World Water Council

Conseil Mondial de l'Eau

Long Term Vision for Water, Life and the Environment:

A Proposed Framework

March 1998

During the First World Water Forum in Marrakech (1997), the Council was mandated to develop a Vision. The Marrakech Declaration also described how:

"Building on past international efforts and relying on the collective wisdom and resources of the global community, the process leading to the Vision will include research, consultations, workshops, print and electronic publications and many other means for absorbing, synthesizing and disseminating knowledge.

At the conclusion of this process, fully aware of the pitfalls along the way, the Vision will offer policy-relevant and region and country-specific conclusions and recommendations for action to be taken by the world's leaders to meet the needs of future generations."

The purpose of this Framework proposal is to translate the above mandate into a work plan that will lead us to the Second World Water Forum in March 2000 in The Hague, and beyond.

This document was prepared by Guy Le Moigne and Arienne Naber under the guidance of Roberto Lenton and Bert Diphoorn, and with substantial contributions from Huub Savenije, Jean-Marie Fritsch, Mark Rosegrant, Jan Janssens, Raymond Lafitte, John Pigram, Mac Mercer and John Soussan. Bas Kotterink contributed to the finalization of this proposal.

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Development at national, regional and global level is aimed at improving the quality of life, not only socially and economically, but also culturally. Water is an important vector for development, although externalities such as water pollution or degradation of the environment can form a serious constraint to this development in many parts of the world.

In June 1996, the World Water Council was established in France as the International Water Policy Think Tank, its main objective being policy impact to improve fresh water management. During the First World Water Forum, organized together with the Government of Morocco in Marrakech in March 1997, the Council was mandated to "launch a three-year initiative of study, consultation and analysis that will lead to a global Vision for Water, Life and the Environment".

Why did the Council decide to take on this formidable task?

Firstly, at the brink of a new century, it is worthwhile to look back momentarily. The 20th century is marked by two World Wars and the extreme tensions between two ideologies: capitalism and communism. We are witnessing society change from predominantly rural and closed communities into largely industrialized urban centers. At the same time and due to the vast developments in communication technologies, the planet is becoming a global village, and humankind is becoming aware that we all share the same limited resources which need to be managed sustainably.

Secondly, expansive demographic development from 2 billion in 1900, to 6 billion in 2000, and probably to 12 billion in 2100, forces humanity to face the complexity of issues—quantitative and qualitative, political and economic, cultural and environmental, fiscal and financial, legal and institutional—related to ensuring food security, providing adequate drinking water and sanitation services, stimulating the economy, and preserving the environment. Satisfying these needs requires a comprehensive approach and hence a good understanding of the resource.

And thirdly, despite historical, physical, and social constraints, the future is not already written. Rather than simply "happening", our future depends on collective and individual choices and actions. Thus, conditioned by necessity and freedom, taking the long view will allow us to prepare for the changes ahead and shape our future path.

The Marrakech Declaration describes how the Council aims to develop the Vision:

"Building on past international efforts and relying on the collective wisdom and resources of the global community, the process leading to the Vision will include research, consultations, workshops, print and electronic publications and many other means for absorbing, synthesizing and disseminating knowledge.

At the conclusion of this process, fully aware of the pitfalls along the way, the Vision will offer policy-relevant and region and country-specific conclusions and recommendations for action to be taken by the world's leaders to meet the needs of future generations."

This proposed Framework attempts to translate the above mandate into a work plan that will lead us to the Second World Water Forum in March 2000 in The Hague, and beyond.

P r e f a c e

The Council is grateful to the Dutch Government for the financing that made it possible to prepare the Framework for the Vision. As part of the preparatory phase, a Stakeholders Consultation was organized with the assistance of IHE in Delft on February 23 and 24, 1998. The present Framework proposal benefited tremendously from the wealth of comments received during this consultation on the background papers by the Task Managers as well as on the first draft Framework. The revised Task Managers' reports are available in separate Annexes.

At the Stakeholders Consultation held in Delft in February 1998, the participants indicated the importance of feelings to guide the preparation of the Long Term Vision for Water, Life and the Environment and stressed the following elements:

"political will and leadership, stakeholder participation and global ownership, regional relevance and communication, finance and access to water, equity and reconciling conflicts, health and lifestyle, value of the environment and water as a vector for sustainable socio-economic development".

Mathieu Pinkers, one of the participants, eloquently captured the feelings expressed above:

"Water for the future

Water our future

Water your future

Water your life

Water your lifestyle".

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In view of the very short preparatory time leading to the presentation of the Framework proposal at the International Conference on Water and Sustainable Development in Paris on March 19, 1998, the Task Managers' reports and their recommendations may still show some inconsistencies in terms of presenting the issues and proposing activities. Following the March 1998 Paris Conference, the proposal will be reviewed by the Council's Board of Governors in April 1998 prior to presentation at donor meetings in May and June 1998.

Guy Le Moigne
Executive Director
March 1998

Executive summary

"Where do we want to be in the year 2025", and "how do we get there" are questions we attempt to unravel in this Framework proposal.

The report begins with a description of what we want the world to look like 30 years from now. The goals, based on commonly held values, are linked and a new approach to addressing water issues in the planning of economic development, industrial processes, and modern lifestyles is introduced.

Croatia: Monastry

To examine the forces that shape our world, the development of three broad classes of scenarios is proposed: a Use scenario variant characterized by essentially fulfilling the needs of the traditional user-functions, a System scenario variant which can be described as aiming to restore and protect environmental values according to the goals of the environment building block, and a Change scenario variant in which the user-functions and the environmental functions are optimized and integrated into an overall socio-economic development policy.

In the next section, the process leading to the Vision is described by looking back at the recent history of the Council, detailing the tasks in the coming two years leading to the Second World Water Forum, as well as proposing future tasks to refine the Vision in the next century. Progress will be monitored every three years at subsequent World Water Forums.

To implement the core activities leading to the Second World Water Forum in March 2000, it is recommended that a dedicated Vision Unit be established. A preliminary cost estimate of US$ 5 million is proposed for financing these core activities, including the Vision Unit, the preparation of regional and international meetings, and the thematic studies leading to the development of scenarios and associated recommendations for action.

The paper closes with a reflection on the need to take the long term view and adopt a comprehensive framework. This section also stresses the importance of a general communication strategy throughout the Vision process.

1. A vision for the next century

1.1 Goals and values

Where do we want to be in the year 2025? While the notion of a sustainable world may accommodate a diversity of views, we might agree that we would like our grandchildren and great-grandchildren to inherit a world, 30 years hence, in which:

- the quality of life is improving, both socially and materially, absolute poverty and malnutrition are eradicated, and access to information and education is universal;
- the quality of the human environment is improving, with pollution under control, critical environmental resources recovering, and the human impact on the global climate reduced;
- the inequity between poor and rich is diminished;
- the disputes over water are solved;
- the human solidarity is stronger at family, community and global levels; and
- the global population growth is stabilized.

This vision reflects widely held values in which water plays an important role. The goals are closely linked, yet achieving them will require not only integration within the water sector, but reaching out to all the other sectors of society. Improving the quality of life, for example, requires arranging a world economy in which the global population growth stabilizes and access to water, food, a healthy environment, security and education are universal.

Brazil: Fetching water

A new approach

Hence, providing for economic growth to raise standards of living without increasing pollution, irreversibly degrading the environment, and accelerating climate change requires a new approach to addressing water issues in the planning of economic development, industrial processes, and modern lifestyles.

First and foremost, we must foster a strong political commitment associated with representative stakeholders participation. Selection of representative stakeholders is difficult but essential to ensure not only that their views are taken into account, but also that the process of preparing the Vision is perceived as assuring equity, transparency and fairness, and hence that the options proposed are sustainable.

