

# Fitting the pieces

**TOGETHER**

**The World Water Assessment  
Programme (WWAP)**  
for development, capacity building  
and the environment

## MILESTONES

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- 1977** • UN Conference on Water, Mar del Plata
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- 1990** • Global Consultation on Safe Water and Sanitation for the 1990s, New Delhi
  - World Summit for Children, New York
- 
- 1992** • International Conference on Water and the Environment, Dublin
  - UN Conference on Environment and Development (UNCED Earth Summit), Rio de Janeiro
- 
- 1994** • Ministerial Conference on Drinking Water Supply and Environmental Sanitation, Noordwijk
  - International Conference on Population and Development, Cairo
  - Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown
- 
- 1995** • World Summit for Social Development, Copenhagen
  - Fourth World Conference on Women, Beijing
  - Intergovernmental Conference to Adopt a Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, Washington, D.C.
- 
- 1996** • UN Conference on Human Settlements (Habitat II), Istanbul
  - World Food Summit, Rome
- 
- 1997** • 1st World Water Forum, Marrakech
- 
- 1999** • World Conference on Science, Budapest
- 
- 2000** • 2nd World Water Forum, The Hague
  - World Water Vision exercise completed
  - World Water Assessment Programme announced
- 
- 2001** • International Conference on Freshwater (Dublin +10), Bonn
- 
- 2002** • World Summit on Sustainable Development (Rio +10), Johannesburg
- 
- 2003** • 3rd World Water Forum, Kyoto
  - First edition of World Water Development Report launched
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**The World Water Assessment  
Programme** (WWAP)  
for development, capacity-building  
and the environment

A United Nations system-wide effort to develop the tools and skills needed to achieve a better understanding of those basic processes, management practices and policies that will help improve the supply and quality of global freshwater resources.

‘ . . . to halve by 2015 the proportion of people who are unable to reach, or to afford, safe drinking water . . . ’

‘ . . . to stop the unsustainable exploitation of water resources, by developing water management strategies at the regional, national and local levels, which promote both equitable access and adequate supplies’.

UN Millennium Declaration, 2000

## THE CHALLENGE

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Nearly 15 years have passed since the 1987 United Nations Commission on Environment and Development (the Brundtland Commission) first called for development *that meets the needs of the present without compromising the ability of future generations to meet their own needs*.

And nearly 10 years have passed since the nations of the world, meeting in Rio de Janeiro for The Earth Summit, drew up an action plan for the twenty-first century, called Agenda 21. Chapter 18 of this blueprint for action focused entirely on the sustainable use of freshwater resources.

Today, the movement towards a more people-oriented and integrated approach to water management and development is well underway. It is time to take stock. Are we achieving the twin goals of serving society, while also ensuring the sustainable use of natural resources? What is missing from the global freshwater picture?

To answer these questions, twenty-three agencies or members of the United Nations family are pooling their talents and their concerns. They are undertaking a collective, system-wide and on-going evaluation process called the World Water Assessment Programme (WWAP). The Secretariat is housed in UNESCO, which also plays a co-ordinating role.

By marshaling the knowledge and expertise already available, by creating new, more comprehensive models, and by testing these models on real-world situations, the Assessment Programme is putting the pieces of a global challenge together. Once the pieces fit, it should be possible to predict where the greatest water scarcity and risks of conflict or floods will occur, and to plan accordingly. Better health, food security, a cleaner environment, and the well-being of both people and planet Earth are at stake.

# PIECES OF A WHOLE

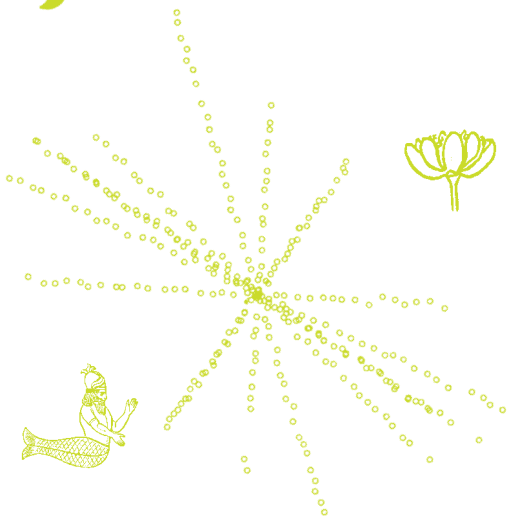
Like the pieces of a giant puzzle, the parts of the World Water Assessment Programme come in every size and shape. There are the human actors and stakeholders: local communities, resource managers, farmers, market women, decision-makers, scientists, engineers, technicians and city dwellers. There are the institutional players: research institutions, funding agencies, wastewater treatment and sanitation centres, national authorities, private sector enterprises, monitoring stations, universities, grass-roots associations and international bodies and non-governmental organizations. And there are the geographical locations being analysed, such as river basins, countries and cities.

