

# COPING

UN-Water  
Thematic  
Initiatives

# WITH WATER

# SCARCITY

**A strategic issue and priority for system-wide action**

August 2006

## BACKGROUND

UN-Water is the mechanism coordinating the actions of the United Nations (UN) system aimed at implementing the agenda set by the Millennium Declaration and the World Summit on Sustainable Development (WSSD) in all aspects related to freshwater. UN-Water has grown out of many years of extensive collaboration and partnership among the UN agencies. These efforts have helped to achieve significant progress and to bring water and water-related issues to the top of the political agenda. Advancing the implementation of this complex and ambitious international agenda is a collective responsibility and challenge. It calls for coordinated action within the UN system and with other partners and stakeholders – including organizations from the public and private sectors, civil society and labour – as part of a global, comprehensive effort.

The main purpose of UN-Water is to complement and add value to existing programmes and projects by facilitating synergies and joint efforts in order to maximize coordinated action, coherence and the effectiveness of the support provided to countries pursuing the goals agreed upon by the international community. This is in line with the integrated water resources management (IWRM) approach, which calls for collaboration among all stakeholders in water management.

UN-Water has identified coping with water scarcity as part of the strategic issues and priorities requiring joint action. This note presents the UN-Water joint plan of action (PoA) for this thematic initiative and describes its elements.

# COPING WITH WATER SCARCITY: THE ISSUE

Water is essential for all socio-economic development and for maintaining healthy ecosystems. As population increases and development calls for increased allocations of groundwater and surface water for the domestic, agriculture and industrial sectors, the pressure on water resources intensifies, leading to tensions, conflicts among users, and excessive pressure on the environment. The increasing stress on freshwater resources brought about by ever rising demand and profligate use, as well as by growing pollution worldwide, is of serious concern.

There are several ways of defining water scarcity. The definition used in framing this programme refers to water scarcity as: the point at which the aggregate impact of all users impinges on the supply or quality of water under prevailing institutional arrangements to the extent that the demand by all sectors, including the environment, cannot be satisfied fully.

**Imbalances between availability and demand, the degradation of groundwater and surface water quality, intersectoral competition, interregional and international conflicts, all bring water issues to the fore.**

Water scarcity is a relative concept and can occur at any level of supply or demand. Scarcity may be a social construct (a product of affluence, expectations and customary behaviour) or the consequence of altered supply patterns stemming from climate change. Scarcity has various causes, most of which are capable of being remedied or alleviated. A society facing water scarcity usually has options. However, scarcity often has its roots in water shortage, and it is in the arid and semi-arid regions affected by droughts and wide climate variability, combined with population growth and economic development, that the problems of water scarcity are most acute.

Water use has been growing at more than twice the rate of population increase in the last century, and, although there is no global water scarcity as such, an increasing number of regions are chronically short of water. By 2025, 1 800 million people will be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under stress conditions. The situation will be exacerbated as rapidly growing urban areas place heavy pressure on neighbouring water resources.

**Freshwater bodies have a limited capacity to process the pollutant charges of the effluents from expanding urban, industrial and agricultural uses. Water quality degradation can be a major cause of water scarcity.**

Most countries in the Near East and North Africa suffer from acute water scarcity, as do countries such as Mexico, Pakistan, South Africa, and large parts of China and India.

Irrigated agriculture, which represents the bulk of the demand for water in these countries, is also usually the first sector affected by water shortage and increased scarcity, resulting in a decreased capacity to maintain per capita food production while meeting water needs for domestic, industrial and environmental purposes. In order to sustain their needs, these countries need to focus on the efficient use of all water sources (groundwater, surface water and rainfall) and on water allocation strategies that maximize the economic and social returns to limited water resources, and at the same time enhance the water productivity of all sectors. In this endeavour, there needs to be a special focus on issues relating to equity in access to water and on the social impacts of water allocation policies.





In most countries, the agriculture sector is the predominant consumer of water. Historically, large-scale water development projects have played a major role in poverty alleviation by providing food security, protection from flooding and drought, and expanded opportunities for employment. In many cases, irrigated agriculture has been a major engine for economic growth and poverty reduction. However, at the same time, poor communities have tended to suffer the greatest health burden from inadequate water supplies and, as result of poor health, have been unable to escape from the cycle of poverty and disease. Thus, growing scarcity and competition for water stand as a major threat to future advances in poverty alleviation, especially in rural areas. In semi-arid regions, increasing numbers of the rural poor are coming to see entitlement and access to water for food production, livestock and domestic purposes as more critical than access to primary health care and education.

**Water development is linked closely to poverty reduction, especially in low-income countries that are highly dependent on a rural economy.**

**In arid and semi-arid regions, where water scarcity is almost endemic, groundwater has played a major role in meeting domestic and irrigation demands. In many regions, massive use of groundwater has been practised for some time for irrigation. Groundwater mining and the lack of adequate planning, legal frameworks and governance have opened a new debate on the sustainability of the intensive use of groundwater resources.**

Rainwater is the primary source of water in agriculture. It has also been used successfully to augment water for industrial and domestic purposes, while being an essential element in the functioning of natural ecosystems. However, rainwater is rarely integrated into water management strategies, which usually focus exclusively on surface water and groundwater. Countries need to integrate rainwater harvesting more fully into their IWRM strategies and to promote its use to alleviate water scarcity.