The new approach will need to be tailored to the situations and constraints facing individual countries and regions. Many of the countries with limited renewable water resources are in the

Middle East, North Africa, Central Asia, and Sub-Saharan Africa, where populations are growing fastest. Elsewhere, water scarcity may be less of a problem at the national level but is nevertheless severe in many areas such as in northern China, western and southern India, western South America, and large parts of Pakistan and Mexico. For some countries, such as those in Europe, pollution and groundwater over-dependency is the largest problem affecting water resources. In much of Africa, implementation capacity is a critical issue exacerbated by the frequency of prolonged droughts. In some countries, water resource management is not yet a significant problem. These differences among regions and countries will shape the design of policies and strategies for a given country (World Bank, 1993).

Scenarios

While the future is open and cannot be predicted, it is proposed to develop scenarios that would examine the forces shaping our world, the uncertainties that lie before us, and the implications for tomorrow of our actions today.

Three broad classes of scenarios are proposed: a Use scenario variant characterized by essentially fulfilling the needs of the traditional user-functions, a System scenario variant which can be described as aiming to restore and protect environmental values according to the goals of the environment building block, and a Change scenario variant in which the user-functions and the environmental functions are optimized and integrated into an overall socio-economic development policy.

The development of the scenarios will be driven by commonly used demographic and economic projections, an assumption that the consumption and production patterns in developing regions will converge towards those in the industrialized world, a hypothesis of gradual technological development, and the absence of abrupt changes affecting water availability, needs and use.

1.2 A comprehensive framework

Once the goals of the Vision are formulated, the next question is "How do we get there". Many agree that a shift in approach is necessary if the major obstacles on the road towards a better future for water, life and environment are to be overcome.

The first Stakeholders Consultation in Delft emphasized the following guiding principles of the Council's Vision:

- build on lessons of the past;
- foster political will and leadership; and
- ensure stakeholder participation and global ownership.

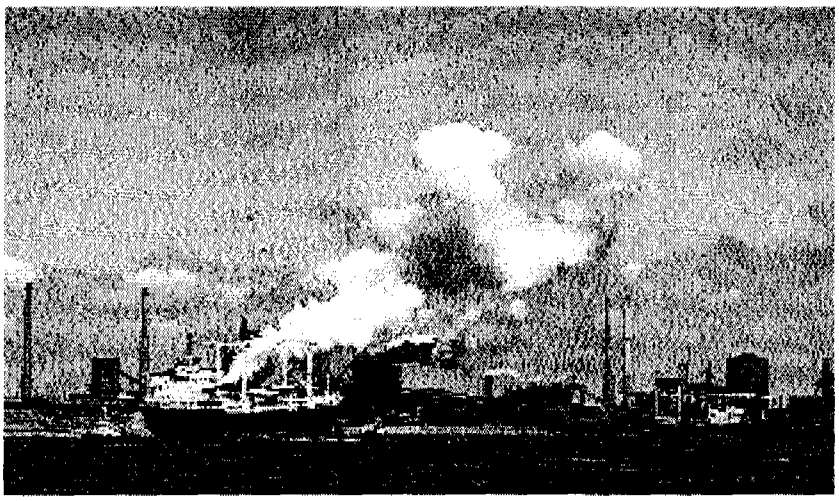
The Vision should address water-sector transcending issues such as water pollution and the links to public health, the loss of essential environmental functions; flooding and the cost to society in terms of public health and loss of economic assets; climate change and the potential links to loss of socio-economic assets and environmental functions.

Many of these pervasive problems, however, originate outside the water-sector and, in most cases, require a solution that lies in part beyond the scope of intervention of the traditional water sector.

Water situations and availability of human and financial resources vary from country to country and from region to region. Since the Vision must appeal as much to the country with abundant resources as it does to the country with scarce resources, the comprehensive framework, therefore, will have a strong regional perspective.

Worldwide, the majority of rivers and aquifers are shared by two or more countries, yet no enforceable law governs the allocation and sharing of international waters. The Vision will attempt to clarify the options available for countries to negotiate water-sharing agreements and to establish mechanisms for joint river basin management.

The above considerations help shape the contours of a new comprehensive framework within



The Netherlands: Inland navigation

which water-issues could be addressed. The subtle departure from previous approaches [1] should lie in the emphasis placed on the integration of water related issues into the socio-economic planning and consensus building processes.

Conventional socio-economic development strategies have resulted in misallocation and wastage of water, and damage to the environment, as a result of institutional weaknesses, market failures, ineffective pricing policies, and misguided investments [2].

Rather than only taking into account national or regional socio-economic objectives in water sector planning and management efforts, water related considerations should drive the process of *setting* these objectives. This requires a different mindset of water professionals, but more importantly, it requires a different mindset and a long term view of our political and religious leaders.

Into the comprehensive framework will have to be integrated and inter-linked the various water-use sub-sectors that will contribute to achieving the goals set out by the Vision:

- Ensuring food security through aquaculture, and rainfed and irrigated agriculture;
- providing adequate water supply and sanitation services;
- developing water resources for economic uses, including industrial water uses, energy production, navigation, and tourism and recreation; and
- preserving essential environmental functions.

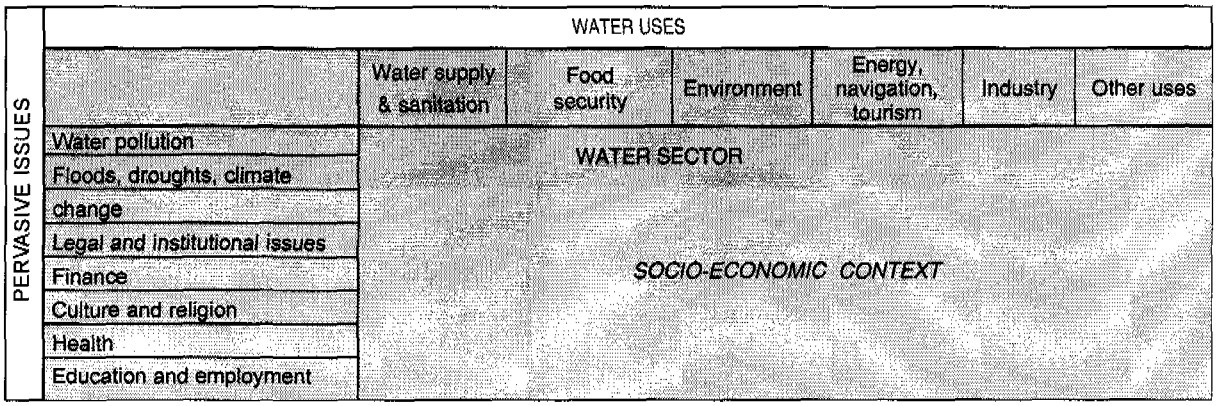
Together these building blocks more or less represent the traditional water sector. In Table 1 *(next page)* the water sector building blocks are placed within the larger socio-economic context and linked with the pervasive water issues. Table 1 also shows another set of cross-cutting themes related to the legal, institutional, financial, cultural and educational fabric of society.

What is missing in this table are the mechanisms and processes that allow the individual elements to interact, to create synergy in working towards realizing the overall goals of the Vision. The importance of the integration of the different elements of the water management framework is underlined by the growing emphasis on the concept of Integrated Water Resources Management (IWRM). IWRM became a buzzword in the 1990s. Today, a worldwide consensus exists on the

1- In this context it can be noted that the United Nations developed "Integrated Water Master Plans" for many developing countries. The origin of these master plans dates back to the early seventies. More recently the "World Bank Policy Paper on Water Resources Management" (1993) stresses the importance of a comprehensive framework for water resources managment.

2 - In its Policy Paper on Water Resources Management (1993), the World bank underlines three problems that need to be addressed in particular:

- fragmented public investment programming and sector management, that have failed to take account of the interdependencies among agencies, juridictions, and sectors;
- excessive reliance on overextended government agencies that have neglected the need for economic pricing, financial accountabilty, and user participation and have not provided services effectively to the poor; and
- public investments and regulations that have neglected water quality, health and environmental concerns.



need to apply this concept in water management. However, a lot of progress still has to be made to translate the theoretical IWRM concepts into real world water management challenges. In particular, as indicated above, the exchanges and interactions between water sector development and socio-economic development need to be better understood. This is one of the issues that requires further analysis in the process of building the Vision. To help us in the analysis of complex systems it may be useful to call on the expertise of professionals in this area. For instance, in preparing for their second and third national water policy paper in the 1980s, the Dutch government called for the help of the company that analyzed the complex issues associated with the launching of space air crafts and rockets to the moon.

