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International Water and Sanitation Centre

**Review of the Finnish Water Sector  
Development Co-operation  
Meeting the Goals of the 21st Century**

**Volume I – Water Demand**

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## **IRC Water and Sanitation Centre**

IRC facilitates the creation, sharing, and use of knowledge so that sector staff and organisations can better support poor men, women and children in developing countries to obtain water and sanitation services they will use and can sustain. It does this by improving the information and knowledge base of the sector and by strengthening sector resource centres in the South.

As a gateway to quality information, the IRC maintains a Documentation Unit and a website with a weekly news service, and produces publications in English, French, Spanish and Portuguese both in print and electronically. It also offers training and experience-based learning activities, advisory and evaluation services, applied research and learning projects in Asia, Africa and Latin America; and conducts advocacy activities for the sector as a whole. Topics include community management, gender and equity, institutional development, integrated water resources management, school sanitation, and hygiene promotion.

IRC staff work as facilitators in helping people make their own decisions; are equal partners with sector professionals from the South; stimulate dialogue among all parties to create trust and promote change; and create a learning environment to develop better alternatives.

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# Table of Contents

Executive Summary.....	4
1. Background .....	8
2. Methodology.....	9
3. International Declarations on the Water Sector .....	11
3.1. Universal water resources forums.....	11
3.2. Other meetings.....	11
3.3. Declarations .....	12
3.4. European Union .....	14
4. Finnish Development Co-operation Policy in the Water Sector.....	15
5. E-Conference and Follow-up Workshops.....	17
6. Discussion .....	19
7. Conclusions.....	32
8. Recommendations .....	35
9. References.....	38
<b>ANNEXES</b>	
1. List of Major References.....	40
2. Agenda 21, Chapter 18.....	67
3. Johannesburg Summit 2002, Key Outlines.....	96
4. E-conference on "Challenges of International Goals in the Water Sector".....	103
5. Chair's Summary of the High-Level Segment, Commission on Sustainable Development, 12 <sup>th</sup> Session.....	116

## **Executive Summary**

The Ministry for Foreign Affairs of Finland invited the IRC International Water and Sanitation Centre to conduct a review of the Finnish water sector development co-operation, demand and resources in light of the latest international declarations and policies developed across the sector.

The general purpose of the review is to initiate long-term planning of the sector activities, to set appropriate emphases and to clarify modes of operation.

A much narrower purpose is to look at the balance between integrated water resources management and provision of water services, between water supply and sanitation, and between rural and urban areas. Institutional arrangements, including the roles of the public, private and third sector, financing structures and cost recovery, will also be addressed.

The purpose of the review is also to find out and outline the present needs, demands, aspirations and policies of Finland's development co-operation partners in light of the latest international water sector goals, and to analyse the resources of the Finnish water sector. This information will be used to match up resources with demands from partners in the developing world.

The goal set internationally at the Johannesburg summit calls for halving the number of people lacking safe drinking water and proper sanitation by the year 2015. Finland has committed itself to this goal, or at least quietly accepted it. It has been estimated that an appropriate share of Finland in this endeavour would require them to assist five million people to get access to wholesome water distribution and sanitation.

The Finnish strategy for international development co-operation is based on the principles published by the Ministry for Foreign Affairs in 1996, later updated by the Government in accordance with new commitments. The strategy sets the following:

- Conformance with the values guiding international relations in the 21st century – freedom, equality, solidarity, tolerance, respect for nature and a sense of common responsibility;
- Central importance of peace, security and disarmament for the world community;
- Development and the eradication of poverty;
- Protecting our common environment;
- Promoting human rights, democracy and good governance;
- Protecting the vulnerable;
- Meeting the special needs of Africa;
- Strengthening the United Nations and the multilateral system.

Finland's decisions are increasingly influenced by the operations of the European Union (EU) and the international community in each country. One of the recent commitments is set out by an EU resolution agreed in 2002, which covers the next 10 years. This resolution has no bearing on Member States' dealings with countries and communities outside the union.

The international dimension (article 9) contains the following:

- An ambitious international environmental policy, with particular attention to global sustainability;
- International promotion of sustainable models for production and consumption;
- A commitment to ensure that policies and actions taken for trading and environment support each other.

The commitment of the Finnish development co-operation in the water sector, and its achievements to-date justify and will continue to stimulate the country's involvement in this sector. When the demand on available fresh water resources increases, as undoubtedly it will, the activities in international watercourses will also increase, bringing about a real danger of clashes of interest between different countries and actors in these countries. Pre-emptive action, in the form of increasing knowledge of the resources and promoting transparency in their management would positively influence future developments and help avoid conflicts in the regions prone to water shortage. Protection of water sources through increased environmental awareness and better knowledge of methods to combat, and even prevent pollution, should be of great service to present and future generations suffering the adverse effects of pollution of water resources all around the developing world.

The trend towards concentrating and directing sector support in its most orthodox form, where all external support is brought in through the national budget of the recipient country, is raising many questions as seen at the e-conference and in the international literature. From the point of view of the water sector, the question of how the stakeholders in the sector can adapt themselves to using the predominant funding instruments has emerged as an important issue. For example, it is worrying that management of sector support programmes has strengthened the central/national level administration of water affairs contrary to the Dublin conference resolution, which called for water affairs to be administered at the lowest feasible level.

The use of many different funding instruments supportive of each other suits the water sector and their versatile application should be encouraged. For example, grant-aid – possibly combined with posting bilateral advisors to the recipient organisation – could support capacity- and institution-building at local level as well as the development of legislation. Simultaneously, the possibilities for stakeholders to participate at local level through water projects could be enhanced. This would help the development of a civil society by supporting water users, sector professionals and water service providers, for instance by assisting them to set up and run NGOs and CBOs and offering them the possibility to organise education at various levels. A capacity-building programme could include, for example, scholarship programmes at various educational levels. Finland could also support the formation and development of a regional education or training centre in Eastern Africa

Urbanisation is growing at an ever-increasing speed throughout the world. This is increasingly shifting the focal point of water supply and sanitation into urban and especially periurban areas. The need to avoid causing harm to rural areas calls for adaptation of human centred and participatory approaches to service provision. Ownership issues are equally important in these conditions as in the rural areas; however, they are more difficult to address. The experience gained in the Finnish water supply and sanitation from past programmes and projects represents a formidable asset for this development work. It should not be wasted, but further developed and disseminated to benefit partners with their self-identified needs and demands.

The availability and sustainable use of water resources largely determine the development of rural areas. However, water projects – at any sub-sector of the water sector – cannot be separate interventions operating in a vacuum, but must conform with the general developmental efforts of rural areas. Integrated interventions bring better and more sustainable results. A water and sanitation project should, in future, be seen as a part of a comprehensive development effort of the rural area where it operates.

The Millennium Development Goals are unachievable for developing countries without external support in the form of financial support to investments, and technical assistance in the form of capacity- and institution-building. The fair share of the financial resources needed from Finland to top up the efforts of the partner countries is a function of the size of Finnish national economy and of its development co-operation funds. This could be a percentage figure or an annual sum. The internationally-floated figure of 20/20 which, in this case, means that the country itself invests 20% of its development investment funds in the water sector and the external supporting agency also renders 20% of its support funding for that same country to support its water sector, might be an overall target for the sector funding. However, the Decision In Principle by Finland to operate in only three to four development co-operation sectors in any one country appears reasonable on the basis that concentration of effort tends to bring better results. This results in a selection process of sectors of operation on a country-by-country basis. The countries where Finland has traditionally operated in the water and sanitation sector, form a natural base for continued efforts. However in future there will be a question of deciding which activities to support within the wider concept of the water sector.

It is also evident that no public funding, including external support, can sustain water and sanitation services without a contribution from the users of the services towards the costs of investments and operation, and the maintenance of the systems. The appropriate share of the financial burden to be borne by the consumers may vary from case to case, but the principle should remain the same. This will affect the technical and institutional choices for service provision level and technology. Further, no selection process will lead to a sustainable outcome without those affected being empowered to participate in the selection and decision-making process. Hence, it is recommended that the participatory approach, already applied as a rule in the Finnish development co-operation intervention, should be continued and further strengthened.

The recent trend of creating various public private partnerships (PPP) is also applicable in developing countries. However, a strong and functional regulatory framework in the country in question is an important precondition for any viable and socially just partnership building. It is therefore vital to assess each country, and every part of each country, as a case on its own, and to apply the principle of PPP according to the prevailing conditions and traditions. Privatisation, outsourcing of functions and decentralisation all need careful consideration and definition of roles and responsibilities for each actor involved.

## **Why invest in water and sanitation?**

- Over five million people die every year from water-related illnesses and there are more than three billion cases of water-related illnesses every year.
- Sick children do not attend school lessons and thirsty persons do not learn. Lack of education prevents development.
- Availability of water resources and their sustainable use is a prerequisite for development and poverty reduction. Development co-operation is a tool to increase the productivity of investments.
- Access to the available water resources is limited by pollution and mismanagement.
- There are more than 800 million under-nourished persons in the world. Halving that number needs increased irrigation and development of irrigation methods. Already now irrigation accounts for 70 % of the water used.
- The number of countries suffering from a severe lack of water is increasing. Simultaneously, demand for water is increasing.
- One billion people, the bulk of whom live in developing countries, lack safe drinking water.
- 2.4 billion people, the bulk of whom live in developing countries, live without proper sanitation.
- Already 13 countries in Africa are suffering from the scarcity of fresh water, and the number of those countries is on the increase.
- 80 % of the water resources of Africa are in international watercourses.
- Women use more than 25 % of their time carrying water in many areas.

## **1. Background**

The goal set internationally at the Johannesburg summit calls for halving the number of people lacking safe drinking water and proper sanitation by the year 2015. Finland has committed itself to this goal, or at least quietly accepted it. It has been estimated that an appropriate share of Finland in this endeavour would require them to assist five million people to get access to wholesome water distribution and sanitation.

One of the most important challenges for the Finnish policy towards developing countries is to ensure that all aspects of the policy work coherently towards achieving the Development Goals, especially poverty reduction and sustainable development. In order to achieve sustainable development, it is critical to harmonise and match together its three main pillars – the economy, environment and social development.

Finland has, for more than thirty years now, been supporting efforts to increase opportunities for access to wholesome drinking water, applying the principles of equity, justice and sustainability. This support was evaluated during 1999 and 2000, and the findings indicate that support towards achieving the agreed goals should be continued. Currently, most of the projects and programmes are approaching their end and there is a perfect opportunity to plan for new types of approaches with increased coherence to adjacent development endeavours, especially in Africa.

The evaluation report of the Finnish support in the water sector pointed out that the reduction of poverty and the achievement of sustainability call not only for construction of water points, water services, or sewerage networks, but also for a more comprehensive approach based on the participation of all stakeholders. A prerequisite for success is a combination of advocacy, education, promotion, gender equality, empowerment at the lowest feasible level, an increase of physical and non-physical resources and the recognition of economic realities.

The concept of social development and the process of making it operational must be clarified further. It has often been restricted to the social sectors only, and the process of listening to the people, which is the most essential part of sustainable development, has remained incomplete.

Another aspect worth mentioning in the context of sustainable use of water resources is the rapid population growth combined with increased human water consumption. In the last century the world population grew three-fold and human water consumption increased six-fold. Today, humankind consumes over 50% of all available fresh water. If the consumption per capita continues to grow as it is now, only 10% of all available fresh water will be left for all other living creatures by year 2025.



## 2. Methodology

Volume I of this report approaches the review of Finland's development co-operation in the water sector from three angles:

- The Finnish Water Sector Development Policy;
- International Declarations on the Water Sector;
- Experience and opinions from the field.

The angle of Finnish Resources, including the methodology used for identifying these resources, will be addressed in volume II

The first two angles were addressed through literature studies. Basic material was obtained from the Ministry for Foreign Affairs of Finland, the IRC-IHE library and the Internet.

The practical information from the field was initially planned to be obtained through a conventional workshop approach to which sector representatives from the main co-operation countries would have been invited. This turned out to be less effective and efficient than arranging an e-conference. The e-conference, held from 22 October to 7 November 2003, was announced on the Internet and through the IMO discussion group of the WSSCC, which has its secretariat at the Water, Engineering and Development Centre (WEDC) in Loughborough University, UK. In addition, 268 personal e-mail invitations were sent out using the contacts of the Ministry for Foreign Affairs of Finland and the IRC International Water and Sanitation Centre. Personal invitations were also sent out directly to national professionals in the main co-operation partner countries of the Finnish Development Co-operation.

The e-conference had 420 subscribers, 67 of whom contributed actively. Of these, 49 were men and 18 were women. Their locations covered all continents, with roughly 54% of participants being based in the South. The countries of origin were: Australia, Brazil, Canada, Chile, Colombia, Denmark, Ethiopia, Finland, Germany, Ghana, Guyana, India, Kenya, Malawi, Mozambique, Namibia, Netherlands, Nicaragua, Nigeria, Pakistan, Palestine, Peru, Portugal, Senegal, Somalia, Sweden, Tanzania, Uganda, UK, Uruguay, USA, Vietnam, Yemen and Zimbabwe.

Based on the information obtained from all the three sources, an analysis and a synthesis are presented in this report.

The whole synthesis was made using an iterative, participatory process, where the stakeholders were invited to express their opinions, visions and aspirations. The process of information gathering was started with an orientation and planning phase, where the IRC team familiarised itself thoroughly with the present Finnish development co-operation policy, the water sector policy and the past experiences. This included an overview of the water sector policies that currently exist. The next phase consisted of a dialogue, two-way communication with representatives of the Finnish and Southern stakeholders (main development co-operation partners of Finland) at decision and implementation levels. This phase included an e-conference with "food-for-thought" presentations. In this phase, the IRC team members acted mainly as facilitators and simultaneously collected material for the analysis and synthesis phases.

As a follow-up to the e-conference, participants from Ethiopia, Kenya, Mozambique, Tanzania and Finland were invited to a workshop on the revision of the Finnish development co-operation policy, within the context of achieving the water and sanitation Millennium Development Goals. From 10 to 11 June 2004 they met face-to-face at the IRC International Water and Sanitation Centre in Delft, the Netherlands.

The basis for the discussion was the outcome report of the e-conference, which was sent to the participants in advance of the workshop, together with the draft report of the whole study.

The outcome of the workshop was used, together with the draft report, as material for this final report.

The following section provides an overall literature review of the water sector, focusing on international declarations and other meetings.

### **3. International Declarations on the Water Sector**

#### **3.1. Universal water resources forums**

The First Universal Water Resources Forum was initiated by the World Water Council and took place in May 1997 in Marrakech. Preparation of a long-term vision for water, life and environment for the 21st century was commissioned. In the following year, 1998, the World Water Commission was established in Stockholm, with the mandate to increase knowledge and awareness among people and decision-makers, to develop a vision for the year 2025 and to promote its implementation. The latter task was given to the Global Water Partnership (GWP), sponsored by the World Bank (WB).

The Second Universal Water Resources Forum was held in March 2000 in the Hague. A new world water vision and framework for action were developed through extensive consultations. Regional and thematic issues were discussed in a ministerial conference, which focused on water security. The GWP prepared a strategic framework for action to meet the goals outlined in the vision for the year 2025.

The third and most recent Universal Water Resources Forum took place in March 2003 in Kyoto. It highlighted the importance of non-governmental organisations (NGOs), and discussed, among others, the following themes: water and poverty, water in cities, water in small island countries, regional co-operation for shared water resources management, and poverty and floods. A World Water Action report confirmed the outcome of the previous meetings. Commitment to the goals was discussed, from the points of view of different relevant institutions.

#### **3.2. Other meetings**

Good water and sanitation services for all have been advocated globally since the United Nations (UN) Water Conference in Mar del Plata, Argentina, in 1977. The UN launched the International Water Supply And Sanitation Decade 1981–1990. The achievements were impressive, but, as a whole, the development financing of the water sector decreased. In 1990, the Global Consultation for Safe Water and Sanitation initiative was organised in New Delhi by UNDP, to follow-up the decade.

The next big step was the UN Conference on Environment and Development, held in Rio de Janeiro in June 1992. The International Conference on Water and Environment and Development held in Dublin, earlier that year, had put integrated water management on the political agenda. In Rio, world leaders endorsed Chapter 18 of the famous Agenda 21, regarding the protection of freshwater resources.

The Government of the Netherlands convened a Ministerial Conference on Drinking Water and Environmental Sanitation in March 1994. The World Water Council was actually initiated at a meeting that was held in 1996 in Marseilles, to promote awareness and build political commitment. The purpose was to facilitate efficient conservation, protection, development, planning, management and use of water in all its dimensions on an environmentally sustainable basis, for the benefit of all life on earth.

A Freshwater Conference was held in December 2001 in Bonn. The goal was to identify the measures needed for sustainable, integrated water resources management, and for the creation of new partnerships. Global and local financing, as well as capacity-building and technology transfer, were addressed. The meeting produced a ministerial declaration to facilitate the work of the UN Summit on Sustainable Development, in September 2002 in Johannesburg.

Another meeting that sent an important declaration to Johannesburg was the Water Symposium, which took place in August 2002, in Stockholm. Principles to secure water for the future generations were highlighted.

Outside the proper focus of this report, some relevant international conventions need to be noted, because of their relevance to integrated planning of water resources and sanitation. The UN Convention to Combat Desertification, the UN Forum on Forests and the Ramsar Convention on Wetlands are some examples.

The literature reviewed is presented in Annexe 1.

### **3.3. Declarations**

All international meetings approached the same problems and addressed core recommendations in similar ways. Those general background principles had already been addressed in national strategies of most donor countries:

- Alleviation of widespread poverty;
- Promotion of global security;
- Promotion of equality, human rights and democracy;
- Prevention of global environmental problems;
- Promotion of economic dialogue.

In addition to the old fundamental principles, the Rio Conference, particularly Agenda 21 with its seven programme areas for action in the freshwater sector, has been adopted as a basis of development strategies. The Johannesburg Water Forum (2002) was organised as a 10-year follow-up review of Agenda 21. Among the measures recommended by the conference were:

- Development of national plans for integrated water resources management and water efficiency plans by 2005;
- Integrated plans for land use, water resources and living resources;
- Better implementation of laws and water use rights;
- Market-based incentives for management of water use and quality.

Those plans and strategies would be national and local. Water and sanitation development were seen as key tools in reducing poverty. Chapter 18 of Agenda 21 is presented in Annexe 2.

The Dublin Principles (1992) defined freshwater as a finite and vulnerable resource, essential to sustain life, development and the environment. They asserted that water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels and acknowledged that women play a central part in the provision, management and safeguarding of water. Finally, the principles recognised that water has an economic value in all its competing uses, and should be recognised as an economic good.

## **The Dublin principles (1992)**

***Freshwater is a finite and vulnerable resource, essential to sustain life, development, and the environment.*** Since water sustains life, effective management of water resources demands a holistic approach linking social and economic development with the protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or aquifer.

***Water development should be based on a participatory approach, involving users, planners and policy makers at all levels.*** The participatory approach involves raising awareness of the importance of water among the policy makers and the general public. It means that decisions are taken at the lowest appropriate level, with full public consultation and involvement of the users in the planning and implementation of projects.

***Women play a central role in the provision, management and safeguarding of water.*** The pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources. Acceptance and implementation of this principle require positive policies to address women's specific needs and to equip and empower women to participate at all levels in water resources programmes, including decision-making and implementation, in ways defined by them.

***Water has an economic value in all its competing uses and should be recognized as an economic good.*** Within this principle, it is vital to recognise first the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognise the economic value of water has led to wasteful and environmentally damaging uses of the resource. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources.

In brief, the requirements of the UN Millennium Water Policies can be summarised as follows (MDG):

- To halve, by the year 2015, the proportion of people who are unable to reach or afford safe drinking water;
- To halve, by the year 2015, the proportion of people who do not have access to basic sanitation;
- To develop integrated water resources management by the year 2005, and to assist the developing countries to reach that goal;
- To assist the developing countries, and the countries in economic transition, to monitor and assess the quantity and quality of their water resources, by establishing and improving national monitoring networks and databases, and by creating relevant national indicators;
- To strengthen the research co-operation that is needed for water resources management;
- To promote co-ordination of co-operation between national and international institutions and processes.

The very latest development in the sector-related international community co-operation came out of the 12th session of Commission on Sustainable Development, held in New York, April 2004. The Chair's Summary of the High-Level Segment is attached to this report as Annexe 5.

### **3.4. European Union**

The European Union (EU) has been active in developing its own policy and directives for regional and international water resources management and sanitation. These commitments, regarding development co-operation, are generally highly consistent with the recommendations of the UN and with global conferences. An initiative was presented in Johannesburg, and has been developed further in Kyoto. Its implementation has already started.

#### **4. Finnish Development Co-operation Policy in the Water Sector**

Finland has been a major participant in water sector development co-operation throughout its involvement in development co-operation since the 1960s. In particular, it has given high priority to improve access to clean drinking water through bringing the collection point closer to the consumer in an affordable way. Efforts to achieving these goals have developed over the years as a response to the ever-increasing concern for sustainability. This work has been undertaken in line with the policy guidelines for the water supply and sanitation sector published in 1989, and slightly revised in 1998. This document is itself based on the general development policy of Finland, "Finland's Policy on Relations with Developing Countries," and includes five general concepts:

- (1) Promotion of global security;
- (2) Reduction of widespread poverty;
- (3) Promotion of human rights and democracy;
- (4) Prevention of global environmental problems;
- (5) Promotion of economic dialogue.

Finnish development co-operation in the water sector is seen as a tool to address aims 2, 3 and 4 in particular.

The Decision In Principle of the Council of State in September 1996, based on the development co-operation strategy approved in 1993 for the 1990s, is based on very similar concepts:

- (1) To reduce widespread poverty in developing countries;
- (2) To combat global environmental threats by helping developing countries;
- (3) To solve environmental problems; and
- (4) To promote social equality, democracy and human rights in developing countries.

Development co-operation in the water sector is seen as a tool to achieve all these goals.

The government of Finland re-iterated its Development Co-operation Policy in its Decision In Principle in February 2004 (Development Policy Government Decision in Principle 2004). It confirms and further develops the previously adopted principles by stating:

"Development policy refers to coherent activity in all sectors of international co-operation and national policy that have an impact on developing countries. These particularly include security, human rights, trade, environment, agriculture and forestry, education, health and social, immigration, and information society policies.

"Development co-operation is a key instrument of development policy. It can promote the strengthening of environments conducive to development in the poorest counties by improving the premises for livelihoods, investment and trade and achieving economic growth.

“The main principles of the new development policy are:

- Commitment to the values and goals of the UN Millennium Declaration;
- Broad national commitment and coherence in all policy areas;
- Commitment to a rights-based approach. This means that the realisation of the rights of the individual as defined by international human rights agreements is taken as the starting point of Finland’s approach to development;
- The principle of sustainable development;
- A comprehensive conception of financing for development;
- Partnerships for development. Partnerships based on the participation of the public and private sectors and civil society, both at the national level and internationally, are necessary conditions for development;
- Respect for the integrity and responsibility of the developing countries and their people. States bear themselves the responsibility for their own development. Finland’s contributions are directed towards supporting each country’s own efforts;
- Long-term commitment and transparency. Finland emphasises predictable long-term commitments, and communicates openly about all activities and plans. This applies both to financing and to the contents of policy.”

The latest sector evaluation, published in April 2001, highlighted the fact that ways of achieving sustainable results have changed over the years. Simultaneously, the structural inefficiency and the decrease of available and usable water resources caused by pollution and the change in climate, have made the accessibility to clean water more difficult and expensive. This has increased the need for water resources management and development of service provision methods for increased efficiency and effectiveness. The need for clarification of the roles and responsibilities of public administration, service providers – both public and private – and users of water has also become more important.



## **5. E-Conference and Follow-up Workshops**

An e-conference, the Challenges in the Water Sector, was organised as part of the participatory approach to preparing this review. Sector stakeholders at decision and implementation levels were consulted for their opinion on the possible further development of the Finnish development policy in the water sector, especially in the main co-operation countries. The discussion was organised around specific questions designed to elicit more problem-oriented answers that addressed specific challenges and to avoid "shopping list" responses about what the Finnish development policy should be. The Summary report of the e-conference is attached to this report as Annexe 4.

As a follow-up to the e-conference, participants from Ethiopia, Kenya, Mozambique and Tanzania were invited to a workshop on the Finnish development co-operation policy should be revised in line with achieving the water and sanitation Millennium Development Goals. The basis for the discussion was the outcome report of the e-conference and the draft report of the whole study. From 10 to 11 June 2004 they met face-to-face at the IRC International Water and Sanitation Centre in Delft, the Netherlands.

### **Objectives**

The workshop opened with a restatement of the four objectives:

- To identify and propose the most effective and efficient intervention tools and processes for the Finnish development policy;
- To identify the roles of all the relevant stakeholders in the development co-operation sector;
- To contribute to the achievement of the MDGs;
- To foster bilateral development co-operation by making the Finnish Development Co-operation more aware of the specific social, cultural and economic circumstances in the partner countries.

### **Outcomes**

The main outcomes of the two-day meeting can be summarised under four main headings:

#### **Water Sector Reform:**

Management and decision-making in this sector should be handled at the lowest possible level in order to enhance ownership. All actors outside the public sector should be encouraged to play an active role in the implementation of the development activities. The authorities should guide and facilitate private sector work.

#### **Poverty Reduction:**

Irrigation is seen as an important tool to create income, from very small-scale activities such as kitchen gardens to large-scale commercial cultivation schemes. In addition to the direct impact on income creation, there are also secondary benefits that contribute to the poverty reduction, such as the positive effect on health and a reduction in the time required for water supply activities.

#### **Fostering of IWRM:**

Integrated Water Resources Management should be the lead principle. However, it was noted that this concept is very difficult to implement in practice, as it involves several ministries in each country.

Interrelations between ministries are acknowledged in principle, but co-ordination frequently faces problems that are hard to overcome. The basin-wide approach to water issues is more helpful in the application of IWRM. Administrative structures can be arranged more easily within a natural entity of a watercourse.

**Legal Framework:**

A clear, unambiguous, transparent and enforced legislative framework was seen as a prerequisite for successful development co-operation between two sovereign countries. Actions that are based on acknowledged principles, not on ad-hoc decisions, create continuity and a sustainable atmosphere, and this is a major requirement for fruitful co-operation.

## 6. Discussion

Based on the e-conference, the second workshop and background literature review, the following summary points have been identified as important topics to address in the water sector.

### *1. A new balance between water provision services and sanitation, and between rural and urban areas*

The main reason to pursue a new balance is the need to improve the efficiency of development co-operation financing in order to reach the targets already set for 2005 and 2015, by applying the principle of integrated water resources management. The intended benefits are obvious, but the difficulties are fundamental. Competition between different needs should be addressed locally, if possible. Existing national and regional strategies are also necessary, to provide an appropriate political and financial framework. Many developing countries possess that level of institutional capacity and tradition at village level only. A wider approach requires long-term strengthening of institutions and administrative processes, starting from legislation and water rights.

A sufficient time period is also necessary for appropriate data collection, and for easy public participation. Projects seldom allow for this. Capacity-building should be seen as an indispensable separate operation, although preferably it should be connected to technical projects. An adequate level of sustainable national capacity should be seen as a precondition of multi-purpose financing. In relatively small projects, checking and building the needed capacity should be a strong component of the project.

National plans, advocated as millennium goals, would be important tools for the necessary multi-purpose approach where all uses of water are taken into account. There will always be competition for the scarce financial resources between national administration sectors, as well as between local beneficiaries, and ways are needed to assess the values of different services. As the value of inputs and benefits is only partly measurable in currency, other kinds of national and local indicators need to be developed to facilitate transparent participation of all stakeholders, for sustainable planning.

For people who are simply in desperate need of just drinking water, it may be hard to understand why such wide perspectives are needed, and the criticism may be partially valid, if bureaucracy is unnecessarily brought to every project. In the rural village context, in particular, where the people themselves are active in arranging their domestic (drinking) water supply, and only relatively small amounts of water are needed to meet the demand, a simplified process could be considered. Only in conditions of extreme scarcity of water would a wider approach be justified in order to avoid conflicts.

The indicators and comparisons of multiple interests should be taken into account in a national or regional strategy plan, which should also be open to public participation of all interest holders and players. This kind of strategy, in particular, should function as a continuous process rather than a one-off decision. The cost-benefit considerations should address all relevant interests, taking into account environmental, social, political, religious and moral values. Providing open access to information appears to be one of the most difficult requirements to implement. However, it might be taken as the cost of promoting democracy.

## *2. A new balance between water services and sanitation, and between rural and urban areas*

The need for water supply and sanitation services is common to both rural and urban areas. Their relative importance varies, as in rural areas the felt need for sanitation improvements is less acute than in more densely inhabited urban and periurban areas. Water supply tends to be an issue of livelihood in rural more than in urban areas, where access to any kind of water is more dependent on arranged water supply. In reality, however, access to wholesome water is equally important both in rural and urban areas. Efforts to improve water supply are partially wasted unless simultaneous improvements are made in sanitation, complete with health education, as breaking the contamination circle remains difficult without them.

Poverty alleviation is equally important and remains a valid reason for improving access to water supply and sanitation services both in rural and urban areas. The time spent in collecting water is directly taken away from other activities necessary for development – for example school attendance or production of income or participation in social activities. Days of sickness reduce the capacity of people to improve their living conditions.

As the world is rapidly urbanising, the pressure to serve newly-urbanised populations is increasing too. In many developing countries, the migrating population settles in periurban areas, which lack the necessary infrastructure. To serve these usually poor people is of utmost importance. Arguments supporting the general humanitarian reasoning include the need to fight the spread of disease, not only in the periurban areas but also everywhere else, as lack of hygiene in any parts of a densely habited area will spread diseases beyond the boundaries of the deprived area itself. Prevention of disease is a direct measure to eliminate poverty.

The participatory approaches, which are working effectively amongst the rural population, are applicable in the periurban areas too. A feeling of a community, however, is more difficult to build up, but when established through awareness-raising and communication, it will work. Activities designed for one purpose, such as improvement of water supply and/or sanitation, will also have a positive impact on other measures to improve living conditions in the periurban areas.