In this context of rapid change, a number of questions arise:

- ▶ **How are the many competing interests involved in water being balanced?**
- ▶ **On what basis are decisions to be made in favour of certain developments at the expense of others?**
- ▶ **What are the scope and conditions for increasing water productivity in different sectors?**
- ▶ **Which tools should be used to enable the more efficient and equitable development and allocation of water?**
- ▶ **How can the best use be made of the water available?**
- ▶ **Which measures should be put in place to protect water resources and increase water supply?**
- ▶ **Which institutional and legal set-ups are the most appropriate for ensuring adequate coordination?**
- ▶ **What kind of information is needed and how is wide public ownership of water-related problems to be ensured?**

**Water conflicts can arise in water stressed areas among local communities and between countries because sharing a very limited and essential resource is extremely difficult. The lack of adequate legal instruments exacerbates already difficult conditions. There should be a greater focus on the peaceful sharing and management of water at both international and local levels. In short, water scarcity is also about equity and rights, and cultural and ethical issues warrant due consideration.**

In conditions of water scarcity, putting in place effective and equitable management practices requires knowledge, expertise and investment at political, institutional and technical levels.

# JUSTIFICATION FOR A JOINT UN-WATER PROGRAMME

Water scarcity affects all social and economic sectors and threatens the sustainability of the natural resources base. Addressing water scarcity calls for an intersectoral and multidisciplinary approach to water resources management, one that ensures the coordinated development and management of water and related resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. Integration across sectors is needed. This integration needs to take into account development, supply, use and demand, and to place the emphasis on people and the ecosystems that sustain them. On the demand side, enhancing the productivity of water use in all sectors is paramount to successful programmes of water scarcity alleviation. Furthermore, protecting and restoring the ecosystems that naturally capture, filter, store and release water, such as rivers, wetlands, forests and soils, is crucial to increasing the availability of water of good quality.

Valuation is an increasingly important tool in the process of allocating scarce water resources. However, the indiscriminate use of a purely economic approach risks overemphasizing monetary expressions of value at the expense of environmental and social values. Valuation frameworks are needed that recognize these three dimensions and in which stakeholders play a central role.

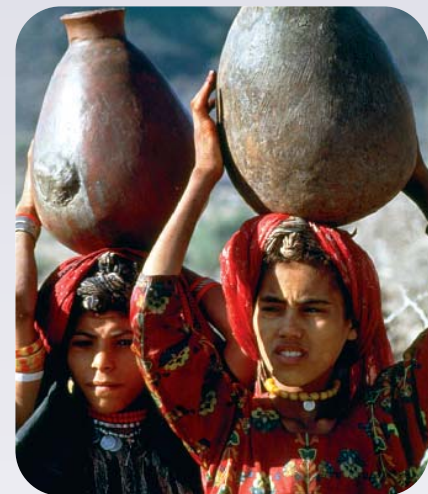
## INTEGRATED WATER RESOURCES MANAGEMENT (IWRM) – THE FRAMEWORK FOR ACTION AT LOCAL, NATIONAL AND REGIONAL LEVELS

At the WSSD in Johannesburg in 2002, the international community acknowledged the importance of the water scarcity challenge by adopting the short-term target of developing “integrated water resources management and water efficiency plans by 2005, with support to developing countries, through actions at all levels.” In particular, the Johannesburg Plan of Implementation calls for:

- ▶ strategies and programmes for integrated river basin, watershed and groundwater management;
- ▶ measures to improve the efficiency of water use, to reduce losses and to increase recycling of water in a way that gives priority to the satisfaction of basic human needs while preserving or restoring ecosystems and their functions;
- ▶ programmes for mitigating the effects of extreme water-related events;
- ▶ diffusion of technologies and capacity building for non-conventional water resources and conservation technologies to developing countries and regions facing water scarcity conditions or subject to drought and desertification.

While there has been progress, much remains to be done in order to develop and implement such plans. IWRM is the overall framework within which all UN-Water efforts for addressing water scarcity take place.

collaboration between nations on shared management of water resources (rivers, lakes and aquifers) and of the benefits thereof. Being intersectoral in its nature, the UN-system response to water scarcity requires: collaboration; the sharing of joint visions and policy principles; and joint action in assisting countries to address the issue. A major challenge in addressing water scarcity in countries successfully is the institutional fragmentation of responsibilities in the water development sector.



Addressing water scarcity requires actions at local, national and river basin levels. It also calls for actions at global and international levels, leading to increased

# POLICY RELEVANCE

Water scarcity issues and the way they are addressed will affect the successful achievement of most of the Millennium Development Goals (Table 1). The eradication of poverty and hunger in rural areas is related closely to fair and equitable access for the most vulnerable people to basic livelihood assets (including land and water) for domestic and productive uses. Because increased demand usually threatens the sustainability of the environment in situations of scarcity, water scarcity management is also crucial to achieving the goals of environmental sustainability.