A final ingredient that glues together the elements of the water resources management framework is the knowledge of the resource and the demand. Three aspects related to knowledge and information are, in particular, relevant to the Vision: demand indicators; policy indicators; and efficiency indicators.

There are furthermore a number of other concerns to be dealt with in the collection, sharing and exchange of information within the water sector, between the water sector and other sectors, within and across countries and regions, and between public, private and non-governmental institutions at different levels. These and other issues are further developed in the following sections on "Integrated water resources management' and "Knowledge and information management", and in the sections on the different water sector building blocks: "Food security", "Water supply and sanitation", "Other economic uses", and the "Environment".

Integrated water resources management

The challenge of IWRM in the coming decades will be to develop do-able approaches to the potentially very complex problem of meeting multiple demands for water by multiple inter-linked resources. The growing demand of a rising population intensifies the competition over an increasingly polluted and depleted resource. The optimal redistribution of water over many uses and users will thus become more critical than ever in the next century. Unfortunately, water resources management institutions have by and large developed as engineering-based water supply organizations and are widely failing to adapt to their new role in which demand needs to be managed and conflicts among users resolved.

The World Bank Water Resources Policy Paper (1993) summarizes some of the key impediments. They are quoted in a footnote above. To address these and other cross cutting issues within the framework of IWRM and in support of building the Vision, the following elements of IWRM and their interlinkages are proposed to be analyzed.

Valuation of water

It is hard to imagine carrying out IWRM without discussing the value of the basic resource. The value of water is different to different users in different parts of the world. In theory, once the

value in use is assessed, IWRM will have the means to optimize allocation of the resource between users and regions. The first step will be to help distinguish between, value, cost, and tariff. There is a great misunderstanding of how these three concepts interact. Many water professionals view these items and their individual components very differently. In particular, the social and political role of direct and cross subsidies in setting tariffs for selling and marketing water services to the poor and other targeted groups has to be addressed.

Stakeholders participation

The process of participation and consensus building on critical water issues needs to be expanded to include other sectors such as planning, finance, health and education at all layers of society in the planning and decision-making process.

The Netherlands: A swimming lesson

Capacity building

There are several basic conditions that have to be met to make IWRM effective (UNDP, 1992):

- an enabling policy and legal environment: emphasize incentives that encourage water conservation, recycling and reuse, and discourage pollution;
- appropriate institutions, financing, mandates, coordination mechanisms and participatory processes: build on existing institutions and integrate the water sector into the fabric of the society and the economy; and
- human resources development: create better career opportunities; train professionals in IWRM or in sub-sectors with ample attention to the intersectoral aspects and implications; and establish the right mix of professionals.

The success of IWRM depends on the weakest of these elements. Capacity building is seen as a process whereby these three components are strengthened in conjunction.

Tools, instruments and methodologies

Planning and analysis for IWRM should address all aspects of IWRM and, hence, has to include national economical, financial, social, environmental and political objectives. In general a strategic planning approach will be followed, combining short term objectives (5-10 years) with long range development options. By definition, planning for IWRM is strongly linked to spatial planning, land use planning, environmental planning and (socio-)economic planning. Depending on the local situation these plans will have to be integrated, tuned to each other or taken as boundary conditions.

It is proposed to develop a strategy for adapting and applying sets of new tools consisting of geographical information systems (GIS), and decision support systems (DSS) to address critical issues in IWRM. Special emphasis will be placed on adapting decision-making tools to the needs of policy-makers and high level decision-makers.

Transboundary waters

Scarcity of water resources make the sharing of transboundary waters an important issue in many regions. At present there are a number of regions where the issue is high on political agendas and is recognized as a major source for political conflict.

To develop an approach to managing transboundary waters it is proposed to analyze promising mechanisms for sharing transboundary waters and to further develop conflict mitigation and resolution strategies.

Knowledge and information management

At the closing of the 20th century, we are witnessing dramatic advances in the fields of telecommunications and information technology. In the next century, the startling result of the combined advances in these sectors may very well be a transparent, cost-effective, worldwide communication environment that is likely to embrace even the most remote parts of our planet.

The challenge in the information age will be to distill out of all the new options the right information and tools that will support policy formulation, decision-making and management processes in the water sector. In the context of increasing competition for a limited resource, more emphasis will have to be placed on developing a framework of indicators for conflict resolution, demand management, water quality issues, and financing, taxation, subsidies and cost recovery.

In this light, the great interest in modern information and networking tools is well understood. However, due to prohibitive cost and limited human resources, and even in spite of developments in new technology areas such as remote sensing and automated data recording, a number of developing countries will continue to have great difficulties in undertaking new data-collection programmes to underpin national water policies with hard figures.

To break out of the lack-of-data spiral, the emphasis should shift from data collection to optimizing the use of existing and readily available data. This requires an evaluation of short term and long term data needs, keeping in mind national and regional policy targets. Secondly, existing data systems and data collection mechanisms need to be better exploited through rehabilitation, validation, harmonization and integration. And thirdly, more readily available socio-economic information should be aggregated with hydogeological and environmental data to produce valuable policy supporting indicators and targets on water related issues. Socio-economic information

3 - An interesting example in this context is the USGS spatial database on emission of toxic substances by industry and agriculture in the USA.

should include diverse types of informations such as gender related data, customary knowledge, but also data on industrial and agricultural processes [3].

Trends and scenarios: the impact of driving forces

An important tool in the evaluation of long term policy options is trend and scenario analysis. Water management strategies will be drawn up against a background of a rising world population, rapid urbanization in the developing world and advancing industrialization in Asia, Latin America and ultimately Africa. These well-known driving forces will increase the pressure on an already much solicited resource and they will make the urgent development of sound water management strategies an imperative. Another factor that may affect regional strategies for water resources allocation in the next century is the potential impact of climate change. To achieve the long term goals of the Vision the impact of these different socio-economic scenarios on demand, water quality and the development of cost will need to be evaluated. It is therefore proposed to develop the three broad classes of scenarios introduced above: the *Use scenario*, the *System scenario*, and the *Change scenario*.

Three sets of indicators are, in particular, relevant to the Vision:

- demand indicators: to feed socio-economic trend analysis and scenario development with quantitative information on demands stemming from the various water uses;
- policy indicators: to inform non-technical decision-makers and the general public and to measure the effectiveness of policy interventions against global, regional and national policy targets; and
- *efficiency indicators:* to stimulate the development of the largest untapped and inexpensive water resource, water use efficiency targets need to be established and their relative adherence measured.

With regard to data-management and long term data needs on all scales the following initiatives are envisaged:

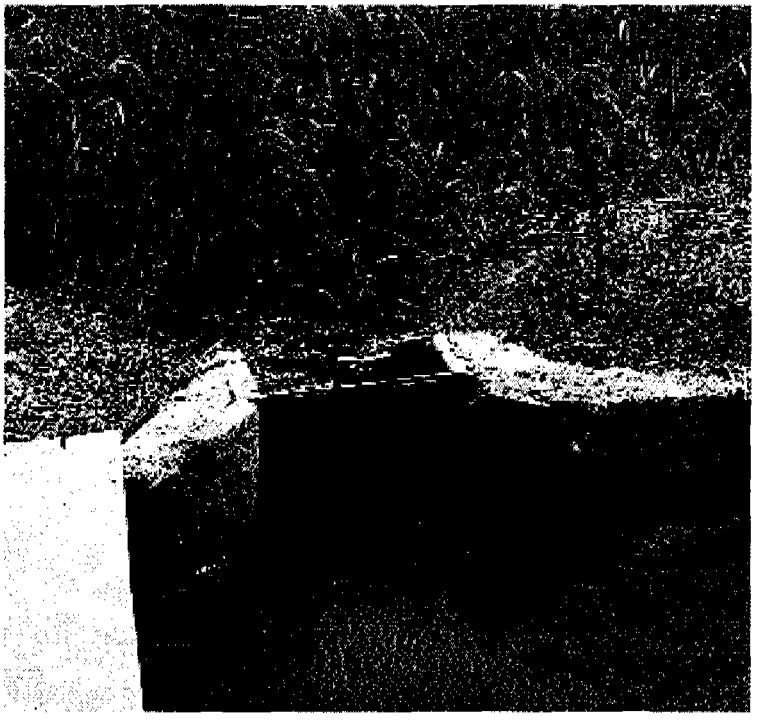
- analysis of technological, institutional and financial bottelnecks in basic data acquisition and dissemination mechanisms;
- evaluation of options for rehabilitation, harmonization and standardization, and integration of data collection, processing and exchange mechanisms on regional and river basin scale;
- analysis of long term data needs to follow regional and global trends related to climate change and other large scale phenomena; and,
- evaluation of mechanims to implement international support for national efforts that serve long term or global needs.

