to:

- Create a higher public awareness of the need for IWRM:
- Create a regional structure with capacity to promote IWRM, address shared problems, facilitate regional consensus on water issues, and represent the region in international water related fora:
- Promote regional action on IWRM as a complementary measure to national actions, only where regional action can add value to national initiatives.

One of the main reasons for embarking on a regional IWRM planning process was the increasing pressure of creating regional responses to challenges of a regional nature notably induced by the ongoing regional economic integration process. Criteria and issues taken into consideration in defining the actions of the Plan included: Promotion of the regional integration, poverty reduction, financial sustainability, transparency, legitimacy and participation, subsidiarity, complementarity and economy of scale.

The Central American process focused on public awareness and support to political processes. Much emphasis was devoted to analysing what driving forces, both inside and outside the water sector, could potentially reinforce or threaten regional cooperation on water management. Thirteen actions were defined in support of the three objectives, taking account of the identified driving forces.

Lessons learned

A critical factor for success and for broad regional consensus on the Plan was the recognition of the importance of allowing sufficient time for the consultative process. This extended the planning process more than envisaged but was crucial for ensuring ownership of the Plan. Continuity and follow-up was pursued by appropriate institutionalisation of the Plan, whose implementation was entrusted to the Consultative Water Group established by the System for Central American Integration (SICA), the inter-governmental organism for regional co-operation in Central America. However, this structure, created to promote the implementation of the Action Plan, did not contribute much to achieve the objectives of the Plan because the participating agencies tend to prioritise their own agendas, which are much wider and more diffuse than just achieving IWRM.

Importance of case for demonstration of IWRM:

This case is a rare example of a regional IWRM planning process. It strictly followed the IWRM planning process as illustrated below, except that it did not initiate capacity building within the regional IWRM institution – simply because such institution was not existing at the time of the planning process. It was, however, created as a result of the process.

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Annex 5

List of acronyms

CSD	UN Commission on Sustainable Development
EU	European Union
GDP	Gross Domestic Product
GWP	Global Water Partnership
IWRM	Integrated Water Resources Management
MDBC	Murray-Darling Basin Commission
MDG	UN Millennium Development Goals
NGO	Non Governmental Organisations
PACADIRH	Action Plan for the Integrated Management of Water Resources in the Central American Isthmus
PAGIRE	Action Plan for Integrated Water Resources Management
PRSP	Poverty Reduction Strategy Papers
RBC	River Basin Committees
SICA	System for Central American Integration
TEC	Technical Committee
UN	United Nations
WAP	Water Action Plan
WSSD	World Summit on Sustainable Development