**TABLE 1**  
**EXAMPLES OF THE WAYS IN WHICH COPING WITH WATER SCARCITY CAN AFFECT THE ACHIEVEMENT OF THE MILLENNIUM DEVELOPMENT GOALS**

MDG	LINKAGE WITH WATER SCARCITY
Eradicating extreme poverty and hunger	Access to water for domestic and productive uses (agriculture, industry, other economic activities), which has a direct impact on poverty and food security. Vulnerability to water-related shocks including droughts. Impact of water scarcity on both irrigated and rainfed agriculture for expanded grain production; for subsistence agriculture, livestock, fish and other foods gathered in common property resources; capacity to produce cheap food with impacts on nutrition in urban and rural areas.
Achieving universal primary education	Incidence of catastrophic events such as droughts that interrupt educational attainment; drought preparedness programmes.
Promoting gender equality and empowering women	Access to water, in particular in conditions of scarce resources, with important gender-related implications, affecting affect the social and economic capital of women in terms of leadership, earnings and networking opportunities.
Reducing child mortality and improving maternal health	Improved nutrition and food security, which reduces susceptibility to diseases. Equitable, reliable water resources management programmes that reduce poor people's vulnerability to shocks, which in turn gives them more secure and fruitful livelihoods to draw upon in caring for their children.
Combating HIV/AIDS, malaria and other diseases	Access to water, and improved water and wastewater management in human settlements that reduces transmission risks of mosquito-borne illness such as malaria and dengue fever.
Ensuring environmental sustainability	Adequate treatment of wastewater, which contributes to less pressure on freshwater resources, helping to protect human and environmental health. Improved water management, including pollution control and water conservation, as a key factor in maintaining ecosystem functions and services.
Promoting global partnerships	Water scarcity increasingly calls for reinforced international cooperation in the fields of technologies for enhanced water productivity, financing opportunities, and an improved environment to share the benefits of scarce water management.

Water scarcity is also linked closely to the five key areas for action identified by the UN Secretary General on the occasion of the WSSD: water, energy, health, agriculture and biodiversity. Last, it also has an impact on all the issues identified in the WSSD Johannesburg Plan of Implementation, and, in particular, on: poverty eradication; changing unsustainable consumption and production patterns; and protecting and managing the natural resources base of economic and social development.

# OBJECTIVES OF THE PLAN OF ACTION

The primary objective of the PoA is to provide a coherent and comprehensive set of information, policy and international advice and technical support to countries and stakeholders that enables them to better address water scarcity issues at local, river basin and national levels.

A multidisciplinary approach is needed in order to consider the social, economic, cultural, legal and institutional constraints relevant to local communities, urban centres, rural areas, user groups and administrative, public and private organizations. When reconsidering development schemes at local and national level, due consideration must also be given to societal and cultural changes that induce the transformation of related water management scenarios.



FAO/6025/H. NULL

## AGRICULTURE AND WATER SCARCITY – IMPERATIVES TO INCREASE WATER PRODUCTIVITY AT ALL LEVELS

Today, agriculture accounts for 70 percent of all water use globally, up to 95 percent in several developing countries. To keep pace with the growing demand for food, it is estimated that 14 percent more freshwater will need to be withdrawn for agricultural purposes in the next 30 years. Adding to the pressures on agricultural use is the increased awareness of the instrumental value of water in maintaining environmental services and ecosystem resilience. Increasing the efficiency of water use and enhancing agricultural water productivity at all levels in the production chains is becoming a priority in a rapidly growing number of countries. A systematic approach to agricultural water productivity requires actions at all levels, from crops to irrigation schemes, and up to national and international economic systems, including the trade in agricultural products. It calls for an informed discussion on the scope for improved water productivity to ameliorate intersectoral competition for water resources and optimize social and economic outcomes.

Several UN agencies have focused at length on the issues of water scarcity and have produced valuable contributions at several levels and from different perspectives (Table 2). At national and local levels, many countries have developed scientific and technical knowledge, backed by policies and legislation, to prevent and remedy water scarcity impacts. There is a widespread need to share the results achieved so far and to raise awareness with all decision-makers, managers and end users, including the general public.

**TABLE 2  
FOCUS OF MAJOR WATER-SCARCITY-RELATED PROGRAMMES AMONG UN-WATER PARTNERS  
AND THE SCOPE FOR COORDINATED ACTION**

	Monitoring	Policy and legislation	Finance and governance	Trans-boundary	Conflict resolution	River basin and watershed management	Water supply and sanitation	Agricultural water productivity	Groundwater management	Drought, risk and vulnerability	Ecosystem services	Wastewater and water quality	Rainwater harvesting
	M	PL	FG	TB	CR	RB	WSS	AWP	GW	V	ES	WQ	RH
<b>UN Agencies and Programmes</b>													
DESA													
FAO													
IAEA													
IFAD													
UNCBD													
UNDP													
UNEP													
UNESCO													
UN-CBD													
UN-HABITAT													
UNICEF													
UN-ISDR													
UNU													
WB													
WHO													
WMO													
<b>UN Regional Commissions</b>													
ECA													
ECE													
ECLAC													
ESCAP													
ESCWA													
<b>Non-UN Partners</b>													
GWP													
IAH													
IAHS													
ICID													
IWA													
RAMSAR													
WWC													

Note: The list is indicative only and subject to further revision.

Other UN-Water partners having more marginal water scarcity-related programmes do not appear in this table.

## STRATEGY FOR THE "WATER FOR LIFE" DECADE

The "Water for life" decade is a unique opportunity for the UN and its partners to deliver a coordinated response to the challenge of water scarcity and to make "Water for life" a decade for action. Through the water scarcity PoA, UN-Water agencies join forces to work towards an effective and coherent response to the challenge of water scarcity. A coordination mechanism established under the aegis of UN-Water will ensure the overall guidance and coordination of actions by individual agencies and partners.

