

# GWP in action



2022



Global Water Partnership

The Global Water Partnership (GWP), established in 1996, is an international network open to all organizations involved in water resources management: developed and developing country government institutions, agencies of the United Nations, bilateral and multilateral development banks, professional associations, research institutions, non-governmental organizations, and the private sector. Its mission is to support countries in the sustainable management of their water resources.

Through its network, the GWP fosters integrated water resources management (IWRM). IWRM aims to ensure the coordinated development and management of water, land, and related resources in order to maximize economic and social welfare – without compromising the sustainability of vital environmental systems. The GWP promotes IWRM by facilitating dialogue at global, regional, area, national and local levels to support stakeholders in implementing IWRM.

The GWP network consists of eleven Regional Technical Advisory Committees (RTACs) based in Southern Africa, West Africa, the Mediterranean, Central and Eastern Europe, Central America, South America, Central Asia and the Caucasus, South Asia, Southeast Asia and China. The GWP Secretariat is located in Stockholm, Sweden, and supported by the following resource centers: DHI Water & Environment in Denmark, HR Wallingford in the UK, and the International Water Management Institute (IWMI) in Sri Lanka.

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# Chair Report

The all-important role of government needs to expand, not contract, with the first priority being what governments alone can do: being creators and managers of legal and regulatory frameworks that are transparent, effective, financially sustainable and responsive to the local needs.

What does it take to create effective policy change and to implement better policy and regulation? This is a much easier question to ask than to answer.

The work of the Global Water Partnership (GWP) is dedicated to encouraging the creation of such policy change for freshwater management and, in partnership with all those that use water, to push for the implementation of an approach to water management that integrates all those in the water sector. It is not an easy task.

Large global meetings that set international goals, and make declarations and resolutions are



Margaret Catley-Carlson  
*GWP Chair*

one of the essential mechanisms that those fighting for policy change can use to make governments more aware of their responsibilities, and encourage them to act. The preparatory work for these meetings often provides valuable catalytic actions and opportunities

to review the current status of water policy, and the possibilities for change. They also provide the occasion to exert pressure on all governments toward desirable policy goals – integrated water resources management, more appropriate technological choice, greater community participation, a higher level of water revenues to maintain and extend services.

## LISTENING TO THE POOR

Governments must also be pressed to ensure that the water security needs of the poor are met through the creation of “pro-poor” water policies – policies created through listening to the poor about their priority water needs for their domestic needs, health and livelihoods, and taking these into account in the financial design of the system. All these are themes that have been elaborated within and advanced at recent international meetings – The Hague, Bonn, Johannesburg and, of course, the forthcoming one in Kyoto in 2003.

The World Summit on Sustainable Development in Johannesburg this August and

September is a good example. The Summit declaration spelled out the political recognition of the challenges facing humanity and the importance of protecting and managing natural resources – including water – for economic and social development. Importantly, it called for each water-stressed country to have a water resource strategy in place by 2005, and to halve the proportion of those not served by sanitation by 2015.

The main task always is making governments in each country more responsive to water needs so that they translate these goals into actions on the ground. Effective change on the ground requires stronger, better performing governance arrangements. The all-important role of government needs to expand, not contract, with the first priority being what governments alone can do: being creators and managers of legal and regulatory frameworks that are transparent, effective, financially sustainable and responsive to local needs.

## DECENTRALIZATION AND TRANSPARENCY

Decentralization may be a key to better service. Given the right power and means, local authorities are in an ideal position to provide the required responsiveness and transparency in water management and to increase the participation of women and men, farmer and fisher, young and old, town- and country-dweller in the decision-making processes. Service provision needs to be centered on well-understood, transparent, client-centered goals, whether effected by the non-governmental, the public or the private sectors – or a mix of these.

The GWP is dedicated to forming new partnerships and coalitions where all water users can get together to share experiences and information. With eleven GWP regions – and more in the process of joining us – there are many people doing many things together to address these challenges and make a difference in the way water is managed. In this report we cannot hope to describe all these important activities. Instead, we bring you a selected series of actions being taken by our partners around the world who are working hard to bring water security to their respective regions, countries and local watersheds – people in partnership working for a better water future.

# Overview

The expansion of our partnerships continues to hold center stage in the GWP. Earlier in the year, Central Asia and the Caucasus signed up as a new GWP region and currently, East Africa is in the process of joining the GWP network. Negotiations are well under way with Central Africa, the Caribbean, and the South Pacific regions and we expect them to join the GWP network during 2003. The transition of our existing regional technical committees (RTACs) into active regional water partnerships is gaining momentum and, as you will read on pages 6–12 of this report, more and more country and area water partnerships are emerging. These changes represent a vital stage in the life cycle of the GWP – extending the ownership from a handful of RTAC members in a region to much larger multi-stakeholder groups whose members are undertaking vital activities on integrated water resources management (IWRM) at country and local levels.

## GOOD GOVERNANCE ESSENTIAL

Good water governance is central to the implementation of IWRM and understanding the conditions required to establish good governance forms a large part of what the GWP does. To facilitate this understanding the GWP, in partnership with the United Nations Development Programme (UNDP) and the International Council for Local Environment Initiatives (ICLEI), has established a Dialogue on Effective Water Governance which is bringing stakeholders together to analyze water governance systems (pages 13–17). In the short term, the outcomes of the Dialogue will be fed into the Third World Water Forum in Japan in March 2003. In the longer term, they will be used to strengthen water governance procedures worldwide and bring us closer to our goal of water security.

From inception, the GWP established an Associated Programme (AP) portfolio to assist GWP partners in the regions and countries develop and implement IWRM strategies for the sustainable management of their water resources. In this report, we have focused on two Associated Programmes, river basin organizations and capacity building. As you will read (pages 18–22), the number of river basin organizations in the GWP

regions has continued to grow and new regional networks of river basin organizations have been formed. These networks will contribute to the exchange of information and experience that will support IWRM.

Many decision-makers and water professionals however, still lack the skills and knowledge required to plan and make the necessary changes to institutions and policies. Highlights of several activities being undertaken to address this situa-



Khalid Mohtadullah  
*Executive Secretary*



Torkil Jønch-Clausen  
*Chair, Technical Committee*

tion are described (pages 23–26) including the activities of the recently constituted international capacity building network, Cap-Net.

## THE FIRST YEAR OF THE TOOLBOX

The IWRM ToolBox, launched in December 2001 by The Crown Prince of the Netherlands, Patron of the GWP, has been designed as an information management system on integrated water resources management to help politicians, water professionals and other stakeholders assess their options and decisions based on IWRM approaches. As you will read (pages 27–30), it is being continuously upgraded and Version 2.0 will be unveiled during the Third World Water Forum in Japan.

These chapters provide several highlights of the GWP's work but much, much more is going on in the network than we can possibly report here. Regular features on many of these activities can be found in the global and regional newsletters and websites. The GWP is growing rapidly and with it, the critical mass of people required to make a difference in the way water is managed. We are doing well but the task is not easy. There is still a long way to go and much more remains to be done.

Good water governance is central to the implementation of IWRM and understanding the conditions required to establish good governance forms a large part of what GWP does.

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# Partners: Keeping Water Flowing

**F**rom dry and dusty desert to lush and verdant rain forest, West Africa is a region of great contrasts. At the edge of the Sahara, Tuareg nomads are struggling to maintain their way of life in the face of encroaching desertification. Further south, the desert turns first to savannah, then to forest, although logging and the expansion of agriculture are rapidly eating into the remaining forested areas. Here, rainfall is plentiful but a combination of factors, including deforestation, is contributing to a worrying trend: The upper reaches of rivers, such as the Tano in western Ghana, are drying up more frequently between wet seasons and, when rains return, flash floods are becoming increasingly common, exacerbated by the absence of trees and vegetation that would moderate the waters' flow. Coastal cities such as Accra, Monrovia and Freetown are expanding rapidly and becoming increasingly vulnerable to flooding, leading to loss of life, overflowing sewers and pollution of their water supplies.

Despite its contrasts, West Africa has similar problems to the rest of the world when it comes to water: Demand is increasing while availability and quality are diminishing. A new integrated approach to the management of this scarce resource is needed, requiring the involvement of all water users, not just the powerful few. One of the most important activities of the GWP is to promote "on the ground" water partnerships that support concerted action at the local level by different user groups and decision-makers. The establishment of these Regional, Country and Area Water Partnerships has already led to progress in a number of difficult cases and areas, West Africa being one of the most recent beneficiaries.

## REGIONAL PARTNERSHIP FOR WEST AFRICA

The United Nations human development index reveals that seven out of the ten poorest countries in the world are in West Africa, so it is not surprising that the region has difficulty in providing clean water, sanitation, health care and

education for its people. Water management is complicated by the presence of several large, international river basins. For example, the Niger River basin covers 1.5 million square kilometers and is shared by nine countries (Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger and Nigeria).

A major step forward was taken in October 2001, when the West African heads of state agreed on a regional plan of action for the implementation of integrated water resources management (IWRM). This was followed by the creation of a permanent secretariat and the formal launch of the West Africa Water Partnership (WAWP) in Bamako, Mali, in April 2002.

"Political will is essential for the implementation of IWRM," says Jérôme Thiombiano, IWRM Program Leader in Burkina Faso, one of the countries that is making good progress in water reform through its new country water partnership. "In West Africa, we are lucky to have a favorable environment in which political leaders appreciate the regional nature of water resources. This paved the way for the establishment of the WAWP."

## BURKINA FASO AND BENIN LEAD THE WAY

Landlocked in the Sahel, Burkina Faso is a flat, arid country of bush, scrub and reddish laterite soil. The French named the country Upper Volta after its three major rivers – the Black Volta, the White Volta and the Red Volta. All flow into Lake Volta in Ghana, the world's largest artificial lake. Traditional land use systems are proving inadequate to meet the food and other needs of the country's rapidly increasing human population, and widespread deforestation, slash-and-burn agriculture and overgrazing are causing increased degradation of the resource base, especially in the north. Rain falls only during four or five months of the year and, if current population growth rates continue, the country will experience significant water shortages by 2025. Better soil and water management, to maximize water quantity and maintain its quality, are key issues for the future of both agriculture and human health.



Photo: WORLD BANK

Political will for change has been evolving since the creation of a Ministry for Environment and Water in 1995, while a “Water Policy and Strategies” document, adopted in 1998, established IWRM as the basis for sustaining water supplies for the future. In February 2002, Burkina Faso launched its Country Water Partnership (CWP) with Ouseni Diallo, the chairman of Green Cross Burkina Faso, as Chair. The partnership aims to foster the participation of all stakeholders in sustainable water resources management and to review and reform national water policy.

“We have two main objectives,” says Diallo. “First, to define and adopt strategies of transition to IWRM, through a National Plan of Action. This requires an analysis of current water resources management. The second objective is to acquire the necessary IWRM capacity to be able to implement this plan.” Another important component of the partnership is the formal dialogue that has been launched between Burkina Faso and Ghana (see “Shared Rivers,” pages 18–22).

Benin also suffers from irregular rainfall, and both the quantity and quality of available water are under extreme pressure as the population

increases at over three percent per annum. Benin established a CWP in September 2001.

“Our mission is to promote IWRM in Benin by reinforcing cooperation among members and with non-member national and international organizations with similar objectives,” says Abel Afouda, Professor at the University of Abomey-Calavi and Benin CWP Chair. “Our initial efforts will focus on mobilizing political will for IWRM, promoting strategic alliances and setting up tools to facilitate decision-making.”