Food security

Worldwide, agriculture accounts for about 72 percent of global water withdrawals. In the mid-1990s, irrigated agriculture contributed nearly 40 percent of world food production on 17 percent of the cultivated land. Irrigated lands are thus disproportionately important to global food security. Over the next 30 years, as much as 80 percent of the additional food supplies to feed the world may depend on irrigation. It is estimated that meeting the food requirements of the 2.6 billion people expected to be added to the planet by 2025 would take an additional 1,040 billion cubic meters of water (Postel, 1996).

However, against the backdrop of continued industrial and urban development, it is likely that significant amounts of water will have to be reallocated from agricultural uses to satisfy higher valued domestic and industrial water demands. Thus, considerable water savings will have to be achieved through improved water management policies. What would be the impact on food production, food security, and the rural economy of transfers of water out of agriculture? For developing countries, what would be the adjustment cost out of agriculture for the national economy all together?

In addition, increased attention has to be paid to the quality of the land and water resource base to prevent further degradation through waterlogging, salinization, groundwater mining, diversions



France: Irrigation

of surface water, and water pollution. Pollution of water from runoff of agricultural chemicals, industrial effluents, and poorly treated sewage and solid waste disposal is a major contributor to disease and malnutrition, particularly among children.

This building block proposal delineates a program of research and analysis, policy outreach, and information dissemination to examine these critical issues and to disseminate the results and recommendations to a wide audience. To best use scarce resources and expertise, the analytical program builds upon existing research from the lead institutions and partners, and will synthesize gains from the current knowledge base wherever possible.

The Food Security building block will pursue three overriding objectives: (1) development of a global and national understanding of the relationships among water scarcity, food production, and food security; (2) assessment of the impacts of alternative policy reforms and investments in water and irrigation development and management on food production and food security; and (3) capacity building in research and other organizations in the study countries, policy outreach to seek coordinated consideration and implementation of the research results and alternative policies, and dissemination of on-going work and final results to a wide audience. In order to achieve these goals, a number of specific objectives will be pursued:

A Examination of a wide range of water productivity enhancing strategies and their effects on food production and food security at the local and basin levels;

B Assessment of the implications of intersectoral competition for water and transfers of water out of agricultural uses on the availability of water for agriculture and fisheries;

C Analysis of the impact of alternative water scenarios on long-term food supply, demand, trade and food security; and

D Information, consultation, and participation of relevant policymakers and stakeholders in the activities of the building block and dissemination of on-going research work and research results.

The analysis will be undertaken globally and by regions and countries. Based on its results, the Food Security building block will develop recommendations for appropriate water resource allocation policies, as well as for the institutional framework to implement these policies in ways that meet the requirements for efficient and environmentally sustainable agricultural and fishery production.

Water supply and sanitation

As the 20th century comes to an end, water supply and sanitation services leave much to be desired:

- one billion people lack safe water;
- two billion people lack safe sanitation;
- four billion people lack sewage treatment;
- all of them cannot realize their aspirations for a better life, because they lack a healthy environment and as a result have only limited economic opportunities; and
- worse, as a result three million children die from water-borne diseases each year.

In view of the rapidly increasing costs, deteriorating infrastructure, serious environmental degradation, possibly irreversible depletion of water resources, and our inability to ensure service to many of the world's population, it is reasonable to ask ourselves how we can provide better services to cities of the future.

Is it sensible to use scarce water once and then discard it? Is it rational to dilute very small quantities of pathogenic excreta with large amounts of water simply to move the excreta somewhere else, and then spend enormous sums to make the pathogens and other contaminants harmless, so that downstream communities can use the water? In a world where topsoil and organic nutrients are being depleted, is it good practice to mix our organic wastes with all sorts of useless and hazardous materials, so that they have to be isolated behind protective barriers and buried, and cannot be reused? Is it really progress when urban areas are regularly flooded several feet deep during the rainy season, bringing normal life to a halt and filling homes with mud, debris and dilute sewage? And, above all, does it make sense to insist on expensive "modern" solutions for everyone, regardless of what they need or what they can afford, when it is clear that in many cases this results in systems that cannot be kept in service, or in denying many people access to service, or both?

Brazil:
Washing clothes and dishes

Of course, people do not only live in cities, and rural areas are as much in need of improved water and sanitation services as the cities. Improving the efficiency of environmental services in cities is an important step towards improving rural service delivery because it will result in a more equitable allocation of financial resources between rural and urban water supply and sanitation investments. The reason is simple: cities are the locomotives pulling the train of economic development and likely to keep getting a large share of funds available for infrastructure improvements. Greater cost-effectiveness will save money which, at least in theory, would then be available for rural infrastructure development above and beyond what would otherwise be allocated.

The greatest need in rural areas now appears to be the widest possible dissemination of approaches used successfully and the creation of institutional arrangements which emphasize work in partnership with members of rural communities and devote as much energy and funds to health education and other developmental issues as to water supply and sanitation.

The task for the Water Supply and Sanitation building block for the next two years is to extract, from the types of approaches that have been found successful, lessons that can guide the sector's development during the next decades. These lessons allow the distillation of "Guiding Principles" the sector should follow in order to improve the extent and quality of its services. Guiding principles identified from experience during and since the International Drinking Water and Sanitation Decade (1980-1990) are reviewed below, grouped under the following major sector topics:

A Service Delivery

B Innovative Technical Approaches

C Finance and Cost Recovery

D Institutional Arrangements

Many of the principles apply equally to both urban and rural services, while some apply more to one or the other. No distinction has been made here, because it is important to consider all of them initially, and reach a judgment on which ones are most relevant in a particular context.

To address these issues, a series of state-of-the-art papers will be prepared. These will cover four major topics:

A Current innovative technologies

B Economic and environmental analysis

C Institutional and financial arrangements for sustainable services

D Demand-driven planning and implementation

Other economic uses

Energy generation

Two methods of energy production will be dealt with in preparing the Vision: hydroelectric power plants and thermal power stations (fossil fuel or nuclear). The latter type require a water supply for their cooling systems.

The Vision will present the following elements:

A The present situation regarding primary consumption of energy in the world, based on energy aspects and electricity.

B Prediction of energy consumption in the world up to 2050 and 2100, based on three categories of countries: the less developed, the developing and the industrialized countries. Estimates will be made concerning population growth and living standards.

C Possible scenarios to meet demand by the two main sources:

- renewable energies (hydraulic, solar, wind, geothermal, tidal, etc); and
- fossil fuels and nuclear.

In particular, the hydroelectric potential remaining to be exploited in the world will be determined (technically and economically feasible) as well as the possible warming of rivers.

D A comparison will be made of scenarios from the point of view of their economic, financial and environmental aspects.

E In collaboration with those responsible for other chapters of the Vision, the consequences of possible climate change on energy production and energy policy will be examined.