This PoA will complement and provide a coherent framework for action for all programmes implemented by individual UN-Water agencies and their partners, and support actions at global, regional, national and local levels. In particular, the PoA will rely extensively on the expertise and knowledge accumulated by agencies through their cooperation and networking programmes, in particular:

- ▶ the programme of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) on “Water And Development Information for arid lands (GWADI)” and its “Water Resources Management in Arid and Semiarid Zones” centres;
- ▶ the FAO programme on “Agricultural water use efficiency, quality and conservation”;
- ▶ the Rainwater initiative of the United Nations Environment Programme (UNEP);
- ▶ the African Water Information Clearing House (AWICH) and the “Water Sharing as an instrument of Regional Integration” Initiative (ECA);
- ▶ the programme of the Economic and Social Commission for Western Asia (ESCWA) on “Integrated policies for the management of regional resources for sustainable development”;
- ▶ the SPM-water Programme on strategic planning and management of the Economic and Social Commission for Asia and the Pacific (ESCAP);
- ▶ the Protocol on Water and Health developed by the United Nations Economic Commission for Europe (UNECE) / World Health Organization Regional Office for Europe WHO–EURO;
- ▶ technical assistance to countries in various issues of water policies by the United Nations Department of Economic and Social Affairs (UNDESA), FAO, UNESCO, United Nations University (UNU), etc.



FAO/8457/F. MATTIOLI

It also links and takes advantage of collaboration with non-UN partners, including: the Global Water Partnership (GWP) and its regional programmes; the networking and advocacy role of the World Water Council and its World Water Fora; and the Challenge programme of the Consultative Group for International Agricultural Research (CGIAR) on water and food, as well as statutory bodies such as the African Ministers’ Council of Water (AMCOW).



FAO/13091/P. JOHNSON

The PoA envisages action at various levels:

- ▶ At international level, agencies provide countries with advice on transboundary water management issues, within the IWRM framework, focusing on negotiations and dialogue and promoting regional cooperation.
- ▶ At national level, the PoA focus is on policy advice and related water governance. Agencies will provide coherent and coordinated advice to national institutions, emphasizing the need for the institutional integration of water policies and increased stakeholder involvement in decision-making processes. Conflict resolution mechanisms will become increasingly important.
- ▶ At local level, the PoA promotes best practices in all fields, leading to increased productivity and sustainability in water use and improved sectoral integration in the management of water resources.

The strategy underlying the PoA includes: knowledge and monitoring; policy guidance and institutions; and best practices and technical advice. It focuses on enhanced governance and capacity building at all levels, and integrates the basic principles of transparency, subsidiarity and equity.



# PLAN OF WORK FOR 2006-07

The PoA integrates initiatives and programmes of UN–Water partners in order to enhance their effectiveness and reduce duplication of efforts. It builds on the strength of individual programmes, and promotes coordination on issues of common interest in coping with water scarcity. It relies on UN regional commissions to promote targeted and coordinated programmes that reflect regional priorities, as in the case of UN–Water Africa (the coordination mechanism for the African region).

The PoA is flexible and updated periodically in order to take into account progress and modifications in the programmes of the UN–Water partners. Annex 1 presents the PoA for 2006–07 (with concrete deliverables). It is organized along the main categories of actions proposed for the PoA, i.e. coordination; knowledge management; education/training; monitoring; policy advice and institutions; and best practices and technical advice. Table 3 lists selected deliverables achieved in 2005–06. Annex 1 presents programmes of global or regional scope and does not report on the variety of actions taking place at country level. However, such actions are connected directly with, and reflect the different elements of, the programme.

**TABLE 3  
SELECTED WATER-SCARCITY-RELATED DELIVERABLES  
ACHIEVED IN THE PERIOD 2005 – EARLY 2006**

DELIVERABLE	PARTIES INVOLVED
<p><b>The Second World Water Development Report (WWDR)</b> <i>A periodic report by UN–Water agencies on the state of the world’s water resources, their use and the challenges they face. The WWDR provides comprehensive and authoritative information on water resources management, including aspects related to water scarcity.</i></p>	<p>All UN–Water partners, under the World Water Assessment Programme (WWAP)</p>
<p><b>The African Water Development Reporting Process</b> <i>A “bottom-up” process for monitoring implementation of the African Water Vision 2025 and related goals.</i></p>	<p>All UN-Water/Africa partners coordinated by ECA</p>
<p><b>Guidelines and case studies on the use of treated wastewater in agriculture</b> <i>In situations of increasing water scarcity, the reuse of treated wastewater for agriculture offers an interesting opportunity to provide urban and peri-urban agriculture with a safe, reliable and regular source of water of high nutrient content.</i></p>	<p>WHO; FAO; UNESCO IHE; UNEP</p>
<p><b>International conference on water for food and ecosystems, The Netherlands, 2005</b> <i>Promoting successful approaches to water management that satisfies the needs for sustaining and enhancing livelihood in rural areas while preserving or maintaining the functions of the ecosystems they rely on.</i></p>	<p>FAO; The Netherlands</p>
<p><b>WHYMAP</b> <i>Preparation of the Hydrogeological Map of the World at scale 1:25.000.000 and related georeferenced database and thematic groundwater resources maps. A thematic map on recharge rates and definition of non-renewable groundwater resources systems of the world.</i></p>	<p>UNESCO, IAEA, IAH, BGR-Germany, CGMW</p>
<p><b>Millennium Ecosystem Assessment</b> <i>Designed to meet the needs of decision-makers and the public for scientific information concerning the consequences of ecosystem changes for human well-being and options for responding to such changes, it focuses on ecosystem services. It is an example of an institutional partnership for assessment and monitoring. In particular, the chapter on freshwater is of direct relevance to this programme.</i></p>	<p>Most UN agencies and partners</p>