One of the major challenges facing Benin, like most other African countries, is implementing the third Dublin Principle (see box) relating to the role of women in water management. While African women are responsible for providing water for their households, they are

“In West Africa, we are lucky to have a favorable environment in which political leaders appreciate the regional nature of water resources.”

#### THE DUBLIN PRINCIPLES

- Consider fresh water as a limited and vulnerable resource indispensable to life and the environment.
- Promote the development and management of water, based on a participative approach involving users, planners and decision-makers at every level.
- Accept that women are at the heart of the water supply, management and conservation process.
- Accept that for all users, sometimes conflicting, water has an economic dimension.



Photo: PRESSENS BILD

Extensive irrigation in order to grow cotton has left the Aral Sea half its former size and given rise to choking dust storms. This large-scale environmental disaster dramatically illustrates the urgent need to develop and implement an integrated approach to water management at the regional level. Eight countries have now agreed to adopt a program of future collaboration.

generally excluded from making decisions on water management. “Changing people’s perceptions and habits is not easy,” adds Afouda. “But we know we have to take these gender considerations into account if we mean what we say about stakeholder participation in the management of water resources.”

WAWP’s program of action is to establish ten country water partnerships in the region by the end of 2003 – a process that is now well under way. Ghana and Nigeria are on track to launch their CWP’s in the second half of 2003, while discussions in Mali, Senegal and Togo are making substantial progress.

#### REGIONAL ACTION IN CENTRAL ASIA

The Aral Sea is Asia’s second largest inland sea and the site of a dramatic conflict in water use stretching back to the 1960s. Only 30 years ago, the sea supported 10,000 fishermen and their families. But extensive irrigation of the surrounding desert in what are now Kazakhstan and Uzbekistan in order to grow cotton led to the abstraction of virtually all the water that used to flow into the Aral from the great Amu Darya and Syr Darya rivers. Consequently, the Aral has become increasingly saline and is drying up. Now the sea is half its former size and all the

fish are gone. Where the water has receded, vast salty wastelands give rise to choking dust storms that are being blamed for the high incidence of throat cancer and eye irritation among local inhabitants. Although cotton contributes to the local economy, the naturally saline desert soil is becoming severely degraded under irrigation, while the over-use of fertilizers and pesticides has severely polluted drinking water supplies.

This large-scale environmental disaster illustrates dramatically the urgent need to develop and implement an integrated approach to water management at the regional level. Since the collapse of the Soviet Union, taking the necessary decisions that will help regenerate the natural resource base has been made even more difficult, since several countries, each with its own institutions and interests, now border the Aral Sea.

“Many of the newly independent states of Central Asia and the Caucasus have adopted new water laws, but these tend to be fragmented and were introduced ten years ago. It is now vital to review water policy and to place more emphasis on IWRM,” says Dr. Vadim Sokolov, Deputy Director of the Scientific Information Center of the Interstate Coordination Water Commission of Central Asia and Chair of the newly formed Regional Water Partnership for Central Asia and the Caucasus. “While essential reforms are taking place in agriculture, insufficient attention is being paid to water-related issues. There is still great potential for conflict between water users upstream and downstream, as we have observed in the Aral Sea.”

Other key challenges faced by the region, according to Sokolov, include renovating its generally degraded infrastructure and managing the transition from central government funding to a market-driven economy.

Therefore, the new regional water partnership’s first priority must be to establish platforms for dialogue. It has already taken an important step towards doing so by organizing a meeting in Almaty, Kazakhstan, at which eight countries (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) agreed to adopt a program of future collaboration. The GWP has helped in the search for funding, and three of the seven planned projects already have finance agreed.

#### SOUTHEAST ASIA: NEW PARTNERSHIPS

Three additional CWP’s were established in 2002 in Southeast Asia: in Indonesia, the Philippines and Vietnam. The Indonesia Water Partnership,



## AREA WATER PARTNERSHIPS

### BANGLADESH

1. Surma
2. Gorai
3. Buriganga
4. Teesta
5. Gomti
6. Moru
7. Rupsha

### INDIA

1. Aurangabad AWP
2. Upper Bhima
3. Tambaraparni AWP
4. Purna AWP
5. Kshipra AWP
6. Upper Godavari
7. Patalganga AWP
8. Sabarmati
9. Royal Seema
10. Netravati
11. Gundalakama
12. Tikahmgarh
13. Dudhi Tawa

### NEPAL

1. Kankai Mai River AWP
2. Rohini AWP
3. Indrawati AWP

### PAKISTAN

1. Indus delta
2. Nara Canal
3. Potohar
4. Dera
5. Sanghar
6. Khyber
7. Badin
8. Chajdoah

### SRI LANKA

1. Maha Oya
2. Malwatu Oya
3. Mahavali
4. Nilwala
5. Ruhuna

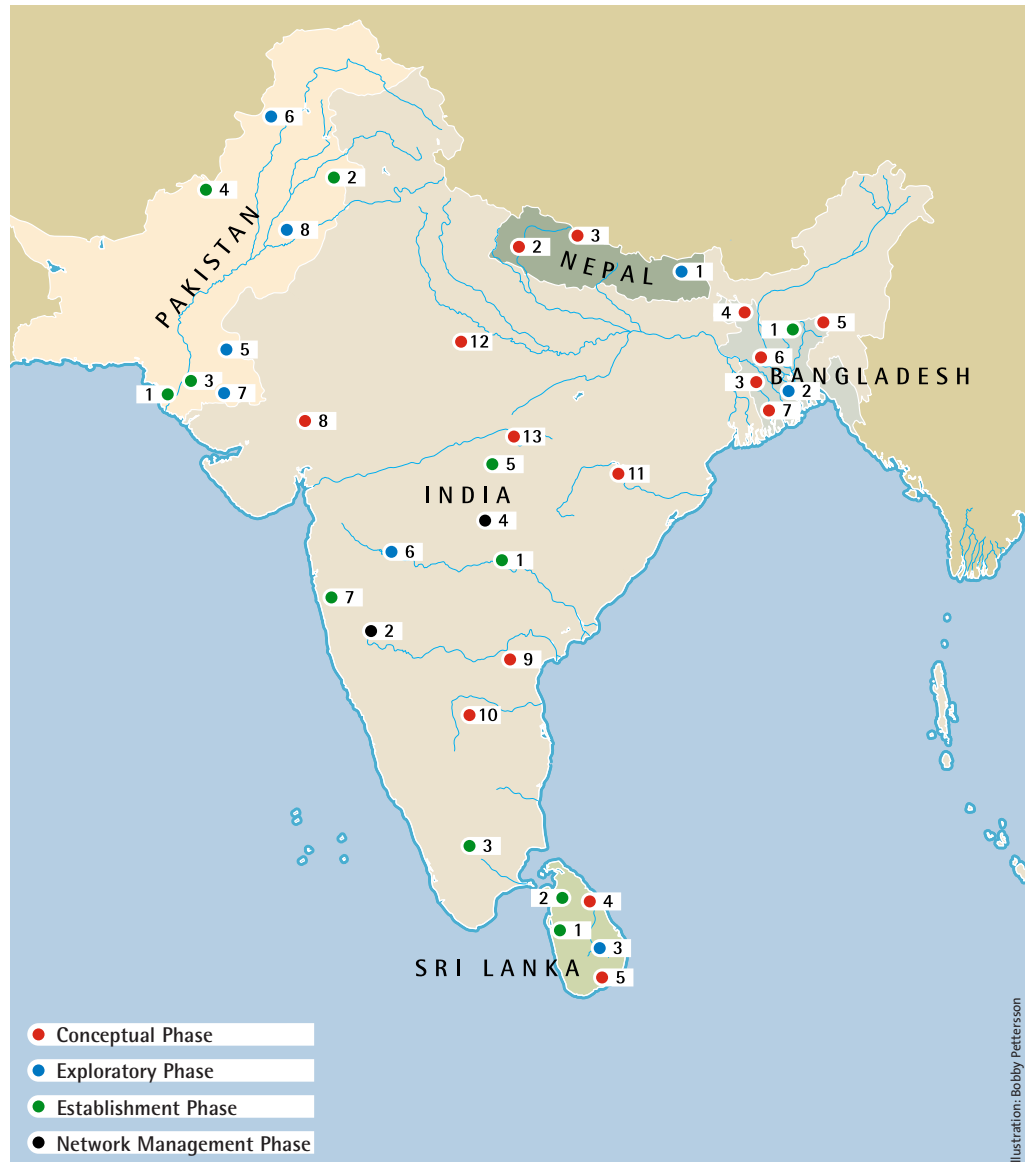


Illustration: Bobby Pettersson

“Kemitraan Air Indonesia,” was formally established in March, and aims to create a forum for interactive discussion, exchange of information and joint problem-solving that will encourage stakeholders to work together to tackle the current problems of water resources development.

Efforts to apply a more integrated approach to the management of water resources in the Philippines date back to the 1976 Water Code, which began the process of reform. However, increasing pressure on the country’s water resources means that a more holistic approach is now an absolute necessity, rather than merely desirable. The Philippine Water Partnership was established in March with four major functions:

- to create a platform for dialogue between stakeholders and a neutral forum for discussion,
- to play a proactive role in promoting IWRM by pushing for recommendations to emerge from the process of dialogue,
- to foster research, communication and the

exchange of information, including models of best practice, research findings and recommendations, and

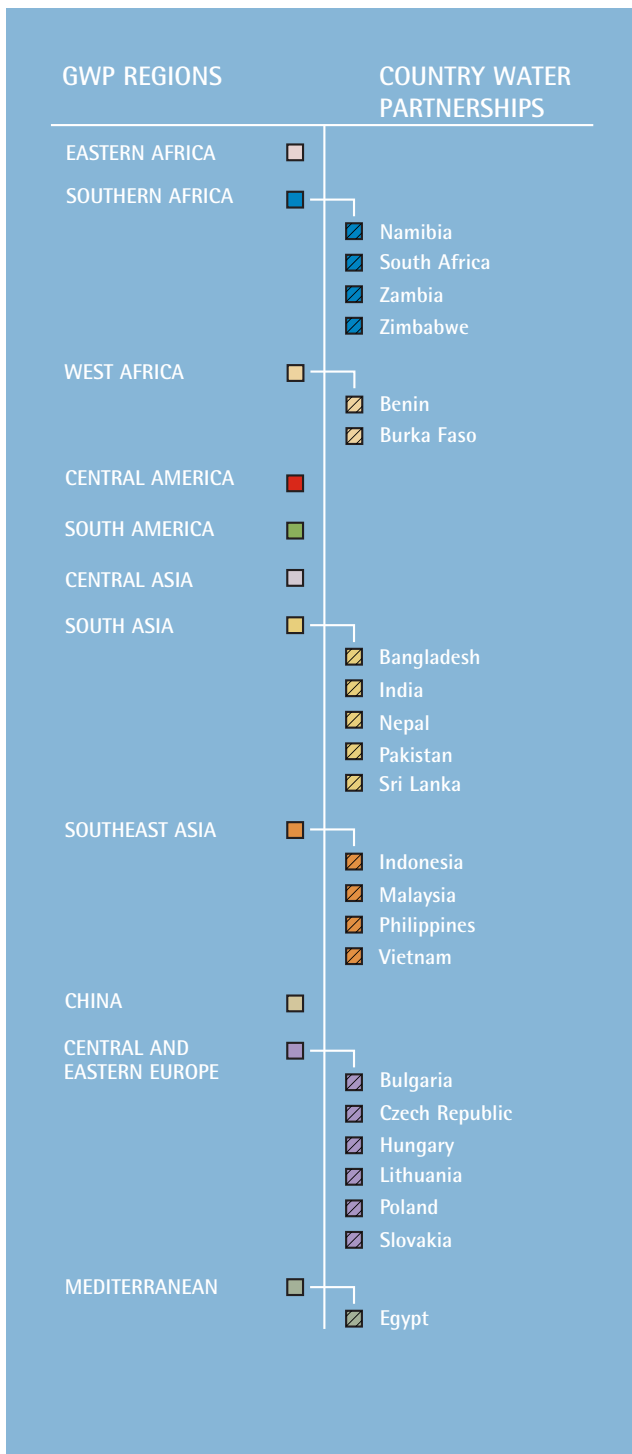
- to pursue an IWRM capacity-building program.