Each part has a role to play. Each piece contributes to our understanding of the whole.

Building on the achievements of many earlier efforts — the 1992 Earth Summit, the World Water Forums of 1997 and 2000, and the World Water Vision completed in 2000 — the World Water Assessment Programme is mandated to:

- **develop** new methodologies, monitoring techniques and modelling tools as required to ensure an integrated approach and comprehensive view of resource needs, availability and demand;
- **compile** and interpret data, and establish a geographically referenced meta-database that takes into account local conditions and circumstances;
- **prepare** a series of World Water Development Reports, revised and updated continuously so as to track and report on progress in devising new assessment tools and policies;
- **improve** country-level capacity through education and training, so that even the poorest regions can participate in the water assessment process;
- **establish** a worldwide information network among governments and institutions concerned with water issues.

Putting the many pieces together will take time, but the exercise will provide a common platform from which to combat the looming water crisis.



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**THE  
WORLD  
WATER  
DEVELOPMENT REPORT**

Documenting basic processes,  
management practices and policies

**This Report, to be updated and published at regular intervals, is both part of the dynamic water assessment process itself, and an outcome of it. It offers an evaluation of our stewardship abilities, an authoritative picture of the state of the world's water resources, and a description of critical problems. The different sections will provide a record of progress made in understanding and implementing better management practices and allow access to the data and methodologies used to model water-related stress in different settings.**

The Report is divided into three parts:

- **A thematic narrative** that highlights national, regional and world trends in water resource management during the 10 years since the 1992 United Nations Conference on Environment and Development (UNCED). With *Agenda 21* as its starting point, it tracks developments in implementing Chapter 18, devoted to the Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources. It also provides a series of world maps and tables that help to summarize the global situation.

- **A methodology section** that presents new techniques for developing indicators to assess stewardship — that is, the ability of each society to adapt to changing circumstances and manage its water resource systems in a sustainable manner.

A major challenge is to broaden conventional economic and hydrological models by incorporating social and cultural factors, biodiversity, gender, climatic variables and other dynamic elements of environmental change.

- **Case studies** to which the new tools and indicators developed in the previous section have been applied. Some of the studies examine trans-boundary river basins, while others are based on cities or country experience. Because the assessment exercise is an on-going process, the case studies will be continuously revised. New data will be added as they become available, and models and indicators will be updated or expanded to take account of new knowledge about interactions between water and people. Over time, the collected examples should make global coverage possible.

**Water stewardship:** that complex aggregation of policies, legislation, social programmes, economic approaches and management strategies by which society seeks to achieve the goal of water sustainability.

(Background document: *World Water Development Report*.)

## Spotlight on developing countries

Many of the most crucial pieces needed to complete the global water picture must come from individual countries, especially those in the developing world. These same countries may also be the prime beneficiaries of the World Water Assessment Programme, since they are often the most exposed to water stress and its attendant problems.

The numerous advantages of co-operation include:

- **support for building capacity** throughout the water sector;
- **assistance in collecting and analysing reliable water data** at national and river basin levels;

- **the opportunity to harmonize** water data and thus gauge progress towards achieving sustainability in comparison with other countries;
- **better targeting** of sustainable water management projects to make them attractive to international investors.

Many national governments are already eager to participate in the water assessment process. Their contribution is vital for putting the pieces together.

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## Filling in the gaps

To complete its global picture of freshwater availability, needs and demand, the World Water Assessment Programme must fill in many gaps. For some of these gaps, the pieces are available, but they must be identified and fitted together. For others, they must be created. However, unlike a conventional puzzle, which remains fixed once the pieces are in place, the freshwater picture is perpetually changing.

Each earlier effort to map the quality and resilience of water resource systems has added some important piece to our knowledge and understanding. But many dark areas remain on which The World Water Assessment Programme hopes to shed light.