Some donors may apply a rule of thumb, requesting that a proportion of a water supply investment must aim at sanitation improvements. This can be considered as a measure to mitigate the harmful consequences to the environment that result from increased flow of wastewater. Indeed, poor sewerage is often a reason for urban floods, with all their well-known harmful consequences to the hygiene of cities. As long as municipal and industrial wastewaters flow in open drains, any loss of pressure in water supply pipes results in contamination. The separation of real sewage from storm water, channelling and treating them separately, is justified in periurban conditions, not to mention urban areas, because the biggest risks of pathological contamination are caused by human/animal faeces and urine. Separation will also make the systems much more manageable in terms of investment and operation. Sanitary landfills that are exposed to floods often form a corresponding hazard. The problem seems to originate, at least partly, from the migration of people from countryside to cities. In an agricultural community, manure is usually considered as a valuable fertilizer. In the rural areas, disposal of domestic waste is no big problem. Farmers desire biologically stabilised wastewater for their fields. However, in cities, the demand for the wastewater is usually limited. When planning, both sides of urban water supply should be addressed together, although it may not always be necessary to combine them in the construction phase.

Many Western cities treat their municipal and industrial wastewaters by reducing organic matter and main nutrients. Harmful microbes are destroyed in the same processes. The aim is to prevent eutrophication and health hazards in the recipient water body. Integrated planning would allow a more appropriate and cheaper treatment of wastewater in areas where recycling is relevant. Water supply planning of a city and the surrounding countryside clearly need to be tailored together. This should also help offer solutions to the problem of limited raw water resource during the dry season. It has more to do with administration than physical factors. Irrigation using primitive methods wastes a lot of water through evaporation to the atmosphere, but it may be the price for producing food for the cities. Industrial pollution control (IPC) becomes an important element of urban sanitation as chemical stabilisation is needed in addition to the biological stabilisation.

The majority of water resources available are used for irrigation. In the dialogue about competition between urban and rural users, there is a dilemma concerning the importance of irrigation to providing sufficient food supply. Within the main theme of this paper, this is treated as an issue of democratic decision-making, where capacity-building is needed to facilitate the discussion taking into account appropriate economic and technical considerations. Local political and traditional rules are usually well known, but enforcement of legislation on water rights remains weak. A qualified irrigation project should also address the social aspects. The tenant tail-ender farmer, the poorest of all, is often neglected, even if loans and services are offered to small landowners. International agreements are also needed to avoid conflicts between neighbouring countries.

A major planning problem of sustainable irrigation seems to be proper drainage. The reason may be similar to that of sewerage problems in urban water supply. Desertification and waterlogging are often the result of greedy calculations to maximise the amount of irrigation only, without giving any thought to the salt balance in the ground. Irrigation planning should cover the whole drainage area, including water users downstream. A regional general plan is usually needed, to provide a framework and standards for individual projects. The necessary assessments should cover all long-term development plans of rural and urban areas that depend on the same source of water. It is common to find that responsibility for constructing irrigation facilities belongs to government ministry different from the one responsible for the administration, maintenance and monitoring of the facilities. The collection of hydrological and meteorological data necessary for proper planning and predictions over a sufficient number of years may belong to a third ministry. Coordination and communication between the separate governmental bodies responsible for the project have turned out to be the weak point in the sustained operation and maintenance of the facilities.

In general, a well-implemented irrigation system provides an excellent water supply that can also be used for other needs of rural households. However, problems arise when groundwater turns saline and gets logged as a result of poor drainage. Sometimes the soil contains natural deposits of hazardous substances, such as poisonous heavy metals. The importance of monitoring water quality should therefore be highlighted in rural water supply. There might also be hazards other than salinity. Water quality should be checked whenever shallow wells are built.

Irrigation, as well as water supply of big cities, requires sizeable channels, reservoirs, dams and pipes. They can be vulnerable to earthquakes and other natural or man-made catastrophes. Dam security and sufficient geotechnical data are considered normal elements of proper planning. However, a concept of emergency co-operation is needed when a major risk occurs.

### *3. A new balance between available resources and demand*

Traditional conceptions of industrial economies mention raw materials, workers, factories and financing as the main factors of production. Later modifications add knowledge as a fifth item. Our conceptual model of the water economy has water as material, all stakeholders as workers, water supply and sanitation facilities as production plants, and money and corresponding in-kind contributions as financing. The knowledge component includes additional global information and communication. As we operate in a market-based framework, there is an equilibrium of supply and demand for all resources. Also, as water is a renewable natural resource, we have to note that the human economy must work inside the ecological framework, in a sustainable manner. This means that we should not harm the future of our resources by overexploitation or other short-term activity.

Globally, water resources are theoretically sufficient for all people, but they are unevenly distributed geographically. Many developing countries have too little, or too much, varying seasonally and by location. Although influenced by pollution, most of the freshwater resources are still good for drinking and for other human purposes. However, we need to add water quality standards or indexes to the toolkit of sustainable planning. Can tap water be "safe" if its quality is not always healthy? Agriculture and industry also have quality requirements. One recommendation could be that water sector projects and programmes should add a simple quality consideration to any comments on quantity, when relevant. However, important water sources should not hastily be disqualified on the grounds of poor quality. They can be treated, if the money, technology and skills are available. Often, however, it is cheaper to eliminate the origin of pollution. Water and wastewater plants should monitor regularly the quality of their product, and provide the public with access to that information. A dusty portable laboratory kit in the basement of the plant is of limited help, if reliable action is missing. Use of poor quality water could, perhaps, be acceptable in cases of necessity; however, lack of transparency of the information is not.

Identification of available water resources is a responsibility, or privilege, of a sovereign nation. However, only industrialised countries benefit from adequate hydrological and meteorological information. Regular observations can be costly and require trained field staff, as well as institutional capacity to create and maintain databases for statistical and planning purposes. Lack of reliable information is commonly mentioned as a problem for water development projects. During preparation of an individual construction project, there is seldom time to collect sufficient information about the sources of water. Planning and forecasts are often based on so-called educated guesses. Sometimes the data are false, or access to data is limited. Money is then lost through inadequate planning or through failures at implementation level. Monitoring systems have deteriorated in many developing countries, and in countries in transition towards a democratic market economy. The financial benefits arising from proper monitoring of hydrological resources are considered to be indirect, slow, or less exclusive, while the costs are immediate and are given low priority in national development financing. The external support agencies for development should perhaps encourage capacity-building for water resources monitoring, as well as promoting open access to the data. Urgent needs for humanitarian assistance may override the long-term interest of maintaining reliable statistics, but why should the poorest people have to suffer as a result of poor engineering? From the point of view of a donor agency, this simply means inefficient use of limited financial resources.

With regard to water technology, opinions are divided. Some experts recommend the development of elementary or local facilities, as people find them familiar, and they can take care of maintenance and most of the work by themselves. Others consider that new challenges require a modern, imported approach. Local practices and needs should be thoroughly reviewed during project preparation, and appropriate technology should be selected together with the people concerned. The method that would be best on technical and economical considerations alone, for example, may not fit local traditions.

There are few purely financial resource issues that can be recommended in this report. The most important one to be considered is the true commitment of the recipient agency to mutually agreed policies. Transparency, social equality, gender neutrality and other desirable aspects of democracy as defined in the Millennium Declarations, should be addressed all the way through the process, starting from the project preparation intervention stage. The requirements should be agreed between all donor organisations together with the recipient agencies at programming level. Variation between projects should be unwelcome. One common example is the question of salary subsidy to local experts who participate in the technology transfer. Another difficult one is local value-added tax payments for purchases with humanitarian assistance money. A key principle could be that financial independence during project implementation should depend on the demonstrated capacity and willingness to follow the mutually agreed policies and rules.

Finally, human resources are the most important element in all water projects. Development co-operation and learning is always a two-way process between the participating people, institutions and nations. Building institutional capacity requires sector-specific strategies. Development of water resources is often focused on technical aspects. However, engineering skills can be used efficiently to promote the millennium agenda only if there is strong understanding of environmental, social, institutional and economic issues. Economic analysis of a project also has to address aspects that are the responsibility of somebody else, and are not necessarily controlled by the decision-makers of the project. The project plan should clearly spell out what human resources will be needed at the time of completion, and how those persons will be trained or educated. Post-evaluation reports often note that the trained persons have been promoted to other jobs, and therefore the development could not be sustained. In reality, the design was not sustainable, as tying persons forever to one particular position may not be realistic. Indeed it may not even be desirable, as well-trained water professionals may promote the development of the water sector and national economy in other positions.

As the goals for a new balance between available resources and demand are global, it would only be fair for the necessary commercial competition between those who are committed to the millennium goals also to be global. We may see future policies led by the EU that will further formulate the role of Member States. According to current commitments, the development activities in third countries are subject to no constraints. Supply-driven marketing of technology is common, and there may be political reasons that justify the purchase of equipment and skilled labour from certain countries. Finland may possess an excellent capacity to perform in the international water sector, as it is one of the lead countries in water technology. However, does the supply-driven approach lead to sustainable choices and ultimately to a sustainable infrastructure, or would an approach in which the partner receiving development co-operation takes the lead role bring better results? Should the emphasis be shifted to capacity-building, so as to increase and sustain a higher level of service provision in terms of both quality and quantity?

The latter option would have to involve the whole sector, starting from the decision-makers and extending to the lowest technical level of actors.

*4. A new set of development co-operation approaches, tools and partners have to be developed and selected to suit the present-day world*

Several mechanisms in the water sector development co-operation have been used till now. The early days of dumping of material has gradually developed through project aid, programme support and sector assistance into budget support and involvement of the private sector. All of these have contributed to the cause, but the success has not been as good as expected. The change in behaviour and practices of stakeholders has not been up to expectations. The above applies also to players in the "North" – the external support agencies and their proxies. At the same time, the world has been changing. Yesterday's truth is valid no more, and constant development and vigilance is needed.

One question set by the millennium approach seems more important and challenging than all the other items together – How to make safe water supply and sanitation affordable to poor people? A general requirement of at least partial cost-recovery would seem appropriate in sustainable development, but the poorest may simply lack money for water. User associations, municipal subsidies, soft loans and privatisation of services have been suggested and tested, so far with limited success.

There is no visible technical reason to question the capacity of the international community to achieve the targets set for 2015. However, at the current level of financing, and on the basis of the experience of past decades, it seems unlikely. New strategies are also needed, as well as intensive institutional capacity-building in developing countries. Foreigners alone will never be able to do what is needed, neither can the results of their contribution be sustained, if national governments are not able to take full responsibility for further development of the sector.

Poverty is a serious reason for mismanagement at all levels. And this is true in both environmental development and water resources. It makes individual people forget the overall benefits to their community. Responsible officials may feel that concern for sustainable development can wait until the people of their territory can afford it. The millennium declarations highlight the goals as a matter of "water for life". However, pollution creates health hazards, water resources are wasted, and short-term actions destroy future development of the poor. Deterioration creates poverty. With regard to biodiversity losses, no final resolution has yet been reached. The consequences of lost biodiversity are often unpredictable. Hence, ecological processes should be respected and nature protection promoted, whenever possible. Environmental and social assessments could be powerful policy tools, if developed as an integral part of economic and technical feasibility assessments.

The principle of transparency is an important tool for enhanced development. The problem is that proper public participation takes time. Free access to all information, including reports and planning documents, is against the traditional administration practice in many countries. It also consumes financial and human resources. Although NGOs have already become useful in development co-operation, their role could be further developed. Incorporation of local considerations is particularly important in water resources management. Everybody needs water and produces wastewater. Water is often an element of traditional and religious rituals, and everybody feels the changes in the ordinary life and household economy.



### *5. The impact of an economic framework, the reality of the global economy*

It appears hard to reach the poorest people through international development financing, as the money is filtered through the power structures of the recipient government. The challenge includes capacity-building at all levels of administration and management. Clarification of legislation is often required to modernise land ownership and water rights. There is also a conceptual problem to consider, as in some cultures, water resources are viewed narrowly, for irrigation only. A proper basis for addressing the impact of a given economic framework would be the identification of connections between provision of water for domestic purposes, agriculture, industry, and nature and economic parameters. There are a large variety of interactions, in addition to the financial operations of water sector services.

Financiers of co-operation may wish neither to compromise their ethically justified national or international commitments nor to ignore the taxpayers' will. Recipient countries may not want to compromise their equally justified opinions of their priority needs. Improving mutual understanding and creating a framework for better communication are clear challenges. According to the latest UNDP statistics, 54 countries are poorer today than in 1990, while the world overall has gained wealth. An earlier expectation was that national economic growth would automatically benefit the poor, sooner or later. Nowadays economists know that this does not always happen. There are clear indications that poverty of the poor people can get worse even during a period of overall growth.

Better methods to evaluate the economic impact and relevant parameters of water sector development would also answer the issue of low priority. A common cause of mismanagement seems to be the false assumption that development can happen without proper respect for the personal financial and other priorities of the people involved. Another cluster of project failures seem to result from ignorance or limited knowledge of hydrological processes of nature. As a possible recommendation, water management should be developed with thorough consideration of both economy and ecology. Both fields of relevant processes behave in accordance with their own laws or rules, which do not surrender to human control.

While globalisation challenges the old technical and economic concepts of water resources development, it also provides better instruments for improved efficiency. One new asset is telecommunication. A global survey of relevant information can be conducted easily, if a simple access to the Internet is available. There are also better opportunities to provide information transparently to the public at a relatively low cost through electronic communication. Information technology seems to have developed into a key factor of project quality. National and international workshops can be organised at short notice. However, that technology is still considered expensive, as often mentioned in evaluation reports. Certainly, it does not reach most of the poor. Relevant information has to be presented in the local language, using local concepts.

### *6. The impact of commercialisation and the trend towards a consumer-orientated service provision*

Private-public partnerships have become popular in addressing the commercial aspects of water supply and sanitation. There is no obvious reason to set "a one and only doctrine" about the right mix of freedom and commercial regulation. It may be considered as a practical decision of the recipient government and local stakeholders. NGOs have joined the teams, successfully in many cases. Both public and private services have their well-known advantages and disadvantages, and both approaches have been common for a long time.

Appropriate legislation and institutional capacity of the responsible agencies seems to be more important. Legislation and enforcement capacity must be in place, as well as quality standards to assess the performance.

Making water and sanitation services tradable triggers the problem of lack of competition, and setting an affordable price. There are several ways to measure the willingness to pay, the replacement value – or the amortisation – and running expenses as bases for financial value. A social warranty of availability of services to the poor seems appropriate in all conditions. Different development strategies may guide the use of water in the longer term.

#### *7. Financing of the investments, and operation and maintenance of the production of services and installations*

A common financing structure of water sector services includes investments financed by the government or municipality, and consumers paying the operation and maintenance costs. Other arrangements, like total cost recovery from the consumers or partly subsidised consumption rates, may work as well, depending on the country and the installations. The main prerequisite is that there are clear rules and they are adhered to and enforced if needs be. Sometimes the connection between the constructing of facilities and user bodies remains weak, resulting in impractical operation. A typical problem of irrigation projects, as well as water supply schemes, for example, is the lack of proper arrangements to collect the water fees, and a high rate of unaccounted-for water. The latter can easily be higher than 50%, which ruins all input-benefit calculations of the services. Leaks and a certain level of losses are of course normal in any system. The reason for high losses can vary from poor design, construction or maintenance to poor collection of fees, inappropriate metering and even stealing or corruption, or a combination of the above.

The connection between water and poverty is obvious, often noted, but difficult to describe in quantitative figures. The health effect, agricultural productivity effect, and environmental safety effect are closely related to improvements in water supply and sanitation. One may conclude that financing of these aspects of development should be considered more or less combined. What makes the water sector special in this context is its correlation with poverty in all developing countries. Poverty may be reduced in many different ways, but no sustainable results can be expected without a certain, minimum level of water and sanitation services. As long as the issue is poverty, and water sector services are missing, it seems justified to support the local development from public and development co-operation assets. The need to assess the actual situation in each country or site requires a water sector programme, to be prepared prior or parallel to project work. Overall, approximately 30–60% of the money that will be allocated to help the poor could go to the water sector services.

The donor should verify the capacity and will of the recipient body to administer and operate the services. Otherwise the co-operation money may be wasted, as only a heavy set of institution-building measures would be adequate. Correspondingly, irrigation improvements should include appropriate draining and water supply services to take care of the effluent.

Proper cost-recovery of operation and maintenance would be the proper policy in most cases, as well as elimination of permanent governmental subsidies. Taking care of the poorest people might justify other views or different safety net actions.

## *8. Options for and the boundary conditions of the institutional set-up of service provision*

There are many different institutional set-ups in use in different countries, based on culture, traditions and history. In general, however, the integration of water sector services to other infrastructures needs improvement everywhere. Operational decision-making should normally be brought as close to users as possible.

Another, important aspect of the institutional set-up is a clear-cut distribution of responsibilities amongst actors in the water sector, combined with good co-ordination, exchange of information and transparency. Public sector staff, starting from the top level of ministries down to the lowest governance level, should all have clear roles and rules. Their links to the private, commercial and the non-profit sector have to be made transparent, in order to facilitate fruitful interaction with complementing roles that best suit each party in the context of the country and the culture.

The greatest difficulties are usually met at the national or ministerial level, where the issue of mandates easily becomes an obstacle to good governance. The perceived boundaries may either overlap or leave gaps – areas where no ministry claims responsibility. Ways of avoiding rigid mandate-based roles are being sought in many countries, and will most likely continue to be so, as there is no one and only good option available. Any external support or advice at this level of governance is sensitive, but is also needed in order to enable educated choices to be made by those with power and responsibility. International experience may act as eye opener for the gridlock of petrified stands of the various parties.

Modernisation of working methods is the greatest need at a lower level of governance and implementation of set policies. This calls for capacity-building of both the institutions themselves and their staff. An extra challenge in this respect is the rapid turnover of staff, which endemic in many countries. The traditional top-down attitude has to be changed to one of working with the people, the private sector and supported by services provided by NGOs, as appropriate. The role of being the guardians of the public good does not imply that the implementation in the sector has to be done entirely by the official public institutions, nor that all the necessary funds would come through budgeted governmental allocations. This trend towards decentralisation and polymorphism is one of the mainstream targets of the countries in transition towards a market economy.

A good strategy usually requires consideration of various alternatives. Administrative districts and boundaries of provinces or municipalities do not necessarily follow the geographical features of watersheds and drainage basins. Regional, as well as national or international, general planning for water resources has been the tool to address that problem in industrialised countries. Similar plans, closely connected to land use and social parameters, would provide a framework for national water sector strategies. This appears to be one of the institutional activities that need to be established. It is a continuous activity, although the overall strategy might need to be reconsidered only now and then.

As village and municipal institutional boundaries are the final level of most interventions, they remain important sources of information and knowledge of local needs. Our strategy should, perhaps, note that both small and big are beautiful, and highlight the definition of the institutional target level for each approach. For instance, national legislation must be in reasonable shape, provincial regulations should be consistent with it, but it is only the local authorities that can provide the transparent and democratic implementation.

Administrative boundaries cover all levels. Hence, we need to separate the strategic components of the IWRM into international, national, state, province, county, municipality and village, in contrast to river basins, lake areas, groundwater aquifers and irrigation areas. The latter, which are natural boundaries, do not necessarily follow the man-made ones. This has caused and will create contradictions in future, unless it is taken into account from the very beginning of planning the interventions.

*9. The volume of future development co-operation in the water sector, with emphasis on the Finnish contribution.*

Most donors expect a certain proportion of total financing from the recipient government as an indication of due commitment to the programme or project. In the case of the poorest countries, an in-kind contribution may be acceptable, with no cash requirement. Willingness to pay by the recipient, either the government or another agency, might set a relative ceiling to the practical volume of financing the co-operation by external support agencies. An exit strategy should be drafted for disappointing cases of promises that later turn out to be empty. On the other hand, verification of real capacity should be the duty of programmers. Mutual understanding in country programming should include a time-table for increased volume of assistance, as long as post-evaluation of the implemented approaches indicates full and reliable commitment to the millennium policies.

The World Water Council has estimated that to achieve the MDGs the annual need for investment in developing countries (OECD criterion) would be some US\$180 billion. Today the level of investment is:

Water supply and sanitation: US\$30 billion per annum

Irrigation: US\$30 billion per annum

Hydropower: US\$20 billion per annum.

The need to top-up is, according to the above calculation, some US\$100 billion per annum. It is highly likely that the financial resources of the developing countries are insufficient to enable the needed increase. External support from industrialised and post-industrialised countries and the private sector are needed.

Finland's role as one of the lead countries in water technology should be addressed. There are also particular fields of the water sector in which the Finnish Government has traditionally maintained an interest. One example is trans-boundary international development, regarding water sources such as the Nile and Mekong rivers.

Social evaluation/appraisal of the sector and budget support programmes are new challenges. Sector and budget support programmes quite often involve action models, reorganisation, privatisation, etc., which cover the whole society. Different stakeholders often have very different stands on these issues. The models and solutions presented may at worst be sensitive and disputable, and can – in the absence of intervention – threaten social stability. An open dialogue and consultation with different groups of society has become more important, not only for the society itself, but also for the legitimacy of the development funding agencies.

Strategies for action may cover at least the following potential packages, which vary from country to country:

- (1) Direct actions by governments (including setting conditions for the private sector and NGOs);
- (2) Regulatory measures (includes legislation, water rights, standards);
- (3) Social tools; and
- (4) Economic and financial incentives.

It should be noted that numbers 1 and 4 are critical. Points 2 and 3, which may appear complicated, are in reality more issues of sustainability than expense.

In conclusion, it should be recognised that quantitative views should be developed, based on cumulative infrastructure investments per capita in different countries and conditions. A reasonable share of the millennium goals would be considered to be a policy decision.

#### *10. Preferred development co-operation approaches in the water sector*

The second workshop on Challenges in the Water Sector, which discussed the aspirations of sector professionals in the main African co-operation partners of the Finnish development co-operation, resulted in the following ideas in principle:

A national focus on water sector reform has emerged as a prerequisite for improvement of the sector performance. The present situation, with the main actors being given partially overlapping mandates with vague boundaries, does not enable an improvement of efficiency. Clear roles, responsibilities and adequate capacity to carry out the necessary duties are called for. This includes the integration of actions of the different branches of governance, at all levels, into a synchronised and holistic system, which takes into consideration all uses of water, and factors governing the resources management.

Poverty reduction is often, and rightly, given as the justification for water sector interventions. However, water services are also essential to improving the living conditions of people. Water is a true economic resource, which enables income creation through a vast number of activities. This does not reduce the value of water as a basic necessity for life, but highlights an aspect that should be clearly kept in mind when judging interventions in the sector. This justifies the policy of cost recovery without, however, sacrificing the aspect of the accessibility requirement for the poorest segment of the society, i.e. the community itself acts as the guarantor for its poorest members.

All actions that become sustainable are based on good governance and equity principles. The credibility of interventions is based on the trust of the stakeholders and on the just and open implementation of agreed principles in the programmes and projects of the sector. Failure to ensure these requirements is fatal. The requirement for equity includes all the social variables: gender, education, income, age, ethnicity and religion. Good governance is based on the rule of law, democracy, clear roles, transparency, predictability and competence.

IWRM should be adopted as the guiding principle when planning, designing and implementing water sector co-operation programmes and projects. In this connection, the basin-wide approach is preferred over the administrative boundary option. In the case of international watercourses, it requires a mechanism to share the monitoring, planning and utilisation facilities, and institutions. The international legislation is not developed far enough to apply directly to most of the cases. Thus capacity-building of international resources management becomes crucial.

A clear, unambiguous, transparent and enforced legislative framework, based on the culture and the sense of what is just for the peoples concerned, was seen as a prerequisite for successful water resources management as well as co-operation between sovereign countries. Actions that are based on acknowledged principles, not on ad-hoc decisions, create continuity and a sustainable atmosphere; and this is a major requirement for fruitful co-operation.

Sound decisions are always based on proper data and information. Hence their quality is of vital importance. Monitoring, if systematic, continuous and purposeful, is a key to obtaining undisputable data, which in turn can defuse tensions and pre-empt the possibilities for mismanagement.

Exchange of information and experience goes hand in hand with monitoring. Information that is shared and used creates new possibilities for the sector development. The wider it is distributed, the greater is its impact.

Human resources development (HRD) includes not only training, but the much wider concept of developing the capacity and career options for professionals in the sector. It promotes the performance of the sector through increasing the skills base and making working more interesting and rewarding for talented professionals in all trades in the sector. It is a continuous process, which keeps knowledge of the professionals up-to-date and improves their performance. HRD should be fostered in parallel to institution building to create a balanced outcome where institutions perform properly and their employees feel that their competence is rewarded.

Participatory approaches, where all those involved have a say in matters concerning them, should be encouraged and promoted. The feeling of ownership is the best guarantee of sustained interest in the success of any exercise. It is to be noted, in this connection, that the principle of equity of interested parties must be adhered to as a prerequisite for success when applying participatory approaches.

Improvement in service delivery of all water sector services and their expansion is the final measuring stick that stakeholders use when considering the benefits of being involved in the development work. This concept is valid not only in the production of services, but also in the conservation of the resources, as sustainability and improvement of services are a common interest.

Gender is a special social variable. It needs constant vigilance to ensure that all decisions are made with full consciousness of their impact on both sexes. It is still a challenge to ensure that women are participating at all levels of the process of improving service delivery – not just at the contribution stage, but in decision-making and planning as well. Empowerment efforts are still called for.

Most major river basins are international, and have cross-boundary catchment areas. This calls for regional co-operation for proper resources management and protection. This is very challenging, as different aspects of the resources management tend to belong to the jurisdiction of several ministries even in one country – not to speak about the different division of tasks, duties and responsibilities in different countries. Co-operation and co-ordination remain necessary for proper, transparent resources management that avoids conflict.

Rural and urban interests in water resources are often said to be counterposed. This may not be completely true. There is common ground, which, with proper planning, can be enhanced. One of the key issues is avoiding pollution, another is avoiding wasteful methods of irrigation.

Cost recovery is a necessary component of sustainable service provision. However, the way it is applied needs serious consideration, as there is a danger of excluding the poorest segment of society from the service provision as they might not be able to afford it. A direct subsidy policy may not lead to the wanted result, as it tends to benefit the middle-class instead of the real target, the poorest service users.

It is necessary to design the cost recovery policy in a development co-operation programme/project so that the possible subsidy component of the intervention lies, from the beginning, in the natural internal structure of the exercise, which will remain after the external support has been phased out. Otherwise, the external support will benefit the more prosperous population/user groups, not the poorest ones.

Various versions of the public private partnership (PPP) are a necessary and a welcomed development or trend. There are many different ways to arrange and foster it. There is no one and only approach. The choice must be based on the tradition, history and stage of development of the society where it is applied.

## **7. Conclusions**

Responsibility for developing a sovereign country has to reside within the country itself, if the Millennium Development Goals of the United Nations are ever to be achieved. The responsibility of the developed world is limited to supporting the efforts of the developing countries and the countries in transition, based on their own efforts to improve the lives of their population, in line with the MDGs. The decisive factor for success is the will and determination of the countries, expressed in the policies of their governments, and in the implementation of these stated policies. It is to be noted that both the policy and its proper implementation are essential. Consequently, the external support given by the international community and the developed, industrial and post-industrial countries must be demand-driven, in order to bring results and be sustainable. Proper awareness-raising, combined with institutional and capacity-building, is key to demand creation and successful external support to the efforts made by the recipient partner countries themselves.

The Integrated Water Resources Management approach appears to be the only way to achieve the MDGs in the water sector. Without IWRM, it is highly unlikely that any serious progress towards the Millennium Targets will be possible. This also includes integration of different uses of the water resources into one common management procedure.

One of the most important challenges of developing countries is to ensure that all sectors of policy coherently support the achievement of MDG goals, especially poverty reduction and sustainable development. It is more important than ever to harmonise and match together the three pillars of sustainable development – the economy, environment and social development. However, this calls for a closer look at the concept of social development and the process of making its operational.

There is a general understanding amongst the professionals in the South and the “international experts” that poverty alleviation is a valid issue in the water sector, and a valid argument for continued efforts to improve the sector services in the developing world. This understanding must be reinforced amongst the decision-makers, as they hold the keys to development policy decisions. In this context, it is critical to mention that the voice of the poor is not easily heard by those responsible for service delivery and resources management. A greater commitment from the professionals and the politicians is called for.

Another general conclusion is that each country is coming from a different perspective in terms of how to deal with the MDGs. Several reasons are contributing for this, the most striking amongst them being the difference between “talk” and “deeds”. For example, it has become quite obvious that sanitation targets will be more difficult to achieve than those for water supply.

General concerns about sustainability have not changed much recently. The newest approach to improving sustainability, IWRM, needs much awareness-raising, as the limits of available water for the competing demands have become more and more obvious, with a real crisis looming in many parts of the world. The challenge of demand management, both in water supply and irrigation, calls for inter-disciplinary approaches and international basin-wide co-operation between riparian countries.

Capacity-building and institution-building are both continuous challenges. The environment of the water sector – social, cultural, technical, economic and natural – is in constant change. Petrified stands and approaches will soon become obsolete and will hinder development, and the achievement of the Millennium Goals. New challenges call for new skills for all the stakeholders in the sector.



The issue of partnerships needs reinforcement. This applies to public, private, third sector and community partnerships, as well as to partnerships of different professionals at all levels in the sector and adjacent sectors. Options for fruitful co-operation are many, but they still depend on the legislation, culture, economy, environment and, most of all, the will of the parties involved.

The term "privatisation" is often used to describe building of partnerships and decentralisation. In the original meaning of the term, however, it means transfer of ownership of assets only. As such, the approach is too narrow and will not lead to an optimal outcome. A more comprehensive meaning using another concept that gives it a real content, has to be accepted. Decentralisation, in its true meaning, refers to delegation of power at the lowest feasible level, together with a spectrum of public private partnerships as the way forward. Inevitably, the best possible roles for each actor and stakeholder in the sector have to be sought in each case, based on the reality on the ground. The approach does not diminish the importance of higher level institutional structures, but enables them to concentrate on the more important tasks of protecting the common good and guiding the implementation-level structures.