Inland navigation

A similar methodology as for energy will be used. Aspects to be covered will include:

A The present situation as regards inland navigation throughout the world: Europe, Asia, Africa, North and South America. This means of transport will be studied in relation to others (rail and road) for the transport of people as well as goods (the present potential of networks, river transport, and tourist activities on waterways).

B Predictions will be made on the evolution of transport needs, (including waterways, road, and rail) in countries which have navigable waterways in existence, under development or planned, taking into account local, national and international economic stakes, as well as financial and environmental aspects.

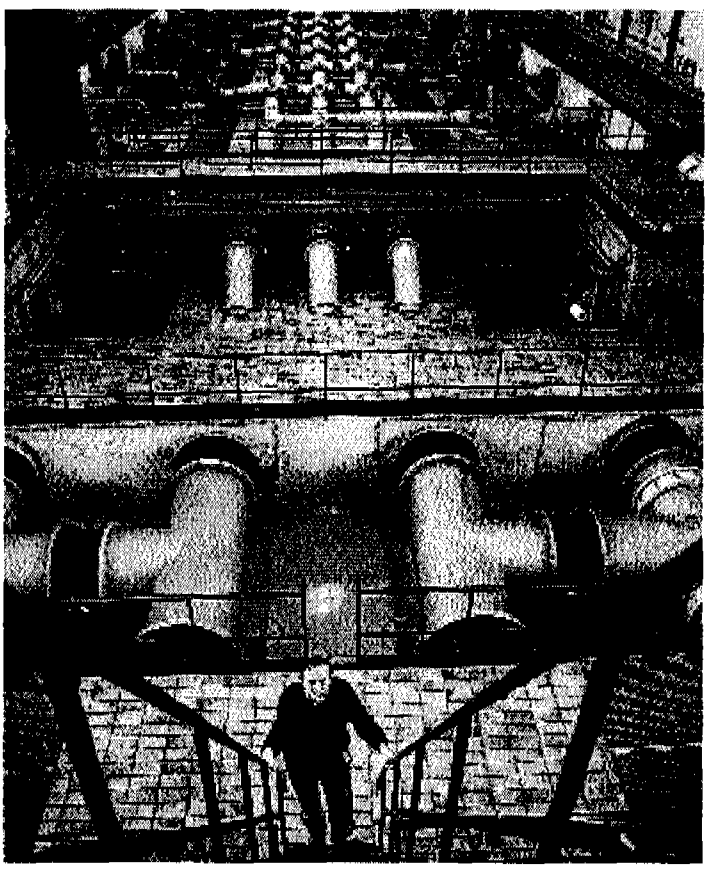
C Possible scenarios to meet demand, by the construction, rehabilitation and management of the necessary infrastructures for transport on waterways, combined with road and rail, in the countries concerned and their continents (harbours, river networks, trans-shipment platforms, commercial and touristic zones nearby...).

Comparison of economic, environmental, technical and legal aspects, as well as investment and development costs, and methods of financing. A first approach will be established for short, medium- and long-term profitability.

D Evaluation of the consequences on local development, particularly economic and touristic impacts (with hypotheses concerning job creation), and impacts on the environment and land management.

Hypotheses concerning the development of exchange and partnership networks (possibilities to collaborate on legal, financial and technical aspects...) on an international scale, which would be beneficial for sustainable local development by the adoption of the most efficient initiatives.

E Aspects which are in common with the scenarios to meet energy needs, dealt with in the previous item.



The Netherlands: Pumping station

Reflections will be made on the economic benefits of multipurpose schemes. Relative weights will be given to the economic effects directly relating to the hydraulic function of the projects, and those generated by supplementary functions.

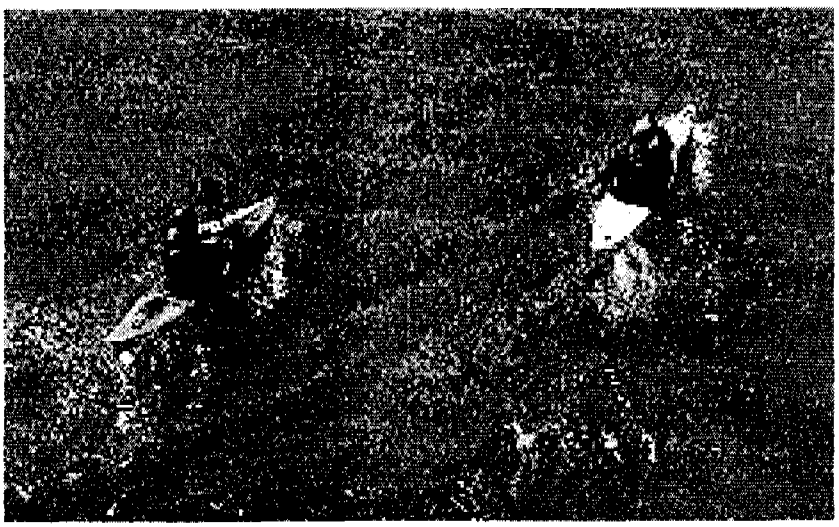
Reflections on the potential offered by multipurpose schemes for the protection, production and distribution of water, and the resulting benefits in the fields of food supply and health.

Tourism and recreation

Tourism is a major activity of great economic and social significance and with far-reaching environmental implications for the developed and developing world. An appreciation of the importance of tourism and recreation globally can be gained from the forecasts of the World Tourism Organisation that 1.6 thousand million tourists will visit the world's leading destinations by 2020, spending more than US$5000 million each day (World Tourism Organisation News, November 1997).

Such growth figures place great pressure on the resource base for tourism and recreation, a key component of which is water.

The question of how to deal with emerging claims on water resources for tourism and recreation is an important and legitimate focus of concern for water managers. Demands for water to support tourism and recreation can become particularly contentious in situations where competition for limited supplies is great and pressure to use the resources in a sustainable manner is high.



Europe:
Tourism
and water
recreation

A simple, but unimaginative response, by resource management agencies might be to refuse approval altogether for tourism and recreation development in areas where the adequacy of water (or other attribute of the resource base) was in question. However, care is needed with such responses, and any decision to exclude tourism and recreation on the basis of some apparent or perceived inadequacy in the water endowment should always be qualified. Improved information and technology, coupled with enlightened planning and management, may permit innovative measures to be implemented and make the initial cautionary reaction irrelevant and redundant.

A range of measures is possible in response to questions over the adequacy of water supplies to support instream uses such as tourism and recreation. The most constructive approach is to work towards better use and management of what water is available. More efficient irrigation, for example "doing better with less" may allow the same agricultural production, but with some water to spare for other uses including tourism and recreation. A further refinement would be to link water allocations to the adoption of "best management practice" in water use. Adjustments to the price of water may also be necessary to stimulate efforts to economize in use, and to recycle and reuse water. A system of transferable water rights is another mechanism which would permit tourist

developers to enter a water market and bid for a share of available water. In some situations, it may be possible to generate new opportunities for water-related tourism and recreation development by encouraging multiple use of water bodies or the creation of additional water resources by the construction of artificial lakes.

As available water supplies dwindle and competition for water increases, activities seen as less essential, such as tourism and recreation, must justify claims on a scarce resource, and demonstrate the capacity to achieve sustainable use. The Palm Springs resort area in the California desert is a good example of the way in which the application of sound water planning principles and management practices can contribute to ecologically sustainable tourism and recreation in an arid environment.

Water-related tourism in the California Desert

Palm Springs is actually only one of a collection of urbanized areas located in the Coachella Valley of southern California 160 kilometers southeast of Los Angeles and north of the Salton Sea. The region is true desert with annual rainfall averaging less than 76 mm and only 15–20 days of rainfall each year. Summer temperatures are extreme; the July mean maximum is 42°C and humidity is very low. The valley is surrounded by mountains up to 3050 meters high, which are snowcapped in winter and which, at times, funnel winds of great force through the valley.