## Plan of work of the UN–Water thematic initiative “Coping with water scarcity” and deliverables for 2006–07

Topic <sup>1</sup>	Description	Partners	Due
<b>Coordination</b>			
–	<b>Setting-up UN–Water coordination mechanism on water scarcity</b>	All UN–Water	
<b>Knowledge and monitoring</b>			
M	<b>World Water Development Report</b> A periodic report by UN–Water agencies on the state of the world’s water resources, their use and the challenges they face.	WWAP and UN–Water agencies	Every 3 years
M	<b>Regional Water Development Reports</b> A periodic review to provide an integrated picture of the state of the regions’ freshwater resources and the stewardship thereof. The reports build on past assessments to constitute a continuing series of assessments in the future with an emphasis on thematic issues of known priorities of the region. Deliverable: A periodic Water Development Report.	UN–ECA, UN–ESCWA	Periodic
M	<b>Development of a joint Web-based UN–Water information system</b> In addition to the WWDR, there is a need to strengthen the component of the programme dealing with data and indicators, possibly leading to the computation of a water development index. The programme will develop a Web-based UN–Water corporate information system, relying heavily on ongoing sectoral initiatives (UNEP-Gemstat, AQUASTAT, IGRAC, GRDC, etc.) and make preliminary tests for the development of a water index to be used in monitoring national water management performances	All UN–Water	Progressive implementation
M AWP	<b>Comprehensive assessment of water management in agriculture</b> This is a 5-year research and assessment programme led by the CGIAR aiming at identifying policy and investment options for water management in agriculture with a special focus on the environment and rural livelihoods. The period 2005–06 is open to a wide participation from all stakeholder institutions in drafting and reviewing the synthesis assessment.	CGIAR, FAO, RAMSAR	October 2006
M PL	<b>IWRM Info-Forum</b> IWRM planning and implementation requires an approach that ensures: efficient allocation of water among stakeholders; a comprehensive approach to water scarcity management; and a comprehensive and equitable assessment of the benefits and costs of all water uses within a river basin. Several UN–Water agencies and donors have agreed on the need for a “mechanism to exchange information and assess progress and needs to stay abreast of developments in IWRM processes” and have initiated the IWRM Info-Forum platform programme.	UNEP, UNDP, WWAP, GWP	Ongoing
ES	<b>The River Basin Initiative on integrating biological diversity, wetland and river basin management</b> Its aims are to: assess the linkage between the management of Wetlands of International Importance and their respective river basins; review relevant experience on site management to provide lessons for application in future GEF interventions; and disseminate information through GEF and other networks. The project addresses the emerging issues of water allocation and availability in the face of water scarcity.	RAMSAR, CBD, UNDP–GEF, partners	March 2007,
WQ	<b>Water and Sewage Utilities Network in Western Asia</b> This project will produce a thorough diagnosis and assessment of partnerships, objectives, procedures, implementation and benefits for the member countries and water and sewage utilities.	UN–ESCWA	Ongoing
M	<b>African Water Information Clearing House (AWICH)</b> Comprehensive national, basin, and regional water information Clearing House in support of the African Water Development Reporting process.	ECA; UN- Water/Africa; partners;	Progressive implementation
M	<b>Development of a rural water poverty index</b> This programme will develop an index for use at global, national and local levels to assess the level and vulnerability of water development in rural areas and identify priorities for action in rural water development.	IFAD, CEH, FAO	2007
PL	<b>Comparative analysis of national water laws and regulations in water scarce countries and development of a water regulation compliance index</b> Much work in this sense has already been done in collaboration with several institutions. It provides countries with examples of legislation adapted to arid conditions. The index is a measure of the degree of implementation and compliance with national regulations.	FAO, UNESCWA, others	September 2006
<b>Policies and institutions</b>			
PL	<b>Support to water management policies in water-scarce countries</b> Several UN–Water partners provide policy guidance on water management in water-scarce countries. Better integration is needed to review and adapt water management policy advice, focusing in particular on: implementation of IWRM; capacity building in negotiation and conflict resolution; adaptation of water and agricultural policies; and harmonization of legislative and environmental standards.	ESCWA, ESCAP, FAO, ICID, UNU, UNESCO, UNEP	Ongoing
ES PL TB RB WQ WSS	<b>Global Programme of Action for the Protection for the Protection of the Marine Environment from Land-based activities (GPA)</b> The GPA addresses pollution from land-based sources, municipal wastewater and freshwater–coast linkages. The Strategic Action Plan on Municipal waste water and the training programme on municipal wastewater management are examples of GPA work. Both include options for reducing water use in sanitation and the reuse of wastewater, e.g. in agriculture.	UNEP, WHO, UN–HABITAT, WSSCC, UNICEF, FAO, UNDOALOS, UNESCO–IHE, GEF, EU	Ongoing
PL FGU	<b>IWRM 2005 programme</b> This programme supports North Africa, Southern Africa, West Africa, Central Africa, South East Asia, Central Asia and Central America and the Caribbean subregions to prepare environmental aspects of IWRM plans in response to the Johannesburg Programme of Implementation.	UNEP, GWP (UCC-Water)	Ongoing
PL CR TB RB	<b>Promotion of IWRM at country and regional level</b> Organization of a capacity building workshop in order to introduce Arab parliamentarians to: IWRM concepts; status of IWRM application in Arab countries; gaps and challenges identified in its application; and the opportunities of developing such strategies. Special focus will be given to the legislative and policy formulation dimensions. Deliverables: A manual for Arab parliamentarians to enable legislators in understanding the necessary integrated approach towards managing water resources in the region.	UN–ESCWA, BGR, UNITAR, GWP–Med, UNESCO	Ongoing
FG	<b>Financing water for agriculture</b> This initiative was initiated as part of the WWF4 High Level Panel on Water Financing (Gurria Panel). It reviews approaches and methods in financing water for agriculture, including investments and operation activities.	WWF, GWP, WB, IFAD, FAO, IWMI	Ongoing
GW	<b>Managing non-renewable groundwater resources</b> The purpose of this project is to provide guidelines for sustainable groundwater management, e.g. evaluation of “sustainable” planned groundwater mining, environmental costs and social costs; adaptation to social and cultural changes; and evaluation of the possible redefinition of development schemes at local and national level.	UNESCO, GW-MATE, IAEA, IAH, IGRAC, FAO, UNEP	2005
WSS	<b>Water and health in the ECE Region</b> The UN–ECE Protocol on Water and Health will assist countries in putting into place policies to ensure clean and reliable water supply through the effective management of water resources. It will foster good health, well-being and the protection of water resources through a series of measures including: legal, administrative and economic measures; monitoring; education; awareness raising; participatory approaches; transboundary cooperation; and international support for national and local action.	UNECE, WHO	Progressive