Currently, the investment level in the sector is too low in the developing countries to reach the MDGs. The annual investments are US\$30 billion for water supply and sanitation, US\$30 billion for irrigation and US\$20 billion for hydropower. The World Water Council recommendation for annual investment level is US\$180 billion for the water sector. As the capacity of the developing countries is limited, additional funding is required from the industrial/post-industrial countries and/or the private sector.

Finland, which has traditionally been active in the water sector development co-operation, has had good results. Continued support in the water sector is therefore justified. Properly planned and implemented improvements in the water sector are contributing towards poverty alleviation, increasing equity and environmental sustainability.

A fair share of the contribution from Finland for the achievement of the MDGs would be to support access to water supply and sanitation for some five million people. This would require an investment of € 500 million in total, or €40 million annually. The current annual Finnish input has been € 10 million only.

The Finnish development co-operation has been mainly directed at a concentrated group of countries in order to limit the number of co-operation partners. The reason is the limited capacity/resources available and the necessity to build up expertise through a deeper understanding of the needs and capacities of the partners. It is foreseen that this fully justified trend would continue in the future. This review has resulted in understanding that there are naturally needs and demand outside the main co-operation partner countries, but this recognition does not change the reasoning behind the decision to limit the number of development co-operation partners. It is envisaged that concentration will lead to a bigger and more sustainable impact in the selected countries.

As stated above, the differences in the environment, development status and orientation of the co-operation partners in the South call for a multitude of development tools and mechanisms. However, there is no one tool and/or mechanism that is suitable for all cases. The most effective and efficient way for development co-operation is a pallet of tools and mechanisms, which is adapted individually to every country and case, in dialogue with the parties concerned.

It will be important to ensure a balance between interventions and the institutional and professional capacities of the co-operation partners.

Often the data and information management capacity of the recipient organisations has turned out to be limited. Development planning capacity should be based on professional knowledge, which arises from information. Information is extraction and derivation of valid data. When internalised it becomes knowledge, which is an essential capacity for good governance. Valid data can be gained only by monitoring the physical and social environment continuously.

Development co-operation in the water sector provides an excellent opportunity for two-way learning. The Finnish sector resources – public, private and the third sector – gain valuable knowledge of methods, institutional options and technology applied in other parts of the world. Working alongside other national and international players in the sector in different environments and cultures acts as an eye-opener, which will improve the capacity and skills base of the sector professionals to improve their performance both in the partner countries and in Finland too. This is a positive example of a win-win situation, where both Finland and partner countries gain skills that help in the global market.

The Finnish demand-driven approach has been confirmed through past experience to be appropriate. Identification of the demand, however, appears difficult in some cases where the development needs in the field do not convert into political interest leading to identified demand. Hence, reflection about the general needs in priority listing of governments can limit the consistency between the need and demand. In such cases, it may become necessary to cautiously approach the issue of sector co-operation in an apparently supply-driven way in order to bring together what is needed in the field and the agenda of the national level government of the partner country. The issue of good governance may, in this context, be limited mostly to smart and transparent administration and low level of corruption.

On the other hand, a supply-driven approach induced by the proven sector capacity in Finland can be positive, as Finland clearly can offer added value to partner countries. As development co-operation is an essential part of the Finnish foreign policy, taking full advantage of the material and non-material resources available in Finland in this sector would seem to be fully justified. This is in line with the general justification of the development co-operation as stated in the Decision in Principle of the Finnish government. In an ideal case, a good development co-operation project/programme is both supply and demand driven; both the demand and resources being properly identified.

## 8. Recommendations

The commitments of the Finnish development co-operation in the water sector, and its achievements to date justify and will continue to stimulate the country's involvement in this sector. It is recommended that Finland continues its development co-operation in the water sector. However, it is advisable to widen the sector involvement into new sub-sectors, in line with the ideology of IWRM, in order to avoid acting in isolation from other development efforts. In this process it is important to maintain a water focus and to determine clearly the roles and responsibilities of all the actors concerned.

When the demand on available fresh water resources increases, as undoubtedly it will, the activities in international watercourses will also increase, bringing about a real danger of clashes of interest between different countries and actors in these countries. Pre-emptive action, in the form of increasing knowledge of the resources and promoting transparency in their management would positively influence future development and help avoid conflicts in the regions prone to water shortage. Protection of water sources by increased environmental awareness and better knowledge of methods to combat, and even prevent pollution, should be of great service to present and future generations suffering the adverse effects of pollution of water resources all around the developing world.

The trend towards concentrating and directing sector support in its most orthodox form, where all external support is brought in through the national budget of the recipient country, is raising many questions as seen at the e-conference and in the international literature. From the point of view of the water sector, the question of how stakeholders in the sector can adapt themselves to using the predominant funding instruments has emerged as an importance issue. For example, it is worrying that management of sector support programmes has strengthened the central/national level administration of water affairs contrary to the Dublin conference resolution, which called for water affairs to be administered at the lowest feasible level. The use of many different funding instruments supportive of each other suits the water sector, and their versatile application should be encouraged. For example, grant-aid – possibly combined with posting of bilateral advisors to the recipient organisation – could support capacity- and institution-building at local level as well as the development of legislation.

Institution-building, which is one of the key goals of development co-operation, requires a transfer from person-based knowledge management capacity to institutional capacity. The knowledge management gap must be addressed. Identification of the capacity of the recipient organisation to manage knowledge is essential for success and, hence, a capacity-building component should be included in the planned intervention, if the capacity has been found to be too low.

The lack of access to information, caused by both political will and deficiency in communication technology, as well as in professional capacity in the partner countries, seriously hampers planning and implementation of sector programmes and projects, causing inefficiency in the use of physical, financial and human resources. Finland could promote and support efforts of the partner countries to gain better access to information and improve its management.

Simultaneously, the possibilities for stakeholders to participate at local level through water projects could be enhanced. This would help the development of a civil society by supporting water users, sector professionals and water service providers, for instance by assisting them to set up and run NGOs and CBOs and offering them the possibility to organise education at various levels.

A capacity-building programme could include, for example, scholarship programmes at various education levels. Finland could also support the formation and development of a regional education or training centre in Eastern Africa

Urbanisation is growing at an ever-increasing speed throughout the world. This is increasingly shifting the focal point of water supply and sanitation into urban and especially periurban areas. Human-centred and participatory approaches to service provision will be necessary in order to avoid causing harm to the rural areas. Ownership issues are equally important in these conditions as in the rural areas; however, they are more difficult to address. The experience gained in the Finnish water supply and sanitation from past programmes and projects represents a formidable asset for this development work. It should not be wasted but further developed and disseminated to benefit the partners with their self-identified needs and demands.

The availability and sustainable use of water resources largely determine the development of rural areas. However, water projects – at any sub-sector of the water sector – cannot be separate interventions operating in a vacuum, but must conform with the general developmental efforts of rural areas. Integrated interventions bring better and more sustainable results. A water and sanitation project should, in future, be seen as a part of a comprehensive development effort of the rural area where it operates.

The Millennium Development Goals to which Finland and its development partner countries are committed are unachievable for the developing countries without external support in the form of financial support to investments, and technical assistance in the form of capacity- and institution-building. The fair share of the financial resources needed from Finland, to top up the efforts of the partner countries themselves, is a function of the size of Finnish national economy and of its development co-operation funds. This could be a percentage figure or an annual sum. The internationally-floated figure of 20/20 which, in this case, means that the recipient country invests 20% of its development investment funds in the water sector and the external supporting agency also renders 20% of its support funding for that same country to support its water sector, might be an overall target for the sector funding. However, the Decision In Principle by Finland to operate in only three to four development co-operation sectors in any one country appears reasonable, on the basis that concentration of efforts tends to bring better results. This results in a selection process of sectors of operation on a country-by-country basis. The countries where Finland has traditionally operated in the water and sanitation sector form a natural base for continued efforts. However, in future it would be a question of deciding which activities to support within the wider concept of the water sector.

It is also evident that no public funding, including external support, can sustain water and sanitation services without a contribution from the users of the services towards the costs of investments, operation and maintenance of the systems. The appropriate share of the financial burden to be borne by the consumers may vary from case to case, but the principle should remain the same. This will affect the technical and institutional choices for the service provision level and technology. Further, no selection process will lead to a sustainable outcome without those affected being empowered to participate in the selection and decision-making process. Hence, it is recommended that the participatory approach, already applied as a rule in the Finnish development co-operation intervention should be continued and further strengthened.

The recent trend of creating various public private partnerships (PPP) is also applicable in developing countries. However, a strong and functional regulatory framework in the country in question is an important precondition for any viable and socially just partnership building. It is therefore vital to assess each country, and every part of each country, as a case on its own, and to apply the principle of PPP according to the prevailing conditions and traditions. Privatisation, outsourcing of functions and decentralisation all need careful consideration and definition of roles and responsibilities for each actor involved.

## 9. References

Annexe 1 presents a listing of the most important sources for additional background information (documents available in electronic form) used, but not necessarily referred to, in this review. The order of literature material starts from that of the European Union and continues through publications of other international and national sector institutions, declarations of international conferences and agreements, and thematic publications to regional documents.

The following electronic subject information has been found by us on countries of special interest to the Finnish development co-operation

Ethiopia: [http://www.worldbank.org/afr/et/prsp/2002\\_07\\_prsp.pdf](http://www.worldbank.org/afr/et/prsp/2002_07_prsp.pdf)

Vietnam: <http://poverty.worldbank.org/prsp/country/186/>

Nepal: not available/under preparation, for general information see –

<http://lnweb18.worldbank.org/sar/sa.nsf/Nepal?OpenNavigator>

Tanzania: <http://poverty.worldbank.org/prsp/country/168/>

Ethiopia: <http://poverty.worldbank.org/prsp/country/58/>

Namibia: not available/ under preparation, for general information see –

<http://lnweb18.worldbank.org/AFR/afr.nsf/06c63e39724293d5852567cf004c6ef0/2082903994783c8b852567d100436228?OpenDocument>

The following table gives a short overview on the above-mentioned documents

**Table: Collection of Literature Information on Countries**

Major paper	Author(s), date of paper	Major targets
Tanzania – Poverty Reduction Strategy, Progress Report 2001/02	Government of Tanzania, March 2003	<ul style="list-style-type: none"> <li>• Raising the proportion of rural population that has access to safe and clean water from 48.5% in 2000 to 55% by December 2004.</li> <li>• Increasing, over the same period, the corresponding ratio for the urban population from 68% to 78%.</li> <li>• Strengthening water resource environmental and pollution control network in order to reduce pollution levels from 20% in 2000, to 10% in December 2004.</li> <li>• Reinforcing legal and institutional involvement of local communities and the private sector in developing water supply schemes, and water sources environmental protection throughout the country by the year 2005.</li> </ul>
Ethiopia – Sustainable Development and Poverty Reduction Program	Federal Democratic Republic of Ethiopia; Ministry of Finance and Economic Development, July 2002	<ul style="list-style-type: none"> <li>• During 2002/03–2004/05, water supply coverage of urban, rural and national areas is expected to reach 82.5%, 31.4% and 39.4%, respectively. With respect to the urban sewerage, coverage will increase annually by 3.5% from its current level of 7%.</li> <li>• Irrigation programs aim to develop a total of 29,043 ha of new land, which brings the total area under irrigation to 226,293 ha by the end of 1997, making 114,390 households beneficiaries. The small scale irrigation scheme is expected to cover an area of 23,823 ha benefitting about 93,510 households.</li> <li>• For hydropower the target is a reconnaissance</li> </ul>

		<p>study at 5 sites, updating of reconnaissance at 3 sites, pre-feasibility study of 1 site and a feasibility study of 4 sites.</p> <ul style="list-style-type: none"> <li>• Hydrology and sediment control of 90 stations of different class.</li> <li>• Establishment of 120 meteorology stations and 8 regional offices.</li> <li>• Ground water assessment.</li> <li>• Flood protection studies complete a started project and start up 4 other projects.</li> <li>• Water shed management start up projects start up the project under Nile initiative and other programs.</li> <li>• Integrated basin development master plan study, complete started projects and start up new projects.</li> <li>• Water resource regulation, complete started work at Beseka and start up construction of laboratories, start up study on water body pollution and inter-regional water resource management.</li> <li>• Strengthen and establish new institutions.</li> <li>• Training of staff.</li> </ul>
Vietnam – The Comprehensive Poverty Reduction and Growth Strategy	Socialist Republic of Vietnam; Approved by the Prime Minister, May 2002	<ul style="list-style-type: none"> <li>• Provide basic infrastructure for 80% of poor communes by 2005 and 100% by 2010.</li> <li>• Provide essential infrastructure, especially water supply and environmental hygiene, for poor areas in cities and towns.</li> <li>• Ensure that 80% of urban and 60% of rural population will have access to clean water by 2005; 85% of rural population to have access to safe water by 2010.</li> <li>• By 2005, air and water pollution must attain national standards.</li> </ul>
Namibia – Proceedings of the World Bank Sub-Saharan Africa Water Resources Technical Workshop	World Bank, Nairobi, Kenya, 12–15 February 1996	<ul style="list-style-type: none"> <li>• Paper is based on Agenda 21, Chapter 18. Goals are: first priority water for domestic purposes, including water for livestock watering for both subsistence and commercial farming; second priority is water for economic activities such as mining, industries, and irrigation. Priorities for these activities will have to be determined in each case by their respective value in relation to the overall development objectives and plans for the future.</li> </ul>
Nepal – Country assistance strategy progress report	World Bank Group	<ul style="list-style-type: none"> <li>• Halve by 2015 the proportion of people without sustainable access to safe drinking water. All based on achieving the Millennium Development Goals.</li> <li>• This project has three major components; the establishment of the Nepal Rural Water Supply and Sanitation Fund Development Board; providing water and sanitation schemes for 900 communities and providing for institutional development and studies.</li> </ul>

# ANNEXE 1

## LIST OF MAJOR REFERENCES

The listing below introduces international electronic form material related to the topic of this report.

### Major reference documents – European Union

### Specific References for the Water and Sanitation Sector (only regarding co-operation with third countries)

<i>Topic / Category</i>	<i>Short Title / Description</i>	<i>Reference and Language</i>
		<i>En</i>
Introductory Documents	<ul style="list-style-type: none"> <li>• DG Development – Water Page (Introduction to Sectoral Policy on Water Resource, etc.)</li> </ul>	<a href="http://europa.eu.int/comm/development/body/theme/water_en.htm">http://europa.eu.int/comm/development/body/theme/water_en.htm</a>
	<ul style="list-style-type: none"> <li>• <u>EU Water Initiative (Water for Life): International Cooperation – from Knowledge to Action</u></li> </ul>	<a href="http://europa.eu.int/comm/research/water-initiative/index_en.html">http://europa.eu.int/comm/research/water-initiative/index_en.html</a>
Legislation (Regulations, Resolutions, etc.)	<ul style="list-style-type: none"> <li>• <u>Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy</u></li> </ul>	<a href="http://europa.eu.int/eur-lex/pri/en/oj/dat/2000/l_327/l_327_20001222en00010072.pdf">http://europa.eu.int/eur-lex/pri/en/oj/dat/2000/l_327/l_327_20001222en00010072.pdf</a>
Communications (not legally binding, official documents)	<ul style="list-style-type: none"> <li>• <u>Communication from the Commission to the Council and the European Parliament: "Water Management in Developing Countries – Policy and Priorities for EU Development Cooperation"</u> (Brussels, 12.03.2002; COM(2002) 132 final)</li> </ul>	<a href="http://europa.eu.int/eur-lex/en/com/cnc/2002/com2002_0132en01.pdf">http://europa.eu.int/eur-lex/en/com/cnc/2002/com2002_0132en01.pdf</a>



<b>Topic / Category</b>	<b>Short Title / Description</b>	<b>Reference and Language</b>
		<b><u>En</u></b>
	<ul style="list-style-type: none"> <li>• Communication from the Commission to the Council, the European Parliament and the Economic and Social Committee – <u>Pricing</u> policies for enhancing the sustainability of water resources/* COM/2000/0477 final */</li> </ul>	<a href="http://europa.eu.int/eur-lex/en/com/cnc/2000/com2000_0477en01.pdf">http://europa.eu.int/eur-lex/en/com/cnc/2000/com2000_0477en01.pdf</a>
	<ul style="list-style-type: none"> <li>• Opinion of the Economic and Social Committee on COM/2000/0477 final */ - the "Communication from the Commission to the Council, the European Parliament and the Economic and Social Committee Pricing policies for Enhancing the Sustainability of Water Resources"</li> </ul>	<a href="http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/c_123/c_12320010425en00650069.pdf">http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/c_123/c_12320010425en00650069.pdf</a>
	<ul style="list-style-type: none"> <li>• Communication from the <u>Commission</u> on Conflict Prevention/* COM/2001/0211 final */</li> </ul>	<a href="http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0211en01.pdf">http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0211en01.pdf</a>
	<ul style="list-style-type: none"> <li>• Communication from the Commission to the Council and the European Parliament – Building an Effective Partnership with the United Nations in the Fields of <u>Development</u> and Humanitarian Affairs/* COM/2001/0231 final */</li> </ul>	<a href="http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0231en01.pdf">http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0231en01.pdf</a>

<b>Topic / Category</b>	<b>Short Title / Description</b>	<b>Reference and Language</b>
		<b><u>En</u></b>
	<ul style="list-style-type: none"> <li>• Communication from the Commission to the Council and the European Parliament – Integrating Environment and Sustainable Development into Economic and Development Co-operation Policy: Elements of a Comprehensive Strategy/* COM/2000/0264 final */</li> </ul>	<a href="http://europa.eu.int/eur-lex/en/com/cnc/2000/com2000_0264en02.pdf">http://europa.eu.int/eur-lex/en/com/cnc/2000/com2000_0264en02.pdf</a>
Guidelines, etc.	<ul style="list-style-type: none"> <li>• EC Guidelines for Water Resources Development Co-operation – Towards Sustainable Water Resource Management.</li> </ul>	<a href="http://europa.eu.int/comm/development/body/theme/intro_en.htm">http://europa.eu.int/comm/development/body/theme/intro_en.htm</a> <a href="http://europa.eu.int/comm/development/body/publications/water/en/tableofcontents_en.htm">http://europa.eu.int/comm/development/body/publications/water/en/tableofcontents_en.htm</a>
Other References (working papers, etc.)	<ul style="list-style-type: none"> <li>• Commission Staff Working Paper; Annex to the Communication from the Commission to the Council and the European Parliament; Water Management in Developing Countries – Policy and Priorities for EU Development Co-operation (Brussels, 12.3.2002 (SEC (2002) 288)</li> </ul>	<u>Commission Staff Working Paper; Annex to the Communication from the Commission to the Council and the European Parliament; Water Management in Developing Countries – Policy and Priorities for EU Development Co-operation (Brussels, 12.3.2002 (SEC (2002) 288)</u>
	<ul style="list-style-type: none"> <li>• <u>Water and Development in the Developing Countries</u>, working paper commissioned by the European Parliament to DG Research; Development Series DEVE 100 EN, 2000.</li> </ul>	<u>Water and Development in the Developing Countries, working paper commissioned by the European Parliament to DG Research; Development Series DEVE 100 EN, 2000.</u>

**Major references – other organisations (multilateral and bilateral donors & NGOs)**

**Main Online Gateways & Thematic Overviews – Water and Sanitation**

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b>En</b>
Asian Development Bank (ADB)	<ul style="list-style-type: none"> <li>• <a href="#">Water For All – ADB Water Page</a>: Providing links to the different sections of ADB's water-related online presentation.</li> </ul>	<a href="http://www.adb.org/Water/default.asp">http://www.adb.org/Water/default.asp</a>
Finland - Ministry for Foreign Affairs/ Development Co-operation	<ul style="list-style-type: none"> <li>• <a href="#">Water Supply and Sanitation – thematic overview page</a></li> </ul>	<a href="http://global.finland.fi/tietopankki/tieemat.php?id=55&amp;kieli=3">http://global.finland.fi/tietopankki/tieemat.php?id=55&amp;kieli=3</a>
Germany - (BMZ)	<ul style="list-style-type: none"> <li>• <a href="#">Water – Overview (German only)</a></li> </ul>	<a href="http://www.bmz.de/themen/imfokuss/wasser/index.html">http://www.bmz.de/themen/imfokuss/wasser/index.html</a>
	<ul style="list-style-type: none"> <li>• <a href="#">International Water Policy – German Initiatives, 2003</a></li> </ul>	<a href="http://www.bmz.de/themen/imfokuss/wasser/wasser520.pdf">http://www.bmz.de/themen/imfokuss/wasser/wasser520.pdf</a>
Germany (KfW)	<ul style="list-style-type: none"> <li>• <a href="#">Water supply- Drinking Water Supply-Waste Water Disposal, Water – A Vital and Scarce Commodity (KfW – overview)</a></li> </ul>	<a href="http://www.kfw.de/EN/Entwicklungszusammenarbeit/Priorityar44/Waater%20supply/Inhalt.jsp">http://www.kfw.de/EN/Entwicklungszusammenarbeit/Priorityar44/Waater%20supply/Inhalt.jsp</a>
OECD / DAC	<ul style="list-style-type: none"> <li>• <a href="#">Aid for Water Supply and Sanitation – Short Analysis of Trends in Aid for Water Extended by Members of the DAC and Multilateral Institutions, February 2003</a></li> </ul>	<a href="http://www.oecd.org/dataoecd/27/22/2955840.pdf">http://www.oecd.org/dataoecd/27/22/2955840.pdf</a>
	<ul style="list-style-type: none"> <li>• <a href="#">Aid Activities in the Water Sector 1997–2002</a></li> </ul>	available in the OECD online bookstore <a href="http://oecdpublications.gfi-nb.com/cgi-bin/OECDBookShop.storefront/EN/product/432003553P1">http://oecdpublications.gfi-nb.com/cgi-bin/OECDBookShop.storefront/EN/product/432003553P1</a>
Sweden (Sida)	<ul style="list-style-type: none"> <li>• <a href="#">Sida – Water page</a></li> </ul>	<a href="http://www.sida.se/Sida/jsp/polopoly.jsp?d=168">http://www.sida.se/Sida/jsp/polopoly.jsp?d=168</a>
UNESCO	<ul style="list-style-type: none"> <li>• <a href="#">UNESCO Main Internet Water Portal</a></li> </ul>	<a href="http://www.unesco.org/water/">http://www.unesco.org/water/</a>
	<ul style="list-style-type: none"> <li>• <a href="#">2003 International Year of Freshwater</a></li> </ul>	<a href="http://www.wateryear2003.org/en/ev.php@URL_ID=1456&amp;URL_DO=DO_TOPIC&amp;URL_SECTION=201.html">http://www.wateryear2003.org/en/ev.php@URL_ID=1456&amp;URL_DO=DO_TOPIC&amp;URL_SECTION=201.html</a>

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
UNICEF	<ul style="list-style-type: none"> <li>• <u>Water, Environment and Sanitation – UNICEF Thematic Page</u></li> </ul>	<a href="http://www.unicef.org/wes/index.html">http://www.unicef.org/wes/index.html</a>
	<ul style="list-style-type: none"> <li>• <u>Global Water Supply and Sanitation Assessment 2000 Report</u></li> </ul>	<a href="http://www.unicef.org/wes/gafull.pdf">http://www.unicef.org/wes/gafull.pdf</a>
United Kingdom (DfID)	<ul style="list-style-type: none"> <li>• <u>Water – a Key to Sustainable Development: A speech by Clare Short, Secretary of State for International Development, 2002</u></li> </ul>	<a href="http://62.189.42.51/DFIDstage/Pubs/files/sp31oct02_waterspeech.pdf">http://62.189.42.51/DFIDstage/Pubs/files/sp31oct02_waterspeech.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>DFID Guidance Manual on Water Supply and Sanitation Programmes, 1999</u></li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/books-and-manuals/guidance-manual/guidance-manual.htm">http://www.lboro.ac.uk/well/resources/books-and-manuals/guidance-manual/guidance-manual.htm</a>
United Kingdom (DfID – WELL)	<ul style="list-style-type: none"> <li>• <u>Learning Lessons from Sector Studies – Uganda, Tanzania, Nigeria and Kenya; A WELL study produced as part of Task 325 by Paul Deverill, edited by Andrew Cotton. WELL Water and Environmental Health at London and Loughborough, 2000</u></li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0325.pdf">http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0325.pdf</a>
United Nations	<ul style="list-style-type: none"> <li>• <u>The UN World Water Development Report (WWDR) – Water for People, Water for Life, English edition released in March 2003</u></li> </ul>	Complete report can be <u>purchased online</u>
		<a href="http://www.unesco.org/water/wwa/p/wwdr/index.shtml">http://www.unesco.org/water/wwa/p/wwdr/index.shtml</a>
		The WWDR Table of contents <a href="http://www.unesco.org/water/wwa/p/wwdr/table_contents.shtml">http://www.unesco.org/water/wwa/p/wwdr/table_contents.shtml</a>
		Executive Summary of the WWDR <a href="http://unesdoc.unesco.org/images/0012/001295/129556e.pdf">http://unesdoc.unesco.org/images/0012/001295/129556e.pdf</a>
United Nations Development Programme (UNDP)	<ul style="list-style-type: none"> <li>• <u>UNDP Water Thematic Page</u></li> </ul>	<a href="http://www.undp.org/water/">http://www.undp.org/water/</a>
USA (USAid)	<ul style="list-style-type: none"> <li>• <u>USAid Water Main Page</u></li> </ul>	<a href="http://www.usaid.gov/our_work/environment/water/">http://www.usaid.gov/our_work/environment/water/</a>

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
World Bank	<ul style="list-style-type: none"> <li>• <u>World Bank – Water Supply and Sanitation</u></li> </ul>	<a href="http://www.worldbank.org/watsan/">http://www.worldbank.org/watsan/</a>
	<ul style="list-style-type: none"> <li>• <u>Water Supply &amp; Sanitation Blue Pages – The World Bank Sector Guide 2000</u></li> </ul>	<a href="http://www.worldbank.org/watsan/pdf/bluepages_2000.pdf">http://www.worldbank.org/watsan/pdf/bluepages_2000.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Learning What Works: A 20-Year Retrospective View on International Water and Sanitation Cooperation; by Maggie Black, 1998</u></li> </ul>	<u>Learning What Works: A 20-Year Retrospective View on International Water and Sanitation Cooperation, by Maggie Black, 1998.</u>
World Health Organization (WHO)	<ul style="list-style-type: none"> <li>• <u>Global Water Supply and Sanitation Assessment 2000 Report</u></li> </ul>	<u>Global Water Supply and Sanitation Assessment 2000 Report</u>

### Online Reference Lists and Resource Centres

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
International Water and Sanitation Centre (IRC)	<ul style="list-style-type: none"> <li>• <u>IRCDOC (monthly updated bibliographic database on water supply and sanitation in developing countries, currently containing 16,000 references)</u></li> </ul>	<u>IRCDOC Homepage</u> <a href="http://www.irc.nl/ircdoc/index.html">http://www.irc.nl/ircdoc/index.html</a>
	<ul style="list-style-type: none"> <li>• <u>IRC publications (listed by topic, e.g. Community Management, Gender, Human Resources Development, Information and Communication, Monitoring, Sanitation and Hygiene, etc.)</u></li> </ul>	<u>IRC publications</u> <a href="http://www.irc.nl/products/publications/index.php">http://www.irc.nl/products/publications/index.php</a>
OECD / DAC	<ul style="list-style-type: none"> <li>• <u>OECD document library (searchable by keyword (e.g. Water and Sanitation, etc.))</u></li> </ul>	<u>OECD online document library</u>
Transboundary Freshwater Dispute Database	<ul style="list-style-type: none"> <li>• <u>Documents / Information database providing resources relating to issues of transboundary water management</u></li> </ul>	<a href="http://www.transboundarywaters.orst.edu/">http://www.transboundarywaters.orst.edu/</a>

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b>En</b>
United Kingdom (DfID – WELL)	<ul style="list-style-type: none"> <li>WELL Resource Page (WELL is a DFID-funded resource centre promoting environmental health and well-being in developing and transitional countries)</li> </ul>	<a href="http://www.lboro.ac.uk/well/resources.htm">http://www.lboro.ac.uk/well/resources.htm</a>
Water and Sanitation Programme (World Bank, UNDP)	<ul style="list-style-type: none"> <li>Water and Sanitation Programme – Publications and videos (extensive online reference list, searchable by author, category, date, title and region)</li> </ul>	<a href="#">Water and Sanitation Programme – Publications and videos</a>
World Bank	<ul style="list-style-type: none"> <li>World Bank – Water Supply and Sanitation Publications (list of thematic publication from the World Bank and other organisations)</li> </ul>	<a href="http://www.worldbank.org/watsan/pubs_online.html">http://www.worldbank.org/watsan/pubs_online.html</a>

### Sector Policies (Water & Sanitation and Related Sectors)

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b>En</b>
African Development Bank (ADB)	<ul style="list-style-type: none"> <li>ADB Policy for Policy for Integrated Water Resources Management, April 2000</li> </ul>	<a href="http://www.afdb.org/projects/policies/pdf/integrated_water_policy_apr2000.pdf">http://www.afdb.org/projects/policies/pdf/integrated_water_policy_apr2000.pdf</a>
	<ul style="list-style-type: none"> <li>Agriculture and Rural Development Sector Bank Group Policy, January 2000</li> </ul>	<a href="http://www.afdb.org/projects/policies/pdf/agri_policy_apr2000.pdf">http://www.afdb.org/projects/policies/pdf/agri_policy_apr2000.pdf</a>
	<ul style="list-style-type: none"> <li>Frequently Asked Questions on the ADB Water Policy</li> </ul>	<a href="http://www.adb.org/Water/faq.asp">http://www.adb.org/Water/faq.asp</a>
Asian Development Bank (ADB)	<ul style="list-style-type: none"> <li>Water For All – The Water Policy of ADB, 2001</li> </ul>	<a href="http://www.adb.org/Documents/Policies/Water/default.asp?p=wtrrefs">http://www.adb.org/Documents/Policies/Water/default.asp?p=wtrrefs</a> <a href="http://www.adb.org/Documents/Policies/Water/water.pdf">http://www.adb.org/Documents/Policies/Water/water.pdf</a>
Australia (AusAid)	<ul style="list-style-type: none"> <li>Making Every Drop Count: Water and Australian Aid: a New Policy to Guide Water-Related Assistance within the Australian Overseas Aid Program, March 2003</li> </ul>	<a href="http://www.ausaid.gov.au/publications/pubout.cfm?id=8650_3406_3901_1959_9059&amp;Type=PubPolicyDocuments">http://www.ausaid.gov.au/publications/pubout.cfm?id=8650_3406_3901_1959_9059&amp;Type=PubPolicyDocuments</a> <a href="http://www.ausaid.gov.au/publications/pdf/everdrop.pdf">http://www.ausaid.gov.au/publications/pdf/everdrop.pdf</a>