The Vietnam Water Partnership was officially inaugurated in May at a ceremony attended by 123 national and international delegates. The Vice-Minister of Agriculture and Rural Development, who is responsible for water management in Vietnam, was appointed president. The partnership already has 37 members, including representatives from national government, research institutes, NGOs, the private sector and the media.

### MAKING A DIFFERENCE “ON THE GROUND”

The concept of Area Water Partnerships (AWPs) was not originally given high priority by the GWP, since the belief was that local needs would be met through the regional and country partnerships. But in fact the activities and impacts

Area water partnerships form the vital action groups needed to tackle these problems at a local level. The sixth South Asia Technical Advisory Committee (SATAc) meeting in June 2000 acknowledged AWP as the most effective means of taking IWRM to the grassroots level.



Country water partnerships are essential for identifying critical water-stressed areas and sectors.

achieved through these local stakeholder groups have provided the organization with some major success stories. While the GWP's mission is to promote IWRM through global and regional networking, country water partnerships are essential for identifying the critical water-stressed areas and sectors. Area partnerships then form the vital action groups needed to tackle these problems at a local level.

The concept of AWP's has been particularly successful in South Asia (see map on previous page), where the large scale of many river basins makes promoting IWRM at the local level very difficult. The sixth South Asia Technical Advisory Committee (SASTAC) meeting in June 2000 acknowledged AWP's as the most effective means of taking IWRM to the grassroots level. Thirteen

AWP's have now been established in India, eight in Pakistan, five in Sri Lanka, seven in Bangladesh and three in Nepal.

The first to be established was the Indus Delta AWP in Pakistan, formed to tackle the severe environmental problems affecting the country's largest and most heavily used river. Water abstraction upstream for the irrigation of crops has drastically reduced the river flow in the delta area, resulting not only in a loss of estuarine habitat but also in sea water intrusion into the soil, which is affecting crop production up to 200 miles inland. The AWP has helped all stakeholders, including farmers, local government officers, non-government organizations (NGOs) and water engineers, to get together and work out a strategy for maintaining water resources in

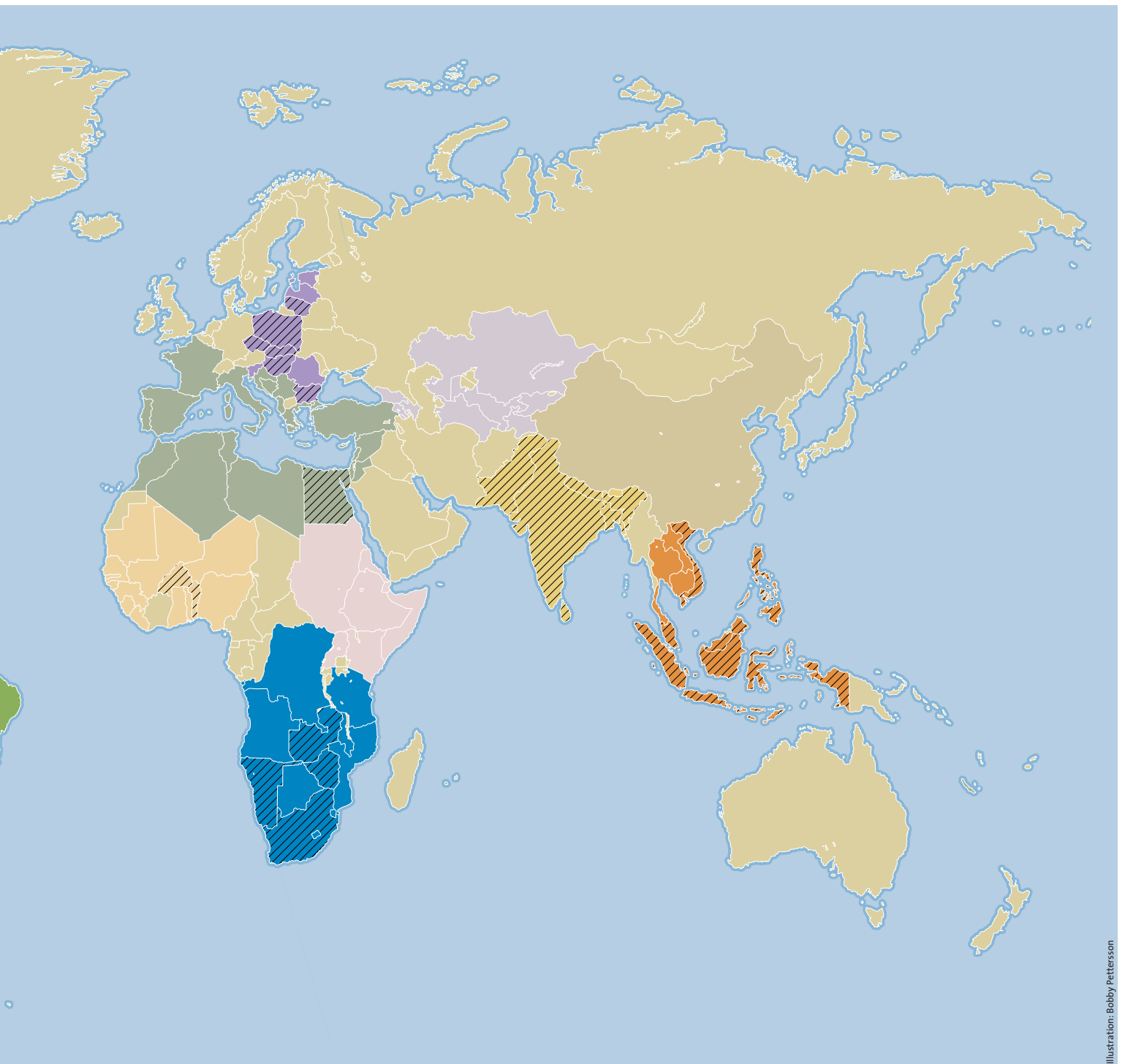


Illustration: Bobby Pettersson

the future. The solutions under consideration include the introduction of salt-tolerant crops in downstream areas, and crops that have a lower water demand upstream. New irrigation techniques that improve water use efficiency are also being explored.

“The key to success is involving the local actors, especially women and young people, be they farmers or local government decision-makers,” says Dr Mosali Sadasiva Reddy, member of SASTAC.

Why has SASTAC placed so much emphasis on AWP? “With such large river basins, we found that we had to scale down our approach to the watershed level,” answers Reddy. “This minimizes political conflict, although even at this level we still have to arbitrate in disputes between individual water users. At present, the

GWP is initiating the partnerships, but we hope that in time key facilitators or NGOs will come forward and suggest new areas where the partnership approach is needed. The partnership structure is starting to be recognized by local government officers and other decision-makers as a platform for dialogue.”

### FOCUS ON WOMEN

When women participate in water management, the projects often perform better, there is less wastage of water, the environment stays cleaner and there is a positive impact on women and children. Yet in many societies women seldom play an active role in the processes of planning, developing and managing water resources. The Women and Water Network (WWN) is a South



Photo: PHOENIX

When women participate in water management, projects often perform better, there is less wastage of water, the environment stays cleaner and there is a positive impact on women and children.

Asian initiative that is designed to redress this imbalance.

“The need for this network arose from the invisibility of women, even though they are the major carriers, users and managers of water at the household level and in agriculture,” explains Simi Kamal, a member of SASTAC and founder director of the Pakistan Water Partnership.

“Women think in an integrated way and so they must be a vital component of IWRM.”

A WWN has been established in each of SASTAC’s six participating countries. The aim is to have a member of the WWN on the steering and/or executive committee of each CWP.

WWNs are also being encouraged at the grassroots level, where they will be closely linked to the AWP. These concepts represent a real social change, breaking with the traditional practice of excluding women that has been so prevalent in South Asia’s past.

“There are now four women on the Pakistan CWP board of directors, and the whole vision has changed,” says Kamal. “Men tend to think of technical solutions like dams, while women tend to think of environmental and sustainability concerns. WWN is a strategic program whose ultimate aim is to put women in key positions

within the GWP family of institutions.”

The SASTAC countries are now preparing reports on women and water. The reports will catalogue the programs that have, or ought to have, a gender component and will raise awareness of the benefits of including women in decision-making structures and processes.

#### TOWARDS EVER GREATER INCLUSIVITY

By forming regional, country and area partnerships, the GWP is creating frameworks for dialogue and the means to build capacity at all levels of society. “Area water partnerships have enlarged the scope of our activities greatly,” says Khalid Mohtadullah, GWP Executive Secretary. “As well as working at the top to influence policy, we are now working at the grassroots level to implement change and create the pressure for more change.

“There is no limit to the number of stakeholders that can have a voice. Indeed, all stakeholders must think, and speak, on all water-related issues. The GWP now has over 600 member institutions and 11 active regions. By the end of 2003 we hope to add Central Africa, the Caribbean and the South Pacific to make it fourteen. That’s what I call progress!”