They include:

- **absence** of reliable, comprehensive data from many countries, especially in the developing world;
- **difficulties** identifying, assessing and comparing information from different national and international sources and at different scales;
- **lack** of widely accepted indicators for the sustainable use and management of water resources;
- **inadequate attention** to issues of water quality, ecosystem dynamics and socio-economic influences.

As these pieces are filled in, a truly global picture of water resources should begin to emerge.



## No single answer

If assessing the state of global freshwater resources were simply a matter of computing supply and demand, the task would be a relatively easy one. However, water is more than just a simple commodity. It has social and economic value, and may also be imbued with different cultural meanings and significance. Therefore, in assessing the world situation, it is essential also to consider the role and value of water within specific social and geographic contexts.

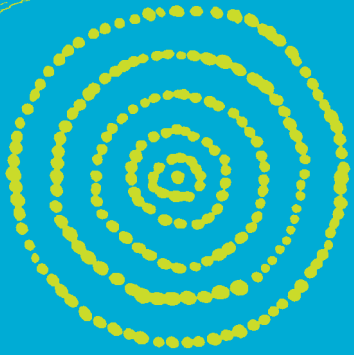
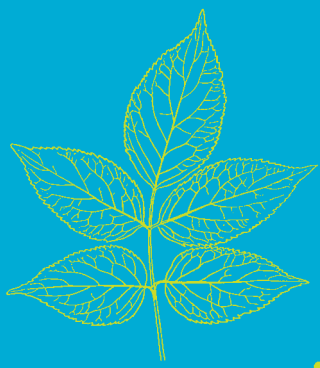
History and anthropology have taught us how each society employs different strategies to adapt to change and scarcity. Water resource management is the rule, not the exception. All water management strategies reflect prevailing social attitudes and values. To be understood, they must be viewed in this broader setting.

One task the World Water Assessment Programme has set for itself is to examine these multiple approaches and evaluate their effectiveness. What approaches give the best results? Under what conditions? Which of these approaches might be useful to others? How can competing interests be harmonized?

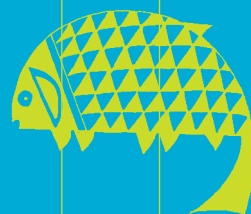
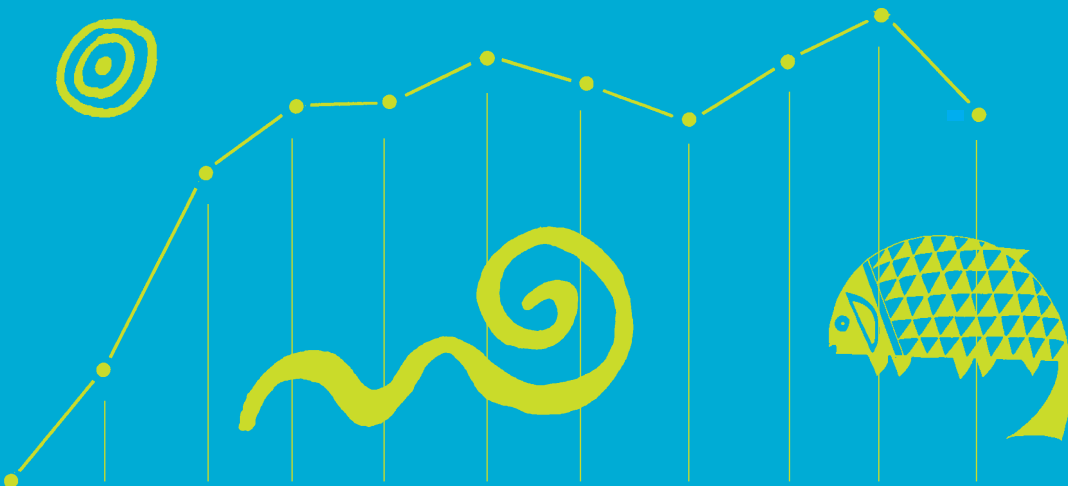
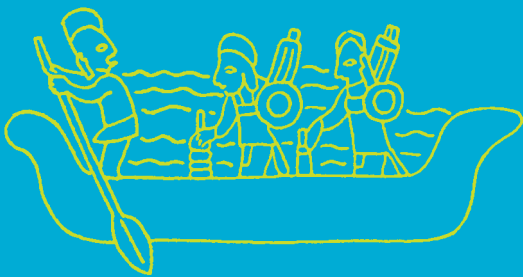
For the moment, there are many questions, but few answers:

- Is access to water and sanitation a basic human right?
- How can water be made both accessible and affordable to everyone?
- What is government's role?
- What policy incentives or disincentives might encourage less wasteful or environmentally damaging practices and behaviour?
- Should the polluter pay?
- How can gender issues be taken more fully into account when formulating policy?
- How can institutional and technological innovation be stimulated?
- Can governments and the private sector form partnerships to develop a service-oriented approach to water management and be accountable to users?
- Will increased private sector participation improve efficiency in water use and supply?
- How can the different stakeholders participate more actively in the decision-making process?
- How can education, capacity-building and awareness campaigns be used to support integrated approaches that respect the environment?

Seen in this light, it becomes clear that no single formula fits all cases. Each society must seek its own answers and responses. Each society must define an approach that suits its particular circumstances.



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# WORLD PEACE AND SECURITY AT STAKE

The freshwater resources of our planet are unevenly distributed and in many places they are dwindling while demand is increasing. We are drawing out more than can be renewed. This downward trend and the water stress it causes are affected by population pressures, economic growth, demographic shifts, technological change, social factors and environmental dynamics. That is why we speak of a water crisis.

**Water crisis** is the current widespread and chronic lack of access to safe and affordable drinking water and sanitation, the high incidence of water-related diseases, the destruction of wetlands, and the degradation of water quality in rivers and lakes. As the imbalance increases, communities face ever greater risks from water-borne diseases, pollution disasters, food shortages and water-related hazards such as floods or drought.

**Water stress** can be defined as the condition of insufficient water of satisfactory quality and quantity to meet human and environmental needs.

Both cases reveal an explosive potential for social conflict and widespread disruption, not to mention bleak prospects for economic growth and human development. Competition may arise between different user groups or sectors within countries, such as between agriculture and cities. And there is also the risk of competition over water between countries, when those who are upstream divert or pollute the water of those who are downstream.

Finally, although water offers potential for conflict, it also provides a powerful tool for co-operation. The World Water Assessment Programme will emphasize good will and shared interests — national, regional and international — as the best way to try to resolve the looming crisis. But first it must take the full measure of progress and problems in managing freshwater resources. Then, by fitting the pieces together with the aid of research, integrated management strategies, creative policy formulation and the participation of all stakeholders, the international community and its partners hope to ensure more sustainable use of our most precious resource.

‘ Sustainable water use is the use of water that supports the ability of human society to endure and flourish into the indefinite future without undermining the integrity of the hydrological cycle or the ecological systems that depend on it.’ Peter H. Gleick

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**Valuing water**  
**Sharing water resources**  
**Managing risks**

# **GOVERNING WATER WISELY**

**Improving the knowledge base**

**Water for energy**

**Protecting ecosystems**  
**Securing the food supply**  
**Meeting basic needs**

**Water for industry**



## JOIN THE EFFORT

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### **United Nations Funds and Programmes**

UN Centre for Human Settlements (Habitat)  
UN Children's Fund (UNICEF)  
UN Department of Economic and Social Affairs (UNDESA)  
UN Development Programme (UNDP)  
UN Environment Programme (UNEP)  
UN High Commission for Refugees (UNHCR)  
UN University / International Network on Water, Environment and Health (INWEH)

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### **Specialized UN Agencies**

Food and Agriculture Organization (FAO)  
International Atomic Energy Agency (IAEA)  
International Bank for Reconstruction and Development (World Bank)  
World Health Organization (WHO)  
World Meteorological Organization (WMO)  
UN Educational, Scientific and Cultural Organization (UNESCO)  
UN Industrial Development Organization (UNIDO)

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### **United Nations Regional Commissions**

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

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### **Secretariats of United Nations Conventions and Decades**

Secretariat of the Convention to Combat Desertification (CCD)  
Secretariat of the Convention on Biological Diversity (CBD)  
Secretariat of the UN Framework Convention on Climate Change (CCC)  
Secretariat of the International Decade for Natural Disaster Reduction (IDNDR)

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The World Water Assessment Programme is an on-going exercise to map the world's progress towards sustainable use of its freshwater resources. The World Water Development Report, published at regular intervals, will document the main trends and results of this process. If you would like to participate or receive more information, please contact:

#### **World Water Assessment Programme (WWAP)**

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