Of great significance to the regional economy is tourism. By the mid-1980s, one in four Coachella Valley jobs was attributed to tourism which had become a US$1.3 billion industry and was still expanding. The area was first made popular for vacations by Hollywood film stars, such as Bob Hope, Frank Sinatra and Telly Savalas who have homes there. At present the warm dry climate attracts more than two million visitors annually to the valley's 200 hotels and resorts offering 12,000 rooms. There are 7,500 swimming pools and over 80 golf courses in an area approximately 55 kilometers by 25 kilometers. Visitors and resident golfers spend nearly US$ 300 million annually and generate 7000 jobs. It is little wonder the valley has become known as "the golf capital of the world".

The ready availability of water made possible by sound management practices has led to the transformation of the desert into a series of oasis-like settlements supporting a thriving economy based on irrigated agriculture and tourism and recreation. Moreover, careful management of the resource appears to have ensured the sustainability of these human activities in the face of increasing demand.

Reduced agricultural demands on groundwater eventually made possible the emergence of the western portion of the valley into the world famous tourism resort area it has become. In turn, tourism and recreation development in Palm Springs benefited from the application of computerized technologies for water control, and the array of other innovative water saving practices already in use in agriculture. Moreover, the measures in place to intercept surface flows and encourage the percolation and replenishment of groundwater storage for agricultural users, became an essential part of a water management strategy to sustain tourism and recreation in this arid region.

This is all the more remarkable in view of the extensive use of water typical of all phases of the Palm Springs tourism industry. Beyond the city limits the open sandy landscape is broken only by stunted vegetation, twisted by the relentless desert winds. Within the urbanized area, water and the evidence of water use are everywhere. Lush turf and flowerbeds line the streets and the golfing fairways. Lakes, fountains, and waterfalls feature prominently on the country club estates. In one leading hotel, diners are taken to the restaurant by barge along an artificial waterway misted with a fine rainforest spray. In the more luxurious estates, multi-million dollar residences feature up to five bathrooms, plus a powder room, pool and spa. Casual visitors, ignorant of the background of conservation, tend to view the scene as profligate waste of water. In fact, sound planning and management of the water resource help integrate the city and its tourism industry into its hostile desert surroundings.

The tasks for the Tourism and Recreation building block component is to:

A encourage investigation, selection, and adoption of innovative technologies for desalination of saline waters, treatment of wastes and waters containing wastes, and recycling/reuse, or safe disposal as applicable; and

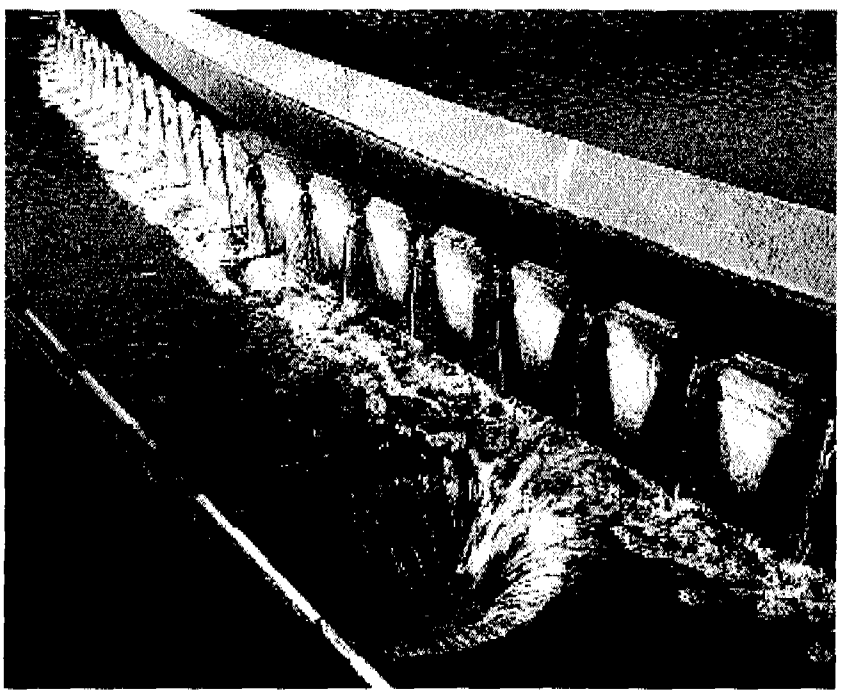
B spread concern for water management and conservation at all levels and forms of activity in tourism and recreation, and achieve a "trickle down" effect among smaller operators and interests; and

C implement an action plan to promote best practice in water management and conservation at all levels of tourism and recreation activities.

Water for the environment

The above sections have been devoted to the development of water for agricultural domestic, industrial, energy, navigation and tourism and recreation purposes. But water is equally essential for the preservation of the environment.

Numerous civil engineering works have been constructed to achieve the more intensive use of water resources in order to augment food production, supply potable water, improve navigation, control flooding and generate electricity. As a result, the response and productivity of a number of ecosystems, in fresh water bodies, estuaries and coastal areas have been considerably modified. Some entire ecosystems have lost their specific functions and can no longer provide the same goods and services as they did traditionally.



The Netherlands: Water treatment plant

The market forces which are well suited to short term trading (for domestic, irrigation and industrial purposes) appear inapplicable to the collective long term needs such as the preservation of the quality of the environment.

The opportunity value of water will increase owing to enhanced demand for other reasons. Hence, more costly methods to satisfy environmental provisions become justified. Thus, if the user is ready to pay for the treatment of polluted effluents, smaller residual flows need be maintained within the same general quality objective. This, in turn, would permit larger abstractions by

upstream users to produce high quality crops. In coastal areas, where there is salt intrusion, protection of the land can be achieved by raising the given discharge with releases from reservoirs, diverting the effluent directly into the sea or by the construction of flap gates and anti-salt barrages.

In densely settled areas in developing countries, however, it is often very difficult to bring about public acceptance, especially from low income groups, of the objectives of environmental preservation which inevitably infringe their productive capacity.

Before embarking upon new water resource developments that would modify the environment substantively, it is necessary to identify alternative solutions that would best preserve the ecosystems. Many development projects have produced disappointing benefits when full environmental costs have been taken into account. Furthermore their evaluation has often lacked a full inter-sectoral consideration.

The task of the Environment building block is to develop and implement an environmental approach to integrated water resources management.

The building block proposal is structured around a core project that includes regional consultations with a few examples of ongoing river basin development initiatives. The project will initiate a process involving representatives of all stakeholders to consider an environmental approach within a integrated water resources management framework.

Technical projects will support the core project within various fields. The following support projects have been identified through consultation with various groups:

1. Integration of an environmental approach into IWRM;
2. Assessment of hydrological functions of ecosystems;
3. Assessment of climate change impacts on ecosystem functions;
4. Framework for establishing the water needs of ecosystems;
5. Linkages between clearing houses and local groups and local knowledge;
6. Participatory approaches within an environmental approach;
7. A legal and economic framework for water resources and ecosystems.

2. The road ahead

2.1 From mandate to action

During the First World Water Forum in Marrakech (1997), the Council was mandated to develop a Vision. The Marrakech Declaration also described how:

"Building on past international efforts and relying on the collective wisdom and resources of the global community, the process leading to the Vision will include research, consultations, workshops, print and electronic publications and many other means for absorbing, synthesizing and disseminating knowledge.

At the conclusion of this process, fully aware of the pitfalls along the way, the Vision will offer policy-relevant and region and country-specific conclusions and recommendations for action to be taken by the world's leaders to meet the needs of future generations."

This Framework Proposal attempts to translate the above mandate into a work plan that will lead us to the Second World Water Forum in March 2000 in The Hague, and beyond.

With the financial support from the Dutch Government, a team of Task Managers elaborated the major challenges, and proposed activities to underpin the Vision. The basis was formed by a terms-of-references detailing the activities to elaborate the framework for the development of a Long Term Vision for Water, Life and the Environment. As a first step, a Kick-off Meeting was organized in The Hague on November 28, 1997 to discuss the terms-of-reference with the Task Managers and agree on a plan of action that would lead to the formulation of a framework.

The Task Managers' proposals and the first draft Framework benefited from the thoughtful comments received during the International Stakeholders Consultation held at IHE, Delft on February 23 and 24, 1998. The next step is to present this Framework proposal to the international community during the International Conference on Water and Sustainable Development in Paris in March 1998.