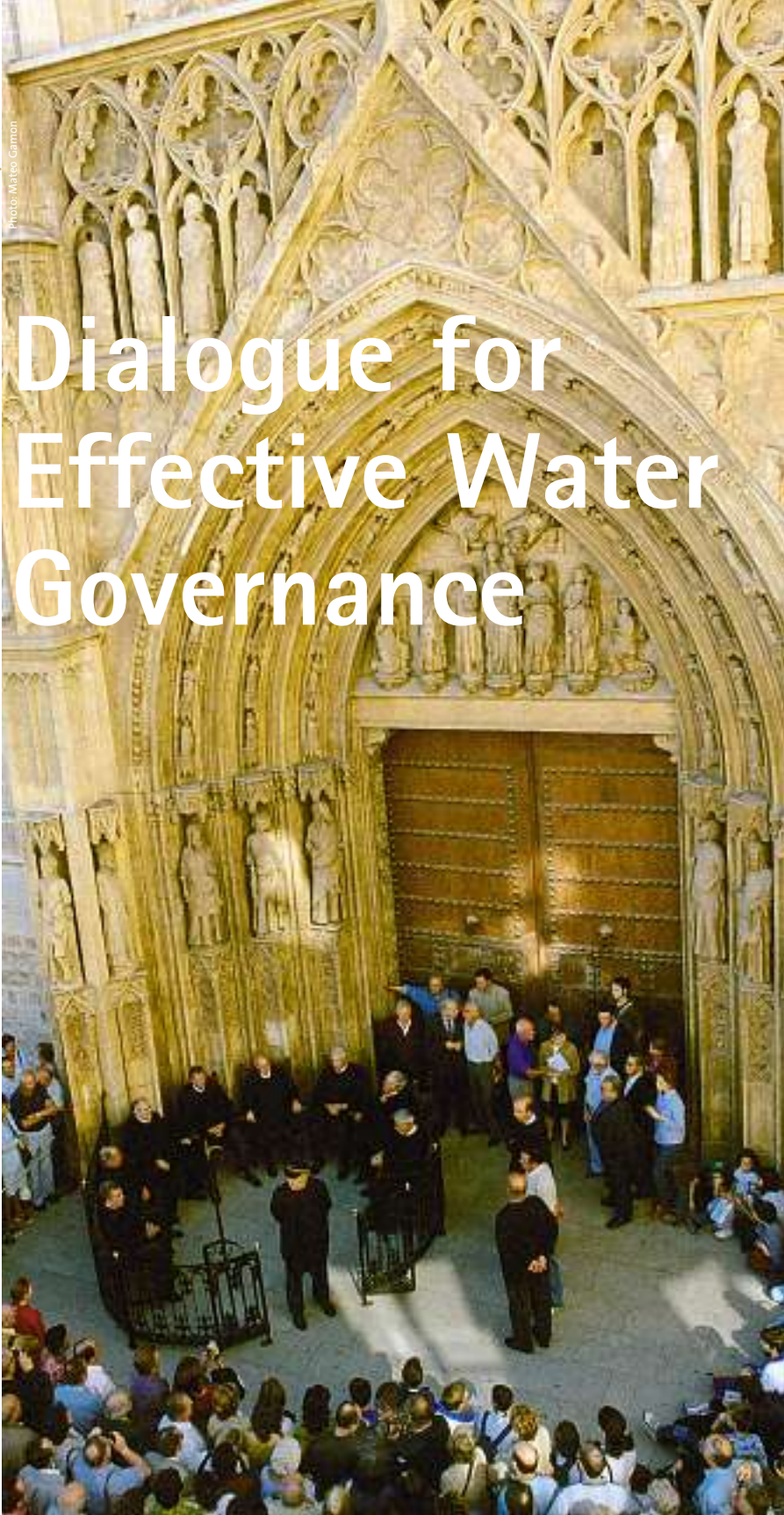


Photo: Mateo Gamon

# Dialogue for Effective Water Governance

**M**anuel Rodrigues grows a good selection of vegetables on his farm near Valencia in Spain. Like his father, grandfather and great-grandfather before him, he relies on the area's shared irrigation system to support his crops during the hot, dry Mediterranean summer.

"There are, inevitably, arguments between neighboring farmers over irrigation water," says Rodrigues, "especially in late summer if water supplies are scarce just when the vegetables need to be made ready for market. Without El Tribunal de las Aguas we could be in trouble!"

Rodrigues is referring to the Valencia Water Court, where farmers have been meeting every Thursday, almost without interruption, for the past 1,000 years to air their irrigation disputes. Founded in the tenth century, this longstanding example of effective local governance of water resources has been maintained by a participatory process in which a panel of eight judges, all farmers, is elected by their peers. Justice is dispensed on the spot, keeping the irrigation system working and ensuring the water is shared fairly among users.

## TECHNOLOGY NOT ENOUGH

Disputes over water have occurred from time immemorial. But the water crisis we face today is on an unprecedented scale. By 2025, it is estimated that around two billion people will live in water-stressed countries or regions. Thus the potential for conflict can only increase. The solutions to current and future crises will not be found in new technological advances or supply-orientated approaches. New and strengthened institutions that govern the allocation and sharing of water are crucial to success. But who should participate in such institutions?

"Governments play an important role in the management of water resources," explains Alan Hall, a member of the GWP task force on water governance. "But they cannot operate in isolation. They need to involve all users of water in the decision-making process."

Establishing this "enabling environment" can be complex. It means creating the right policies and legislation to foster good management and appropriate allocation among competing users. And it also means building adequate capacity and accountability within regulatory and management institutions to ensure they can implement these policies.

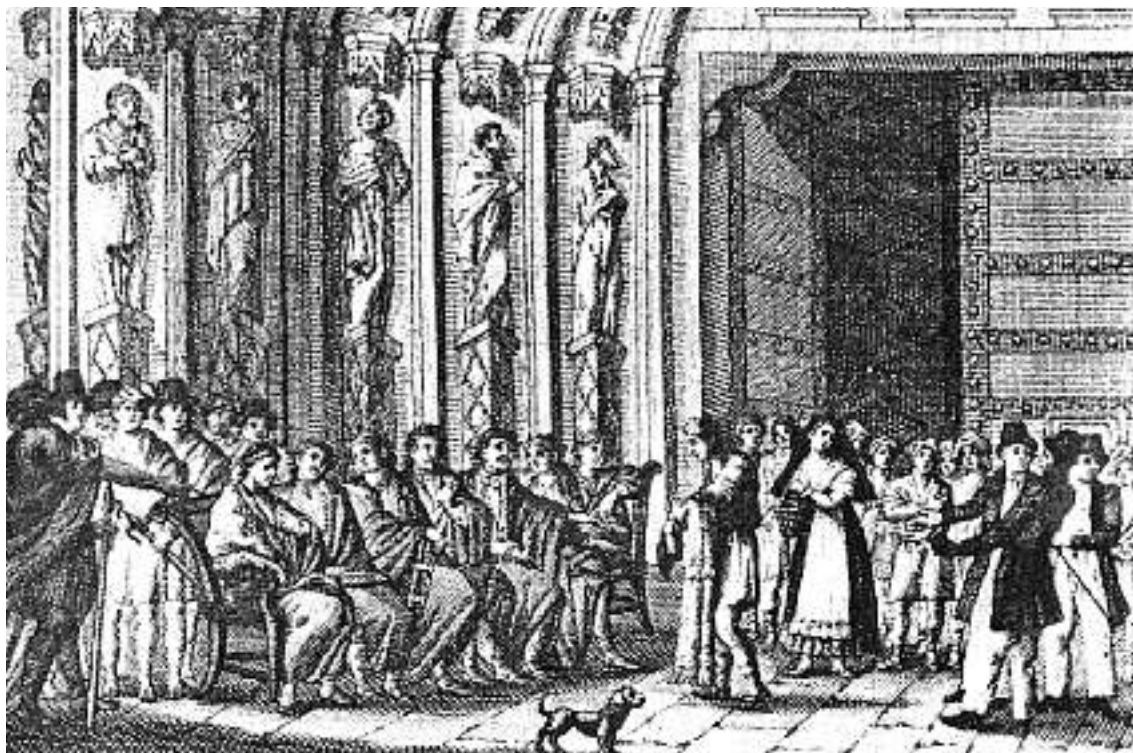
"The key to effective water governance and successful implementation of IWRM lies in getting

the political process and institutional arrangements right," adds Hall. "Only when water resources are managed in ways responsive to social and economic needs, and to the long-term sustainability of the water resource, will the goal of water security be achieved. And that is the aim of the Dialogue: to find out how to get the enabling environment and institutional arrangements right."

## A DIALOGUE FOR CHANGE

The Dialogue on Effective Water Governance, a GWP initiative to put water governance issues on

**A millenium of good governance: Farmers have been meeting at the Valencia Water Court every Thursday for almost 1,000 years to air their irrigation disputes.**



Past and present: The Water Court in Valencia, Spain, in 1831....

the political agenda, enables stakeholders to examine the political processes involved in managing water effectively and to analyze existing water governance systems, such as the Water Court in Valencia. The GWP coordinates the Dialogue through its existing structures and in cooperation with two major partners: the United Nations Development Program (UNDP) and the International Council for Local Environmental Initiatives (ICLEI). So far, the partners have successfully raised

awareness of the issues of water and governance, especially since these issues were highlighted at the second World Water Forum in 2000. As a result, several other organizations, notably the European Commission, the Inter-American Development Bank and the World Conservation Union (IUCN), joined the Dialogue in 2002. The Dialogue adds the necessary political dimension

to the GWP's focus on IWRM and as such will be vital in promoting its adoption.

#### GETTING DECISION-MAKERS TOGETHER

Stakeholder meetings and political roundtables to analyze existing water governance systems at the regional, national and local levels have been held throughout 2002, focusing on questions such as:

- Is there a synergy between governance systems and arrangements for managing water resources?
- Will proposed legal instruments encourage stakeholder participation in decision-making?
- Who should participate in a governance system, how should they be involved, and at what stages in the water allocation process?

At the African Ministerial Dialogue held in Accra, Ghana, in June 2002, ten ministers and senior officials from four West African countries met to discuss issues such as financing and cost recovery, private-sector participation, payment for water, and ownership and control of water resources. They noted a growing realization that subsidizing the water sector is no longer sustainable and that, in future, urban water users will have to pay for their supplies. They advocated tariff increases to improve cost recovery and a shift from exclusive government provision to more participation by the private sector.

This last point gave rise to considerable debate. While greater private-sector involvement has the potential to improve service provision and efficiency, there is often strong opposition from consumers. Extensive public awareness and education

#### WATER GOVERNANCE AND THE DIALOGUE

Water governance refers to the range of political, social, economic and administrative systems that are put in place to regulate the development and management of water resources and the provision of water services at different levels of society. Governance systems have important implications for the management of water resources at all administrative levels and their resolution is a prerequisite for the successful implementation of IWRM. The GWP Dialogue on Effective Water Governance aims to:

- facilitate communication between politicians and other decision-makers, water managers and users in an effort to address water governance issues,
- highlight good practices and lessons learned in implementing IWRM and use case studies to illustrate progress in improving water governance, and
- demonstrate IWRM as a practical process by using the IWRM ToolBox.



campaigns are needed to illustrate the benefits, as well as tight regulation by a government watchdog agency to ensure that private operators do not merely perpetuate public-sector inefficiencies at the same time as raising prices to the public.

The ministers recommended that the GWP help resolve these issues by facilitating an annual discussion on private-sector participation in Africa's water supply sectors. One way forward could be to involve women more in decision-making on governance issues, as they tend to put a higher value on water and sanitation than do men and they are more inclined to favor private-sector participation as a route to improvement.

At present, the improvement of water supplies in rural areas is funded largely by governments and by donors. The ministers recognize that this needs to change, with greater reliance on private-sector investment. However, raising money is problematic as there is widespread opposition to water charging and a general lack of cash to pay bills. African ministers therefore need to develop new approaches that address poverty concerns by enhancing the capacity of local people to do things for themselves. Several suggestions were made, including the promotion of year-round farming through water harvesting and better use of wet-season runoff to recharge groundwater supplies.

#### POLICY REFORM IN SOUTHERN AFRICA

Southern Africa is well on the way to developing and implementing a set of policy reforms that should promote IWRM. The GWP is helping to create better understanding, while the Water

Sector of the Southern Africa Development Community (SADC) is playing an important regional coordinating role. Working together, the GWP and the SADC have been able to build on existing national initiatives to encourage water policy reform in Malawi, Mozambique, South Africa, Zambia and Zimbabwe.

"Several countries have taken advantage of recent changes in their political systems to launch the reform process," says Tabeth Matiza-Chiuta of GWP Southern Africa. "For example, the change of regime in South Africa and the end of the civil war in Mozambique have enabled a wider group of stakeholders to become involved in decision-making, and administrative systems have been re-designed to take a more holistic view of water management."