		<b>Reference</b>
Canada (CIDA)	<ul style="list-style-type: none"> <li>CIDA'S Policy on Meeting Basic Human Needs (including Water &amp; Sanitation), 1997</li> </ul>	<a href="http://w3.acdi-cida.gc.ca/cida_ind.nsf/8525629000655496852561b000746f35/57bcc6a3a52b339b85256484006187c5?OpenDocument">http://w3.acdi-cida.gc.ca/cida_ind.nsf/8525629000655496852561b000746f35/57bcc6a3a52b339b85256484006187c5?OpenDocument</a>
		<a href="http://w3.acdi-cida.gc.ca/cida_ind.nsf/8525629000655496852561b000746f35/57bcc6a3a52b339b85256484006187c5/\$FILE/Hum-needs.pdf">http://w3.acdi-cida.gc.ca/cida_ind.nsf/8525629000655496852561b000746f35/57bcc6a3a52b339b85256484006187c5/\$FILE/Hum-needs.pdf</a>
Japan (MOFA)	<ul style="list-style-type: none"> <li>Japan's Foreign Policy on Global Environmental Problems (Diplomatic Bluebook 2002: Global Problems)</li> </ul>	<a href="http://www.mofa.go.jp/policy/other/bluebook/2002/chap2-4.pdf">http://www.mofa.go.jp/policy/other/bluebook/2002/chap2-4.pdf</a>
Sweden (Sida)	<ul style="list-style-type: none"> <li>Management and Use of Water Resources – a Summary of Sida's Experiences and Priorities, Position Paper, 1999</li> </ul>	<a href="http://www.sida.se/Sida/articles/13700-13799/13754/pp[1].pdf">http://www.sida.se/Sida/articles/13700-13799/13754/pp[1].pdf</a>
The Netherlands	<ul style="list-style-type: none"> <li>Achieving Water security, DGIS. Water Support Unit, The Hague, Ministry of Foreign Affairs, 2001</li> </ul>	<a href="#">Achieving Water Security, DGIS. Water Support Unit, The Hague, Ministry of Foreign Affairs, 2001</a>
UNICEF	<ul style="list-style-type: none"> <li>UNICEF Strategies in Water and Environmental Sanitation, New York, 1995</li> </ul>	<a href="http://www.unicef.org/wes/spen.pdf">http://www.unicef.org/wes/spen.pdf</a>
United Kingdom (DfID)	<ul style="list-style-type: none"> <li>Addressing the Water Crisis: Healthier and more Productive Lives for Poor People, DfID strategy paper, 2003</li> </ul>	<a href="http://62.189.42.51/DFIDstage/Pubs/files/tsp_water.pdf">http://62.189.42.51/DFIDstage/Pubs/files/tsp_water.pdf</a>

### International Conferences and Agreements (sector specific)

#### 1. World Water and Sanitation Collaborative Council (WSSCC)

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b>En</b>
World Water and Sanitation Collaborative Council (WSSCC)	<ul style="list-style-type: none"> <li><a href="#">WSSCC Homepage</a></li> </ul>	<a href="http://www.wsscc.org/index2.cfm?CFID=244520&amp;CFTOKEN=81631698">http://www.wsscc.org/index2.cfm?CFID=244520&amp;CFTOKEN=81631698</a>
	<ul style="list-style-type: none"> <li><a href="#">Vision 21 – a Shared Vision for Hygiene, Sanitation and Water Supply and a Framework for Action.</a></li> </ul>	<a href="http://www.wsscc.org/pdf/v21core.pdf">http://www.wsscc.org/pdf/v21core.pdf</a>

2. 3<sup>rd</sup> World Water Forum, March 16-23, 2003, Kyoto, Shiga, Osaka / Japan (Conference and Donor Follow-Up)

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
3 <sup>rd</sup> World Water Forum – Official Website	<ul style="list-style-type: none"> <li>• <u>The 3rd World Water Forum – Official Website</u></li> </ul>	<a href="http://www.world.water-forum3.com/">http://www.world.water-forum3.com/</a> <a href="http://www.world.water-forum3.com/jp/mc/md_final.pdf">http://www.world.water-forum3.com/jp/mc/md_final.pdf</a> <a href="http://ap.world.water-forum3.com/themeWwf/en/sessionListAll.do">http://ap.world.water-forum3.com/themeWwf/en/sessionListAll.do</a>
Asian Development Bank (ADB)	<ul style="list-style-type: none"> <li>• <u>Results of the 3rd World Water Forum 16–23 March 2003 Kyoto, Osaka, Shiga, Japan – ADB's main page on the results and ADB's follow up to the WWF</u></li> </ul>	<a href="http://www.adb.org/Water/forum.asp">http://www.adb.org/Water/forum.asp</a>
Germany (KfW)	<ul style="list-style-type: none"> <li>• World Water Forum in Kyoto, March 2003 – KfW Press Release</li> </ul>	<u>World Water Forum in Kyoto, March 2003 – KfW Press Release</u>
Japan (MOFA)	<ul style="list-style-type: none"> <li>• The 3rd World Water Forum – MOFA main page on results and Japan's follow-up</li> </ul>	<a href="http://www.mofa.go.jp/policy/environment/wwf/index.html">http://www.mofa.go.jp/policy/environment/wwf/index.html</a>
United Nations Development Programme (UNDP)	<ul style="list-style-type: none"> <li>• UNDP webpage on 3rd World Water Forum</li> </ul>	<a href="http://www.undp.org/water/wwf3/index.htm">http://www.undp.org/water/wwf3/index.htm</a>



## (i) Agenda 21 (Rio Summit)

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b>Eng</b>
United Nations	<ul style="list-style-type: none"> <li>• <u>Agenda 21 – Table of Contents</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm">http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm</a>
	<ul style="list-style-type: none"> <li>• <u>Agenda 21 – Chapter 12: Managing Fragile Ecosystems: Combating Desertification and Drought</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter12.htm">http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter12.htm</a>
	<ul style="list-style-type: none"> <li>• <u>Agenda 21 – Chapter 14: Promoting Sustainable Agriculture and Rural Development</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter14.htm">http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter14.htm</a>
	<ul style="list-style-type: none"> <li>• <u>Agenda 21 – Chapter 17: Protection of the Oceans, all Kinds of Seas, Including Enclosed and Semi-enclosed Seas and Coastal Areas and the Protection, Rational Use and Development of their Living Resources</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter17.htm">http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter17.htm</a>
	<ul style="list-style-type: none"> <li>• <u>Agenda 21 – Chapter 18: Protection of the Quality and Supply of Freshwater Resources – Application of Integrated Approaches to the Development, Management and Use of Water Resources</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter18.htm">http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter18.htm</a>

## (ii) Johannesburg Summit

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b>Eng</b>
United Nations	<ul style="list-style-type: none"> <li>• <u>Johannesburg Summit – Homepage (not longer updated)</u></li> </ul>	<a href="http://www.johannesburgsummit.org/">http://www.johannesburgsummit.org/</a>
	<ul style="list-style-type: none"> <li>• <u>Johannesburg Declaration on Sustainable Development</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm">http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm</a>
	<ul style="list-style-type: none"> <li>• <u>WSSD Plan of Implementation</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm">http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm</a>

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b>Eng</b>
United Nations Division for Sustainable Development	<ul style="list-style-type: none"> <li>• <u>Commission on Sustainable Development (Summit Follow-Up)</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/index.html">http://www.un.org/esa/sustdev/index.html</a>
	<ul style="list-style-type: none"> <li>• The Road from Johannesburg – What was Achieved and the Way Forward</li> </ul>	<a href="http://www.un.org/esa/sustdev/media/Brochure.PDF">http://www.un.org/esa/sustdev/media/Brochure.PDF</a>

## (iii) Other Statements and International Agreements

<b>Statement / Document</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
The Dublin Statement	<ul style="list-style-type: none"> <li>• <u>The Dublin Statement on Water and Sustainable Development</u></li> </ul>	<a href="http://www.wmo.ch/web/homs/documents/english/icwedece.html">http://www.wmo.ch/web/homs/documents/english/icwedece.html</a>
UN Commission on Sustainable Development	<ul style="list-style-type: none"> <li>• <u>Complete List of Commission Sessions (incl. documents)</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/csd/csd_past.htm">http://www.un.org/esa/sustdev/csd/csd_past.htm</a>
	<ul style="list-style-type: none"> <li>• <u>Commission on Sustainable Development, 6th session New York, 20 April–1 May 1998</u></li> </ul>	<a href="http://www.un.org/esa/sustdev/csd/CSD6.htm">http://www.un.org/esa/sustdev/csd/CSD6.htm</a>
UN Convention on Desertification	<ul style="list-style-type: none"> <li>• <u>Text and Ratification Status of the Convention to Combat Desertification</u></li> </ul>	<a href="http://www.unccd.int/convention/menu.php">http://www.unccd.int/convention/menu.php</a>

**International Initiatives & Cooperative Efforts (Selection)**

<b>Initiative</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
Bank - Netherlands Water Partnership (BNWP)	<ul style="list-style-type: none"> <li>• <u>Bank-Netherlands Water Partnership (BNWP) – Improving Water &amp; Sanitation Services for the Poor</u></li> </ul>	<a href="http://wbin0018.worldbank.org/water/BNWP.nsf/webpage/About+BNWP">http://wbin0018.worldbank.org/water/BNWP.nsf/webpage/About+BNWP</a>
		<a href="http://www.worldbank.org/html/fpd/water/bnwp/files/brochure.pdf">http://www.worldbank.org/html/fpd/water/bnwp/files/brochure.pdf</a>
		<a href="http://www.worldbank.org/html/fpd/water/bnwp/files/booklet.pdf">http://www.worldbank.org/html/fpd/water/bnwp/files/booklet.pdf</a>
Japan-France Water Sector Cooperation	<ul style="list-style-type: none"> <li>• <u>Japan-France Water Sector Cooperation – Overview</u></li> </ul>	<a href="http://www.mofa.go.jp/region/europe/france/w_coop0303.html">http://www.mofa.go.jp/region/europe/france/w_coop0303.html</a>
World Water Assessment Programme (WWAP)	<ul style="list-style-type: none"> <li>• <u>UN-wide programme seeking to improve understanding of basic processes, management practices and policies that will help improve the supply and quality of global freshwater resources</u></li> </ul>	<a href="http://www.unesco.org/water/wwap/index.shtml">http://www.unesco.org/water/wwap/index.shtml</a>
Water and Sanitation Program (World Bank administered)	<ul style="list-style-type: none"> <li>• <u>Water and Sanitation Program – Homepage</u></li> </ul>	<a href="http://www.wsp.org/">http://www.wsp.org/</a>

<b>Initiative</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
Water Utility Partnership (WUP)	<ul style="list-style-type: none"> <li>World Bank-supported joint programme initiated by the Union of African Water Suppliers (UAWS), the Regional Centre for Low Cost Water and Sanitation (CREPA) and the Centre for Training, Research and Networking for Development (TREND)</li> </ul>	

### Evaluation methodologies (including indicators) & (sector specific)

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
USA (USAid)	<ul style="list-style-type: none"> <li>Guidelines for Institutional Assessment of Water and Waste Water Institutions, 1988</li> </ul>	<a href="http://www.dec.org/pdf_docs/pnaaz336.pdf">http://www.dec.org/pdf_docs/pnaaz336.pdf</a>
World Bank	<ul style="list-style-type: none"> <li><u>Evaluating Water Institutions and Water Sector Performance</u>, by R. Saleth and Ariel Maria-Dinar, 1999</li> </ul>	<a href="http://www-wds.worldbank.org/servlet/WDSServlet?pcont=details&amp;eid=00009494699090305381648">http://www-wds.worldbank.org/servlet/WDSServlet?pcont=details&amp;eid=00009494699090305381648</a>
	<ul style="list-style-type: none"> <li><u>Benchmarking Water &amp; Sanitation Utilities: a Start-Up Kit</u>, by William Kingdom, World Bank Water &amp; Sanitation Division, 1999</li> </ul>	<a href="http://www.worldbank.org/watsan/pdf/benchmarking.pdf">http://www.worldbank.org/watsan/pdf/benchmarking.pdf</a>
	<ul style="list-style-type: none"> <li><u>Water &amp; Wastewater Utilities, Indicators</u>, 2nd Edition (PDF), by Guillermo Yepes and Augusta Dianderas, World Bank Water Supply &amp; Sanitation Division, 1996</li> </ul>	<a href="http://www.worldbank.org/watsan/pdf/indicators.pdf">http://www.worldbank.org/watsan/pdf/indicators.pdf</a>

## Themes / Topics

### i. Agriculture

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
United Kingdom (DfID – WELL)	<ul style="list-style-type: none"> <li>Guidelines for <u>Wastewater Reuse in Agriculture and Aquaculture: Recommended Revisions Based on New Research Evidence</u>, by Dr <u>Ursula J. Blumenthal</u>, Dr <u>Anne Peasey</u>, Prof. <u>Guillermo Ruiz-Palacios</u> and Prof. <u>Duncan D. Mara</u>, June 2000</li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0068i.pdf">http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0068i.pdf</a>

### ii. Communication Strategies

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
UNICEF	<ul style="list-style-type: none"> <li><u>Towards Better Programming: a Manual on Communication for Water Supply and Environmental Sanitation Programmes</u>, UNICEF Programme Division, <u>Technical Guidelines Series</u>, 1999</li> </ul>	<a href="http://www.unicef.org/wes/com_e.pdf">http://www.unicef.org/wes/com_e.pdf</a>
United Kingdom (DfID – WELL)	<ul style="list-style-type: none"> <li><u>Environmental Health Promotion Capacity Building: a Training Guide Based on CARE's Hygiene Promotion Manual</u>, 2001</li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0515.pdf">http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0515.pdf</a>
	<ul style="list-style-type: none"> <li><u>Effectiveness of Promotional Techniques in Environmental Health</u>, by Ben Cave and Dr Valerie Curtis, March 1999</li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0165.pdf">http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0165.pdf</a>

iii. Finance & Economics of Water & Sanitation

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
OECD / DAC	<ul style="list-style-type: none"> <li>• <u>Financing Water and Sanitation Key Issues in Increasing Resources to the Sector. A WaterAid briefing paper by S. Annamraju, B. Calaguas and E. Gutierrez, November 2001.</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/13/55/2552051.pdf">http://www.oecd.org/dataoecd/13/55/2552051.pdf</a>
	<ul style="list-style-type: none"> <li>• Financing Strategies for the Urban Water Sector in the NIS: Overview; Fifth Meeting of the NIS Environmental Finance Network, 21–23 May, 2001, Yerevan, Armenia</li> </ul>	<a href="http://www.oecd.org/dataoecd/30/3/2399977.pdf">http://www.oecd.org/dataoecd/30/3/2399977.pdf</a>
	<ul style="list-style-type: none"> <li>• Water – A World Financial Issue. A Major Challenge for Sustainable Development in the 21st century, March 2001 (report by PriceWaterhouseCoopers)</li> </ul>	<a href="http://www.pwcglobal.com/extweb/pwcpublishings.nsf/4bd5f76b48e282738525662b00739e22/c91e2e712955e71785256b09003a7572/\$FILE/Water.pdf">http://www.pwcglobal.com/extweb/pwcpublishings.nsf/4bd5f76b48e282738525662b00739e22/c91e2e712955e71785256b09003a7572/\$FILE/Water.pdf</a>
	<ul style="list-style-type: none"> <li>• Affordability of Urban Water Services in the NIS, EAP working paper, 2002</li> </ul>	<a href="http://www.oecd.org/dataoecd/17/14/2390871.pdf">http://www.oecd.org/dataoecd/17/14/2390871.pdf</a>
	<ul style="list-style-type: none"> <li>• Key Issues and Recommendations for Consumer Protection: Affordability, Social Protection, and Public Participation in Urban Water, 2003</li> </ul>	<a href="http://www.oecd.org/dataoecd/53/0/14636760.pdf">http://www.oecd.org/dataoecd/53/0/14636760.pdf</a>
United Kingdom (DfID)	<ul style="list-style-type: none"> <li>• Optimising the Selection of Demand Assessment Techniques for Water Supply and Sanitation Projects, Project/Task No: 207, by Sarah Parry-Jones, Final Report: October 1999</li> </ul>	<u>Optimising the Selection of Demand Assessment Techniques for Water Supply and Sanitation Projects, Project/Task No: 207 Sarah Parry-Jones, Final Report: October 1999</u>

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<u><b>En</b></u>
World Bank	<ul style="list-style-type: none"> <li>• Making Water Affordable – Output-based Consumption Subsidies in Chile, by Andrés Gómez-Lobo, 2001 (chapter 2 of a WB publication "Contracting for Public Services: Output-based Aid and its Applications")</li> </ul>	<u>Making Water Affordable – Output-based Consumption Subsidies in Chile; Andrés Gómez-Lobo, 2001</u>
	<ul style="list-style-type: none"> <li>• Easing Tariff Increases: Financing the Transition to Cost-Covering Water Tariffs in Guinea, by Penelope J. Brook and Alain Locussol, 2001; (chapter 3 of WB publication "Contracting for Public Services: Output-based Aid and its Applications")</li> </ul>	<a href="http://rru.worldbank.org/Documents/08ch3.pdf">http://rru.worldbank.org/Documents/08ch3.pdf</a>
	<ul style="list-style-type: none"> <li>• The Link Between Demand-Responsiveness and Sustainability: Evidence from a Global Study, by Travis Katz, The World Bank, 1998</li> </ul>	<u>The Link Between Demand-Responsiveness and Sustainability: Evidence from a Global Study, by Travis Katz. The World Bank, 1998.</u>
	<ul style="list-style-type: none"> <li>• Water Pricing Experiences, An International Perspective, by Ariel Dinar and Ashok Subramanian, World Bank Technical Paper #386, 1997.</li> </ul>	<a href="http://www-wds.worldbank.org/servlet/WDServlet?pcont=details&amp;eid=000009265_3971201161412">http://www-wds.worldbank.org/servlet/WDServlet?pcont=details&amp;eid=000009265_3971201161412</a>
UNICEF	<ul style="list-style-type: none"> <li>• Basic Services for All? Public Spending and the Social Dimensions of Poverty, 2000</li> </ul>	<a href="http://www.unicef-icdc.org/publications/pdf/basicce.pdf">http://www.unicef-icdc.org/publications/pdf/basicce.pdf</a>

iv. Gender

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b>En</b>
Gender and Water Alliance (GWA)	<ul style="list-style-type: none"> <li>• <u>The Gender and Water Development Report 2003: Gender Perspectives on Policies in the Water Sector, 2003</u></li> </ul>	<a href="http://www.wateryear2003.org/en/ev.php@URL_ID=3592&amp;URL_DO=DO_TOPIC&amp;URL_SECTION=201.html">http://www.wateryear2003.org/en/ev.php@URL_ID=3592&amp;URL_DO=DO_TOPIC&amp;URL_SECTION=201.html</a>
International Water & Sanitation Center (IRC)	<ul style="list-style-type: none"> <li>• <u>Gender in Community Water Supply, Sanitation and Water Resource Protection – a Guide to Methods and Techniques, 1995</u></li> </ul>	<a href="http://www.irc.nl/products/publications/online/op23e/index.html">http://www.irc.nl/products/publications/online/op23e/index.html</a>
	<ul style="list-style-type: none"> <li>• <u>Together for Water and Sanitation: Tools to Apply a Gender Approach – The Asian Experience</u></li> </ul>	
OECD / DAC	<ul style="list-style-type: none"> <li>• <u>Water &amp; Sanitation Gender Tipsheets: Spreading Responsibility for Integrating a Gender Perspective into Development Activities and Policies</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/2/45/1896488.pdf">http://www.oecd.org/dataoecd/2/45/1896488.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Irrigation Gender Tipsheets: Spreading Responsibility for Integrating a Gender Perspective into Development Activities and Policies</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/3/12/1896616.pdf">http://www.oecd.org/dataoecd/3/12/1896616.pdf</a>
Sweden (Sida)	<ul style="list-style-type: none"> <li>• <u>Handbook for Mainstreaming – a Gender Perspective in the Water Resources Management Sector, 1996</u></li> </ul>	A free copy of this handbook can be ordered online <a href="http://www.sida.se/Sida/jsp/pology.jsp?d=168&amp;a=604">http://www.sida.se/Sida/jsp/pology.jsp?d=168&amp;a=604</a>
UNDP	<ul style="list-style-type: none"> <li>• <u>Mainstreaming Gender in Water Management – a Practical Journey to Sustainability: a Resource Guide, 2003</u></li> </ul>	<a href="http://www.undp.org/water/genderguide/index.html">http://www.undp.org/water/genderguide/index.html</a>
UNFPA	<ul style="list-style-type: none"> <li>• <u>Global Population and Water Access and Sustainability, 2003</u></li> </ul>	<a href="http://www.unfpa.org/upload/lib_public_file/190_filename_globalwater_eng.pdf">http://www.unfpa.org/upload/lib_public_file/190_filename_globalwater_eng.pdf</a>



<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
Women's Environment and Development Organisation (WEDO)	<ul style="list-style-type: none"> <li>• Untapped Connections: Gender, Water and Poverty, 2003, report prepared for the 3rd World Water Forum; Overview of the relationships between gender, water, and poverty, and exploring women's central role in managing water supply and distribution</li> </ul>	<a href="http://www.wedo.org/sus_dev/untapped1.htm">http://www.wedo.org/sus_dev/untapped1.htm</a>

v. NGOs and Water & Sanitation

<b>Initiative</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
United Kingdom (DfID)	<ul style="list-style-type: none"> <li>• <u>Lessons Learned from NGO Experiences in the Water and Sanitation Sector</u>, edited by Ian Smout and Sarah Parry-Jones, Water and NGOs workshop, 1998</li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/books-and-manuals/lfneitwss/contents.htm">http://www.lboro.ac.uk/well/resources/books-and-manuals/lfneitwss/contents.htm</a>
	<ul style="list-style-type: none"> <li>• Water and NGOs – Proceedings of an ODA workshop, 1996</li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/conference-proceedings/water-and-ngos/water-and-ngos.pdf">http://www.lboro.ac.uk/well/resources/conference-proceedings/water-and-ngos/water-and-ngos.pdf</a>

vi. Private Sector & Water and Sanitation

<b>Initiative</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
United Kingdom (DfID – WELL)	<ul style="list-style-type: none"> <li>• <u>Private Sector Participation in the Water and Sanitation Sector</u>, prepared by Richard Franceys, WEDC Loughborough University and IHE, Delft, July 1997, Occasional paper No. 3</li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/occasional-papers/no-3.htm">http://www.lboro.ac.uk/well/resources/occasional-papers/no-3.htm</a>
	<ul style="list-style-type: none"> <li>• <u>Public-Private Partnership and the Poor – An Initial Review</u>, by Mike Webster and Kevin Sansom, edited by Julie Woodfield, 1999</li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0164.pdf">http://www.lboro.ac.uk/well/resources/well-studies/full-reports-pdf/task0164.pdf</a>

vii. Right to Water

<b>Initiative</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
UNICEF	<ul style="list-style-type: none"> <li>• <u>Financing of Fresh Water for All – a Rights Based Approach</u>, by Ashok Nigam and Sadig Rasheed, UNICEF, New York, 1998</li> </ul>	<a href="http://www.un.org/documents/eco_soc/cn17/1998/background/ecn171998-right.htm">http://www.un.org/documents/eco_soc/cn17/1998/background/ecn171998-right.htm</a>
World Health Organization (WHO)	<ul style="list-style-type: none"> <li>• <u>The Right to Water (Water Supply, Potable Water, Human Rights, Treaties)</u>, World Health Organization, 2003)</li> </ul>	<a href="http://www.who.int/docstore/water_sanitation_health/Documents/righttowater/righttowater.pdf">http://www.who.int/docstore/water_sanitation_health/Documents/righttowater/righttowater.pdf</a>

viii. Sanitation

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b> <b><u>En</u></b>
UNICEF	<ul style="list-style-type: none"> <li>• <u>Towards Better Programming – a Sanitation Handbook, UNICEF Programme Division, Guideline Series (in coordination with USAid), 1997</u></li> </ul>	<a href="http://www.dec.org/pdf_docs/pnacb124.pdf">http://www.dec.org/pdf_docs/pnacb124.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Motivating Better Hygiene Behaviour – Importance for Public Health, Mechanisms of Change, 1995 (according to UNICEF information an older document that has been republished due to public demand)</u></li> </ul>	<a href="http://www.unicef.org/wes/behav.pdf">http://www.unicef.org/wes/behav.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Sanitation for All: Promoting Dignity and Human Rights, 2000</u></li> </ul>	<a href="http://www.unicef.org/wes/sanall.pdf">http://www.unicef.org/wes/sanall.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Towards Better Programming – a Manual on Hygiene Promotion, UNICEF Programme Division, Guideline Series, 1999</u></li> </ul>	<a href="http://www.unicef.org/wes/hman.pdf">http://www.unicef.org/wes/hman.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Towards Better Programming – a Manual on School Sanitation and Hygiene, UNICEF Programme Division, Guideline Series, 1998</u></li> </ul>	<a href="http://www.unicef.org/wes/Sch_e.pdf">http://www.unicef.org/wes/Sch_e.pdf</a>
United Kingdom (DfID)	<ul style="list-style-type: none"> <li>• <u>On-plot Sanitation for Low-income Urban Communities: Guidelines for Selection, by Andrew Cotton and Darren Saywell, 1998</u></li> </ul>	<a href="http://www.lboro.ac.uk/departments/cv/wedc/publications/opsg.htm">http://www.lboro.ac.uk/departments/cv/wedc/publications/opsg.htm</a>
	<ul style="list-style-type: none"> <li>• <u>On-Plot Sanitation in Low-income Urban Communities: A Review of Literature, 1995</u></li> </ul>	<a href="http://www.lboro.ac.uk/departments/cv/wedc/publications/opsl.htm">http://www.lboro.ac.uk/departments/cv/wedc/publications/opsl.htm</a>
	<ul style="list-style-type: none"> <li>• <u>Health, Environment and the Burden of Disease – a Guidance Note, 2003</u></li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/books-and-manuals/DFID%20Health.pdf">http://www.lboro.ac.uk/well/resources/books-and-manuals/DFID%20Health.pdf</a>

		<b>Reference</b>
United Kingdom (DfiD – WELL)	<ul style="list-style-type: none"> <li>Sanitation and the Poor, by Rebecca Scott, Andrew Cotton and Beenakumari Govindan, 2003</li> </ul>	<a href="http://www.lboro.ac.uk/well/resources/well-studies/summaries-htm/satp.htm">http://www.lboro.ac.uk/well/resources/well-studies/summaries-htm/satp.htm</a>

ix. Integrated Water Resource Management (including Water Management)