From March 1998 to March 2000, the core activities of the preparation of the Vision will focus on consultations and dialogues discussing well-defined, policy and strategy-related thematic issues and on elaborating scenarios at regional and international level. The background information feeding into these consultations will consist of commissioned papers prepared under the guidance of the Council with the assistance of the Task Managers. These papers will synthesize existing knowledge, but will also put forward new ideas and proposals for research. The outputs of these consultations will form the underpinnings of the options for action that will be presented at the Second World Water Forum in The Hague. The overall budget for the core activities is estimated at US$ 5 million: US$ 1 million for a central Vision Unit, US$ 1,5 million for dialogues and consultations, and US$ 2,5 million for background studies.

To further support the development of the Vision, beyond its first presentation in March 2000, we recognize the need for generating new knowledge, developing innovative models and indicators, and collecting and managing knowledge and information. However, additional funding will have to be found to finance these activities. The budget requirements to finance all Task Managers proposals amount to about an additional US$ 20 million over the next five years. The advancements made will first be reviewed at the Third World Water Forum in March 2003.

Further progress on the development of the Vision and the implementation of recommended policies and strategies will be monitored at subsequent World Water Forums, to be held every three years. Between the World Water Forums, the Council will continue to organize yearly international water policy forums to discuss policy issues. In close collaboration with and at the request of its Members, the Council will also organize regional and thematic forums and seminars in relation to policy and strategy development and implementation.

Simultaneously, a comprehensive communication strategy will be implemented to both benefit from and support the consultative process. Communication outputs will include regular policy and research briefs to the international and regional press and press coverage of major events and workshops.

In addition, the commissioned papers and full proceedings of all dialogues and consultations will be published, both on paper and electronically. The World Water Council Website and Newsletter will also regularly report on the progress made.

Finally, it is envisaged to work together with a professional team to produce a television documentary on water.

2.2 Towards the Second World Water Forum

The proposed work plan and budget estimates cover the period April 1998-March 2000. After presentation of the Framework proposal in Paris on March 19, 1998, it is proposed to present the revised document to the Board of Governors in april 1998 and to organize donor meetings at the end of May and in early June 1998 to raise the funds for the core and other associated activities.

Dialogues and consultation

Three of the key objectives of the Vision are to:

- create political will;
- raise public awareness; and
- build ownership at the highest decision-making level in the public and private sectors, as well as at the middle-manager's and operational levels.

This requires involving water and non-water professionals, and in particular religious leaders and other representatives of civil society. The preparatory process will therefore be highly consultative with a strong emphasis on communication. To achieve the above goals and reach the targeted audiences, it is proposed to organize consultations and dialogues at three different levels:

1. High decision-making level in the region;
2. Regional stakeholders level; and
3. International stakeholders level.

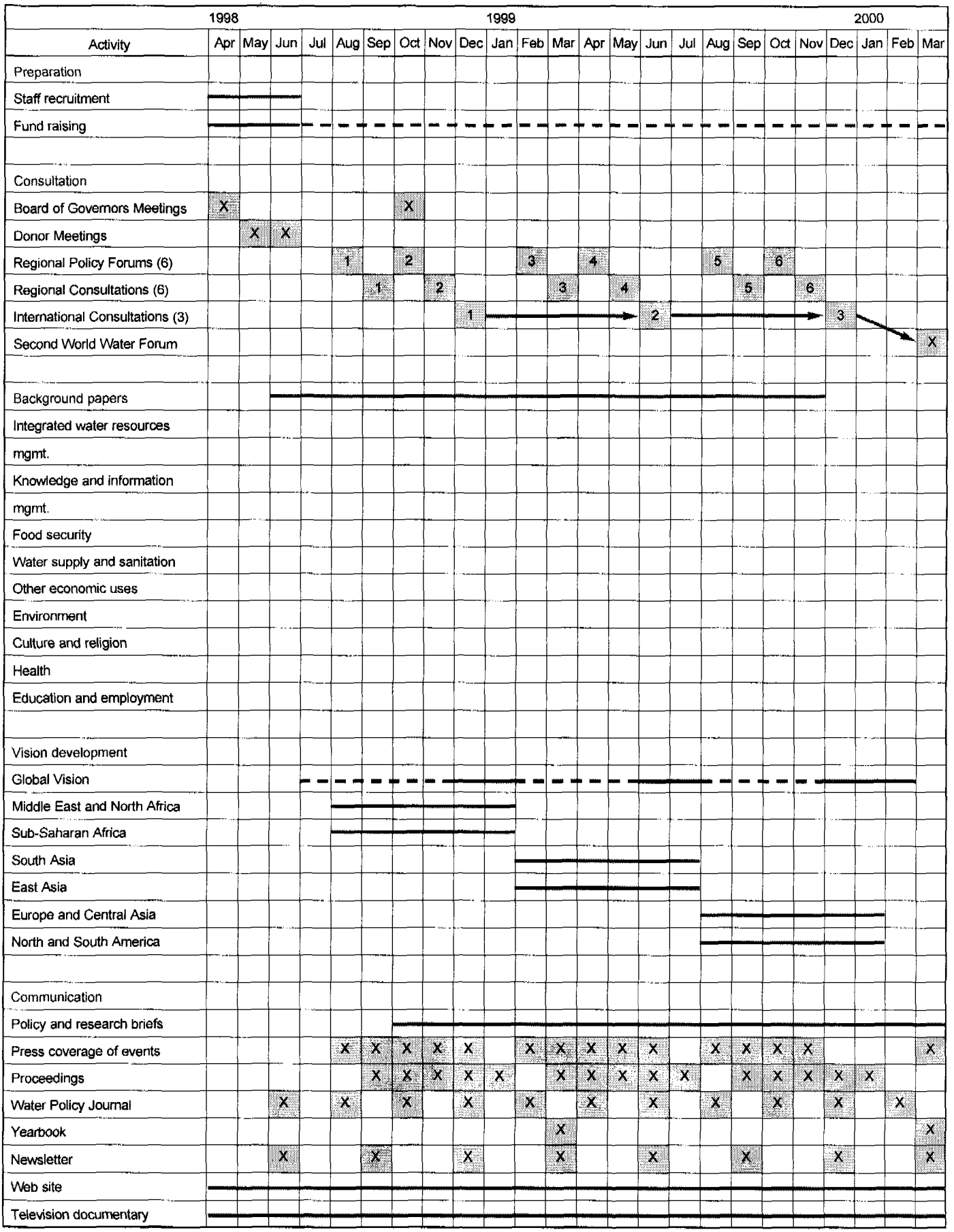
Targets, outputs, time plan and budget

In addition to the general objectives, each type of meeting has its own specific targets and outputs. To achieve the set objectives, the meetings are organized in such a way that the outcome of one meeting serves as input to the other, going from the high-decision making level to the regional and global stakeholders levels. As a result, selection of the location of the meeting is important to ensure the desirable flow of synthesis and information. A time plan is attached in Table 2.The cost of each series of meetings, the Policy Forums and Regional and International Stakeholders Consultations, is estimated at US$ 500,000, totaling US$ 1,500,000. The total budget for preparing the background material is estimated at US$ 2,500,000.

Regional Water Policy Forums

It is envisaged to organize six high-level dialogues with a maximum of 15 participants. These dialogues will be organized in six geographic regions, i.e. North and South America, Europe and Central Asia, South Asia, East Asia, North Africa and the Middle East, and Sub-Saharan Africa.

The participants may include Ministers of the Planning, Finance, Public Health, and Water Departments, other political and religious leaders, Chief Executive Officers of leading industries in the region, and other high-level representatives of civil society. The focus will be on participants from the region, but representatives from other regions are invited to facilitate exchange of experience and information across regions.