The 1991 Water Law in Mozambique set the scene for major changes in the country's water sector. Water management is now more decentralized, with five regional authorities having responsibility for approving projects in their areas, setting urban water fees, operating dams and issuing flood warnings. A new regional authority will also be created for the Zambezi river basin, and this will be linked to the SADC Zambezi River Basin Commission, ensuring a transboundary approach to water management. The 1991 Water Law has promoted greater involvement of the private sector and better acceptance of the economic value of water among users. Further progress was made in 1995 with the adoption of a National Water Policy for Mozambique. This defines the strategy to be followed by the water sector, setting specific targets for water supplies

...still meets in the same place to resolve disputes.

and ensuring better integration of water resources management across sectors.

The reform process in Malawi and Zambia also began several years ago, and policies are now being revised to reflect IWRM issues. Malawi produced its first comprehensive water strategy

document in 1994, which sets the objective of providing clean drinking water for all. In 2000 the document was revised to take greater account of the IWRM approach, to clarify the roles of different stakeholders and to spell out the institutional arrangements for directing water resources management and water service delivery.

Zambia's reform process dates back to 1993, when the first attempts were made to introduce policies that would ensure more sustainable development of the country's water resources. Since then, water supply and sanitation services have been partially commercialized, with the establishment of local authority-owned private companies to operate services in urban areas, where consumption-based tariffs have also been introduced. There has also been increased emphasis on

IWRM at high level in the relevant ministries. In 2001, institutional and legislative reforms were launched under the Water Resources Action Program, which seeks to establish a comprehensive framework for promoting the sustainable use, development and management of water resources nationwide.

"The reforms on the water supply side have achieved much in terms of setting up a very clear legislative and institutional framework," says Imasiku Nyambe, Professor of Geology at the University of Zambia. "The regions where the commercial water management companies have been formed have seen a halt in further deterioration of services. However, many challenges remain, notably the lack of adequate financial resources for much needed new infrastructure.

"Decision-makers are now listening more and dictating less," concludes Matiza-Chiuta. "This success is based on a deliberate strategy to build

on the existing SADC network, taking advantage of regional cooperation to widen the scope of water reforms."

### LEGAL REFORM IN CENTRAL AMERICA

Encouraging progress is also being made in Central America, where six countries (Belize, Costa Rica, El Salvador, Guatemala, Nicaragua and Honduras) are working on the modernization of the legal and institutional water framework. In 2001, the GWP Central America Technical Advisory Committee (CATAC) identified and analyzed the main problems impeding the introduction of IWRM in the region.

"We identified an overall lack of effective water policy," says Maureen Ballestero, CATAC Chair. "Some of our countries have no legal framework, and where it does exist it is largely obsolete. Water administration is highly fragmented, with many overlaps and gaps, while users participate little in the management process." The CATAC team is using the Governance Dialogue as a vehicle for solving these problems and ensuring that IWRM issues are taken into account in the reform process.

A new government took office in Costa Rica in 2002, creating an ideal opportunity for policy reform. Indeed, water issues were high on the agenda during the election campaign. To capitalize on this opportunity, GWP Central America organized a national meeting between different stakeholders and recently appointed high-level decision-makers, including the Minister for the Environment, senior legislators and the president of the national water supply institution. The purpose was to prepare the way for the introduction of three new bills to change current water legislation, which has been in place for over 60 years.

"The meeting was highly symbolic," says Ballestero. "Costa Rica's national debate on new laws and procedures has begun with public participation as part of the process."

A second high-level meeting with similar participants (also organized by the GWP) focused on the environmental aspects of water management. It too raised the level of both public awareness and the political commitment for change. Costa Rica's new law will hopefully come into force by May 2003 and will create a National Water Authority, bringing all aspects of water governance, hitherto fragmented, into the mandate of a single institution. "We are now in the strange position of having to slow down the process," Ballestero explains. "There is so much enthusiasm from politicians that they want to race ahead – but we need to



Photo: Jose Antonio Sicilia Parra/Agencia

The bailiff of Valencia's Water Court, Francisco Roca Ortiz,





Photo: Jose Antonio Sicilia Panecque

make sure the process is properly planned.”

In Guatemala, the GWP is supporting a grass route effort, the “Mesa Nacional del Agua,” as a place for dialogue among public and private stakeholders. This initiative is facilitated by national NGOs (Fundación Solar, FLASCO and CALAS). Elisa Colom, the GWP CATAC Governance Coordinator, is working with the national team for the Water Law and the Public Services for Water and Sanitation proposals.

“One of the benefits of partnerships of this kind is that stakeholders, legislators and decision-makers can learn from each other,” says Colom. “In a move facilitated by the GWP, the Guatemalan technical commission has planned to visit South Africa to learn from their colleagues in the water and forestry departments and to see how a similar governance system has been developed.”

Guatemalan CATAC members have disseminated information on IWRM through the Mesa del Agua meetings and workshops, and persuaded their government to include IWRM in the social agenda policy reforms – broadening the country’s approach from one focused primarily on health and sanitation to one covering all IWRM issues.

### A LONG-TERM PROCESS

The modest success stories reported here have taken a considerable amount of time and effort to achieve. “The process of policy reform cannot be hurried,” says Ballestero. “Effective gover-

nance must be participatory and create a sense of ownership amongst stakeholders. This is why, in Central America, we are trying hard to balance the need to get results quickly with the desire to make lasting and well thought-out policies.”

In addition, success in one country cannot automatically be replicated in another – every situation is different. What can be accomplished relatively quickly in a democratic system may take much longer elsewhere. “The key is to look and learn,” adds Ballestero, “and this is where the GWP comes into its own.”

Through creating a platform for dialogue and a vehicle for sharing experiences and information, the GWP helps decision-makers find support and inspiration for their own situations. Indeed, ministers in several Central American countries have already asked the GWP to help them organize discussions and accelerate the process of water legislation reform.

A thousand years of good water governance in Spain proves the durability of an effective governance system. “The Valencia Water Court is an example of how to create peace and good neighborliness throughout the farmlands, of how to settle potentially conflictive matters amicably and of how to share a scarce resource fairly,” says Rita Barbera Nolla, Mayor of Valencia. If the policy changes promoted by the GWP prove equally durable, then considerable progress has already been made in securing the world’s water resources for future generations.



“The Valencia Water Court is an example of how to create peace and good neighborliness throughout the farmlands, of how to settle potentially conflictive matter amicably and of how to share a scarce resource fairly.”

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# Shared Water: River Basin Organizations

**W**hen asked to picture a typical landscape in Bangladesh, most people visualize water, not soil – wide rivers swollen with floodwater and murky with silt. The country is truly shaped by water, with a land area that cannot even be measured precisely due to the continuous processes of erosion and deposition effected by its 230 rivers. Situated on the flood plains of the great Ganges, Brahmaputra and Meghna rivers, the country suffers from both floods and droughts. Over 80 percent of annual precipitation falls during the four months of the monsoon, when the peak discharge of the Ganges is 70 times its dry-season flow.

Water management on a local level is made doubly difficult by the fact that over 90 percent of the main river catchments lie outside Bangladesh. Widespread deforestation, as far away as Nepal and also in neighboring India, has historically contributed to flooding in Bangladesh, but an equally worrying trend has appeared more recently: Irrigation on Indian farms is now abstracting so much water that in dry seasons the Ganges barely reaches the sea.

## POTENTIAL FOR CONFLICTS

Management of the water resources of the Ganges, Brahmaputra and Meghna rivers is especially complex, as these huge basins are densely populated by millions of poor people whose very survival may depend on the river. But smaller river catchments also face problems in the equitable sharing of water, as do aquifers. The difficulties of deciding how water should be shared within and among user groups are magnified when the resource crosses national frontiers. And with over 40 percent of the world's population now living within such transboundary river basins and aquifers, the potential for conflict is growing.

Shared management of these water resources is essential if poverty is to be alleviated, environmental damage prevented and political stability ensured. Although the hydrological unit of the river basin is the logical basis for managing water resources, in many regions management is by

political and administrative entities that bear little or no relation to the water catchment area.

## RIVER BASIN ORGANIZATIONS

Although River Basin Organizations (RBOs) have been in existence for a number of years, many were started with specific objectives, such as improving navigation, producing electricity or creating flood defense schemes, and they may lack the IWRM approach more commonly found in the more recently created bodies. Since 1999, the GWP has worked closely with the International Network of Basin Organizations (INBO) with the aim of developing new and strengthening existing RBOs. Key objectives are to increase understanding of how IWRM works in a river basin context and to support the introduction of new organizational models and management tools.

In 2002 the number of RBOs has continued to grow and new regional networks of RBOs have been formed. These networks, like those involved in other aspects of IWRM, will contribute to the exchange of information and experience that will underpin the more sustainable and equitable use of water resources in the future.

Although the GWP has taken part in several discussions on the management of shared water resources, there is still unexplored potential for further activities in this area. At the Consulting Partners meeting held in Accra, Ghana, in June 2002, a working group of 40 participants from 20 countries met to share their experiences with different initiatives in managing shared water and to suggest ways in which the GWP could support further initiatives.

“The participants noted that there is a great need to invest in data collection, to facilitate data availability and to promote the exchange of information. Support for capacity building is also needed,” reports Khaled Abu-Zeid from the Center for Environment and Development for the Arab Region and Europe, who chaired the working group meeting.

The role of the GWP was seen as that of coordinator between the various support initiatives,



which sometimes duplicate one another, while the regional partnerships should identify regional needs and focus more on IWRM in whole river basins, rather than individual rivers. The GWP can act as a catalyst in mobilizing support for shared water management by helping to build capacity, promote data sharing, secure funding and resolve conflicts.

### PROGRESS IN WEST AFRICA

As described in “Partners: Keeping Water Flowing,” West Africa is characterized by large, transboundary rivers such as the Niger, the Senegal and the Volta. Competition for water is increasing due to population growth, climate change and desertification. There is an urgent need to work towards a river basin approach to water management to ensure the equitable use of scarce resources and reduce the potential for conflict. It is appropriate, then, that this region has, through its GWP technical advisory committee (WATAC), taken the lead in establishing

the African Network of Basin Organizations (ANBO).

“This discussion group will enable our various organizations to forge more effective and solid links with one another,” said Ahmed Salem Ould Saleck, Secretary General of the Senegal River Basin Development Organization, at a major planning meeting in March. “These links will enable us to share our most profitable experiences and practices, both in sensitive areas such as conservation and in the energy and agricultural sectors, in tourism and in industrial and domestic water use.”

In addition to sharing information, the network will mobilize support for IWRM and help to create the political will to implement it. It will also address the need for a more coordinated approach between different sectors and stakeholders, for legislation to be harmonized and for authority for water resources to be more closely geared to the river basin as an administrative unit. Many African development activities pay

The difficulties of deciding how water should be shared within and among user groups are magnified when the resource crosses national frontiers. Management of the water resources of the Ganges river is especially complex, as its huge basin is densely populated by millions of poor people whose very survival may depend on the river.