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
International Water & Sanitation Centre (IRC)	<ul style="list-style-type: none"> <li>• <u>Integrated Water Resource Management in Water and Sanitation Projects: Lessons from Projects in Africa, Asia and South America, 1999</u></li> </ul>	<a href="http://www.irc.nl/products/publications/online/op31e/">http://www.irc.nl/products/publications/online/op31e/</a>
OECD / DAC	<ul style="list-style-type: none"> <li>• <u>Policy Brief: Improving Water Management: Recent OECD Experience, March 2003.</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/10/40/2499227.pdf">http://www.oecd.org/dataoecd/10/40/2499227.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>OECD Recommendations to Improve Water Management, Overview Page</u></li> </ul>	<a href="http://www.oecd.org/document/52/0,2340,en_2649_34487_2501236_1_1_1_1,00.html">http://www.oecd.org/document/52/0,2340,en_2649_34487_2501236_1_1_1_1,00.html</a>
Overseas Development Institute (ODI)	<ul style="list-style-type: none"> <li>• <u>Adopting a Sustainable Livelihoods Approach to Water Projects: Implications for Policy and Practice, by Alan Nicol, Working Paper 133, April 2000</u></li> </ul>	<a href="http://www.odi.org.uk/publications/wp133.pdf">http://www.odi.org.uk/publications/wp133.pdf</a>
Sweden (Sida)	<ul style="list-style-type: none"> <li>• <u>Management and Use of Water Resources – a Summary of Sida's Experiences and Priorities, Position Paper, 1999</u></li> </ul>	<a href="http://www.sida.se/Sida/articles/13700-13799/13754/pp[1].pdf">http://www.sida.se/Sida/articles/13700-13799/13754/pp[1].pdf</a>
UNICEF	<ul style="list-style-type: none"> <li>• <u>Water Handbook – a Comprehensive Review and Guide on Procedures, Methodologies and Technologies for Water Programmes, 1999</u></li> </ul>	<a href="http://www.unicef.org/wes/Water.pdf">http://www.unicef.org/wes/Water.pdf</a>

x. Transboundary Water Management

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>

		<b>Reference</b>
Transbound-ary Freshwater Dispute Database	<ul style="list-style-type: none"> <li data-bbox="545 237 848 506">• <u>Criteria for Equitable Allocations: The Heart of International Water Conflict.</u> by <u>Aaron T. Wolf,</u> <u>Natural Resources Forum.</u> Vol. 23 #1, February 1999. pp. 3-30.</li> </ul>	<a href="http://www.transboundarywaters.orst.edu/publications/allocations/">http://www.transboundarywaters.orst.edu/publications/allocations/</a>

xi. Urban Water Supply and Sanitation

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
OECD / DAC	<ul style="list-style-type: none"> <li>• <u>Urban Water Management –OECD thematic page</u></li> </ul>	<a href="http://www.oecd.org/department/0,2688,en_2649_34343_1_1_1_1_1,00.html">http://www.oecd.org/department/0,2688,en_2649_34343_1_1_1_1_1,00.html</a>
	<ul style="list-style-type: none"> <li>• <u>Guiding Principles for Reform of the Urban Water Supply and Sanitation Sector in the NIS, 2000</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/45/56/1895432.pdf">http://www.oecd.org/dataoecd/45/56/1895432.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Pollution Prevention and Control: Improving the Management of Municipal Water Supply and Sanitation Infrastructure, NIS Environment Strategy Background Paper</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/16/32/2390612.pdf">http://www.oecd.org/dataoecd/16/32/2390612.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Policy Brief: Public-Private Partnerships in the Urban Water Sector, April 2003</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/31/50/2510696.pdf">http://www.oecd.org/dataoecd/31/50/2510696.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Urban Water Reform in Eastern Europe, Caucasus and Central Asia; Progress since the Almaty Ministerial Conference; Urban Water Reform Monitoring Report, 2003</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/1/45/14626557.pdf">http://www.oecd.org/dataoecd/1/45/14626557.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Affordability of Urban Water Services in the NIS, EAP working paper, 2002</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/17/14/2390871.pdf">http://www.oecd.org/dataoecd/17/14/2390871.pdf</a>
	<ul style="list-style-type: none"> <li>• <u>Key Issues and Recommendations for Consumer Protection: Affordability, Social Protection, and Public Participation in Urban Water, 2003</u></li> </ul>	<a href="http://www.oecd.org/dataoecd/53/0/14636760.pdf">http://www.oecd.org/dataoecd/53/0/14636760.pdf</a>
United Kingdom (DfID)	<ul style="list-style-type: none"> <li>• <u>On-Plot Sanitation for Low-Income Urban Communities: Guidelines for Selection, by Andrew Cotton and Darren Saywell, 1998</u></li> </ul>	<a href="http://www.lboro.ac.uk/departments/cv/wedc/publications/opsg.htm">http://www.lboro.ac.uk/departments/cv/wedc/publications/opsg.htm</a>

xii. Rural Water Supply and Sanitation

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
International Water and Sanitation Centre (IRC)	<ul style="list-style-type: none"> <li>• <u>Keep It Working: A Field Manual to Support Community Management of Rural Water Supply</u>; by <u>Eveline Bolt and Catarina Fonseca</u></li> </ul>	<p>Publication can be purchased online  <a href="http://www.irc.nl/products/publications/title.php?file=tp36e">http://www.irc.nl/products/publications/title.php?file=tp36e</a></p>
World Bank	<ul style="list-style-type: none"> <li>• <u>Rural Water Supply and Sanitation Toolkit for Multisector Projects</u>; Developed by <u>Rural Water Supply and Sanitation and Social Funds Thematic Groups</u>, 2002</li> </ul>	<p><a href="http://www.worldbank.org/watsan/rwsstoolkit/material/rwss_pub.pdf">http://www.worldbank.org/watsan/rwsstoolkit/material/rwss_pub.pdf</a></p>
United Kingdom (DFID – WELL)	<ul style="list-style-type: none"> <li>• <u>Provision of Water and Sanitation Services to Small Towns</u>, by <u>Jeremy Colin and Joy Morgan</u>, edited by <u>Julie Woodfield</u></li> </ul>	<p><a href="http://www.lboro.ac.uk/well/resources/well-studies/summaries-htm/task0323.htm">http://www.lboro.ac.uk/well/resources/well-studies/summaries-htm/task0323.htm</a></p>
	<ul style="list-style-type: none"> <li>• <u>Sharing It Out. Introducing Water Demand Management: Strategies for Small Towns</u>, by <u>Paul Deverill</u>, 2001</li> </ul>	<p><a href="http://www.lboro.ac.uk/well/resources/well-studies/summaries-htm/task0513.htm">http://www.lboro.ac.uk/well/resources/well-studies/summaries-htm/task0513.htm</a></p>

**Region-Specific References**

xiii. Newly Independent States (NIS)

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
OECD / DAC	<ul style="list-style-type: none"> <li>• <u>Guiding Principles for Reform of the Urban Water Supply and Sanitation Sector in the NIS</u>, 2000</li> </ul>	<p><a href="http://www.oecd.org/dataoecd/45/56/1895432.pdf">http://www.oecd.org/dataoecd/45/56/1895432.pdf</a></p>
	<ul style="list-style-type: none"> <li>• <u>Pollution Prevention and Control: Improving the Management of Municipal Water Supply and Sanitation Infrastructure</u>, NIS Environment Strategy Background Paper</li> </ul>	<p><a href="http://www.oecd.org/dataoecd/16/32/2390612.pdf">http://www.oecd.org/dataoecd/16/32/2390612.pdf</a></p>



<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
	<ul style="list-style-type: none"> <li>• Regulatory Reform in the NIS: The Case of Water, 2000</li> </ul>	<a href="http://www.oecd.org/dataoecd/62/13/1876109.pdf">http://www.oecd.org/dataoecd/62/13/1876109.pdf</a>
	<ul style="list-style-type: none"> <li>• Environmental Regulatory Reform in the NIS: The Case of the Water Sector, 12th Meeting of the EAP Task Force, 18–19 October 2000</li> </ul>	<a href="http://www.oecd.org/dataoecd/51/62/1913774.pdf">http://www.oecd.org/dataoecd/51/62/1913774.pdf</a>
	<ul style="list-style-type: none"> <li>• Affordability of Urban Water Services in the NIS, EAP working paper, 2002</li> </ul>	<a href="http://www.oecd.org/dataoecd/17/14/2390871.pdf">http://www.oecd.org/dataoecd/17/14/2390871.pdf</a>
	<ul style="list-style-type: none"> <li>• Legal and Institutional Reforms in the NIS Urban Water Sector</li> </ul>	

xiv. Latin America

<b>Donor / Source</b>	<b>Short Title / Description</b>	<b>Reference</b>
		<b><u>En</u></b>
USA (USAid)	<ul style="list-style-type: none"> <li>• <u>Case Studies on Decentralization of Water Supply and Sanitation Services in Latin America, Environmental Health Project, Strategic Paper No. 1, January 2001</u></li> </ul>	<a href="http://www.dec.org/pdf_docs/pnac k672.pdf">http://www.dec.org/pdf_docs/pnac k672.pdf</a>

## **ANNEXE 2**

### **CHAPTER 18**

#### **PROTECTION OF THE QUALITY AND SUPPLY OF FRESHWATER RESOURCES: APPLICATION OF INTEGRATED APPROACHES TO THE DEVELOPMENT, MANAGEMENT AND USE OF WATER RESOURCES**

**18.1.** Freshwater resources are an essential component of the Earth's hydrosphere and an indispensable part of all terrestrial ecosystems. The freshwater environment is characterized by the hydrological cycle, including floods and droughts, which in some regions have become more extreme and dramatic in their consequences. Global climate change and atmospheric pollution could also have an impact on freshwater resources and their availability and, through sea-level rise, threaten low-lying coastal areas and small island ecosystems.

**18.2.** Water is needed in all aspects of life. The general objective is to make certain that adequate supplies of water of good quality are maintained for the entire population of this planet, while preserving the hydrological, biological and chemical functions of ecosystems, adapting human activities within the capacity limits of nature and combating vectors of water-related diseases. Innovative technologies, including the improvement of indigenous technologies, are needed to fully utilize limited water resources and to safeguard those resources against pollution.

**18.3.** The widespread scarcity, gradual destruction and aggravated pollution of freshwater resources in many world regions, along with the progressive encroachment of incompatible activities, demand integrated water resources planning and management. Such integration must cover all types of interrelated freshwater bodies, including both surface water and groundwater, and duly consider water quantity and quality aspects. The multisectoral nature of water resources development in the context of socio-economic development must be recognized, as well as the multi-interest utilization of water resources for water supply and sanitation, agriculture, industry, urban development, hydropower generation, inland fisheries, transportation, recreation, low and flat lands management and other activities. Rational water utilization schemes for the development of surface and underground water-supply sources and other potential sources have to be supported by concurrent water conservation and wastage minimization measures. Priority, however, must be accorded to flood prevention and control measures, as well as sedimentation control, where required.

**18.4.** Transboundary water resources and their use are of great importance to riparian States. In this connection, cooperation among those States may be desirable in conformity with existing agreements and/or other relevant arrangements, taking into account the interests of all riparian States concerned.

**18.5.** The following programme areas are proposed for the freshwater sector:

- (a) Integrated water resources development and management;
- (b) Water resources assessment;
- (c) Protection of water resources, water quality and aquatic ecosystems;
- (d) Drinking-water supply and sanitation;
- (e) Water and sustainable urban development;
- (f) Water for sustainable food production and rural development;
- (g) Impacts of climate change on water resources.

## PROGRAMME AREAS

### A. Integrated Water Resources Development and Management

#### Basis for action

**18.6.** The extent to which water resources development contributes to economic productivity and social well-being is not usually appreciated, although all social and economic activities rely heavily on the supply and quality of freshwater. As populations and economic activities grow, many countries are rapidly reaching conditions of water scarcity or facing limits to economic development. Water demands are increasing rapidly, with 70-80 per cent required for irrigation, less than 20 per cent for industry and a mere 6 per cent for domestic consumption. The holistic management of freshwater as a finite and vulnerable resource, and the integration of sectoral water plans and programmes within the framework of national economic and social policy, are of paramount importance for action in the 1990s and beyond. The fragmentation of responsibilities for water resources development among sectoral agencies is proving, however, to be an even greater impediment to promoting integrated water management than had been anticipated. Effective implementation and coordination mechanisms are required.

#### Objectives

**18.7.** The overall objective is to satisfy the freshwater needs of all countries for their sustainable development.

**18.8.** Integrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good, whose quantity and quality determine the nature of its utilization. To this end, water resources have to be protected, taking into account the functioning of aquatic ecosystems and the perennality of the resource, in order to satisfy and reconcile needs for water in human activities. In developing and using water resources, priority has to be given to the satisfaction of basic needs and the safeguarding of ecosystems. Beyond these requirements, however, water users should be charged appropriately.

**18.9.** Integrated water resources management, including the integration of land- and water-related aspects, should be carried out at the level of the catchment basin or sub-basin. Four principal objectives should be pursued, as follows:

(a) To promote a dynamic, interactive, iterative and multisectoral approach to water resources management, including the identification and protection of potential sources of freshwater supply, that integrates technological, socio-economic, environmental and human health considerations;

(b) To plan for the sustainable and rational utilization, protection, conservation and management of water resources based on community needs and priorities within the framework of national economic development policy;

(c) To design, implement and evaluate projects and programmes that are both economically efficient and socially appropriate within clearly defined strategies, based on an approach of full public participation, including that of women, youth, indigenous people and local communities in water management policy-making and decision-making;

(d) To identify and strengthen or develop, as required, in particular in developing countries, the appropriate institutional, legal and financial mechanisms to ensure that water policy and its implementation are a catalyst for sustainable social progress and economic growth.

**18.10.** In the case of transboundary water resources, there is a need for riparian States to formulate water resources strategies, prepare water resources action programmes and consider, where appropriate, the harmonization of those strategies and action programmes.

**18.11.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including the United Nations and other relevant organizations as appropriate, could set the following targets:

A) By the year 2000:

- i. To have designed and initiated costed and targeted national action programmes, and to have put in place appropriate institutional structures and legal instruments;
- ii. To have established efficient water-use programmes to attain sustainable resource utilization patterns;

B) By the year 2025:

- i. To have achieved subsectoral targets of all freshwater programme areas.

It is understood that the fulfilment of the targets quantified in (i) and (ii) above will depend upon new and additional financial resources that will be made available to developing countries in accordance with the relevant provisions of General Assembly resolution 44/228.

#### **Activities**

**18.12.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including the United Nations and other relevant organizations as appropriate, could implement the following activities to improve integrated water resources management:

- (a) Formulation of costed and targeted national action plans and investment programmes;
- (b) Integration of measures for the protection and conservation of potential sources of freshwater supply, including the inventorying of water resources, with land-use planning, forest resource utilization, protection of mountain slopes and riverbanks and other relevant development and conservation activities;
- (c) Development of interactive databases, forecasting models, economic planning models and methods for water management and planning, including environmental impact assessment methods;
- (d) Optimization of water resources allocation under physical and socio-economic constraints;
- (e) Implementation of allocation decisions through demand management, pricing mechanisms and regulatory measures;
- (f) Flood and drought management, including risk analysis and environmental and social impact assessment;
- (g) Promotion of schemes for rational water use through public awareness-raising, educational programmes and levying of water tariffs and other economic instruments;
- (h) Mobilization of water resources, particularly in arid and semi-arid areas;
- (i) Promotion of international scientific research cooperation on freshwater resources;
- (j) Development of new and alternative sources of water-supply such as sea-water desalination, artificial groundwater recharge, use of marginal-quality water, waste-water reuse and water recycling;
- (k) Integration of water (including surface and underground water resources) quantity and quality management;

- (l) Promotion of water conservation through improved water-use efficiency and wastage minimization schemes for all users, including the development of water-saving devices;
- (m) Support to water-users groups to optimize local water resources management;
- (n) Development of public participatory techniques and their implementation in decision-making, particularly the enhancement of the role of women in water resources planning and management;
- (o) Development and strengthening, as appropriate, of co-operation, including mechanisms where appropriate, at all levels concerned, namely:
  - i. At the lowest appropriate level, delegation of water resources management, generally, to such a level, in accordance with national legislation, including decentralization of government services to local authorities, private enterprises and communities;
  - ii. At the national level, integrated water resources planning and management in the framework of the national planning process and, where appropriate, establishment of independent regulation and monitoring of freshwater, based on national legislation and economic measures;
  - iii. At the regional level, consideration, where appropriate, of the harmonization of national strategies and action programmes;
  - iv. At the global level, improved delineation of responsibilities, division of labour and coordination of international organizations and programmes, including facilitating discussions and sharing of experiences in areas related to water resources management;
- p) Dissemination of information, including operational guidelines, and promotion of education for water users, including the consideration by the United Nations of a World Water Day.

### **Means of implementation**

#### *A) Financing and cost evaluation*

**18.13.** The Conference secretariat has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about US\$115 million from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

#### *B) Scientific and technological means*

**18.14.** The development of interactive databases, forecasting methods and economic planning models appropriate to the task of managing water resources in an efficient and sustainable manner will require the application of new techniques such as geographical information systems and expert systems to gather, assimilate, analyse and display multisectoral information and to optimize decision-making. In addition, the development of new and alternative sources of water-supply and low-cost water technologies will require innovative applied research. This will involve the transfer, adaptation and diffusion of new techniques and technology among developing countries, as well as the development of endogenous capacity, for the purpose of being able to deal with the added dimension of integrating engineering, economic, environmental and social aspects of water resources management and predicting the effects in terms of human impact.

**18.15.** Pursuant to the recognition of water as a social and economic good, the various available options for charging water users (including domestic, urban, industrial and agricultural water-user groups) have to be further evaluated and field-tested.

Further development is required for economic instruments that take into account opportunity costs and environmental externalities. Field studies on the willingness to pay should be conducted in rural and urban situations.

**18.16.** Water resources development and management should be planned in an integrated manner, taking into account long-term planning needs as well as those with narrower horizons, that is to say, they should incorporate environmental, economic and social considerations based on the principle of sustainability; include the requirements of all users as well as those relating to the prevention and mitigation of water-related hazards; and constitute an integral part of the socio-economic development planning process. A prerequisite for the sustainable management of water as a scarce vulnerable resource is the obligation to acknowledge in all planning and development its full costs. Planning considerations should reflect benefits investment, environmental protection and operation costs, as well as the opportunity costs reflecting the most valuable alternative use of water. Actual charging need not necessarily burden all beneficiaries with the consequences of those considerations. Charging mechanisms should, however, reflect as far as possible both the true cost of water when used as an economic good and the ability of the communities to pay.

**18.17.** The role of water as a social, economic and life-sustaining good should be reflected in demand management mechanisms and implemented through water conservation and reuse, resource assessment and financial instruments.

**18.18.** The setting afresh of priorities for private and public investment strategies should take into account a) maximum utilization of existing projects, through maintenance, rehabilitation and optimal operation; (b) new or alternative clean technologies; and (c) environmentally and socially benign hydropower.

#### *C) Human resources development*

**18.19.** The delegation of water resources management to the lowest appropriate level necessitates educating and training water management staff at all levels and ensuring that women participate equally in the education and training programmes. Particular emphasis has to be placed on the introduction of public participatory techniques, including enhancement of the role of women, youth, indigenous people and local communities. Skills related to various water management functions have to be developed by municipal government and water authorities, as well as in the private sector, local/national non-governmental organizations, cooperatives, corporations and other water-user groups. Education of the public regarding the importance of water and its proper management is also needed.

**18.20.** To implement these principles, communities need to have adequate capacities. Those who establish the framework for water development and management at any level, whether international, national or local, need to ensure that the means exist to build those capacities. The means will vary from case to case. They usually include:

- (a) Awareness-creation programmes, including mobilizing commitment and support at all levels and initiating global and local action to promote such programmes;
  - (b) Training of water managers at all levels so that they have an appropriate understanding of all the elements necessary for their decision-making;
  - (c) Strengthening of training capacities in developing countries;
  - (d) Appropriate training of the necessary professionals, including extension workers;
  - (e) Improvement of career structures;
- Sharing of appropriate knowledge and technology, both for the collection of data and for the implementation of planned development including non-polluting technologies and the knowledge needed to extract the best performance from the existing investment system.

#### *D) Capacity-building*

**18.21.** Institutional capacity for implementing integrated water management should be reviewed and developed when there is a clear demand. Existing administrative structures will often be quite capable of achieving local water resources management, but the need may arise for new institutions based upon the perspective, for example, of river catchment areas, district development councils and local community committees. Although water is managed at various levels in the socio-political system, demand-driven management requires the development of water-related institutions at appropriate levels, taking into account the need for integration with land-use management.

**18.22.** In creating the enabling environment for lowest-appropriate-level management, the role of Government includes mobilization of financial and human resources, legislation, standard-setting and other regulatory functions, monitoring and assessment of the use of water and land resources, and creating of opportunities for public participation. International agencies and donors have an important role to play in providing support to developing countries in creating the required enabling environment for integrated water resources management. This should include, as appropriate, donor support to local levels in developing countries, including community-based institutions, non-governmental organizations and women's groups.

### **B. Water Resources Assessment**

#### **Basis for action**

**18.23.** Water resources assessment, including the identification of potential sources of freshwater supply, comprises the continuing determination of sources, extent, dependability and quality of water resources and of the human activities that affect those resources. Such assessment constitutes the practical basis for their sustainable management and a prerequisite for evaluation of the possibilities for their development. There is, however, growing concern that at a time when more precise and reliable information is needed about water resources, hydrologic services and related bodies are less able than before to provide this information, especially information on groundwater and water quality. Major impediments are the lack of financial resources for water resources assessment, the fragmented nature of hydrologic services and the insufficient numbers of qualified staff. At the same time, the advancing technology for data capture and management is increasingly difficult to access for developing countries. Establishment of national databases is, however, vital to water resources assessment and to mitigation of the effects of floods, droughts, desertification and pollution.

#### **Objectives**

**18.24.** Based upon the Mar del Plata Action Plan, this programme area has been extended into the 1990s and beyond with the overall objective of ensuring the assessment and forecasting of the quantity and quality of water resources, in order to estimate the total quantity of water resources available and their future supply potential, to determine their current quality status, to predict possible conflicts between supply and demand and to provide a scientific database for rational water resources utilization.

**18.25.** Five specific objectives have been set accordingly, as follows:

- (a) To make available to all countries water resources assessment technology that is appropriate to their needs, irrespective of their level of development, including methods for the impact assessment of climate change on freshwaters;
- (b) To have all countries, according to their financial means, allocate to water resources assessment financial resources in line with the economic and social needs for water resources data;



(c) To ensure that the assessment information is fully utilized in the development of water management policies;

(d) To have all countries establish the institutional arrangements needed to ensure the efficient collection, processing, storage, retrieval and dissemination to users of information about the quality and quantity of available water resources at the level of catchments and groundwater aquifers in an integrated manner;

(d) To have sufficient numbers of appropriately qualified and capable staff recruited and retained by water resources assessment agencies and provided with the training and retraining they will need to carry out their responsibilities successfully.

**18.26.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including cooperation with the United Nations and other relevant organizations, as appropriate, could set the following targets:

(a) By the year 2000, to have studied in detail the feasibility of installing water resources assessment services;

(b) As a long-term target, to have fully operational services available based upon high-density hydrometric networks.

#### **Activities**

**18.27.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including the United Nations and other relevant organizations as appropriate, could undertake the following activities:

##### *A) Institutional framework:*

i) Establish appropriate policy frameworks and national priorities;

ii) Establish and strengthen the institutional capabilities of countries, including legislative and regulatory arrangements, that are required to ensure the adequate assessment of their water resources and the provision of flood and drought forecasting services;

iii) Establish and maintain effective cooperation at the national level between the various agencies responsible for the collection, storage and analysis of hydrologic data;

iv) Cooperate in the assessment of transboundary water resources, subject to the prior agreement of each riparian State concerned;

##### *B) Data systems:*

i) Review existing data-collection networks and assess their adequacy, including those that provide real-time data for flood and drought forecasting;

ii) Improve networks to meet accepted guidelines for the provision of data on water quantity and quality for surface and groundwater, as well as relevant land-use data;

iii) Apply standards and other means to ensure data compatibility;

iv) Upgrade facilities and procedures used to store, process and analyse hydrologic data and make such data and the forecasts derived from them available to potential users;

v) Establish databases on the availability of all types of hydrologic data at the national level;

vi) Implement "data rescue" operations, for example, establishment of national archives of water resources;

vii) Implement appropriate well-tried techniques for the processing of hydrologic data;

viii) Derive area-related estimates from point hydrologic data;

ix) Assimilate remotely sensed data and the use, where appropriate, of geographical information systems;

*C) Data dissemination:*

- i) Identify the need for water resources data for various planning purposes;
- ii) Analyse and present data and information on water resources in the forms required for planning and management of countries' socio-economic development and for use in environmental protection strategies and in the design and operation of specific water-related projects;
- iii) Provide forecasts and warnings of flood and drought to the general public and civil defence;

*D) Research and development:*

- i) Establish or strengthen research and development programmes at the national, subregional, regional and international levels in support of water resources assessment activities;
- ii) Monitor research and development activities to ensure that they make full use of local expertise and other local resources and that they are appropriate for the needs of the country or countries concerned.

**Means of implementation**

*A) Financing and cost evaluation*

**18.28.** The Conference secretariat has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about US\$355 million, including about US\$145 million from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

*B) Scientific and technological means*

**18.29.** Important research needs include (a) development of global hydrologic models in support of analysis of climate change impact and of macroscale water resources assessment; (b) closing of the gap between terrestrial hydrology and ecology at different scales, including the critical water-related processes behind loss of vegetation and land degradation and its restoration; and (c) study of the key processes in water-quality genesis, closing the gap between hydrologic flows and biogeochemical processes. The research models should build upon hydrologic balance studies and also include the consumptive use of water. This approach should also, when appropriate, be applied at the catchment level.

**18.30.** Water resources assessment necessitates the strengthening of existing systems for technology transfer, adaptation and diffusion, and the development of new technology for use under field conditions, as well as the development of endogenous capacity. Prior to inaugurating the above activities, it is necessary to prepare catalogues of the water resources information held by government services, the private sector, educational institutes, consultants, local water-use organizations and others.

*C) Human resource development*

**18.31.** Water resources assessment requires the establishment and maintenance of a body of well-trained and motivated staff sufficient in number to undertake the above activities. Education and training programmes designed to ensure an adequate supply of these trained personnel should be established or strengthened at the local, national, subregional or regional level. In addition, the provision of attractive terms of employment and career paths for professional and technical staff should be encouraged.

Human resource needs should be monitored periodically, including all levels of employment. Plans have to be established to meet those needs through education and training opportunities and international programmes of courses and conferences.

**18.32.** Because well-trained people are particularly important to water resources assessment and hydrologic forecasting, personnel matters should receive special attention in this area. The aim should be to attract and retain personnel to work on water resources assessment who are sufficient in number and adequate in their level of education to ensure the effective implementation of the activities that are planned. Education may be called for at both the national and the international level, with adequate terms of employment being a national responsibility.

**18.33.** Recommended actions include:

- (a) Identifying education and training needs geared to the specific requirements of countries;
- (b) Establishing and strengthening education and training programmes on water-related topics, within an environmental and developmental context, for all categories of staff involved in water resources assessment activities, using advanced educational technology, where appropriate, and involving both men and women;
- (c) Developing sound recruitment, personnel and pay policies for staff of national and local water agencies.

*D) Capacity-building*

**18.34.** The conduct of water resources assessment on the basis of operational national hydrometric networks requires an enabling environment at all levels. The following national support action is necessary for enhanced national capacities:

- (a) Review of the legislative and regulatory basis of water resources assessment;
- (b) Facilitation of close collaboration among water sector agencies, particularly between information producers and users;
- (c) Implementation of water management policies based upon realistic appraisals of water resources conditions and trends;
- (d) Strengthening of the managerial capabilities of water-user groups, including women, youth, indigenous people and local communities, to improve water-use efficiency at the local level.

## **C. Protection of Water Resources, Water Quality and Aquatic Ecosystems**

### **Basis for action**

**18.35.** Freshwater is a unitary resource. Long-term development of global freshwater requires holistic management of resources and a recognition of the interconnectedness of the elements related to freshwater and freshwater quality. There are few regions of the world that are still exempt from problems of loss of potential sources of freshwater supply, degraded water quality and pollution of surface and groundwater sources. Major problems affecting the water quality of rivers and lakes arise, in variable order of importance according to different situations, from inadequately treated domestic sewage, inadequate controls on the discharges of industrial waste waters, loss and destruction of catchment areas, ill-considered siting of industrial plants, deforestation, uncontrolled shifting cultivation and poor agricultural practices. This gives rise to the leaching of nutrients and pesticides. Aquatic ecosystems are disturbed and living freshwater resources are threatened. Under certain circumstances, aquatic ecosystems are also affected by agricultural water resource development projects such as dams, river diversions, water installations and irrigation schemes. Erosion, sedimentation, deforestation and desertification have led to increased land degradation, and the creation of reservoirs has, in some cases, resulted in adverse effects on ecosystems.

Many of these problems have arisen from a development model that is environmentally destructive and from a lack of public awareness and education about surface and groundwater resource protection. Ecological and human health effects are the measurable consequences, although the means to monitor them are inadequate or non-existent in many countries. There is a widespread lack of perception of the linkages between the development, management, use and treatment of water resources and aquatic ecosystems. A preventive approach, where appropriate, is crucial to the avoiding of costly subsequent measures to rehabilitate, treat and develop new water supplies.

### **Objectives**

**18.36.** The complex interconnectedness of freshwater systems demands that freshwater management be holistic (taking a catchment management approach) and based on a balanced consideration of the needs of people and the environment. The Mar del Plata Action Plan has already recognized the intrinsic linkage between water resource development projects and their significant physical, chemical, biological, health and socio-economic repercussions. The overall environmental health objective was set as follows: "to evaluate the consequences which the various users of water have on the environment, to support measures aimed at controlling water-related diseases, and to protect ecosystems". [1]

**18.37.** The extent and severity of contamination of unsaturated zones and aquifers have long been underestimated owing to the relative inaccessibility of aquifers and the lack of reliable information on aquifer systems. The protection of groundwater is therefore an essential element of water resource management.

**18.38.** Three objectives will have to be pursued concurrently to integrate water-quality elements into water resource management:

- (a) Maintenance of ecosystem integrity, according to a management principle of preserving aquatic ecosystems, including living resources, and of effectively protecting them from any form of degradation on a drainage basin basis;
- (b) Public health protection, a task requiring not only the provision of safe drinking-water but also the control of disease vectors in the aquatic environment;
- (c) Human resources development, a key to capacity-building and a prerequisite for implementing water-quality management.

**18.39.** All States, according to their capacity and available resources, through bilateral or multilateral cooperation, including the United Nations and other relevant organizations as appropriate, could set the following targets:

- (a) To identify the surface and groundwater resources that could be developed for use on a sustainable basis and other major developable water-dependent resources and, simultaneously, to initiate programmes for the protection, conservation and rational use of these resources on a sustainable basis;
- (b) To identify all potential sources of water-supply and prepared outlines for their protection, conservation and rational use;
- (c) To initiate effective water pollution prevention and control programmes, based on an appropriate mixture of pollution reduction-at-source strategies, environmental impact assessments and enforceable standards for major point-source discharges and high-risk non-point sources, commensurate with their socio-economic development;
- (d) To participate, as far as appropriate, in international water-quality monitoring and management programmes such as the Global Water Quality Monitoring Programme (GEMS/WATER), the UNEP Environmentally Sound Management of Inland Waters (EMINWA), the FAO regional inland fishery bodies, and the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention);

(e) To reduce the prevalence of water-associated diseases, starting with the eradication of dracunculiasis (guinea worm disease) and onchocerciasis (river blindness) by the year 2000;

(f) To establish, according to capacities and needs, biological, health, physical and chemical quality criteria for all water bodies (surface and groundwater), with a view to an ongoing improvement of water quality;

(g) To adopt an integrated approach to environmentally sustainable management of water resources, including the protection of aquatic ecosystems and freshwater living resources;

(h) To put in place strategies for the environmentally sound management of freshwaters and related coastal ecosystems, including consideration of fisheries, aquaculture, animal grazing, agricultural activities and biodiversity.