<sup>1</sup> Topic code refers to the categories listed in Table 2 of this document.

(continued...)

## Plan of work of the UN-Water thematic initiative "Coping with water scarcity" and deliverables for 2006–07

Topic <sup>1</sup>	Description	Partners	Due
WQ	<b>Assessment of water quality management practices in Western Asia</b> A study that characterizes and assesses water quality concerns in selected countries of Western Asia and provides recommendations to their governments on the protection and sustainable use of scarce water resources.	UN-ESCWA	December 2006
PL ES	<b>Policies, principles and procedures on payments for ecosystems services in integrated water resources management</b> The initiative aims to provide guidance on the establishment and use of PES to implement IWRM through the promotion of the protection, restoration and sustainable use of water-related ecosystems at all levels, from local to transboundary. It will illustrate the measures to integrate into development policies the value of services provided by forests and wetlands and to provide a compensation for such services. It will reflect good practices and recommend the steps to establish and implement the payments – from how to identify the value of the ecosystem services, to the legal and institutional requirements, the need for stakeholder participation and public awareness, as well as monitoring and research.	UNECE, Switzerland, UNEP, FAO; Ramsar, IUCN, MCPFE, CAREC, WWF	October 2006,
PL TB	<b>Policy framework for supporting the establishment of mechanisms for interstate cooperation on shared aquifers</b> The aim is to strengthen the capacity of water management institutions in the Mediterranean region to implement sustainable forms of utilization, management and protection of internationally shared groundwater resources. Major activities include: formulate draft policy framework (workshop); review and update existing water policies, visions and forecasts; finalize regional water vision. Deliverables: increased awareness and application of the international norms in the sustainable management of shared aquifers; transfer and exchange expertise on various shared aquifer management issues and mechanisms (including the management of data on shared aquifers); and strengthen capability to engage in interstate cooperation regarding shared aquifers and to plan and manage groundwater resources using the tools and mechanisms developed.	UN-ESCWA, UN-ECE, UN-ECA, UNDESA, UNESCO	2007
PL	<b>Guidelines for legislative and institutional reforms needed for the implementation of IWRM at national level</b> The aim is to provide member states with further guidelines on two important aspects of IWRM application: legal and institutional. These two issues were identified as two major challenges to the sustainable management of water resources and they require further study in order to enhance the application of IWRM at national level. Deliverables: guidelines for legal and institutional reforms to enhance the application of IWRM at national level.	UN-ESCWA, UNDP-CAPNET, WMO	2006
V	<b>Water-sector-related poverty reduction strategy and programs in ESCWA member countries</b> This project will: review existing applied poverty reduction strategies and programmes in ESCWA member countries; formulate improvements for guidelines and implementation of strategies and programmes; and promote dissemination and application in countries of western Asia. Deliverables: A thorough diagnosis and assessment of constraints, challenges, best practices, and deficiencies between policy and implementation.	UN-ESCWA, GTZ	Ongoing
<b>Best practices and technical advice</b>			
AWP	<b>Agricultural water use efficiency, quality and conservation</b> Low water productivity, competition for scarce water resources and degradation of water quality threaten rural livelihoods and their future sustainability. The productivity of agricultural systems is below potential under both irrigated and rainfed conditions, as are water-use efficiency and the performance of irrigation systems and rural water-related services. In extreme cases of scarce natural water resources, non-conventional sources (e.g. brackish water) are used with significant quality implications requiring adaptation and improvement of the technical and institutional framework. Moreover, the environmental impacts of agricultural activities and of the use of polluted and non-conventional water resources are further undermining the sustainability of agricultural systems. The programme aims to strengthen regulatory frameworks, management strategies and policies related to agricultural water management and to promote modern irrigated agricultural technologies and practices.	FAO, IWMI, ICID	Ongoing