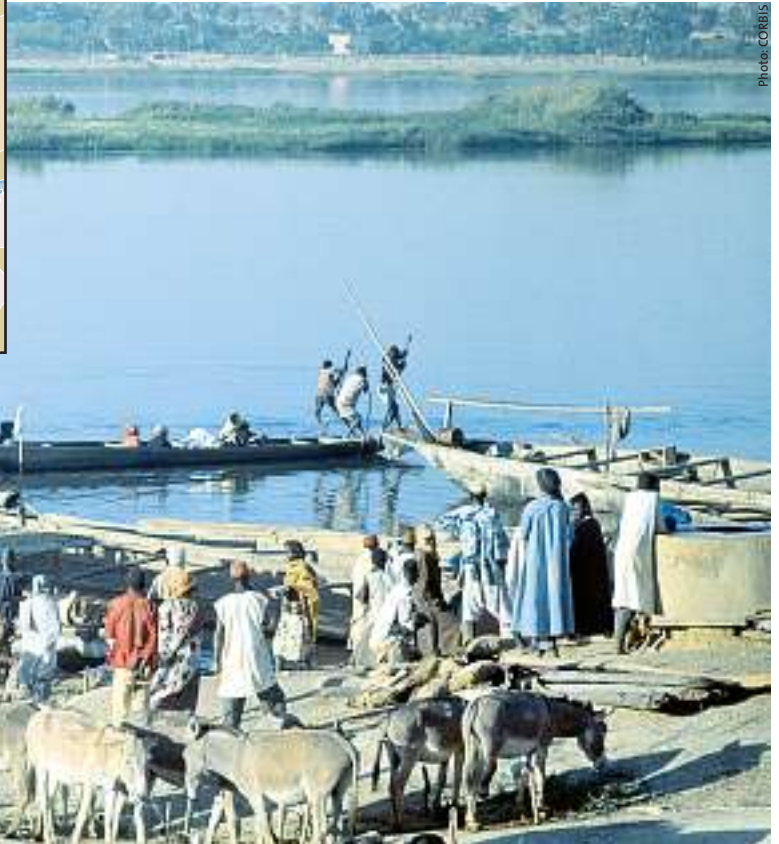


Photo: CORBIS

In 2002, the two major Volta basin countries, Burkina Faso and Ghana, laid the foundations for a permanent “consultation framework” to promote IWRM in the region.

insufficient attention to the river basin or catchment area at present, failing to use it as the basis for integrating the needs of different water users and the environment. Networking will help the members strengthen their capacity to meet these challenges.

The Volta River basin is one of the largest in West Africa, covering 379,000 square kilometers of land in six countries (Côte d’Ivoire, Benin, Burkina Faso, Ghana, Mali and Togo). In 2002, the two major Volta basin countries, Burkina Faso and Ghana, laid the foundations for a permanent “consultation framework” to promote IWRM in the region. A technical committee will collect information, oversee its exchange and offer advice on various aspects of water management, such as coordinating water resources development plans. Committee members will also be able to assess the potential of the basin’s water resources and give advice on the standardization of IWRM policies among different countries.

#### WORKSHOPS IN EUROPE AND ASIA

The Central and Eastern European Network of Basin Organizations (CEENBO) was launched in 2001 and has already hosted two major international meetings, attended by delegates from ten countries. At the second meeting, held in

Sinaia, Romania, in February 2002, Yugoslavia became the eleventh member of CEENBO, widening the scope of the network even further. The main goals of the meeting were to approve the statutory document of CEENBO and to establish the structure of the new organization. The first regional network activity is now being prepared, and will investigate the methodology for evaluating water tariffs.

Cambodia is generally considered to be a “water-wealthy” country and currently has a relatively low population density and underdeveloped economy. However, it is highly dependent on a single river basin – the Mekong – which it shares with its neighbor Vietnam. Population growth, urbanization and agricultural and industrial development mean that plans must be put in place now to safeguard the country’s water resources for the future. Steps have already been taken towards integrated management of the Mekong river basin through the international Mekong River Commission and the national Mekong Committee. A national water resources policy is currently being prepared by an inter-ministry task force, and this will further promote the practical application of integrated river basin management and stakeholder participation.

The formation of the Malaysian country water



Photo: PRESSENS BILD

partnership has encouraged several dialogues among water users in three river basins: the Kerian basin, which is shared by three states, the Tenggi basin, which is predominantly rural and has valuable peat swamp habitats, and the Langat basin, which has mixed urban and agricultural users. The first stakeholders' workshop for the Langat basin was held in June and was attended by 63 participants, including policy-makers, planners, environmentalists and engineers. Shahrizaila Abdullah, a water resources consultant and founder member of GWP Southeast Asia, was there.

"For a first workshop, it was very open and there was a good level of participation," he reports. "The Langat basin is suffering from environmental damage and deteriorating water quality at the same time as facing an unprecedented level of population growth and infrastructure development. But there is no integrated approach to planning or resource management."

Discussions at the workshop resulted in several proposals that would address the basin's problems, including a program of social development and awareness, the creation and enforcement of water management regulations, greater centralization of authority and measures to improve understanding amongst stakeholders.

"The next step will be to develop action

plans," continues Abdullah, "and we are planning to continue our discussions through roundtables and mini-dialogues with selected stakeholders to move the process forward."

The Agno river basin, in northwest Luzon, typifies the problems faced by RBOs in the Philippines. The upper catchment is home to several indigenous groups who claim rights to it as their ancestral domain, the middle part of the basin supports a large irrigated agricultural area, and a major fishing community inhabits the river mouth. Two multipurpose dams store water and provide hydroelectricity, and a third is under construction. Competition for water from agriculture, urban development, industry and tourism is increasing, while unregulated human activities, such as deforestation and cropping on steep slopes, pose a growing threat to the entire natural resource base.

The Agno River Basin Development Commission was created in 1999 to coordinate water-related activities in the basin. The task is complicated by the fact that the basin spans three administrative districts. However, the initial strategic framework plan drawn up by the commission maintains consistency with local development plans by building on existing planning structures. The plan also addresses the interrela-

Steps have already been taken towards integrated management of the Mekong river basin through the international Mekong River Commission and Cambodia's national Mekong Committee. An inter-ministry task force in Cambodia is preparing a national water resources policy, which will further promote the practical application of integrated river basin management and stakeholder participation.

“By exchanging knowledge and experience between our pilot basins and established RBOs, and by introducing twinning arrangements, we believe we can considerably reduce the time taken to introduce improved management tools.

tionships and potential conflicts that current planning structures are unable to deal with. At this stage, one of the most important tasks is to clearly define the roles and responsibilities of different stakeholders, and to reorganize working committees so that these become spatial groupings rather than purely sectoral ones. The ultimate aim of the framework plan (and the subsequent master plan) is to optimize the allocation of water amongst competing users, providing clear direction for the allocation of public and private resources in response to people’s needs.

### 15 RBOs IN THAILAND

Thailand has been very successful in establishing RBOs, with a grand total of 15 now in place. The members have worked hard to strengthen the role of the river basin committees in developing, implementing and monitoring water management plans for each basin, while ensuring that community participation and multi-sectoral consultation remain integral parts of the management and decision-making process. They are also documenting the evolution of the participatory approach to river basin planning, with a view to sharing their findings with other countries in Southeast Asia.

### SOUTH ASIA WORKPLAN

Over the past three years, GWP South Asia has made considerable progress in promoting the concept of river basin management. Sri Lanka’s Mahaweli River Development Program, a large-scale project geared to food production and power needs, has given the country more than 20 years’ experience in applying an integrated approach to water resources management.

“The Mahaweli experience resulted in a resilient and dynamic management system that was able to solve problems through consultation with stakeholders,” says Nanda Abeywickrama, Director of the Sri Lanka National Water Partnership (Lanka Jalani). “Now that the development phase is largely completed, the organization that was established to pursue it is being re-structured to become a more formal river basin authority. The new body will adopt an IWRM approach.

“This experience, and the management systems developed over the past two decades, especially in watershed management and cross-sectoral water allocation, provide good examples of IWRM in practice – examples that should be shared with emerging basin organizations elsewhere in South Asia.”

The GWP asked Lanka Jalani to take the lead

in forming a network of river basin organizations in the region. In late 2000, the South Asia Network of River Basin Organizations (SAS-NET-RBO) was formed, with the Mahaweli Authority as the prime mover. The members have identified several pilot river basins and developed a core group of professionals.

“Our initial aims were to increase our understanding of river basin management and to support critical processes that will make it more effective,” adds Abeywickrama. “We can now move forward and begin to implement activities that will link existing and new RBOs within the region and outside.”

This year, the network formalized its workplan at a major planning meeting. Government ministers and other key decision-makers attended, illustrating the strength of support for the initiative. Delegates developed a three-and-a-half-year work plan and budget, which includes identification of key network members to ensure effectiveness and maximize geographic coverage. The monitoring of target river basins will include documenting institutions and events, such as the incidence of pollution, water shortages and major disputes, as well as the more traditional aspects of water flow and quality. One of the main emphases will be on creating partnerships and links between different sectors, such as government agencies, the private sector and academic institutions. Links with the highly successful Area Water Partnerships within the region will help to ensure information is relayed to and from water users “on the ground.” Various communication activities will be encouraged, to maximize public awareness and improve understanding within relevant professional communities.

### EXTENDING THE BENEFITS

The experience in South Asia suggests that networking can considerably extend the benefits of individual projects, programs and organizations. Problems and successes can be shared, providing a unique learning experience for all involved.

“By exchanging knowledge and experience between our pilot basins and established RBOs, and by introducing twinning arrangements, we believe we can considerably reduce the time taken to introduce improved management tools,” concludes Abeywickrama. “This should help to reduce the potential for conflict, creating positive environmental, social and economic benefits. And the network will help us to share our experiences and create a wider impact – not just in our own region but also further afield.”

# Networks of Knowledge: Building IWRM Capacity

Rain falls heavily on the glass-fronted high-rise buildings of Kuala Lumpur, where businessmen hold early-morning meetings. On the pavement below, the rotting remnants of yesterday's vegetable market are washed into the storm drains. As the water flows through the poorer districts on the outskirts of the city, it is contaminated further by untreated sewage and factory effluent.

Like Bangkok and Jakarta, the capital city of Malaysia has been transformed during the past few decades into a vibrant and crowded modern city. Rapid economic growth has also increased the pressure on water resources and little attention has so far been paid to issues of sustainability over the longer term. An integrated approach to the management of water is desperately needed, but decision-makers and water professionals still lack the skills and knowledge needed to make the necessary changes to institutions and policies.

Southeast Asia is not alone. A lack of capacity in IWRM is emerging as perhaps the single greatest obstacle to the sustainable development of the water sector in virtually all the world's developing regions. In recent years, the GWP and other organizations have been highly successful in raising awareness among decision-makers of the need to improve water resources management.

But if awareness is to be translated into action, decision-makers need information to create the political will for reform and to help them carry out reform activities. For example, how are new policies to be translated into laws and regulations? What are the best institutional arrangements for specific tasks and how can such arrangements be put in place?

## STILL A NEW CONCEPT

The concept of IWRM is still new in many countries and existing institutions often lack the skills and resources needed to support the practical implementation of water sector reforms. In addition, the cross-sectoral nature of IWRM creates a demand for new alliances. The International Network for Capacity Building in



IWRM (Cap-Net) links the key institutions – such as universities, vocational training centers, private companies and NGOs – that can build the necessary capacity for reform in the water sector. The emphasis is very much on improving local skills and knowledge rather than supplying international technical assistance.

“It is vital to promote local ownership of the capacity development process,” says Paul Taylor, Cap-Net’s Director. “Water sector reform is a long-term process and the capacity to support it must be anchored in local institutions, which need to become more commercial and more demand-responsive if they are to meet future challenges.”