#### **Activities**

**18.40.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including United Nations and other relevant organizations as appropriate, could implement the following activities:

##### *A) Water resources protection and conservation:*

- i. Establishment and strengthening of technical and institutional capacities to identify and protect potential sources of water-supply within all sectors of society;
- ii. Identification of potential sources of water-supply and preparation of national profiles;
- iii. Preparation of national plans for water resources protection and conservation;
- iv. Rehabilitation of important, but degraded, catchment areas, particularly on small islands;
- v. Strengthening of administrative and legislative measures to prevent encroachment on existing and potentially usable catchment areas;

##### *B) Water pollution prevention and control:*

- i. Application of the "polluter pays" principle, where appropriate, to all kinds of sources, including on-site and off-site sanitation;
- ii. Promotion of the construction of treatment facilities for domestic sewage and industrial effluents and the development of appropriate technologies, taking into account sound traditional and indigenous practices;
- iii. Establishment of standards for the discharge of effluents and for the receiving waters;
- iv. Introduction of the precautionary approach in water-quality management, where appropriate, with a focus on pollution minimization and prevention through use of new technologies, product and process change, pollution reduction at source and effluent reuse, recycling and recovery, treatment and environmentally safe disposal;
- v. Mandatory environmental impact assessment of all major water resource development projects potentially impairing water quality and aquatic ecosystems, combined with the delineation of appropriate remedial measures and a strengthened control of new industrial installations, solid waste landfills and infrastructure development projects;
- vi. Use of risk assessment and risk management in reaching decisions in this area and ensuring compliance with those decisions;

- vii. Identification and application of best environmental practices at reasonable cost to avoid diffuse pollution, namely, through a limited, rational and planned use of nitrogenous fertilizers and other agrochemicals (pesticides, herbicides) in agricultural practices;
- viii. Encouragement and promotion of the use of adequately treated and purified waste waters in agriculture, aquaculture, industry and other sectors;

*C) Development and application of clean technology:*

- i. Control of industrial waste discharges, including low-waste production technologies and water recirculation, in an integrated manner and through application of precautionary measures derived from a broad-based life-cycle analysis;
- ii. Treatment of municipal waste water for safe reuse in agriculture and aquaculture;
- iii. Development of biotechnology, inter alia, for waste treatment, production of biofertilizers and other activities;
- iv. Development of appropriate methods for water pollution control, taking into account sound traditional and indigenous practices;

*D) Groundwater protection:*

- i. Development of agricultural practices that do not degrade groundwaters;
- ii. Application of the necessary measures to mitigate saline intrusion into aquifers of small islands and coastal plains as a consequence of sea-level rise or overexploitation of coastal aquifers;
- iii. Prevention of aquifer pollution through the regulation of toxic substances that permeate the ground and the establishment of protection zones in groundwater recharge and abstraction areas;
- iv. Design and management of landfills based upon sound hydrogeologic information and impact assessment, using the best practicable and best available technology;
- v. Promotion of measures to improve the safety and integrity of wells and well-head areas to reduce intrusion of biological pathogens and hazardous chemicals into aquifers at well sites;
- vi. Water-quality monitoring, as needed, of surface and groundwaters potentially affected by sites storing toxic and hazardous materials;

*E) Protection of aquatic ecosystems:*

- i. Rehabilitation of polluted and degraded water bodies to restore aquatic habitats and ecosystems;
- ii. Rehabilitation programmes for agricultural lands and for other users, taking into account equivalent action for the protection and use of groundwater resources important for agricultural productivity and for the biodiversity of the tropics;
- iii. Conservation and protection of wetlands (owing to their ecological and habitat importance for many species), taking into account social and economic factors;
- iv. Control of noxious aquatic species that may destroy some other water species;

*F) Protection of freshwater living resources:*

- i. Control and monitoring of water quality to allow for the sustainable development of inland fisheries;
- ii. Protection of ecosystems from pollution and degradation for the development of freshwater aquaculture projects;

*G) Monitoring and surveillance of water resources and waters receiving wastes:*

- i. Establishment of networks for the monitoring and continuous surveillance of waters receiving wastes and of point and diffuse sources of pollution;
- ii. Promotion and extension of the application of environmental impact assessments of geographical information systems;
- iii. Surveillance of pollution sources to improve compliance with standards and regulations and to regulate the issue of discharge permits;
- iv. Monitoring of the utilization of chemicals in agriculture that may have an adverse environmental effect;
- v. Rational land use to prevent land degradation, erosion and siltation of lakes and other water bodies;

*H) Development of national and international legal instruments that may be required to protect the quality of water resources, as appropriate, particularly for:*

- i. Monitoring and control of pollution and its effects in national and transboundary waters;
- ii. Control of long-range atmospheric transport of pollutants;
- iii. Control of accidental and/or deliberate spills in national and/or transboundary water bodies;
- iv. Environmental impact assessment.

**Means of implementation**

*A) Financing and cost evaluation*

**18.41.** The Conference secretariat has estimated the average total cost (1993-2000) of implementing the activities of this programme to be about US\$1 billion, including about US\$340 million from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

*B) Scientific and technological means*

**18.42.** States should undertake cooperative research projects to develop solutions to technical problems that are appropriate for the conditions in each watershed or country. States should consider strengthening and developing national research centres linked through networks and supported by regional water research institutes. The North-South twinning of research centres and field studies by international water research institutions should be actively promoted. It is important that a minimum percentage of funds for water resource development projects is allocated to research and development, particularly in externally funded projects.

**18.43.** Monitoring and assessment of complex aquatic systems often require multidisciplinary studies involving several institutions and scientists in a joint programme. International water-quality programmes, such as GEMS/WATER, should be oriented towards the water-quality of developing countries. User-friendly software and Geographical Information Systems (GIS) and Global Resource Information Database (GRID) methods should be developed for the handling, analysis and interpretation of monitoring data and for the preparation of management strategies.

*D) Human resource development*

**18.44.** Innovative approaches should be adopted for professional and managerial staff training in order to cope with changing needs and challenges. Flexibility and adaptability regarding emerging water pollution issues should be developed. Training activities should be undertaken periodically at all levels within the organizations responsible for water-quality management and innovative teaching techniques adopted for specific aspects of water-quality monitoring and control, including development of training skills, in-service training, problem-solving workshops and refresher training courses.

**18.45.** Suitable approaches include the strengthening and improvement of the human resource capabilities of local Governments in managing water protection, treatment and use, particularly in urban areas, and the establishment of national and regional technical and engineering courses on the subjects of water-quality protection and control at existing schools and education/training courses on water resources protection and conservation for laboratory and field technicians, women and other water-user groups.

*D) Capacity-building*

**18.46.** The effective protection of water resources and ecosystems from pollution requires considerable upgrading of most countries' present capacities. Water-quality management programmes require a certain minimum infrastructure and staff to identify and implement technical solutions and to enforce regulatory action. One of the key problems today and for the future is the sustained operation and maintenance of these facilities. In order not to allow resources gained from previous investments to deteriorate further, immediate action is required in a number of areas.

## **D. Drinking-Water Supply and Sanitation**

### **Basis for action**

**18.47.** Safe water-supplies and environmental sanitation are vital for protecting the environment, improving health and alleviating poverty. Safe water is also crucial to many traditional and cultural activities. An estimated 80 per cent of all diseases and over one third of deaths in developing countries are caused by the consumption of contaminated water, and on average as much as one tenth of each person's productive time is sacrificed to water-related diseases. Concerted efforts during the 1980s brought water and sanitation services to hundreds of millions of the world's poorest people. The most outstanding of these efforts was the launching in 1981 of the International Drinking Water Supply and Sanitation Decade, which resulted from the Mar del Plata Action Plan adopted by the United Nations Water Conference in 1977. The commonly agreed premise was that "all peoples, whatever their stage of development and their social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs". [2] The target of the Decade was to provide safe drinking-water and sanitation to underserved urban and rural areas by 1990, but even the unprecedented progress achieved during the Decade was not enough. One in three people in the developing world still lacks these two most basic requirements for health and dignity. It is also recognized that human excreta and sewage are important causes of the deterioration of water-quality in developing countries, and the introduction of available technologies, including appropriate technologies, and the construction of sewage treatment facilities could bring significant improvement.



## **Objectives**

**18.48.** The New Delhi Statement (adopted at the Global Consultation on Safe Water and Sanitation for the 1990s, which was held in New Delhi from 10 to 14 September 1990) formalized the need to provide, on a sustainable basis, access to safe water in sufficient quantities and proper sanitation for all, emphasizing the "some for all rather than more for some" approach. Four guiding principles provide for the programme objectives:

- (a) Protection of the environment and safeguarding of health through the integrated management of water resources and liquid and solid wastes;
- (b) Institutional reforms promoting an integrated approach and including changes in procedures, attitudes and behaviour, and the full participation of women at all levels in sector institutions;
- (c) Community management of services, backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes;
- (d) Sound financial practices, achieved through better management of existing assets, and widespread use of appropriate technologies.

**18.49.** Past experience has shown that specific targets should be set by each individual country. At the World Summit for Children, in September 1990, heads of State or Government called for both universal access to water-supply and sanitation and the eradication of guinea worm disease by 1995. Even for the more realistic target of achieving full coverage in water-supply by 2025, it is estimated that annual investments must reach double the current levels. One realistic strategy to meet present and future needs, therefore, is to develop lower-cost but adequate services that can be implemented and sustained at the community level.

## **Activities**

**18.50.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including the United Nations and other relevant organizations as appropriate, could implement the following activities:

### *A) Environment and health:*

- i. Establishment of protected areas for sources of drinking-water supply;
- ii. Sanitary disposal of excreta and sewage, using appropriate systems to treat waste waters in urban and rural areas;
- iii. Expansion of urban and rural water-supply and development and expansion of rainwater catchment systems, particularly on small islands, in addition to the reticulated water-supply system;
- iv. Building and expansion, where appropriate, of sewage treatment facilities and drainage systems;
- v. Treatment and safe reuse of domestic and industrial waste waters in urban and rural areas;
- vi. Control of water-associated diseases;

### *B) People and institutions:*

- i. Strengthening of the functioning of Governments in water resources management and, at the same time, giving of full recognition to the role of local authorities;

- ii. Encouragement of water development and management based on a participatory approach, involving users, planners and policy makers at all levels;
- iii. Application of the principle that decisions are to be taken at the lowest appropriate level, with public consultation and involvement of users in the planning and implementation of water projects;
- iv. Human resource development at all levels, including special programmes for women;
- v. Broad-based education programmes, with particular emphasis on hygiene, local management and risk reduction;
- vi. International support mechanisms for programme funding, implementation and follow-up.

*C) National and community management:*

- i. Support and assistance to communities in managing their own systems on a sustainable basis;
- ii. Encouragement of the local population, especially women, youth, indigenous people and local communities, in water management;
- iii. Linkages between national water plans and community management of local waters;
- iv. Integration of community management of water within the context of overall planning;
- v. Promotion of primary health and environmental care at the local level, including training for local communities in appropriate water management techniques and primary health care;
- vi. Assistance to service agencies in becoming more cost-effective and responsive to consumer needs;
- vii. Providing of more attention to underserved rural and low-income periurban areas;
- viii. Rehabilitation of defective systems, reduction of wastage and safe reuse of water and waste water;
- ix. Programmes for rational water use and ensured operation and maintenance;
- x. Research and development of appropriate technical solutions;
- xi. Substantially increase urban treatment capacity commensurate with increasing loads;

*D) Awareness creation and public information/participation:*

- i. Strengthening of sector monitoring and information management at subnational and national levels;
- ii. Annual processing, analysis and publication of monitoring results at national and local levels as a sector management and advocacy/awareness creation tool;
- iii. Use of limited sector indicators at regional and global levels to promote the sector and raise funds;

- iv. Improvement of sector coordination, planning and implementation, with the assistance of improved monitoring and information management, to increase the sector's absorptive capacity, particularly in community-based self-help projects.

### **Means of implementation**

#### *A) Financing and cost evaluation*

**18.51.** The Conference secretariat has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about US\$20 billion, including about US\$7.4 billion from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

#### *B) Scientific and technological means*

**18.52.** To ensure the feasibility, acceptability and sustainability of planned water-supply services, adopted technologies should be responsive to the needs and constraints imposed by the conditions of the community concerned. Thus, design criteria will involve technical, health, social, economic, provincial, institutional and environmental factors that determine the characteristics, magnitude and cost of the planned system. Relevant international support programmes should address the developing countries concerning, inter alia:

- (a) Pursuit of low-cost scientific and technological means, as far as practicable;
- (b) Utilization of traditional and indigenous practices, as far as practicable, to maximize and sustain local involvement;
- (c) Assistance to country-level technical/scientific institutes to facilitate curricula development to support fields critical to the water and sanitation sector.

#### *C) Human resource development*

**18.53.** To effectively plan and manage water-supply and sanitation at the national, provincial, district and community level, and to utilize funds most effectively, trained professional and technical staff must be developed within each country in sufficient numbers. To do this, countries must establish manpower development plans, taking into consideration present requirements and planned developments. Subsequently, the development and performance of country-level training institutions should be enhanced so that they can play a pivotal role in capacity-building. It is also important that countries provide adequate training for women in the sustainable maintenance of equipment, water resources management and environmental sanitation.

#### *D) Capacity-building*

**18.54.** The implementation of water-supply and sanitation programmes is a national responsibility. To varying degrees, responsibility for the implementation of projects and the operating of systems should be delegated to all administrative levels down to the community and individual served. This also means that national authorities, together with the agencies and bodies of the United Nations system and other external support agencies providing support to national programmes, should develop mechanisms and procedures to collaborate at all levels. This is particularly important if full advantage is to be taken of community-based approaches and self-reliance as tools for sustainability. This will entail a high degree of community participation, involving women, in the conception, planning, decision-making, implementation and evaluation connected with projects for domestic water-supply and sanitation.

**18.55.** Overall national capacity-building at all administrative levels, involving institutional development, coordination, human resources, community participation, health and hygiene education and literacy, has to be developed according to its fundamental connection both with any efforts to improve health and socio-economic development through water-supply and sanitation and with their impact on the human environment. Capacity-building should therefore be one of the underlying keys in implementation strategies. Institutional capacity-building should be considered to have an importance equal to that of the sector supplies and equipment component so that funds can be directed to both. This can be undertaken at the planning or programme/project formulation stage, accompanied by a clear definition of objectives and targets. In this regard, technical cooperation among developing countries owing to their available wealth of information and experience and the need to avoid "reinventing the wheel", is crucial. Such a course has proved cost-effective in many country projects already.

## **E. Water and Sustainable Urban Development**

### **Basis for action**

**18.56.** Early in the next century, more than half of the world's population will be living in urban areas. By the year 2025, that proportion will have risen to 60 per cent, comprising some 5 billion people. Rapid urban population growth and industrialization are putting severe strains on the water resources and environmental protection capabilities of many cities. Special attention needs to be given to the growing effects of urbanization on water demands and usage and to the critical role played by local and municipal authorities in managing the supply, use and overall treatment of water, particularly in developing countries for which special support is needed. Scarcity of freshwater resources and the escalating costs of developing new resources have a considerable impact on national industrial, agricultural and human settlement development and economic growth. Better management of urban water resources, including the elimination of unsustainable consumption patterns, can make a substantial contribution to the alleviation of poverty and improvement of the health and quality of life of the urban and rural poor. A high proportion of large urban agglomerations are located around estuaries and in coastal zones. Such an arrangement leads to pollution from municipal and industrial discharges combined with overexploitation of available water resources and threatens the marine environment and the supply of freshwater resources.

### **Objectives**

**18.57.** The development objective of this programme is to support local and central Governments' efforts and capacities to sustain national development and productivity through environmentally sound management of water resources for urban use. Supporting this objective is the identification and implementation of strategies and actions to ensure the continued supply of affordable water for present and future needs and to reverse current trends of resource degradation and depletion.

**18.58.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including the United Nations and other relevant organizations as appropriate, could set the following targets:

(a) By the year 2000, to have ensured that all urban residents have access to at least 40 litres per capita per day of safe water and that 75 per cent of the urban population are provided with on-site or community facilities for sanitation;

(b) By the year 2000, to have established and applied quantitative and qualitative discharge standards for municipal and industrial effluents;

(c) By the year 2000, to have ensured that 75 per cent of solid waste generated in urban areas are collected and recycled or disposed of in an environmentally safe way.

## **Activities**

**18.59.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including the United Nations and other relevant organizations as appropriate, could implement the following activities:

*A) Protection of water resources from depletion, pollution and degradation:*

- i. Introduction of sanitary waste disposal facilities based on environmentally sound low-cost and upgradable technologies;
- ii. Implementation of urban storm-water run-off and drainage programmes;
- iii. Promotion of recycling and reuse of waste water and solid wastes;
- iv. Control of industrial pollution sources to protect water resources;
- v. Protection of watersheds with respect to depletion and degradation of their forest cover and from harmful upstream activities;
- vi. Promotion of research into the contribution of forests to sustainable water resources development;
- vii. Encouragement of the best management practices for the use of agrochemicals with a view to minimizing their impact on water resources.

*B) Efficient and equitable allocation of water resources:*

- i. Reconciliation of city development planning with the availability and sustainability of water resources;
- ii. Satisfaction of the basic water needs of the urban population;
- iii. Introduction of water tariffs, taking into account the circumstances in each country and where affordable, that reflect the marginal and opportunity cost of water, especially for productive activities.

*C) Institutional/legal/management reforms:*

- i. Adoption of a city-wide approach to the management of water resources;
- ii. Promotion at the national and local level of the elaboration of land-use plans that give due consideration to water resources development;
- iii. Utilization of the skills and potential of non-governmental organizations, the private sector and local people, taking into account the public's and strategic interests in water resources.

*D) Promotion of public participation:*

- i. Initiation of public-awareness campaigns to encourage the public's move towards rational water utilization;
- ii. Sensitization of the public to the issue of protecting water quality within the urban environment;
- iii. Promotion of public participation in the collection, recycling and elimination of wastes.

*E) Support to local capacity-building:*

- i. Development of legislation and policies to promote investments in urban water and waste management, reflecting the major contribution of cities to national economic development;

- ii. Provision of seed money and technical support to the local handling of materials supply and services;
- iii. Encouragement, to the extent possible, of autonomy and financial viability of city water, solid waste and sewerage utilities;
- iv. Creation and maintenance of a cadre of professionals and semi-professionals, for water, waste-water and solid waste management.

*F) Provision of enhanced access to sanitary services:*

- i. Implementation of water, sanitation and waste management programmes focused on the urban poor;
- ii. Making available of low-cost water-supply and sanitation technology choices;
- iii. Basing of choice of technology and service levels on user preferences and willingness to pay;
- iv. Mobilization and facilitation of the active involvement of women in water management teams;
- v. Encouragement and equipment of local water associations and water committees to manage community water-supply systems and communal latrines, with technical back-up available when required;
- vi. Consideration of the merits and practicality of rehabilitating existing malfunctioning systems and of correcting operation and maintenance inadequacies.

**Means of implementation**

*A) Financing and cost evaluation*

**18.60.** The Conference secretariat has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about US\$20 billion, including about US\$4.5 billion from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

*B) Scientific and technological means*

**18.61.** The 1980s saw considerable progress in the development and application of low-cost water-supply and sanitation technologies. The programme envisages continuation of this work, with particular emphasis on development of appropriate sanitation and waste disposal technologies for low-income high-density urban settlements. There should also be international information exchange, to ensure a widespread recognition among sector professionals of the availability and benefits of appropriate low-cost technologies. The public-awareness campaigns will also include components to overcome user resistance to second-class services by emphasizing the benefits of reliability and sustainability.

*C) Human resource development*

**18.62.** Implicit in virtually all elements of this programme is the need for progressive enhancement of the training and career development of personnel at all levels in sector institutions. Specific programme activities will involve the training and retention of staff with skills in community involvement, low-cost technology, financial management, and integrated planning of urban water resources management.

Special provision should be made for mobilizing and facilitating the active participation of women, youth, indigenous people and local communities in water management teams and for supporting the development of water associations and water committees, with appropriate training of such personnel as treasurers, secretaries and caretakers. Special education and training programmes for women should be launched with regard to the protection of water resources and water-quality within urban areas.

#### *D) Capacity-building*

**18.63.** In combination with human resource development, strengthening of institutional, legislative and management structures are key elements of the programme. A prerequisite for progress in enhancing access to water and sanitation services is the establishment of an institutional framework that ensures that the real needs and potential contributions of currently unserved populations are reflected in urban development planning. The multisectoral approach, which is a vital part of urban water resources management, requires institutional linkages at the national and city levels, and the programme includes proposals for establishing intersectoral planning groups. Proposals for greater pollution control and prevention depend for their success on the right combination of economic and regulatory mechanisms, backed by adequate monitoring and surveillance and supported by enhanced capacity to address environmental issues on the part of local Governments.

**18.64.** Establishment of appropriate design standards, water-quality objectives and discharge consents is therefore among the proposed activities. The programme also includes support for strengthening the capability of water and sewerage agencies and for developing their autonomy and financial viability. Operation and maintenance of existing water and sanitation facilities have been recognized as entailing a serious shortcoming in many countries. Technical and financial support are needed to help countries correct present inadequacies and build up the capacity to operate and maintain rehabilitated and new systems.

### **F. Water for Sustainable Food Production and Rural Development**

#### **Basis for action**

**18.65.** Sustainability of food production increasingly depends on sound and efficient water use and conservation practices consisting primarily of irrigation development and management, including water management with respect to rain-fed areas, livestock water-supply, inland fisheries and agro-forestry. Achieving food security is a high priority in many countries, and agriculture must not only provide food for rising populations, but also save water for other uses. The challenge is to develop and apply water-saving technology and management methods and, through capacity-building, enable communities to introduce institutions and incentives for the rural population to adopt new approaches, for both rain-fed and irrigated agriculture. The rural population must also have better access to a potable water-supply and to sanitation services. It is an immense task but not an impossible one, provided appropriate policies and programmes are adopted at all levels – local, national and international. While significant expansion of the area under rain-fed agriculture has been achieved during the past decade, the productivity response and sustainability of irrigation systems have been constrained by problems of waterlogging and salinization. Financial and market constraints are also a common problem. Soil erosion, mismanagement and overexploitation of natural resources and acute competition for water have all influenced the extent of poverty, hunger and famine in the developing countries. Soil erosion caused by overgrazing of livestock is also often responsible for the siltation of lakes. Most often, the development of irrigation schemes is supported neither by environmental impact assessments identifying hydrologic consequences within watersheds of interbasin transfers, nor by the assessment of social impacts on peoples in river valleys.

**18.66.** The non-availability of water-supplies of suitable quality is a significant limiting factor to livestock production in many countries, and improper disposal of animal wastes can in certain circumstances result in pollution of water-supplies for both humans and animals.

The drinking-water requirements of livestock vary according to species and the environment in which they are kept. It is estimated that the current global livestock drinking-water requirement is about 60 billion litres per day and based on livestock population growth estimates, this daily requirement is predicted to increase by 0.4 billion litres per annum in the foreseeable future.

**18.67.** Freshwater fisheries in lakes and streams are an important source of food and protein. Fisheries of inland waters should be so managed as to maximize the yield of aquatic food organisms in an environmentally sound manner. This requires the conservation of water-quality and quantity, as well as of the functional morphology of the aquatic environment. On the other hand, fishing and aquaculture may themselves damage the aquatic ecosystem; hence their development should conform to guidelines for impact limitation. Present levels of production from inland fisheries, from both fresh and brackish water, are about 7 million tons per year and could increase to 16 million tons per year by the year 2000; however, any increase in environmental stress could jeopardize this rise.

### **Objectives**

**18.68.** The key strategic principles for holistic and integrated environmentally sound management of water resources in the rural context may be set forth as follows:

- (a) Water should be regarded as a finite resource having an economic value with significant social and economic implications reflecting the importance of meeting basic needs;
- (b) Local communities must participate in all phases of water management, ensuring the full involvement of women in view of their crucial role in the practical day-to-day supply, management and use of water;
- (c) Water resource management must be developed within a comprehensive set of policies for (i) human health; (ii) food production, preservation and distribution; (iii) disaster mitigation plans; (iv) environmental protection and conservation of the natural resource base;
- (d) It is necessary to recognize and actively support the role of rural populations, with particular emphasis on women.

**18.69.** An International Action Programme on Water and Sustainable Agricultural Development (IAP-WASAD) has been initiated by FAO in cooperation with other international organizations. The main objective of the Action Programme is to assist developing countries in planning, developing and managing water resources on an integrated basis to meet present and future needs for agricultural production, taking into account environmental considerations.

**18.70.** The Action Programme has developed a framework for sustainable water use in the agricultural sector and identified priority areas for action at national, regional and global levels. Quantitative targets for new irrigation development, improvement of existing irrigation schemes and reclamation of waterlogged and salinized lands through drainage for 130 developing countries are estimated on the basis of food requirements, agro-climatic zones and availability of water and land.

**18.71.** FAO global projections for irrigation, drainage and small-scale water programmes by the year 2000 for 130 developing countries are as follows: (a) 15.2 million hectares of new irrigation development; (b) 12 million hectares of improvement/modernization of existing schemes; (c) 7 million hectares installed with drainage and water control facilities; and (d) 10 million hectares of small-scale water programmes and conservation.

**18.72.** The development of new irrigation areas at the above-mentioned level may give rise to environmental concerns in so far as it implies the destruction of wetlands, water pollution, increased sedimentation and a reduction in biodiversity. Therefore, new irrigation schemes should be accompanied by an environmental impact assessment, depending upon the scale of the scheme, in case significant negative environmental impacts are expected.



When considering proposals for new irrigation schemes, consideration should also be given to a more rational exploitation, and an increase in the efficiency or productivity, of any existing schemes capable of serving the same localities. Technologies for new irrigation schemes should be thoroughly evaluated, including their potential conflicts with other land uses. The active involvement of water-users groups is a supporting objective.

**18.73.** It should be ensured that rural communities of all countries, according to their capacities and available resources and taking advantage of international cooperation as appropriate, will have access to safe water in sufficient quantities and adequate sanitation to meet their health needs and maintain the essential qualities of their local environments.

**18.74.** The objectives with regard to water management for inland fisheries and aquaculture include conservation of water-quality and water-quantity requirements for optimum production and prevention of water pollution by aquacultural activities. The Action Programme seeks to assist member countries in managing the fisheries of inland waters through the promotion of sustainable management of capture fisheries as well as the development of environmentally sound approaches to intensification of aquaculture.

**18.75.** The objectives with regard to water management for livestock supply are twofold: provision of adequate amounts of drinking-water and safeguarding of drinking-water quality in accordance with the specific needs of different animal species. This entails maximum salinity tolerance levels and the absence of pathogenic organisms. No global targets can be set owing to large regional and intra-country variations.

#### **Activities**

**18.76.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including the United Nations and other relevant organizations as appropriate, could implement the following activities:

##### *A) Water-supply and sanitation for the unserved rural poor:*

- i. Establish national policies and budget priorities with regard to increasing service coverage;
- ii. Promote appropriate technologies;
- iii. Introduce suitable cost-recovery mechanisms, taking into account efficiency and equity through demand management mechanisms;
- iv. Promote community ownership and rights to water-supply and sanitation facilities;
- v. Establish monitoring and evaluation systems;
- vi. Strengthen the rural water-supply and sanitation sector with emphasis on institutional development, efficient management and an appropriate framework for financing of services;
- vii. Increase hygiene education and eliminate disease transmission foci;
- viii. Adopt appropriate technologies for water treatment;
- ix. Adopt wide-scale environmental management measures to control disease vectors.

##### *B) Water-use efficiency:*

- i. Increase of efficiency and productivity in agricultural water use for better utilization of limited water resources;
- ii. Strengthen water and soil management research under irrigation and rain-fed conditions;

- iii. Monitor and evaluate irrigation project performance to ensure, inter alia, the optimal utilization and proper maintenance of the project;
- iv. Support water-users groups with a view to improving management performance at the local level;
- v. Support the appropriate use of relatively brackish water for irrigation.

*C) Waterlogging, salinity control and drainage:*

- i. Introduce surface drainage in rain-fed agriculture to prevent temporary waterlogging and flooding of lowlands;
- ii. Introduce artificial drainage in irrigated and rain-fed agriculture;
- iii. Encourage conjunctive use of surface and groundwaters, including monitoring and water-balance studies;
- iv. Practise drainage in irrigated areas of arid and semi-arid regions.

*D) Water-quality management:*

- i. Establish and operate cost-effective water-quality monitoring systems for agricultural water uses;
- ii. Prevent adverse effects of agricultural activities on water-quality for other social and economic activities and on wetlands, inter alia, through optimal use of on-farm input and the minimization of the use of external input in agricultural activities;
- iii. Establish biological, physical and chemical water-quality criteria for agricultural water-users and for marine and riverine ecosystems;
- iv. Minimize soil run-off and sedimentation;
- v. Dispose properly of sewage from human settlements and of manure produced by intensive livestock breeding;
- vi. Minimize adverse effects from agricultural chemicals by use of integrated pest management;
- vii. Educate communities about the pollution-related impacts of the use of fertilizers and chemicals on water-quality, food safety and human health.

*E) Water resources development programmes:*

- i. Develop small-scale irrigation and water-supply for humans and livestock and for water and soil conservation;
- ii. Formulate large-scale and long-term irrigation development programmes, taking into account their effects on the local level, the economy and the environment;
- iii. Promote local initiatives for the integrated development and management of water resources;
- iv. Provide adequate technical advice and support and enhancement of institutional collaboration at the local community level;
- v. Promote a farming approach for land and water management that takes account of the level of education, the capacity to mobilize local communities and the ecosystem requirements of arid and semi-arid regions;

- vi. Plan and develop multi-purpose hydroelectric power schemes, making sure that environmental concerns are duly taken into account.

*F) Scarce water resources management:*

- i. Develop long-term strategies and practical implementation programmes for agricultural water use under scarcity conditions with competing demands for water;
- ii. Recognize water as a social, economic and strategic good in irrigation planning and management;
- iii. Formulate specialized programmes focused on drought preparedness, with emphasis on food scarcity and environmental safeguards;
- iv. Promote and enhance waste-water reuse in agriculture.

*G) Water-supply for livestock:*

- i. Improve quality of water available to livestock, taking into account their tolerance limits;
- ii. Increase the quantity of water sources available to livestock, in particular those in extensive grazing systems, in order to both reduce the distance needed to travel for water and to prevent overgrazing around water sources;
- iii. Prevent contamination of water sources with animal excrement in order to prevent the spread of diseases, in particular zoonosis;
- iv. Encourage multiple use of water-supplies through promotion of integrated agro-livestock-fishery systems;
- v. Encourage water spreading schemes for increasing water retention of extensive grasslands to stimulate forage production and prevent run-off.