PL FG	<b>Private-sector participation in the management of water resources</b> This project will diagnose and assess experience gained, lessons learned, economizing costs, benefits, training and qualification of staff in major utilities of countries in Western Asia. In the light of the assessment, guidelines will be prepared with a focus on outsourcing services, concentrating on focal points, clearly specifying economic benefits and increasing of cost efficiency. Deliverables: Toolkit and guidelines on standard outsourcing services and procedures, and dissemination of information to member countries and to water and sewage utilities.	UN-ESCWA	Ongoing
PL	<b>Education and public awareness</b> The educational aspects constitute the most crucial issue to be developed by the UN system. Education can change people's attitudes to water. Education is meant in the widest sense, aimed at children and young people, women (with their role in the family and the community), farmers and industrial water users, managers, operational and maintenance personnel, educators, agronomists and engineers. The need for innovation in developing public awareness of water scarcity is crucial.	UNESCO IHE, UNU, all	Ongoing
TB GW	<b>Internationally shared aquifer resources management (ISARM)</b> One of the purposes of this project is to assess the linkage between transboundary management and water scarcity. The 14th Session of the Intergovernmental Council of the International Hydrological Programme of UNESCO launched an international initiative to promote studies in regard to transboundary aquifers called the Internationally Shared Aquifer Resources Management programme (ISARM). Regional inventories, technical advice to countries, and case studies have been developed. Close cooperation with the UNILC has been set up for the preparation of new legal instruments on the Law of Transboundary Aquifer Systems.	UNESCO, FAO, UNECE, IAEA, IAH, IGRAC	2005–07
CR	<b>Tension reduction and prevention of water conflict among member states</b> Enhancing negotiating skills on shared water resources. Deliverable: capacity building seminars to improve negotiating skills on shared water resources for Iraq and Jordan.	UN-ESCWA	2007
PL FG	<b>Arab Integrated Water Resources Management Network (AWARENET)</b> Manuals and training workshop for water users associations (WUAs) on the local implementation of IWRM. The technical material used will be extracted from the IWRM manual and tailored for these WUAs. The main modules of interest to this target group will be on: water supply, sanitation and health within IWRM considerations; balancing water supply and demand; public-private partnership (PPP) in water management; capacity building issues and needs in IWRM at national and regional level in the ESCWA region; the enabling environment; and institutional roles.	UN-ESCWA, UNESCO-IHE/IHP, UNDP-CAPNET, UNEP	Ongoing
TB CR	<b>Transboundary river basin dialogues – expanding the boundary conditions of water sharing</b> Based on experience in conflict resolution in water-scarce regions, the programme element will develop an approach to river basin dialogue with the aims of: expanding the boundary conditions of the problem; and seeking to share the benefits of water use rather than water itself, thus expanding the domain of optimal solutions. Expertise developed for the Nile basin, the UNESCO PC-CP programme, the transboundary water conference in Central Asia, etc. will be used to shape the programme.	UNDP, WB, UNESCO, FAO, DESA, UNEP, UNECE, etc.	Progressive
CR RB	<b>Water scarcity management and conflict resolution at local level</b> The programme will: provide a link between local initiatives in water scarcity management and conflict resolution at the level of the small basin; enhance exchange of experience and information among stakeholders; and develop a knowledge base for use by stakeholders and practitioners in the field.	CGIAR, FAO, WHO, DESA	Ongoing
WSS AWP	<b>Guidelines and case studies on village water development</b> Integrating drinking-water with productive use of water can maximize benefits of village water development. It requires the development of new institutional linkages, especially at a decentralized level. The guidelines will assist in setting up integrated water resources planning and management capacities at local level. Field projects in SSA and Pacific islands (Gambia, Chad, Madagascar, East Timor, etc.).	UNICEF, FAO, WHO, DESA	2007

<sup>1</sup> Topic code refers to the categories listed in Table 2 of this document.

(continued...)