Malaysia has already taken its first steps towards improving its capacity for IWRM. MyCapNet, the Malaysian capacity building network, was established in 2001 under the auspices of the Malaysian Water Partnership, with the support of 14 Malaysian institutions and organizations involved in education and training.

“We found that courses on many aspects of IWRM were already being taught in Malaysian universities, but there was no single consolidated program providing students or water profession-

“Water sector reform is a long-term process and the capacity to support it must be anchored in local institutions, which need to become more commercial and demand-responsive if they are to meet new challenges.”

## CAP-NET: AN ASSOCIATED PROGRAMME

The GWP has adopted The International Network for Capacity Building in IWRM (Cap-Net) as one of its flagship Associated Programs. Cap-Net is a UNDP project funded by the Dutch Ministry of Foreign Affairs and hosted by UNESCO-IHE in Delft, the Netherlands. It links the key institutions – such as universities, vocational training centers, private companies and NGOs – that can build the necessary capacity for reform in the water sector. It has three major inter-linked axes of activity:

- networking – supporting the establishment of new cross-sectoral networks,
- capacity building in IWRM – ensuring access to training, information and shared experience, and
- website development – providing a vehicle for communication and information exchange ([www.cap-net.org](http://www.cap-net.org)).

als with a full grasp of all the relevant issues,” says Dr Low Kwai Sim, Director of Asia Pacific Environmental Consultants and a key member of MyCapNet.

“Members of the network have therefore drafted a framework for a new Master’s program in IWRM, which will be available from next year.”

The postgraduate course, Master of Environmental Science in Integrated Water Resources Management, will be offered as a collaborative program between

at least six universities. Students with an undergraduate degree and water professionals with several years of practical experience are eligible to apply for one of the 20 places available. A Diploma program will be run concurrently, comprising the same course modules but with no requirement to write a thesis. The consortium of universities is now looking into hosting a formal undergraduate program.

“Besides providing a complete education in IWRM, this course is breaking down the rivalry between different universities and faculties,” adds Kwai Sim. “The need to work together is creating new dialogues and relationships that will help to foster the long-term process of capacity building.”

Indonesia is closely following Malaysia’s lead, having established its national capacity building network, InaCapNet, in June. Network members will begin by documenting currently available expertise and identifying needs at different levels and in different sectors. They also plan to promote cross-sectoral dialogue and to seek support for new training and curricula development activities.

The first regional capacity building network in water resources in the developing world was in fact established in Africa. WaterNet links 24 African university departments and research and training institutes specializing in water management. Launched in 1999, it now has member institutions in Botswana, Kenya, Lesotho, Mozambique, Namibia, South Africa, Tanzania, Uganda, Zambia and Zimbabwe.

The mission of WaterNet is to enhance regional capacity in IWRM through training, education, research and outreach by sharing the complementary expertise of its members. Through consultation with stakeholders, a range of capacity building programs involving regional and international contributors has been designed specifically for different target groups. A modular IWRM Master of Science program has been set

An IWRM Master of Science program has been set up in Malaysia.

## IWRM Master's Program Courses

### Generic Modules:

- Course 1: Ecological System: Biodiversity and Conservation
- Course 2: Land use and Natural Resource Management
- Course 3: Hydroinformatics in Water Resource Management
- Course 4: Environmental Management Instruments and Systems

### Experiential Modules:

- Course 5: Water Resource Methodologies
- Course 6: Field Work and Report/Project Paper

### Core Modules:

- Course 7: Hydrology
- Course 8: Water Resources Economics
- Course 9: Hydraulics Engineering
- Course 10: Integrated Watershed Modelling
- Course 11: Integrated Water Information System/ICT
- Course 12: Risk Management
- Course 13: Water Resources Protection

Course 14: Aquatic Biodiversity and Conservation

### Research Project:

Course 15: Thesis

### Elective Modules:

- Course 16: Project Planning, Management and Evaluation
- Course 17: Human Dimensions in Development
- Course 18: Forest Management
- Course 19: Integrated River Basin Management
- Course 20: Integrated Coastal Zone Management
- Course 21: Urban Storm Water Management
- Course 22: Water Rights and Governance
- Course 23: Conflict Management of Water Resources
- Course 24: Decision Support Systems
- Course 25 Sustainable Urban Ecosystems

All students must take the generic, experiential and core courses and 2–4 electives.



up and several short courses will take place from 2002 onwards.

### TARGETING YOUNG PROFESSIONALS

Southern Africa is leading the way in targeting young water professionals – the decision-makers of the future. The Southern Africa Youth Water Action Team (SAYWAT) arose from a forum organized by GWP-Southern Africa in Harare, Zimbabwe in September 2001 to discover what and how the region's youth could contribute both to a vision for water resources and to the vision's practical implementation through IWRM. The participants highlighted the lack of formal training in IWRM as a major constraint. As graduates and young professionals in the water sector, they were keen to establish a youth network to raise awareness of the need for IWRM and to help them access information and share experiences. They also hoped the network would create pressure for additional training courses in IWRM.

"The key to successful action has been to let the young people organize themselves," says Sibonginkosi Moyo, SAYWAT's Regional Coordinator. "They have been encouraged to come up with their own national programs and this has motivated and empowered them, while the wider regional network has helped in securing funds and creating and sharing ideas."

Members of the network have already arranged a program of school visits and are currently investigating ways of training country coordinators in IWRM. These national representatives will become a valuable resource in their own right, since they can train others, thereby building vital local managerial capacity and forming a group of key future opinion-leaders.

### HARNESSING IDEALISM

It is the idealistic young who, more than other groups in society, have the most interest in, and often a passionate concern for, environmental issues and the interaction between people and their environment. Appropriately educated, whether formally or informally, young people can become highly aware of environmental issues and may be moved to act more responsibly than their elders to improve the environment. Education is therefore a useful tool for promoting the conservation and integrated management of water resources. In many countries, however, teachers and other educators lack sufficient knowledge relating to IWRM and its practical application.

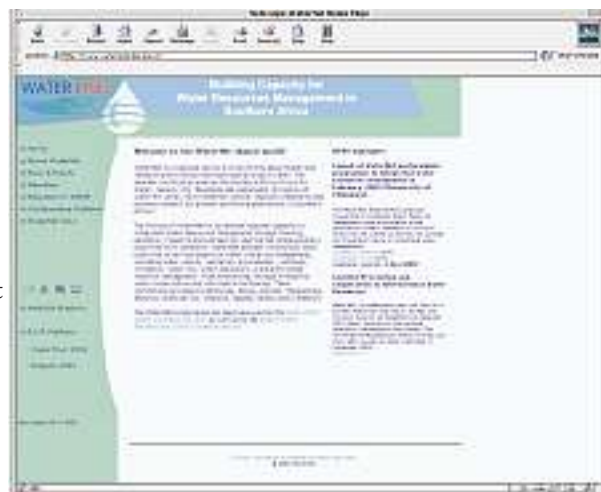
Collaboration between schools and NGOs in

seven Mediterranean countries (Cyprus, Egypt, Greece, Israel, Morocco, Tunisia and Turkey) has resulted in an educational package designed to support environmental teachers and students. The package provides background materials and a collection of appropriate learning activities designed to complement existing curricula by sharpening the focus on water management and conservation issues in the Mediterranean region. It is aimed primarily at high school students (12-15 years), although it can be adapted to both younger and older pupils.

Most activities include questions to stimulate discussion of environmental issues, encouraging students to form opinions and develop balanced judgments. Because they are likely to take home important messages, students using the package may also influence the opinions and actions of their parents. Some may go on to follow further studies in water management, creating a demand for more advanced IWRM training at university and vocational levels.

"In most Mediterranean countries environmental awareness programs are run by NGOs, not by schools or universities," says Michael Scoullos, Professor of Environmental Chemistry at Athens University and chair of GWP-Med. "We need to make local communities more aware of the need for IWRM and to turn them into pressure groups that can influence the politicians. We are also aiming to create a network of educators who will have the power and commitment to change curricula so that these give more prominence to water issues."

This initiative therefore works on two levels: to create awareness and action on the part of communities and to influence education on water issues. "We have deliberately involved different kinds of organization," says Scoullos. "And this approach has paid off. Greece, the United Nations Environment Program and the Mediterranean Office for Environment, Culture and Sustainable Development are playing a leading role in the project's development and expansion through a new



WaterNet links 24 African university departments and training institutes specializing in water management.

"While the short-term needs of policy-makers and water resource managers can be met by short courses and one-off information resources, effective long-term implementation of IWRM needs to begin with comprehensive academic education in schools and universities."

initiative called MEDIES – Mediterranean Education Initiative for Environment and Sustainability. UNESCO and the European Union have also taken the project to heart."

### MAJOR INITIATIVES LAUNCHED

This support was demonstrated when MEDIES was launched and the educational package was presented at the "WaterDome" during the World Summit on Sustainable Development held in Johannesburg in August/September 2002. Such high-profile representation will contribute greatly to the GWP's efforts to influence the development of capacity in IWRM on a wider scale.

In addition, the Nile Basin Initiative, which covers a huge area encompassing some ten countries in central, eastern and northern Africa, has been in place since 1999. Its objective is to promote IWRM as a way of fighting poverty and supporting economic development in the region. Participants have highlighted education and training as important activities that will contribute to this objective. The initiative's Applied Training Project aims to strengthen institutional capacity in selected subject areas of water resources management, to promote the development and delivery of training programs in IWRM, and to expand the frequency and scope of information exchange among water professionals. A recently formed regional network for capacity building, NileNet, will be an important vehicle for achieving these objectives.

Capacity building was also the subject of a group discussion at the annual Consulting Partners Meeting held in Accra, Ghana in June. The group, chaired by Dr Ahmad Wagdy from the Center for Environment and Development for the Arab Region and Europe, focused on identifying capacity building problems and suggested how the GWP and Cap-Net could help to provide solutions to these problems.

"IWRM is still poorly understood in many countries, and there is little generation, sharing and validation of IWRM knowledge and skills," commented Dr Wagdy. "The GWP and Cap-Net can play an important role in developing unified curricula and providing good, basic training materials. Our best way forward is to cooperate with various national and regional centers to implement these programs."

An important outcome of the meeting was that three institutions – the National Water Resources Institute (NWRI) in Nigeria, the Ecole Inter-Etats des Ingénieurs de

l'Équipement Rural/Ecole pour Techniciens Supérieurs de l'Hydraulique et de l'Équipement Rural (EIER/ETSHER) in Burkina Faso, and the Kwame Nkrumah University of Science and Technology (KNUST) in Ghana – agreed to become the founding members of a new capacity building network in West Africa. The three agreed to identify other capacity building institutions that could be invited to join the network. Three members, one from each institution, plan to visit WaterNet in southern Africa later in the year to learn from their experience in network management. The two national institutions, NWRI and KNUST, are willing to share their experience and training materials regionally, whilst EIER/ETSHER is a regional institution already serving 14 countries in French-speaking West Africa. This provides a very sound basis for the success of the network.

### SUPPORT FROM CAP-NET

Cap-Net is actively supporting the establishment of networks like WaterNet and MyCapNet, helping them to exchange experiences and access global information as well as developing new capacity building tools and materials. The Cap-Net website, currently under construction, will provide a comprehensive information service with access to news and events, links to other networks, training courses and materials, resource centers, publications and case studies. Cap-Net will also help networks to secure international funding and will supply targeted strategic technical inputs.