*H) Inland fisheries:*

- i. Develop the sustainable management of fisheries as part of national water resources planning;
- ii. Study specific aspects of the hydrobiology and environmental requirements of key inland fish species in relation to varying water regimes;
- iii. Prevent or mitigate modification of aquatic environments by other users or rehabilitate environments subjected to such modification on behalf of the sustainable use and conservation of biological diversity of living aquatic resources;
- iv. Develop and disseminate environmentally sound water resources development and management methodologies for the intensification of fish yield from inland waters;
- v. Establish and maintain adequate systems for the collection and interpretation of data on water quality and quantity and channel morphology related to the state and management of living aquatic resources, including fisheries.

*I) Aquaculture development:*

- i. Develop environmentally sound aquaculture technologies that are compatible with local, regional and national water resources management plans and take into consideration social factors;
- ii. Introduce appropriate aquaculture techniques and related water development and management practices in countries not yet experienced in aquaculture;

- iii. Assess environmental impacts of aquaculture with specific reference to commercialized culture units and potential water pollution from processing centres;
- iv. Evaluate economic feasibility of aquaculture in relation to alternative use of water, taking into consideration the use of marginal-quality water and investment and operational requirements.

### **Means of implementation**

#### *A) Financing and cost evaluation*

**18.77.** The Conference secretariat has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about US\$13.2 billion, including about US\$4.5 billion from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

#### *B) Scientific and technological means*

**18.78.** There is an urgent need for countries to monitor water resources and water-quality, water and land use and crop production; compile inventories of type and extent of agricultural water development and of present and future contributions to sustainable agricultural development; evaluate the potential for fisheries and aquaculture development; and improve the availability and dissemination of data to planners, technicians, farmers and fishermen. Priority requirements for research are as follows:

- (a) Identification of critical areas for water-related adaptive research;
- (b) Strengthening of the adaptive research capacities of institutions in developing countries;
- (c) Enhancement of translation of water-related farming and fishing systems research results into practical and accessible technologies and provision of the support needed for their rapid adoption at the field level.

**18.79.** Transfer of technology, both horizontal and vertical, needs to be strengthened. Mechanisms to provide credit, input supplies, markets, appropriate pricing and transportation must be developed jointly by countries and external support agencies. Integrated rural water-supply infrastructure, including facilities for water-related education and training and support services for agriculture, should be expanded for multiple uses and should assist in developing the rural economy.

#### *C) Human resource development*

**18.80.** Education and training of human resources should be actively pursued at the national level through: (a) assessment of current and long-term human resources management and training needs; (b) establishment of a national policy for human resources development; and (c) initiation and implementation of training programmes for staff at all levels as well as for farmers. The necessary actions are as follows:

- (a) Assess training needs for agricultural water management;
- (b) Increase formal and informal training activities;
- (c) Develop practical training courses for improving the ability of extension services to disseminate technologies and strengthen farmers' capabilities, with special reference to small-scale producers;
- (d) Train staff at all levels, including farmers, fishermen and members of local communities, with particular reference to women;

(e) Increase the opportunities for career development to enhance the capabilities of administrators and officers at all levels involved in land- and water-management programmes.

#### *D) Capacity-building*

**18.81.** The importance of a functional and coherent institutional framework at the national level to promote water and sustainable agricultural development has generally been fully recognized at present. In addition, an adequate legal framework of rules and regulations should be in place to facilitate actions on agricultural water-use, drainage, water-quality management, small-scale water programmes and the functioning of water-users' and fishermen's associations. Legislation specific to the needs of the agricultural water sector should be consistent with, and stem from, general legislation for the management of water resources. Actions should be pursued in the following areas:

(a) Improvement of water-use policies related to agriculture, fisheries and rural development and of legal frameworks for implementing such policies;

(b) Review, strengthening and restructuring, if required, of existing institutions in order to enhance their capacities in water-related activities, while recognizing the need to manage water resources at the lowest appropriate level;

(c) Review and strengthening, where necessary, of organizational structure, functional relationships and linkages among ministries and departments within a given ministry;

(d) Provision of specific measures that require support for institutional strengthening, inter alia, through long-term programme budgeting, staff training, incentives, mobility, equipment and coordination mechanisms;

(e) Enhancement of involvement of the private sector, where appropriate, in human resource development and provision of infrastructure;

(f) Transfer of existing and new water-use technologies by creating mechanisms for cooperation and information exchange among national and regional institutions.

### **G. Impacts of Climate Change on Water Resources**

#### **Basis for action**

**18.82.** There is uncertainty with respect to the prediction of climate change at the global level. Although the uncertainties increase greatly at the regional, national and local levels, it is at the national level that the most important decisions would need to be made. Higher temperatures and decreased precipitation would lead to decreased water-supplies and increased water demands; they might cause deterioration in the quality of freshwater bodies, putting strains on the already fragile balance between supply and demand in many countries. Even where precipitation might increase, there is no guarantee that it would occur at the time of year when it could be used; in addition, there might be a likelihood of increased flooding. Any rise in sealevel will often cause the intrusion of salt water into estuaries, small islands and coastal aquifers and the flooding of low-lying coastal areas; this puts low-lying countries at great risk.

**18.83.** The Ministerial Declaration of the Second World Climate Conference states that "the potential impact of such climate change could pose an environmental threat of an up to now unknown magnitude ... and could even threaten survival in some small island States and in low-lying coastal, arid and semi-arid areas". [3] The Conference recognized that among the most important impacts of climate change were its effects on the hydrologic cycle and on water management systems and, through these, on socio-economic systems. Increase in incidence of extremes, such as floods and droughts, would cause increased frequency and severity of disasters. The Conference therefore called for a strengthening of the necessary research and monitoring programmes and the exchange of relevant data and information, these actions to be undertaken at the national, regional and international levels.

## **Objectives**

**18.84.** The very nature of this topic calls first and foremost for more information about and greater understanding of the threat being faced. This topic may be translated into the following objectives, consistent with the United Nations Framework Convention on Climate Change:

- (a) To understand and quantify the threat of the impact of climate change on freshwater resources;
- (b) To facilitate the implementation of effective national countermeasures, as and when the threatening impact is seen as sufficiently confirmed to justify such action;
- (c) To study the potential impacts of climate change on areas prone to droughts and floods.

## **Activities**

**18.85.** All States, according to their capacity and available resources, and through bilateral or multilateral cooperation, including the United Nations and other relevant organizations as appropriate, could implement the following activities:

- (a) Monitor the hydrologic regime, including soil moisture, groundwater balance, penetration and transpiration of water-quality, and related climate factors, especially in the regions and countries most likely to suffer from the adverse effects of climate change and where the localities vulnerable to these effects should therefore be defined;
- (b) Develop and apply techniques and methodologies for assessing the potential adverse effects of climate change, through changes in temperature, precipitation and sealevel rise, on freshwater resources and the flood risk;
- (c) Initiate case-studies to establish whether there are linkages between climate changes and the current occurrences of droughts and floods in certain regions;
- (d) Assess the resulting social, economic and environmental impacts;
- (e) Develop and initiate response strategies to counter the adverse effects that are identified, including changing groundwater levels and to mitigate saline intrusion into aquifers;
- (f) Develop agricultural activities based on brackish-water use;
- (g) Contribute to the research activities under way within the framework of current international programmes.

## **Means of implementation**

### *A) Financing and cost evaluation*

**18.86.** The Conference secretariat has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about US\$100 million, including about US\$40 million from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

### *B) Scientific and technological means*

**18.87.** Monitoring of climate change and its impact on freshwater bodies must be closely integrated with national and international programmes for monitoring the environment, in particular those concerned with the atmosphere, as discussed under other sections of Agenda 21, and the hydrosphere, as discussed under programme area B above. The analysis of data for indication of climate change as a basis for developing remedial measures is a complex task.

Extensive research is necessary in this area and due account has to be taken of the work of the Intergovernmental Panel on Climate Change (IPCC), the World Climate Programme, the International Geosphere-Biosphere Programme (IGBP) and other relevant international programmes.

**18.88.** The development and implementation of response strategies requires innovative use of technological means and engineering solutions, including the installation of flood and drought warning systems and the construction of new water resource development projects such as dams, aqueducts, well fields, waste-water treatment plants, desalination works, levees, banks and drainage channels. There is also a need for coordinated research networks such as the International Geosphere-Biosphere Programme/Global Change System for Analysis, Research and Training (IGBP/START) network.

*C) Human resource development*

**18.89.** The developmental work and innovation depend for their success on good academic training and staff motivation. International projects can help by enumerating alternatives, but each country needs to establish and implement the necessary policies and to develop its own expertise in the scientific and engineering challenges to be faced, as well as a body of dedicated individuals who are able to interpret the complex issues concerned for those required to make policy decisions. Such specialized personnel need to be trained, hired and retained in service, so that they may serve their countries in these tasks.

*D) Capacity-building*

**18.90.** There is a need, however, to build a capacity at the national level to develop, review and implement response strategies. Construction of major engineering works and installation of forecasting systems will require significant strengthening of the agencies responsible, whether in the public or the private sector. Most critical is the requirement for a socio-economic mechanism that can review predictions of the impact of climate change and possible response strategies and make the necessary judgements and decisions.

### **Notes**

1. Report of the United Nations Water Conference, Mar del Plata, 14-25 March 1977 (United Nations publication, Sales No. E.77.II.A.12), part one, chap. I, sect. C, para. 35.
2. Ibid., part one, chap. I, resolution II.
3. A/45/696/Add.1, annex III, preamble, para. 2.  
<http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter18.htm>

## ANNEXE 3



# JOHANNESBURG SUMMIT 2002

WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT | JOHANNESBURG, SOUTH AFRICA | 26 AUGUST–4 SEPTEMBER 2002

## KEY OUTCOMES OF THE SUMMIT

- The Summit reaffirmed sustainable development as a central element of the international agenda and gave new impetus to global action to fight poverty and protect the environment.
- The understanding of sustainable development was broadened and strengthened as a result of the Summit, particularly the important linkages between poverty, the environment and the use of natural resources.
- Governments agreed to and reaffirmed a wide range of concrete commitments and targets for action to achieve more effective implementation of sustainable development objectives.
- Energy and sanitation issues were critical elements of the negotiations and outcomes to a greater degree than in previous international meetings on sustainable development.
- Support for the establishment of a world solidarity fund for the eradication of poverty was a positive step forward.
- Africa and NEPAD were identified for special attention and support by the international community to better focus efforts to address the development needs of Africa.
- The views of civil society were given prominence at the Summit in recognition of the key role of civil society in implementing the outcomes and in promoting partnership initiatives. Over 8,000 civil society participants attended the Summit, reinforced by parallel events which included major groups, such as, NGOs, women, indigenous people, youth, farmers, trade unions, business leaders, the scientific and technological community and local authorities as well as Chief Justices from various countries.
- The concept of partnerships between governments, business and civil society was given a large boost by the Summit and the Plan of Implementation. Over 220 partnerships (with US\$235 million in resources) were identified in advance of the Summit and around 60 partnerships were announced during the Summit by a variety of countries.



## **KEY COMMITMENTS, TARGETS AND TIMETABLES FROM THE JOHANNESBURG PLAN OF IMPLEMENTATION<sup>1</sup>**

### **POVERTY ERADICATION**

Halve, by the year 2015, the proportion of the world's people whose income is less than US\$1 a day and the proportion of people who suffer from hunger (*reaffirmation of Millennium Development Goals*).

By 2020, achieve a significant improvement in the lives of at least 100 million slum dwellers, as proposed in the "Cities without slums" initiative (*reaffirmation of Millennium Development Goal*).

Establish a world solidarity fund to eradicate poverty and to promote social and human development in the developing countries.

### **WATER AND SANITATION**

Halve, by the year 2015, the proportion of people without access to safe drinking water (*reaffirmation of Millennium Development Goal*).

Halve, by the year 2015, the proportion of people who do not have access to basic sanitation.

### **SUSTAINABLE PRODUCTION AND CONSUMPTION**

Encourage and promote the development of a 10-year framework of programmes to accelerate the shift towards sustainable consumption and production.

### **ENERGY**

#### *Renewable energy*

Diversify energy supply and substantially increase the global share of renewable energy sources in order to increase its contribution to total energy supply.

#### *Access to Energy*

Improve access to reliable, affordable, economically viable, socially acceptable and environmentally sound energy services and resources, sufficient to achieve the Millennium Development Goals, including the goal of halving the proportion of people in poverty by 2015.

#### *Energy Markets*

Remove market distortions including the restructuring of taxes and the phasing out of harmful subsidies.

Support efforts to improve the functioning, transparency and information about energy markets with respect to both supply and demand, with the aim of achieving greater stability and to ensure consumer access to energy services.

#### *Energy efficiency*

Establish domestic programmes for energy efficiency with the support of the international community. Accelerate the development and dissemination of energy efficiency and energy conservation technologies, including the promotion of research and development.

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<sup>1</sup> Note: this list is not exhaustive but provides information on the key commitments set out in the Johannesburg Plan of Implementation. For the full text, including the exact terms in which these commitments were made, visit the official website: [www.johannesburgsummit.org](http://www.johannesburgsummit.org)

## **CHEMICALS**

Aim, by 2020, to use and produce chemicals in ways that do not lead to significant adverse effects on human health and the environment.

Renew the commitment to the sound management of chemicals and of hazardous wastes throughout their life cycle.

Promote the ratification and implementation of relevant international instruments on chemicals and hazardous waste, including the Rotterdam Convention so that it can enter into force by 2003 and the Stockholm Convention so that it can enter into force by 2004.

Further develop a strategic approach to international chemicals management, based on the Bahia Declaration and Priorities for Action beyond 2000, by 2005.

Encourage countries to implement the new globally harmonized system for the classification and labeling of chemicals as soon as possible, with a view to having the system fully operational by 2008.

## **MANAGEMENT OF THE NATURAL RESOURCE BASE**

### *Water*

Develop integrated water resources management and water efficiency plans by 2005.

### *Oceans and fisheries*

Encourage the application by 2010 of the ecosystem approach for the sustainable development of the oceans.

On an urgent basis and where possible by 2015, maintain or restore depleted fish stocks to levels that can produce the maximum sustainable yield.

Put into effect the FAO international plans of action by the agreed dates:

- for the management of fishing capacity by 2005; and
- to prevent, deter and eliminate illegal, unreported and unregulated fishing by 2004.

Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 .

Establish by 2004 a regular process under the United Nations for global reporting and assessment of the state of the marine environment.

Eliminate subsidies that contribute to illegal, unreported and unregulated fishing and to over-capacity.

### *Atmosphere*

Facilitate implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer by ensuring adequate replenishment of its fund by 2003/2005.

Improve access by developing countries to alternatives to ozone-depleting substances by 2010, and assist them in complying with the phase-out schedule under the Montreal Protocol.

### *Biodiversity*

Achieve by 2010 a significant reduction in the current rate of loss of biological diversity.

## *Forests*

Accelerate implementation of the IPF/IFF proposals for action by countries and by the Collaborative Partnership on Forests, and intensify efforts on reporting to the United Nations Forum on Forests, to contribute to an assessment of progress in 2005.

## **CORPORATE RESPONSIBILITY**

Actively promote corporate responsibility and accountability, including through the full development and effective implementation of intergovernmental agreements and measures, international initiatives and public-private partnerships, and appropriate national regulations.

## **HEALTH**

Enhance health education with the objective of achieving improved health literacy on a global basis by 2010.

Reduce, by 2015, mortality rates for infants and children under 5 by two thirds, and maternal mortality rates by three quarters, of the prevailing rate in 2000 (*reaffirmation of Millennium Development Goal*).

Reduce HIV prevalence among young men and women aged 15-24 by 25 per cent in the most affected countries by 2005 and globally by 2010, as well as combat malaria, tuberculosis and other diseases (*reaffirmation of General Assembly resolution*).

## **SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES**

Undertake initiatives by 2004 aimed at implementing the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities to reduce, prevent and control waste and pollution and their health-related impacts.

Develop community-based initiatives on sustainable tourism by 2004.

Support the availability of adequate, affordable and environmentally sound energy services for the sustainable development of small island developing States, including through strengthening efforts on energy supply and services by 2004.

Review implementation of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States in 2004.

## **SUSTAINABLE DEVELOPMENT FOR AFRICA**

Improve sustainable agricultural productivity and food security in accordance with the Millennium Development Goals, in particular to halve by 2015 the proportion of people who suffer from hunger.

Support African countries in developing and implementing food security strategies by 2005.

Support Africa's efforts to implement NEPAD objectives on energy, which seek to secure access for at least 35 per cent of the African population within 20 years, especially in rural areas.

## **MEANS OF IMPLEMENTATION**

Ensure that, by 2015, all children will be able to complete a full course of primary schooling and that girls and boys will have equal access to all levels of education relevant to national needs (*reaffirmation of Millennium Development Goal*).

Eliminate gender disparity in primary and secondary education by 2005 (*reaffirmation of Dakar Framework for Action on Education for All*).

Recommend to the UN General Assembly that it consider adopting a decade of education for sustainable development, starting in 2005.

## **INSTITUTIONAL FRAMEWORK FOR SUSTAINABLE DEVELOPMENT**

Adopt new measures to strengthen institutional arrangements for sustainable development at international, regional and national levels.

Enhance the role of the Commission on Sustainable Development, including through reviewing and monitoring progress in the implementation of Agenda 21 and fostering coherence of implementation, initiatives and partnerships.

Facilitate and promote the integration of the environmental, social and economic dimensions of sustainable development into the work programs UN regional commissions.

Establish an effective, transparent and regular inter-agency coordination mechanism on ocean and coastal issues within the United Nations system.

Take immediate steps to make progress in the formulation and elaboration of national strategies for sustainable development and begin their implementation by 2005.

# Key Initiatives and Announcements from the Johannesburg Summit<sup>2</sup>

## WATER & SANITATION

- The United States announced US\$970 million in investments over the next three years on water and sanitation projects.
- The European Union announced the "Water for Life" initiative that seeks to engage partners to meet goals for water and sanitation, primarily in Africa and Central Asia.
- The Asia Development Bank provided a US\$5 million grant to UN Habitat and US\$500 million in fast-track credit for the Water for Asian Cities Programme.
- The UN has received 21 other water and sanitation initiatives with at least US\$20 million in extra resources.

## ENERGY

- The nine major electricity companies of the E7 signed a range of agreements with the UN to facilitate technical cooperation for sustainable energy projects in developing countries.
- The European Union announced a US\$700 million partnership initiative on energy and the United States announced that it would invest up to US\$43 million in 2003.
- DESA, UNEP and the US EPA announced a partnership on Cleaner Fuels and Vehicles with broad support from confirmed partners from the private sector, the NGO community, developed and developing countries.
- The South African energy utility Eskom announced a partnership to extend modern energy services to neighboring countries.
- The United Nations Environment Programme launched a new initiative called the Global Network on Energy for Sustainable Development to promote the research, transfer and deployment of green and cleaner energy technologies to the developing world.
- The UN has received 32 partnership submissions for energy projects with at least US\$26 million in resources.

## HEALTH

- The United States announced a commitment to spend US\$2.3 billion through 2003 on health, some of which was earmarked earlier for the Global Fund.
- The UN has received 16 partnership submissions for health projects with US\$3 million in resources.

## AGRICULTURE

- The United States will invest US\$90 million in 2003 for sustainable agriculture programmes.

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<sup>2</sup> The following list is not exhaustive, but reflects some key initiatives announced during the Johannesburg Summit.

- The UN has received 17 partnership submissions with at least US\$2 million in additional resources.

#### **BIODIVERSITY AND ECOSYSTEM MANAGEMENT**

- Canada and Russia announced they intended to ratify the Kyoto protocol.
- The United States announced US\$53 million for forests in 2002-2005.
- The UN has received 32 partnership initiatives with US\$100 million in resources.

#### **CROSS-CUTTING ISSUES**

- Agreement to the replenishment of the Global Environment Facility, with a total of US\$3 billion (US\$2.92 billion announced pre-Summit and US\$80 million added by EU in Johannesburg).
- Norway pledged an additional US\$50 million towards following up the Johannesburg commitments.
- The United Kingdom announced it was doubling its assistance to Africa to £1 billion a year and raising its overall assistance for all countries by 50 per cent.
- The EU announced that it will increase its development assistance with more than €22 billion in the years to 2006 and by more than €9 billion annually from 2006 onwards.
- Germany announced a contribution of €500 million euros over the next five years to promote cooperation on renewable energy.
- Canada announced that, as of 1 January 2003, it will eliminate tariffs and quotas on almost all products from the least developed countries, and that by 2010, it would double development assistance.
- Japan announced that it will provide at least 250 billion yen in education assistance over a five-year period and that it would extend emergency food aid amounting to US\$30 million to save children in southern Africa from famine.
- Japan also announced it would provide cooperation in environment-related capacity building by training 5,000 people from overseas over a five-year period.
- Ireland announced that it has allocated almost €8 million in emergency funding in response to the humanitarian needs of the African region.

UN/DESA

September 2002

## ANNEXE 4

### E-CONFERENCE ON "CHALLENGES OF INTERNATIONAL GOALS IN THE WATER SECTOR"

20<sup>TH</sup> OCTOBER – 7<sup>TH</sup> NOVEMBER 2003

#### Summary report

**Heikki Wihuri**  
**Marielle Snel**  
**Jyrki Wartiovaara**

*Organised by IRC on behalf of the Finnish Ministry for Foreign Affairs*

<b>Content</b>	
Executive summary	101
Organisation of the e-conference	102
Topic 1	103
Topic 2	105
Topic 3	108
Conclusions	109
Annexe A	111

#### **Executive summary**

The Challenges in the Water Sector e-conference was organised as a part of a process where sector stakeholders at decision and implementation levels are consulted for their opinion on for further development of the Finnish development policy in the water sector, especially in the main co-operation countries.

There were 420 individual subscribers to this discussion list during the conference period. A total of 67 people contributed for the discussion. Of these, 49 were men and 18 were women. Their locations covered all continents, with roughly 54 % of participants from the South.

Their countries of origin were: Australia, Brazil, Canada, Chile, Colombia, Denmark, Ethiopia, Finland, Germany, Ghana, Guayana, India, Kenya, Malawi, Mozambique, Namibia, Netherlands, Nicaragua, Nigeria, Pakistan, Palestine, Peru, Portugal, Senegal, Somalia, Sweden, Tanzania, Uganda, UK, Uruguay, USA, Vietnam, Yemen and Zimbabwe.

The e-Conference was organised into three topics, one per week, as follows:

Topic 1: Actions needed to meet the targets for 2015?

Topic 2: Obstacles to meeting the targets

Topic 3: Balance between present day and future demand, sustainability

A "Background Introductory Paper" was prepared by the e-Conference Co-chairmen and sent to each participant on registration.

The general conclusion, which can be drawn from the discussion, is that countries are in rather different position in responding to the MDGs. Several reasons were given, amongst them the most striking was the difference between talk and deeds. It also has become quite obvious that sanitation targets will be more difficult to achieve than those for water supply.

The general worries about sustainability have not changed much lately. The newest one, IWRM, needs much awareness-raising, as the limits of available water for the competing demands have become more and more obvious. There is a real crisis looming in many parts of the world. The challenges of demand management, both in water supply and in irrigation, call for inter-disciplinary approaches and international – basin-wide co-operation.

There appears to be a general understanding that poverty alleviation is a valid issue in the water sector. However, the voice of the poor is not easily heard by those responsible for service delivery and resources management. More real commitment from the professionals and the politicians is called for.

Capacity building and institution building are both continuous challenges. The environment of the water sector (social, cultural, technical, economic and natural) is in constant change. Petrified stands and approaches will soon become obsolete and actually hinder development, and achievement of the Millennium Goals. New challenges call for new skills for all the stakeholders in the sector.

### **Organisation of the e-Conference**

The e-Conference was organised into three topics, one per week, as follows:

Topic 1: Actions needed to meet the targets for 2015?

Topic 2: Obstacles to meeting the targets

Topic 3: Balance between present day and future demand, sustainability

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The conference messages are available for viewing in the Jiscmail at <http://www.jiscmail.ac.uk/lists/IMO.html> and files such as the background paper held at <http://www.jiscmail.ac.uk/files/IMO/>

The number of e-mail contributions received per topic was: Topic 1: 78; Topic 2: 46; Topic 3: 24.



## **Topic 1: Actions needed to meet the targets for 2015?**

There were five questions to open the discussion. Below the questions and summary answers to them:

### *1. Are the targets realistic?*

The targets were found to be unrealistic. However, there are also opinions, that they are realistic and achievable. They are good tools if understood to be a global vision each country should make their own targets, more realistic but still ambitious, and then work hard to achieve them. They were also found to be top-down, and a bottom-up approach was called for. Another difficulty observed was in the statistics, reliability of the data. Also high population growth in poor countries was mentioned as a factor contributing to non-achievement of the targets.

### *2. On who's terms are the targets being set? What about the poor?*

Quite a number of participants say that the MDGs have been set by the donor community, and apply their norms and values. The international forums where they have been discussed have been attended also by the elite of developing countries which may have lost track of reality in their countries due to too high percentage of their time being spent in meetings with the external support agencies. Each ESA appears to have its own agenda. Coping with this situation takes too much of the time of the responsible stakeholders in the recipient countries. The poor are rarely, if at all, consulted.

### *3. Have you noticed positive trends in real WSS service provision in your country? Do you think they will lead to achievement of the MDGs?*

There were mixed messages here. The majority were of the opinion that the targets will not be met. The trend in sanitation was found worse than in water supply.

### *4. Has your country's government WSS policy changed or are there signs of initiation of a change?*

Also here there were mixed messages. However, it was positive to learn that attempts have been made in some countries. The messages had also doubts about the sincerity of the policy makers. The word lip-service was used and commitment called for real actions.

### *5. What is to your mind the role of bilateral donors?*

The role of bilateral donors was found important. They should work in partnership with the recipients in a demand-based way, as well as agree on policies and modes of operation together with the recipients. The time the discussions require of the recipient country authorities was found to be a problem.

Difficulties in reaching the poor were mentioned. Bilateral donors tend to discuss with the relevant authorities, as they should (sovereign states). The problem found is how to design the interventions to reach the poor also in practice, not only on paper.

Some theme opinions drawn from the answers:

#### **Quality of data and services**

The statistical data appears to be in many cases of doubtful quality. There were claims that those making the figures want to please and to give an inflated figures. Another found problem mentioned was the number of non-operational facilities included in the coverage figures. The figures have no connection to quality of service or quality of water.

#### **Sustainability**

Many participants are concerned about sustainability of installations and systems. In this connection donor/project dependence was mentioned. Lack of capacity, resources and motivation were presented as reasons for the poor sustainability. In this connection also the problems of knowledge transfer in projects and programmes were discussed.

People orientation and empowerment of the end users of services and installations were presented as keys to sustainability.

Subsidies for irrigation were brought forwards as one cause for over exploitation of the ground water resources. This is a tip of an iceberg of the larger issue: The infinity of water resources is a myth, which has to be counter-fought – now. The looming wave of water conflicts is a real danger for international development.

Pollution of the water resources caused by poor sanitation has been mentioned too. It makes the looming water crisis more probable and drains resources, which could be used more efficiently elsewhere in the sector.

### **Commitment**

Another common point is commitment of decision makers. This has led to a situation where there is much more talking than action for improvement. There is a need for more people oriented integrated approach (competing uses of water) for water resources management and development. The commitment of the decision makers at the political level is emphasised by the need to alleviate poverty. This was highlighted for example in the Johannesburg summit by Mr. Valli Moosa, Minister for Environmental Affairs and Tourism for the Republic of South Africa and Chair of the Commission session. He said in connection of explaining why consensus was developing over the issue: "Access to freshwater is the single biggest contribution to alleviating poverty."

### **Poverty alleviation**

There is amongst the participants a strong opinion that WSS is a major contributor for poverty alleviation.

In poverty alleviation efforts through the water sector we should remember that the poor have a voice, which can be heard, but do we hear it? The poor also have knowledge and a will. To listen and to have a true dialogue with the poorest segment of the society is vital. The professionals in the sector have a great responsibility when designing and implementing interventions; not to work for the poor but with the poor.

### **Information gap**

A further worry is information gap. It is understood as lack of understandable information to the "grassroots" the ultimate users of water and sanitation. If only "academic" messages and highly sophisticated guidelines are distributed within the sector stakeholders, the end users will be left outside the information flow. Especially, the poor do not have means to invest into anything they do not understand, appreciate and feel beneficial for them. If the end users of WSS are informed properly and empowered to do educated choices, they will participate and invest to their capacity. Possibility for sustainability will increase exponentially.

### **Balance of investment**

The balance of investment between hardware, technology and capacity building is also debated. The capacity building of institutions, organisations and individuals appear to be under the level it should be. Result = wasted investment in technology and hardware.

### **Privatisation**

Discussion on privatisation has resulted in observation that it is not so simple, black and white, yes / no issue, as so easily appears to be in discussions. There is no one-solution-only answer to this question. All depends on situation, environment and tradition of the stakeholders and their geographic area. All options in the spectrum from state/government only via different private public partnerships (PPP) to unregulated market economy option need closer scrutiny in the very case in question before implemented. Key words used are good governance, competent management, social justice.

## **Sanitation**

Sanitation appears currently to be much less appreciated than water supply. However, poor sanitation directly and indirectly influences adversely health, dignity, equity and water resources. Sanitation is clearly in need of enhanced attention by all stakeholders. A quote from contribution (61) by Mr. Sam Mawunganidze says it all: "Prioritizing sanitation is just a strategic choice which we all disregard in our Funding proposals and Policy formulation." No positive discrimination that would mean that discrimination of negatively water issues but a priority of its own, was one opinion. Others said simply yes to question: Does sanitation need positive discrimination? I understand, however, that both mean the same: Give sanitation its rightful priority. Get it out of the shadow of water supply.

It has also emerged in some contributions, that the institutional fragmentation, the multitude of institutions, having a role and a responsibility in sanitation, hampers progress. The roles and responsibilities tend not to be clear. The old saying; divided responsibility is no responsibility at all; seems to be valid.

### **Social marketing and change of behaviour**

Social marketing and change of behaviour as keys to success in sanitation improvements have emerged in the discussion. They are seen as vital ingredients for sustainable sanitation. In this connection choice of technology, technical options to be used have been debated. Technology and its users must be compatible. It has also been expressed in this discussion that change of behaviour will take time. It is a process, which needs long commitment from both the messengers and the recipients of information.

Culture sensitivity, basing the interventions on the culture and adapting its practices in a modern way for development, was mentioned as a key to success. Not only in the context of sanitation but also in water supply.