1998
1999
2000
Activity
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
Preparation
Staff recruitment
Fund raising
Consultation
Board of Governors Meetings
Donor Meetings
Regional Policy Forums (6)
Regional Consultations (6)
International Consultations (3)
Second World Water Forum
Background papers
Integrated water resources mgmt.
Knowledge and information mgmt.
Food security
Water supply and sanitation
Other economic uses
Environment
Culture and religion
Health
Education and employment
Vision development
Global Vision
Middle East and North Africa
Sub-Saharan Africa
South Asia
East Asia
Europe and Central Asia
North and South America
Communication
Policy and research briefs
Press coverage of events
Proceedings
Water Policy Journal
Yearbook
Newsletter
Web site
Television documentary

The primary aims of these dialogues are to build political commitment, also in preparation for the parallel Ministerial Session during the Second World Water Forum, and to prioritize not more than three thematic issues at the regional, sub-regional and, where possible, country levels. The background documents for these dialogues will consist of commissioned papers prepared and distributed to the participants one month in advance.

Regional Stakeholders Consultation

The recommendations of the Regional Water Policy Forums will be used to feed the six Regional Stakeholders Consultations. These consultations will have a maximum of 50 participants, predominantly from the region, but also from other parts of the world. The participants represent stakeholders from the middle-manager and operational levels in and outside the water sector. The meetings will be organized in close collaboration with existing regional structures from the Council membership, the GWP regional TACs, and others.

The objectives of these regional consultations are to build broad ownership and to prepare regional scenarios and policy-relevant options for action. In addition to the outputs from the Policy Forums, specialists will be requested to prepare background papers under the guidance of the Task Managers and the Council Vision Unit (*see below*).

International Stakeholders Consultation

At the global level, it is proposed to organize three International Stakeholders Consultations with about 100 participants from around the world. The meetings will review the regional scenarios proposed by the regional consultations so as to ensure that they fit in the overall Vision framework. The events, organized in close collaboration with Council Members in the region, will be held after two regional consultations have taken place.

The aims of these global consultations are to build ownership and to ensure continuity and consistency in the preparation of the Vision. In addition to the inputs from the two immediately preceding regional consultations, the outcome of the first international conference will feed into the next one, culminating in the finalization of recommendations at the third meeting for the preparation of the Vision to be presented at the Second World Water Forum.

Management and organization

The intensity of the preparatory work before and after each meeting will require a dedicated Vision Unit consisting of the Director and a Task Manager, one communication specialist and two programme assistants. In addition, the team will require two support staff members for administrative and organizational assistance. The budget for the Vision Unit, including staff salary, communications and travel, is estimated at US$ 1,000,000 over the two year period.

While proposals for the detailed organization for the preparation for the Vision were discussed at the Delft meeting, the overall organizational structure responsible for preparing the Vision, including coordination with the Dutch Secretariat for the Second World Water Forum, will be decided at the next Council Board of Governors meeting scheduled to be held end of April 1998.

Conclusions

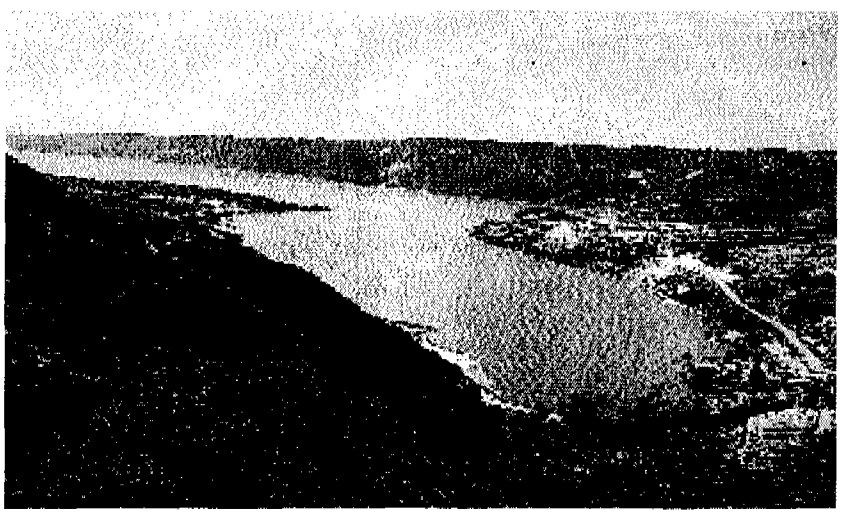
At the verge of a new millenium, taking the long view is an appropriate exercise for the International Water Policy Think Tank. The changes witnessed over the past century, the ongoing transformation of society, and the projected global population growth coupled with each individual's expectation to improve the quality of their life or at least the life of their children, force us to face the challenges of the next century and formulate options for action.

A new approach, or comprehensive framework, is introduced in which the water sector is placed in the larger scope of the socio-economic environment. It is argued that rather than only taking into account national or regional socio-economic objectives in water sector planning and management efforts, water related considerations should directly contribute to the process of setting these objectives. This requires a different mindset of water professionals, but more importantly, it requires a different mindset and a long term view of our political and religious leaders.

Within the building blocks, activities are proposed to generate new knowledge to underpin the development of the Vision. More than generating new knowledge, however, the initial process of preparing the Vision will focus on consultation to foster the political will, leadership and ownership required to bring about change.

Communication is at the heart of this consultative process. Many well attended meetings have been organized in the water sector and many well received documents and papers have been published. Indeed, water issues have recently gained recognition on international agendas. However, the water sector professionals have not yet succeeded to convince the majority of decision makers of the urgent need to implement the many well formulated recommendations. A comprehensive communication strategy should help us convey the messages and policy recommendations coming out of the Vision process, and reach the global community from the highest decision making levels to the general public.

Lastly, to implement the core activities proposed, a dedicated Vision Unit with sufficient staff will be established. The final arrangements of this Unit will be decided upon by the Council's Board of Governors Meeting, scheduled to be held in April 1998.



France: Water reservoir

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Water is essential to life and the environment.

Wisely used, water means harvests, health, prosperity and natural abundance for the peoples and nations of the earth; badly managed or out of control, water brings poverty, disease, floods, erosion, salinization, waterlogging, silting, environmental degradation and human conflict.

The effective management of the world's water resources will contribute to the strengthening of peace, security, co-operation and friendly relations among all nations in conformity with the principles of justice and equal rights.

Amongst the natural resources, water is the most critical. It can and should be used to promote the economic and social advancement of all peoples of the earth, in accordance with the Purposes and Principles of the United Nations as set forth in the United Nations Charter and the Declaration of Human Rights.

However, authority over the world's water is fragmented among the nations of the world, hundreds of thousands of local governments, and countless non-governmental and private organizations as well as a large number of international bodies.

In response to this fragmentation and following the 1992 recommendations of the Rio Earth Summit, the Ministerial and Officials Conference on Drinking Water and Environmental Sanitation held in Noordwijk, the Netherlands recommended in March 1994 the establishment of a World Water Council. This recommendation was subsequently endorsed by the Commission on Sustainable Development and the General Assembly of the United Nations. A Founding Committee was formed by the International Water Resources Association in November 1994 and the World Water Council was formally established in Marseille on June 14, 1996.

The objectives of the World Water Council are:

- to create a platform for information exchange for all the stakeholders in the water sector;
- to identify critical water issues of local, regional and global importance on the basis of ongoing assessments of the state of water;
- to raise awareness about critical water issues at all levels of decision making, from the highest authorities to the general public;
- to provide the forum to arrive at a common strategic vision on integrated water resources management on a sustainable basis, and to promote the implementation of effective policies and strategies worldwide;
- to provide advice and relevant information to institutions and decision makers on the development and implementation of comprehensive policies and strategies for sustainable water resources management, with due respect for the environment and social and gender equity; and
- to contribute to the resolution of issues related to transboundary waters.

At the First World Water Forum held in Marrakech in March 1997, the Council was mandated to prepare a Long Term Vision for Water, Life and the Environment.

This framework proposal, is a step towards the preparation of the Vision that will be presented at the Second World Water Forum, to be organized together with the Government of The Netherlands in The Hague in March 2000.

World Water Council
Conseil Mondial de l'Eau

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