Cap-Net will cooperate closely with the team developing the GWP ToolBox – the partnership's instrument for capacity building in IWRM – which was launched in December 2001. The intention is to build the ToolBox into a vital aid to the successful implementation of sustainable water resources management. Cap-Net will assist in generating additional case studies and knowledge but, most importantly, will also ensure that the technical tools are matched by capacity building tools supporting training and education.

"A systematic effort is vital," concludes Kwai Sim. "While the short-term needs of policy-makers and water resource managers can be met by short courses and one-off information resources, effective long-term implementation of IWRM needs to begin with comprehensive academic education in schools and universities. The GWP's activities in Malaysia and around the world are working towards this goal, helping to strengthen human and institutional capacity at the regional, national and local levels."

# IWRM in Action: Toolbox Update

The rolling plateaus and deep gorges of the wild and remote Ruaha National Park in Tanzania are home to large herds of elephants, kudu, roan and sable antelope, hippos and crocodiles. But if recent trends continue, many of these animals – and the tourist dollars they attract – could disappear, victims of the region’s steadily worsening droughts. The first ominous signs appeared ten years ago, when the formerly perennial Great Ruaha River, which forms the park’s eastern boundary, completely dried up. Since then, dry-season flow has ceased several times and the periods of drought are getting longer, depriving both animals and people of the water resources that are essential for their survival.

And it’s not just the animals and people living in the national park that are suffering. The reduction in water flow is contributing to national power shortages because hydro-electric generating plants further downstream cannot function at full capacity. The Tanzania Electricity Supply Corporation has been quick to blame farmers, for over-use of irrigation water, as well as pastoralists, who are accused of overstocking. However, the number of different water users means that it is difficult to identify the cause, and there is no easy solution.

The problems of the Great Ruaha River illustrate the need for an integrated approach to water resources management that takes account of different user groups and their needs. GWP has been promoting the concept of IWRM since its establishment in 1996 and the concept is becoming widely accepted among water professionals as offering the most promising way forward in thinking about, and planning for, the world’s water resources.

## IWRM AND THE TOOLBOX

Compared to conventional, typically sectoral, approaches to water management, IWRM takes a broader view, examines a more comprehensive range of solutions and is better able to consider how different activities affect one another. IWRM places new demands on policy-makers,

water professionals and users, but it also offers great hope, in that it addresses water resources problems in ways that supersede the present narrow, sectoral view.

“Introducing IWRM and making the change from unsustainable to sustainable water use will take time, and decision-makers will be faced with difficult choices,” notes Hilary Sunman, member of the GWP’s ToolBox task force. “The IWRM ToolBox has been designed as an information management system to help politicians, water professionals and other stakeholders as they assess their options and make their decisions.”

The ToolBox was launched in December 2001 by The Crown Prince of the Netherlands, Patron of the GWP, who described it as “the only interactive database of its kind.” It provides a range of tools that can be modified according to the needs of the user. Once the issues and options relevant to an IWRM problem have been identified, the user can select a suitable mix and sequence of tools to work in any given country, context and situation (see box). The ToolBox is designed to be a dynamic and growing resource that will continue to evolve as our knowledge and understanding of IWRM and its practical application grows.

## PRACTICAL EXPERIENCE

The IWRM ToolBox is already being used to guide the decision-making process. For example, in Costa Rica, the technical and legal commission working towards the introduction of new water management legislation (see “Dialogue for Effective Water Governance”) is using the ToolBox to raise awareness of different principles and the implications of different actions. Members of the commission include the Minister of the Environment, a hydrologist, a chemical engineer, lawyers, sociologists, and GWP representatives Maureen Ballesteros and Yamileth Astorga. The

### WHAT IS IWRM?

Integrated water resources management (IWRM) is a process that promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. (GWP-TEC, 2000).

## IWRM TOOLBOX STRUCTURE

The ToolBox combines three main areas of policy tools to form the integrated approach:

- Tools such as legislation, policy and finance structures, which make the enabling environment or “rules of the game.”
- Institutional roles of resource managers, service providers, irrigation agencies and utilities, river basin authorities, regulators, civil society and other water sector stakeholders. This area recognizes the need for capacity building to improve performance.
- Management instruments, in such areas as water resources assessment, demand management, public information and education, conflict resolution, regulatory devices, economic measures, information and communication.

The ToolBox describes the tools and provides links to references, people and websites to support users. Case studies provide accounts of experience in applying the IWRM approach and the lessons learnt. There is a discussion area for making comments and comparing experience.

ToolBox is particularly useful for adding objectivity to the commission’s discussions, helping to resolve complex issues on which its members have different opinions.

Danka Thalmeinerova, Head of the Environmental Policy Program at the Academia Istropolitana Nova in Slovakia, is another “ToolBox champion.” She has been testing the ToolBox with her post-graduate students.

“Our testing program meets two objectives,” she reports. “Firstly, we are getting valuable feedback from future users and decision-makers and secondly, the students are developing their IWRM capacity and learning to work with professionals from other sectors. We have engineers working with environmentalists; hydrologists with socio-economists – the kind of integration that does not traditionally occur.”

## CASE STUDIES

In its first year the ToolBox has acquired a variety of valuable case studies. These provide examples of real events and experiences with the implementation of IWRM and an analytical and critical account of the decisions and actions taken in response to different situations. The aim is to extract “lessons learned” from experience and pass these on to others. The cases reflect the

application of the tools, illustrating how they have worked in a given combination and context. All cases are supported by references to sources of further information and details about the authors and institutions involved. At present, there are 12 full cases on the ToolBox website ([www.gwpforum.org](http://www.gwpforum.org)), a further 20 under review, and over 40 case proposals. Two cases are summarized below to illustrate the range of water issues which the integrated approach helps to address.

## GREAT RUAHA RIVER CASE STUDY

Analysis of water use in the Great Ruaha River basin revealed six main water users (upstream to downstream):

- Rainfed farmers and domestic users in the high catchment
- Irrigators in the plains at the base of the escarpment
- Domestic users and rainfed maize farmers in the plains
- Pastoralists and fishermen in the central wetlands
- Wildlife and tourists in the Ruaha National Park
- The Mtera/Kidatu hydropower schemes.

To promote a more integrated approach to water resources management, the Tanzanian Ministry of Water and Livestock Development has introduced new programs on river basin organization, irrigation improvement and wetland management. Efforts are now being made to improve the efficiency of water use and the regulation of water rights. However, the more powerful stakeholders have contested the findings that emerged from the research and analysis stage, thwarting implementation. In addition, the arrangements for water charging and the allocation of water rights are inappropriate for the situation, with the result that regulations are seldom enforced.

## lessons learned

The first lesson to be learned from this case study is the need for thorough research to ensure the situation is fully understood before solutions are implemented. The research should cover not just standard technical measurements of water use, flows and quality, but also relevant socio-economic and institutional factors.

A second lesson is the need to understand the role of different stakeholders. In this case, efforts were needed to influence the powerful elite – to change their perceptions and encourage them to

think in a more socially responsible way.

A third important lesson also relates to perceptions. Stakeholders believed that irrigation would have to be reduced to make more water available to the national park and the hydro-electricity industry. However, this is not necessarily the case. More water could be made available downstream by developing locally available but as yet untapped water resources, such as boreholes or stock dams. Irrigation could even be expanded if better infrastructure was introduced to reduce wastage. In summary, water development is often a better, and certainly a less conflicting, solution than water re-allocation.

### BAIXI RESERVOIR CASE STUDY

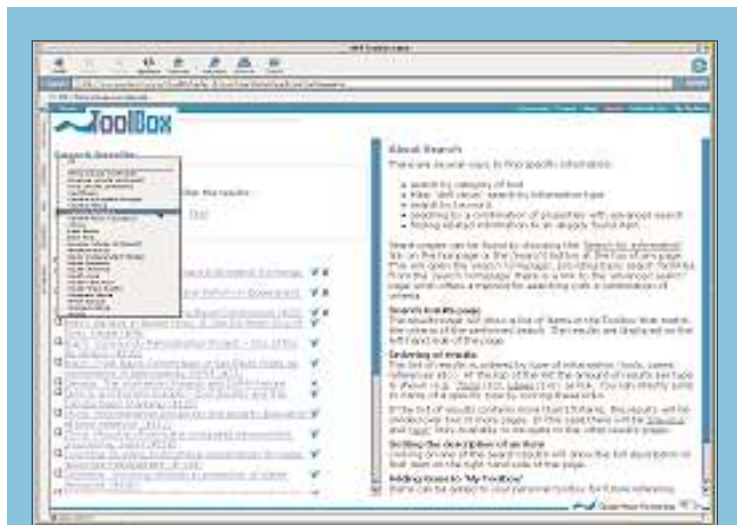
New dam and reservoir projects can provide important social, economic and environmental benefits. They can also lead to conflict if the needs of competing water and land users are not taken into account. This case from eastern China illustrates how a well-managed dam project can minimize conflict, promote compromise, and act as a catalyst for economic development and environmental protection.

The project began in 1997 with the construction of a new dam and reservoir in the Baixi river basin to provide drinking water to a large downstream city, flood control, hydropower and irrigation. A single public corporation (the Baixi Reservoir Construction and Development Company) was given overall responsibility for construction and operation of the dam, development of the landscape and tourism, soil and water conservation upstream and management of water flows downstream of the dam.

It is important for the company's operations to protect the quality of water in the reservoir. They enlisted support from the local communities, helping them to benefit from opportunities for income-generation by setting up joint ventures for new agricultural and tourism activities. The villagers used the funds they received as compensation for loss of land to launch these activities. All negotiations were participatory, and the local communities are represented on the company board.

### lessons learned

The important lesson to be drawn from this case study is that establishing benefit-sharing mechanisms can provide a strong incentive for communities to participate in local development and to work together to safeguard their water resources for the future. Farmers and villagers in



The IWRM Toolbox will help to address the information gap and will continue to evolve, providing an ever more comprehensive resource to support the implementation of IWRM.

the Baixi river basin now share responsibility for alleviating poverty and protecting their environment, so they are willing to work with the development company to arrive at “win-win” solutions. The success of such an approach depends on good governance, building capacity within the governing bodies and the local communities, and tangible reduction in poverty. This will ensure that the participation of local farmers and villagers continues.

#### THE FUTURE OF THE TOOLBOX

“We need more information on stocks and flows of water, water quality, groundwater, ecosystems and, most importantly, water management procedures, in the context of river basins as a whole,” said Margaret Catley-Carlson, GWP Chair, at the ToolBox launch.

The IWRM ToolBox will help to address this information gap, and will continue to evolve, providing an ever more comprehensive resource

to support the implementation of IWRM. As experience grows, so too will the level of detail and choice of options within the tools.

A key conclusion from the Great Ruaha case study is IWRM means that managers need to continuously review and enrich their knowledge base and management processes, with the aim of refining, and sometimes redefining, what is an appropriate institutional response. This implies that IWRM involves taking account of each and every individual situation, carefully analyzing the issues before delivering tailored solutions. There are no universally applicable answers to the immense challenges posed. The ToolBox provides information support to people dealing with this complexity. Its further development will expand the understanding of how to use the tools and increase their effectiveness and flexibility. The GWP is now responding to feedback from its members to ensure this process takes place in the IWRM ToolBox’s second year and beyond.

## Spreading the Word

Water partnerships around the world publish a wide range of documents – in their own languages – that provide ideas on how IWRM can be put into practice to achieve water security in their respective regions and countries. Many of these documents can be viewed in the library on the GWP website, [www.gwpforum.org](http://www.gwpforum.org).



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