**Plan of work of the UN–Water thematic initiative “Coping with water scarcity” and deliverables for 2006–07**

Topic <sup>1</sup>	Description	Partners	Due
ES	<b>Guidelines for environmental impact assessment and regulation</b> The focus is on the protection of coastal and marine environment from concentrated brine discharges, associated indirect GHG emissions from desalination plants, conducting LCAs, etc.	UNEP, FAO	2006
AWP GW	<b>Guidelines to assess impacts of recharge enhancement systems for irrigated agriculture</b> Assessing water harvesting for groundwater recharge (enhancement systems such as percolation dams, recharge wells, etc.). The improvement of scientific knowledge on the technical performance of recharge enhancement systems and their associated social, economic and environmental impacts is intended to make the aspect of groundwater recharge (UNESCO–IAH MAR) better understood and managed (see NEX projects).	FAO, UNESCO, IAEA, IAH, GEF	2006
WQ	<b>Reuse of treated sewage in countries of Western Asia</b> The project will review existing projects and experiences, particularly of sewage reuse projects, and will aim to disseminate information among member countries by means of workshops, seminars and conferences. Deliverables: guidelines for reuse schemes in agriculture and/or recharge of aquifers, specify standards and crops, and consider socio-economic constraints.	UN-ESCWA	Ongoing
RH WSS	<b>Rainwater harvesting for augmenting water supply</b> This initiative promotes the use of rainwater for augmenting water supply for all uses through the Rainwater Partnership. The partnership promotes the mainstreaming of rainwater into water policies and strategies at global, regional and national levels.	UNEP, UN–HABITAT, UNESCO	Ongoing
PL	<b>Dams and development project</b> This project promotes the due incorporation of social and environmental aspects and stakeholder participation into decision-making, planning and management in order to ensure sustainable outcomes in support of environmentally sound water and energy management.	UNEP and the Sustainable Development Partnership	Ongoing
AWP	<b>Development and application of a model for supplementary irrigation in semi-arid areas</b> The model will identify the potential for the application of supplementary irrigation in semi-arid areas, and key constraints on the dissemination of this technique.	FAO, ICARDA	2007
AWP RH	<b>Training and development of water harvesting practices in arid and semi-arid areas for rural water development</b> A programme to enhance the use of water harvesting technologies for domestic use, agriculture, livestock, and small industries.	FAO, ICARDA, UNESCO	2007
RB	<b>HELP Basins Network</b> Best practices from the HELP Basins network for integrated catchment management: water law and policy experts, water resource managers and water scientists.	UNESCO, WMO	2007
GW	<b>Managing groundwater-dependent ecosystems</b> As many other ecosystems, wetlands depend on aquifers and groundwater resources. The programme aims to develop hydrogeological criteria for their management, and to ensure their conservation and protection.	UNESCO, FAO, IAH, GEF, Spain, Italy	2007
PL	<b>Development of an e-platform regional network on strategic planning and management (SPM) of natural resources for Asia and the Pacific</b> The focus will be on groundwater and surface water and on related capacity building.	UNESCAP, FAO, WHO, UNICEF, UNEP, UNESCO	2007

<sup>1</sup> Topic code refers to the categories listed in Table 2 of this document.

## UN-WATER

www.unwater.org

### For further information on the UN Water Scarcity Initiative

Food and Agriculture Organization of the United Nations (FAO)  
Contact: Jean-Marc Faurès or Pasquale Steduto  
Land and Water Development Division  
Viale delle Terme di Caracalla  
00100 Rome, Italy  
e-mail: jeanmarc.faires@fao.org – pasquale.steduto@fao.org  
www.fao.org/landandwater

United Nations Educational, Scientific and Cultural Organization (UNESCO)  
Contact: Alice Aureli  
Division of Water Sciences  
1, rue Miollis  
75732 Paris Cedex 15, France  
e-mail: a.aureli@unesco.org  
www.unesco.org/water/ihp/index.shtml

### Contacting UN-Water

Dr James Bartram,  
Chair, UN-Water  
World Health Organization (WHO)  
20, avenue Appia  
CH-1211 Genève 27, Switzerland  
e-mail: bartramj@who.int  
www.who.int/water\_sanitation\_health

Manuel Dengo  
Secretary, UN-Water  
UN Department of Economic and Social Affairs (UN-DESA)  
Room DC2-2020 Two United Nations Plaza,  
New York, NY 10017, USA  
Tel +1-212-963-4208  
e-mail: dengo@un.org

### UN MEMBERS

United Nations Convention on Biological Diversity (CBD)  
United Nations Department of Economic and Social Affairs (DESA)  
Food and Agriculture Organization (FAO)  
International Atomic Energy Agency (IAEA)  
International Fund for Agricultural Development (IFAD)  
United Nations International Strategy for Disaster Reduction (ISDR)  
United Nations Convention to Combat Desertification (UNCCD)  
United Nations Development Programme (UNDP)  
United Nations Environment Programme (UNEP)  
United Nations Economic, Scientific and Cultural Organization (UNESCO)  
United Nations Framework Convention on Climate Change (UNFCCC)  
United Nations High Commissioner for Refugees (UNHCR)  
United Nations Human Settlements Programme (UNHABITAT)  
United Nations Children's Fund (UNICEF)  
United Nations Industrial Development Organization (UNIDO)  
United Nations University (UNU)  
World Bank (WB)  
World Health Organization (WHO)  
World Meteorological Organization (WMO)

United Nations Economic Commission for Africa (ECA)  
United Nations Economic Commission for Europe (ECE)  
United Nations Economic Commission for Latin America and the Caribbean (ECLAC)  
United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)  
United Nations Economic and Social Commission for Western Asia (ESCWA)

### PARTNERS

Global Water Partnership (GWP)  
International Association of Hydrogeologists (IAH)  
International Association of Hydrological Sciences (IAHS)  
International Programme for Technology and Research in Irrigation and Drainage (IPTRID)  
International Water Association (IWA)  
Public Services International (PSI)  
Ramsar Convention on Wetlands Secretariat  
World Water Council (WWC)