### **Summary points**

To wind-up the discussion of the week: A couple of sentences quoted from the discussion:

(36) Tapio S. Katko: "I would say and argue that there is just no shortcut to progress."

Development and related Capacity building at all levels takes time. I personally think that too often in water and any other development sector we have too ambitious expectations and therefore the public, the fundamental payers of development cooperation, may think too much of failures.

Thus we should analyse our experiences from long-term. Yet, we have to remember that water is always and everywhere largely a local issue. Therefore, any idea of having "international modes" for water services management will fail. Instead we may have and probably have several good principles that should be followed."

(40) Ekiyor Lewis Prince: "In summary, from the global perspective, the MDGs are quite good and do form a basis for accelerated progress in WSS for all. But the great challenge comes in when it is considered on a country by country basis particularly for the developing countries of Africa where issues of political instability, non-continuity of government policy, corruption, misdirected and poor prioritisation of effort cannot be corrected in the near future."

## **Topic 2: Obstacles to meeting the targets**

There were five questions to open the discussion. Below first the questions and summary answers to them:

### *1. What are the critical international/national policy obstacles?*

There were some extremely interesting responses regarding the main issues that should be considered. Many of the e-mails overlapped in terms of the critical issues.

The following points were mainly cited:

- Issue of poverty
- Institutional constraints (fragmentation of institutions, inadequate incentives, co-ordination and consensus issues, information and communication constraints, etc.) – corruption at all levels
- Financial management – One issue that stood out was the debate on where actual donor money goes to in terms of benefiting the poor and how much of the donor aid actually reaches the beneficiary communities; At the local level, the issue of municipalities financially mismanaged was cited
- Scaling up obstacles were cited which included the issue of inaccurate assessment of current coverage; unwillingness to accept the scale of the problems on the part of governments and donors alike; adherence to the DRA approach imposed by donors when demand stimulation is required and over-reliance on the community to do it by itself
- Policy obstacles – centralized and top-down. Also socially and/or culturally unacceptable policies were noted. The issue of strategic political constraints was also cited
- Political less democratic global unfair relations between nations
- WSS policies which are sectoral, not integrated, at national and international level
- Biases of professionals themselves
- Political indifference and biases specifically of politicians (simply paying lip service to WSS issues and failing to implement policies that are agreed to) plus lack of knowledge of politicians

*2. What are the institutional issues / capacity building issues that are creating obstacles?*

There were again some interesting ideas regarding the issue of institutional and capacity building issues, which included:

- Little community involvement.
- Lack of co-ordination.
- Lack of a strong WSS base at local government level.
- Lack of knowledge – which refers especially to policy makers who do not know the state of the art, and best practices – Henk Holtslag's suggestion is that more emphasis should be placed on best and cheapest options for WSS facilities. Peder Hjorth suggests that lack of knowledge should be seen as an indicator of lack of interest in low-cost solutions.

*3. What are the major sanitation; water resource; water supplies, water quantity, water quality, water efficiency and integrated water resource management obstacles?*

Some of the main points included that:

- The balance tilts much more towards water than sanitation. This in itself is an obstacle especially for sanitation.
- Appropriate low-cost technology affordable to the poor should be adopted for WSS programs in rural communities.
- There is a wrong impression among people that water is free. "There should be intensive mobilisation to the effect that water has a price and should be paid for, no matter how small the amount. Communities should be encouraged to have a regular source of income for O&M and individuals should be ready to contribute when necessary or pay user charges."
- There is a conflicting interest between the users, from very local water source disputes to trans/national river basin / border disputes.

Specifically in terms of IWRM and Sanitation, the following was cited:

- In terms of water resource management (IWRM) the concept itself need to be clear. Currently IWRM is not very clear or manageable for those who are supposed to translate policy into action.
- "In terms of sanitation it should be prioritised and its importance given recognition. Yet, sanitation fails to appear in many national or even regional water resource strategies. Wastewater may receive some attention somewhere, not environmental sanitation in its wider context even if it clearly has an impact upon the water resources in question. This is certainly one of the major obstacles for sanitation management. It is 'nice' but not that fashionable."
- In terms of sanitation there is clearly a "lack of political will and commitment at national level".

*4. What are main solid waste management, school sanitation and hygiene education, hygiene behaviour and promotion obstacles currently being faced?*

The following are some of the main points cited:

- At the national level funds from donors to make a national (School Sanitation and Hygiene Education) programme are not easy. At the school level, funds are needed to make it possible to build latrines at schools. Currently in Somalia and Somaliland one finds the ratio is 1 toilet for 200 to 300 students.
- The toilets for girls (especially in Moslem countries) are a serious headache for the older school going girls. Placement (of latrines) must be done in full participation with the girls
- Conflicts with and between NGOs and other organisations on how best to approach school development is also a hurdle.
- "Missiles and motorcades cannot confer prestige on nations without taps and toilets (also in schools)" cited by Dick de Jong and Mariela Garcia.

*5. What gender and participation obstacles should be considered more carefully?*

Some of the final points focusing on gender and participation included:

- Lack of effective participation by women and children. Women and children are the most vulnerable when water and sanitation facilities breakdown or are absent. They should therefore be allowed to participate actively, particularly in planning, training and capacity building.
- Cultural and religious barriers that prevent women from effective participation in community affairs are an obstacle which should be addressed by community, local government, and religious leaders.
- The idea of a 'rushed' approach in strategic development planning. There is a tension between the need to move forward quickly and securing genuine participatory processes. However, without participation, there can, of course, be no attention to gender issues.

#### **Summary points**

All of us who have taken part in this e-conference, continue to translate lessons learnt from field experiences into knowledge that is both practical and strategic. That is the main objective of the whole e-conference and especially this week's theme on 'obstacles to meeting the targets'.

As is clearly cited in this week's e-conference, we have experience and expertise but we are still learning how to face the challenges.

This week's responses reflect that we still need to work with others to meet the MDG goals, such as:

- Professionals – who are also working in the water and sanitation sector directly or indirectly (such as in the health and social sector) with their line ministry(ies)
- Politicians, who set policies and budgets – they need to realize how important environmental sanitation and water services are; and
- Whole communities – not just the unserved.

The obstacles will be overcome, not in this e-conference or other conferences, but on the ground – that will be the greatest obstacle/challenge to take forward.

On a final note there are two points, which do need some additional emphasis as these points have come up in a number of e-mails. These focus on the role of:

- Women and children in water and sanitation; and
- Engineers in water and sanitation projects/programmes.

In terms of the first point- **the role of women and children in water and sanitation**, for millions of women and children around the world, fetching and carrying water is part of their daily routine. The role of collection water is not only physically stressful but also time consuming. Children and particularly girls are required to help their mothers with water collection and other domestic tasks. This means they are not able to attend school and often have little time for 'fun' activities such as playing.

With reference to sanitation, women often have different privacy requirements from men. For example in densely-populated urban settlements without adequate sanitation, such as in India, they are required to use public spaces in the evening or early morning and as a result can suffer health problems related to urine retention. The main point here is that although women are known to play a 'custodian' role of water sources and in hygiene management at the community and household level, they are rarely been consulted in water and sanitation programmes.

In terms of the second point- **the role of engineers in water and sanitation work** – it is interesting to cite that water supply and sanitation rose up the development agenda more than 20 years ago. Clearly the challenge now is to make a variety of professionals (e.g. engineers, planners, sociologists, etc.) work in water and sanitation projects/programmes together *coherently*. Partnerships with different professionals, which also imply a variety of organisations, ministries, etc. should remain the driving force towards sustainable water and sanitation services.

### **Topic 3: Balance between present day and future demand, sustainability**

Quality of the contributions was very good, although the number, 24 of comments was less than that of the previous two weeks. Let us note the similarity with water resources development in the field. Scarce water is valuable. The discussion proceeded more freely than during the preceding weeks. Below are the summary opinions.

#### **Sustainability**

Meeting the present needs without compromising the needs of the future is a continuous process. Both developing and industrialized countries keep working on it, there is an opportunity to two-way learning. A key issue is handing over the responsibility for implementation to the community. Training and technology transfer are important, as well as creation of ownership. Issues have to be addressed pragmatically, intersectorally, efficiently, and for wider benefit of the society. At the end, services have to be paid by the beneficiaries. IWRM approach seems to be very essential, although the requirements are complex and ambitious. To promote ownership, communities should contribute in cash and in kind.

## **Environmental and social impacts**

It is crucial to realize that environmental and social aspects are interlinked, particularly regarding the health. They require different expertise and skills to appraise the impacts, but should be addressed with equal interest and priority. The attitude of politicians and professionals vary, in accordance to their background and knowledge. Listening to the local people is important, as well as open participation in planning. A minimum of 40 % women is recommended in rural committees.

## **Poverty**

Most important is to focus the attention of our development policy to the poor. Cost-recovery is a question to be discussed with the elders of the community. There is no general resolution to the problem of providing affordable water and sanitation to everybody. Different cultures can find different technologies and institutional arrangements. Water can be considered both as a free common good and as a tradable product, depending on the facilities and treatment.

## **Responsibility of wastewater**

Water supply bodies should take care of the wastewater. The municipalities bill also for treatment of solid wastes, and there is often no other practical way. Drainage as an important element of sustainable irrigation was unfortunately not yet discussed in this context.

## **Integrated water resources management**

IWRD is a key to sustainable use of water. It is difficult in resource-poor situations, particularly in rural communities and small cities, where the data are insufficient for sustainable planning and management. Money and skills for development are also missing. All the relevant ministries should be involved where necessary. Training is needed at all levels.

## **Knowledge base**

Access to internet seems to be a true challenge, due to high expenses in the developing countries. The acquisition of data and relevant information is a major problem. Importance of reliable data for proper planning is sometimes poorly recognised. Data collection and monitoring should be based on objective. The project should be evaluated to ensure that it meets the objective. Quality of data is important, sometimes official statistics lack reliability. Data should be collected also from stakeholders.

## **Institutions**

Institution building seems to be a key for better capacity. However, this discussion remained very general. Nations, cities, tribes, even villages, have their own needs and traditions. Improvements in institutional capacity have to be tailored for each society. National and regional plans should be the starting point. Education and training are key elements, in addition to material resources. May I quote Alfred Mashauri's remark: 'It is all round and lifetime training'. At individual level, it can also be a way out from poverty.

## **From present to future**

During our first week it was noted that resources for water affairs have declined in most governmental agencies in developing countries. The crucial importance of good drinking water and sanitation has, luckily, been recognized quite commonly by now, but still a lot of prioritizing is needed by the political decision-makers. Our conversation may facilitate the design of better policies, although many important factors need a lot more work. Climate change may also facilitate the problem. More severe droughts are expected on the areas already suffering from the lack of water. Additional effort is needed for mitigation of flood damages, partly on the same areas as droughts. The most important requirement to meet the future properly is to keep working together.

## **CONCLUSIONS**

The general conclusion, which can be drawn from the discussion, is that countries are in rather different position in responding to the MDGs. Several reasons were given, amongst them the most striking was the difference between talk and deeds. It also has become quite obvious that sanitation targets will be more difficult to achieve than those for water supply.

The general worries about sustainability have not changed much lately. The newest one, IWRM, needs much awareness-raising, as the limits of available water for the competing demands have become more and more obvious. There is a real crisis looming in many parts of the world. The challenges of demand management, both in water supply and in irrigation, call for inter-disciplinary approaches and international – basin-wide co-operation.

There appears to be a general understanding that poverty alleviation is a valid issue in the water sector. However, the voice of the poor is not easily heard by those responsible for service delivery and resources management. More real commitment from the professionals and the politicians is called for.

Capacity building and institution building are both continuous challenges. The environment of the water sector (social, cultural, technical, economic and natural) is in constant change. Petrified stands and approaches will soon become obsolete and actually hinder development, and achievement of the Millennium Goals. New challenges call for new skills for all the stakeholders in the sector.

Partnerships need reinforcement. This applies to public, private, third sector and community partnerships, as well as to partnerships of different professionals in the sector and adjacent sectors, and at all levels. Options for fruitful co-operation are many and always dependent on the legislation, culture, economic status, environment, and most of all will of the parties involved. The term privatisation is quite often used to describe decentralisation and building of partnerships. It means, however, in the original meaning of the term, transfer of ownership of assets only. If understood just as that, the approach is too narrow-minded and will not lead to optimal outcome. More comprehensive meaning, and real content, has to be accepted. The best possible roles for each actor and stakeholder in the sector have to be sought in each case based on the reality of it on the ground.



## ANNEXE A

### **Background paper for “Challenges of International Goals in the Water Sector” – an e-conference on impacts of new thinking and targets on development strategies**

**Organised by** the IRC International Water and Sanitation Centre on behalf of the Finnish Ministry for Foreign Affairs

**Facilitated by** Heikki Wihuri and Marielle Snel of the IRC International Water and Sanitation Centre, Delft, the Netherlands and Jyrki Wartiovaara of Jywaconsulting, Helsinki, Finland

#### Introduction

This background paper introduces the challenges of the 21<sup>st</sup> century to the sustainability of the water sector, in relation to development co-operation. The term ‘water sector’ in this background paper is used in reference to water resources management, environmental aspects, economic use of water, water supply, sanitation and related health issues, but excluding water as transport media and as a source of energy.

The background paper aims to stimulate your feedback and inputs in the e-conference. This e-conference is meant for project staff, managers and directors of water supply projects and programmes and policy makers dealing directly or indirectly with the water sector at a global, national, state and/or local level. You know the reality of development co-operation in the water sector and are aware of what is needed to make programmes and projects work both more effectively and efficiently. We want to hear from you!

This e-conference renders a possibility to the participants to make their voice heard and to gain an insight to latest developments in thinking inside the water sector stakeholders in many different corners of the world and in numerous and various roles. Simply a great learning opportunity for all of us!

Before we carry on, some clarification should be given regarding the starting position for this e-conference. This e-conference is based on the following assumptions:

- Latest developments in the international forums, with their declarations and goals and the wide acceptance of them, reflected in the commitments of governments, international organisations and NGOs, provide both challenges and opportunities for development co-operation;
- Those actively working in the water sector have hands-on experience which is worth sharing and discussing with other professional; and
- Discussions based on personal capacities best promotes the formulation of policies and action plans as these opinions do not present official stands but rather, they are based on practical experience and academic research.

#### **Developing policies to meet today’s challenges**

There are numerous successfully implemented water sector development projects that meet the goals either partially or completely. ***Hence, in this e-conference we may want to highlight efficient resolutions that have worked, but also seek improved components for international co-operation policies.***

## **International goals**

A reflection back at the Millennium Development Goals that were reiterated in Johannesburg at the World Summit on Sustainable Development stated the following:

- To halve, by the year 2015, the proportion of people who are unable to reach or afford safe drinking water
- To halve, by the year 2015, the proportion of people who do not have access to basic sanitation

The WASH campaign of the WSSCC highlights that bringing sustainable water services and environmental sanitation to everybody is not just about statistics, but includes:

- health issues;
- dignity and status;
- the physical and financial burden of having or not having services;
- the social exclusion of vulnerable groups;
- poverty;
- economic factors;
- environmental impacts;
- development;
- and most of all - people!

### **The Finnish strategy**

The Finnish strategy for international development co-operation is very much based on the principles published by the Ministry for Foreign Affairs in 1996<sup>3</sup>, which has been updated by the Government in accordance to new commitments. The strategy that originates from 1993 sets the following goals:

- Alleviate widespread poverty in the developing countries;
- Combat global environmental threats by assisting developing countries in solving environmental problems; and
- Promote social equality, democracy and human rights in the developing countries.

Finland's decisions are increasingly influenced by the operations of the European Union (EU) and the international community in each country. One of the recent commitments is the EU resolution<sup>4</sup> made in 2002, which covers the next 10 years. It does not limit the national authority to deal with countries and communities outside the union. The international dimension (article 9) contains the following goals:

- Ambitious international environmental policy with particular attention to global sustainability;
- International promotion of sustainable models for production and consumption;
- Ensure that policies and actions taken for trading and environment support each other.

### **Gap between local and donor values**

Water resources development is closely related to the aspects of poverty, health, environment, and equality. So far, it has been hard to reach the poorest of the poor through international development financing, as the money is filtered through the old power structures of the recipient government.

Sometimes it has been said that westerners are trying to apply their own opinions in different cultures. Others are known to say that poor nations cannot afford the quality of life that has been called for in international conventions.

There might be an element of truth in this statement. Nevertheless, the underlying point is that environmental and social requirements of co-operation are considered externalities in economic planning of projects and programs. In financial analysis this might be appropriate, but economic, environmental, and social assessments should address all costs and benefits. The key challenge is therefore the difficulty of quantifying indirect and non-financial parameters.

Financiers of co-operation may neither compromise their ethically justified national or international commitments, nor ignore the taxpayer's will. Recipient countries may not compromise their equally justified opinions of their priority needs. There is an obvious challenge to improve the mutual understanding, and to create a framework for better communication.

According to latest UNDP statistics, 54 countries are today poorer than in 1990, while the world overall has gained wealth. What has gone wrong and how can we rectify this situation? An earlier expectation was that national economic growth would automatically benefit the poor, sooner or later. Nowadays economists know that it is not always true. There are clear indications that poverty can get worse even during a period of strong overall growth.

In addition, one of the obvious problems in some countries is weak human resource base of capable counterparts that can take over the technical responsibilities at the end of projects. Technology transfer, on-the-job training, involvement of schools and universities, and study tours are commonly used to train staff. However, training follow-up remains minimal in many countries. In addition, the lack of relevant positions available for those trained is also a dilemma. How can this situation be turned around to benefit those trained as well as the donors who are sponsoring those being trained?

Finally, do our actions in designing and implementing projects show that we are committed to helping the poor, and honouring principles of gender equity – or is this largely lip-service? Gender and poverty-sensitive approaches can help projects succeed in achieving their objectives for all: girls and boys, men and women, rich and poor members of the community. However those involved, from the donors to those in the field, should understand some basic aspects of gender and their implications. How can the principle of gender neutrality be upheld?

## Themes

As you will see this background paper has produced a number of fundamental points for discussion in this e-conference. In order to facilitate this process we will divide this e-conference into the following three themes which include:

- 1. Actions needed to meet the targets for 2015?**
- 2. Obstacles to meeting the targets**
- 3. Balance between present day and future demand, sustainability**

Let us learn from the good and bad practices, let us learn from each other and from the experiences in different countries. Inform the participants in this e-conference about your opinions and experiences in your project at the local, district, state and/or national level! For only then do we all move forward towards understanding as well as learning about how to solve some of these issues!

# **ANNEXE 5**

## **COMMISSION ON SUSTAINABLE DEVELOPMENT – 12TH SESSION**

### **CHAIR'S SUMMARY OF THE HIGH-LEVEL SEGMENT**

#### **I. INTRODUCTION**

The participation of more than one hundred Ministers with Environment, Water, Housing, Development, Finance and Agriculture portfolios and of heads of a number of UN agencies and international organisations, and a broad-based participation of major groups, is indicative of the importance that these parties attach to their commitments to reach the Millennium Development Goals (MDGs) and the Johannesburg Plan of Implementation (JPOI) goals and targets on water, sanitation and human settlements, and to the work of the Commission. The role of the Commission on Sustainable Development as the high-level inter-governmental body on sustainable development and for monitoring progress towards implementation of Agenda 21, as well as achieving the goals and targets contained in the JPOI was highlighted. Ministers valued the richness of the discussions and the sharing of experiences and best practices on national and local implementation efforts as well as on the constraints, obstacles and challenges faced. They welcomed the active participation of major groups throughout the session. They also appreciated the outcome of the regional implementation fora, the diversity of activities at CSD-12 and opportunities for capacity building, including through partnership fairs, the learning centre and side-events. The Session was organised in a manner that encouraged interactive discussions and Ministers expressed satisfaction with these working methods and suggested that their example could be followed in subsequent review sessions of the CSD.

#### **II. MEETING THE TARGETS**

Ministers emphasized that achieving the targets for water, sanitation, and human settlements and achieving the poverty eradication target are inextricably linked and play a crucial role for sustaining economic growth. It was noted that the status of implementation of the goals and targets is as follows:

- A considerable number of countries are expected to reach the target of developing integrated water resources management and efficiency plans by 2005 but many countries would need further technical assistance to achieve the target;
- A considerable number of countries are on track to halve the population without access to safe drinking water by 2015 but progress is uneven among countries and continents and many countries will fail to meet the goal if progress continues at the current rate;
- A large number of countries are not on track to reach the target of halving the proportion of people without access to basic sanitation by 2015, either in rural or urban areas, unless substantial additional resources were raised; and
- Some countries are close to achieving the target of significantly improving the lives of slum dwellers by 2020 in relative terms, while several countries are not on track. In many countries slums are growing at an alarming pace.

Although many countries are not currently on track, the targets for water, sanitation and human settlements are achievable in the timeframe agreed. Achieving them, however, will require high level political commitment and strengthened governance at all levels, and substantial efforts at mobilizing and effectively using resources.

Ministers stressed their commitment to implementation and to making this a decade of kept promises and emphasized the importance of proving safe drinking water, sanitation and shelter as a prerequisite for achieving other MDGs.

### **III. CREATING AN ENABLING ENVIRONMENT**

Meeting the challenge of global sustainable development is a shared responsibility. Each country is responsible for its own progress towards implementing Agenda 21, the MDGs and the JPOI targets and commitments. Ministers acknowledged that developing countries, as well as countries with economies in transition, continue to need support from donor countries, UN agencies and international financial institutions and other organisations, particularly in the areas of planning, finance, technology transfer, and capacity building. There was widespread support for integrating water, sanitation and human settlements into national strategies for sustainable development (NSSDs), including poverty reduction strategy papers (PRSPs).

#### **Capacity Building and Transfer of Technology**

Ministers recognized that capacity building efforts had not kept pace with evolving needs, and that substantial technical and institutional gaps remain at all levels. Monitoring programmes for water, sanitation and human settlements need to be strengthened at national level if progress towards the MDGs and JPOI targets is to be measured.

National capacities could usefully be strengthened in scientific and technical know-how to conduct assessment and monitoring of water resources, water quality, and aspects of water vulnerability – including natural disasters, particularly in Small Island Developing States (SIDS). Closer and more focused North-South, South-South and regional scientific and technical cooperation would facilitate this. Local communities, including indigenous peoples, organisations and individuals possess a wealth of knowledge and practical experience that could be more effectively utilized and more widely shared with strengthened regional and international mechanisms for knowledge exchange in these areas.

#### **Governance**

Ministers stressed that strong institutions and good governance are essential to ensure proper and efficient use of scarce government resources and affordable service delivery to the poor and noted progress made in many countries. Democratic and inclusive participation of all stakeholders, the rule of law, conducive regulatory environments, accountability, transparency, and corporate social responsibility, including efforts to combat corruption, were recognized by Ministers as important dimensions of good governance. Political stability and security, and sound economic management were also recognized as particularly important for mobilizing investment and productive private-sector entrepreneurial initiatives. Strong local institutions are necessary for effective service delivery, especially to support decentralization and to make service provision demand-driven.

Whereas national leadership and authority for sustainable development policies rest with Governments, responsibility-sharing initiatives with local authorities and communities, non-governmental organisations, public-private partnerships and individual citizens, including indigenous peoples, are all important for effectively addressing sustainable development issues. Enhancing the participation of women in decision-making at all levels is crucial to effective water, sanitation and human settlements planning and management.

Good governance at the international level is crucial to providing an enabling environment for sustainable development in developing countries.

#### **Finance**

Ministers noted that the public sector remains the principal financier of water, sanitation and human settlements infrastructure investments. With decentralization of services, local governments bear a growing share of financial responsibility. Attention was drawn to the importance of measures to provide them with, and/or empower them to mobilize, the needed resources.

A broad-based appeal was made for development partners, in the spirit of mutual accountability, to move towards meeting the full Monterrey commitments, and to target an increased amount of funding specifically for investments in water, sanitation and human settlements.

ODA could help to leverage private capital through a variety of financing schemes, including market-based financing models for small and medium enterprises (SMEs), with a potentially large multiplier effect on domestic resource mobilization. Ministers recalled the JPOI commitment to promote open, equitable, rules-based, predictable and non-discriminatory multilateral trading and financial systems that benefit all countries in the pursuit of sustainable development.

Mobilization of investments from the private sector for water and sanitation was considered of crucial importance although the view was expressed that investments by private companies would be insufficient to fill the water and sanitation gap for the poor. With appropriate policy and institutional support, including the further development of supportive regulatory frameworks and innovative financing schemes, the role of small-scale entrepreneurs in providing affordable services to the poor could be strengthened.

Appropriate financing arrangements are needed to meet the housing requirements of the poor and, in particular, residents of informal settlements. It was noted that traditional mortgage lending institutions had begun to extend lending to low-income households, though generally not the poorest, and that this needed to be further encouraged through schemes like partial loan guarantees. Also, micro-credit finance can provide valuable support to home improvements of slum dwellers lacking access to formal credit markets. Scaling up micro-credit facilities to benefit more of the poor – and especially the poorest – remains a challenge.

It was recognized that the partnership approach taken at Johannesburg and beyond could be a valuable and important modality to leverage additional resources for sustainable development. It was noted that partnerships should respond to the needs of developing countries and not the priorities of donors and that they should complement and not substitute for inter-governmental efforts.

#### **IV. WATER**

##### **Integrated Water Resources Management**

Ministers stressed that meeting the target of developing integrated water resources management (IWRM) and efficiency plans by 2005, addressing water quantity and quality concerns, should be a political priority, and efforts at implementation need to be accelerated.

They acknowledged that governance of the water sector was often hampered by unclear division of responsibilities and accountability and limited coordination among various agencies. Integrated water resources management plans offer the opportunity to rationalize water management and break down sectoral compartmentalization. Agencies responsible for land management could usefully coordinate more closely with those responsible for water resources.

The experiences and the value of cooperation and the management of water resources on the basis of river basins were noted, particularly in the context of international river basins. Further development and implementation of an ecosystem approach, including recognition of the services ecosystems provide, was recognized as one of several options that should be promoted, depending on priorities and circumstances. Ministers emphasized the importance of improving water efficiency, particularly in irrigated agriculture, and expressed concerns over water scarcity and depletion and pollution of ground water resources in many areas. The need to consider the inter-linkages between freshwater, coastal and marine ecosystems was recognized.

##### **Drinking Water Supply**

Ministers stressed that providing access to safe drinking water is essential to improve health, particularly for children, and alleviate poverty. They noted that financing investments in water supply systems required a mix of public investment and cost-recovery through user fees, combined with targeted subsidies to ensure access to affordable water for essential purposes by poor people.

Rehabilitation of water and sanitation infrastructure requires actions on several fronts. Funds must be available not only for construction of water facilities but also for long-term operation and maintenance.

Some countries have moved towards fuller cost recovery to strengthen financing for maintaining, expanding and improving water supply. It was noted that targeted subsidies were an important means for ensuring access for poor people.

Ministers emphasized that governments retained responsibility for the provision of safe drinking water and that effective private sector involvement required a sound regulatory system. They noted the need for further assessment of the role of the private sector as a source of both investment and expertise in utility management, including operation and maintenance. However, water resources themselves are considered to be in the public domain.

The urgent need to improve water supply and sanitation in Africa was recognized and Ministers welcomed new initiatives to that effect.

## **V. SANITATION**

Ministers emphasized the need to raise the visibility of sanitation and hygiene given its central importance to sustainable development. The high costs to societies of improper sanitation, and the significant economic, social and environmental benefits from investments in sanitation were recognized. They noted with appreciation that sanitation was for the first time being considered in a comprehensive way as a separate item on the agenda of the Commission.

Ministers emphasized that access to basic sanitation, coupled with hygienic behaviours such as hand-washing, can have significant positive impacts on privacy, dignity, security, health, education and economic growth. The importance of creating and maintaining public demand for sanitation services was noted. In view of the significant positive public health impacts, public subsidies for sanitation and awareness raising are justified. These subsidies need to be targeted to the poor.

Ministers acknowledged the importance of identifying and applying low-cost technologies well adapted to local social and physical environments in water supply, sanitation, and wastewater treatment, as alternative to water-borne sewerage. High-tech solutions and conventional sewerage networks may not necessarily be the best or most cost-effective solutions, but should be considered on a site-specific basis. Meeting the sanitation target would require particular attention to sanitation provision in rural areas.

Women and girls play an especially important role in household water supply, sanitation and hygiene and serve as agents of change. They are also particularly vulnerable to inadequate sanitation. Women should be involved in the planning, design and location of water supply and sanitation facilities. The importance of providing separate sanitation facilities for girls in schools was noted.

Ministers stressed the urgency of improving wastewater management, particularly in developing countries, to protect health and the environment, including both freshwater and marine ecosystems.

## **VI. HUMAN SETTLEMENTS**

Ministers noted that in the coming years almost all population growth will take place in urban areas of developing countries, and in the form of informal settlements. To make real progress in addressing the slum problem, the international community would need to surpass significantly the MDG target for improving the lives of 100 million slum dwellers.

Ministers emphasized the importance of secure tenure, entitlement to land, and freedom from unlawful eviction. It was noted that by setting up formal systems for registry and titling of property and dwellings, governments could empower citizens to transform their assets into working capital and access to finance. The growing challenge of meeting poor people's need for employment and decent shelter in healthy and secure communities was acknowledged.

Empowering the poor was seen as critical for improving their livelihoods and their communities. The voices, priorities and capacities of civil society and local communities need to be recognized, and the energy of local entrepreneurs needs to be tapped.

Ministers stressed the crucial role of women and voiced support for mainstreaming the gender perspective in policies and programmes related to human settlements. The conditions in slum settlements have a disproportionate impact on women and children.

The HIV/AIDS pandemic has heightened the urgency of addressing the inheritance rights of female household members.

Rapid urbanization poses a major challenge to urban planning and development. The development of policies that support rural development and positive interactions among rural and urban settlements has become increasingly important. Ministers noted that long-term integrated land-use planning and urban management, especially in the areas of transport and other services, is essential for developing sustainable cities.

The impacts of conflicts and natural disasters on human settlements infrastructure can be devastating. National disaster preparedness, including land-use planning, mitigation and recovery programs should be developed and can be strengthened through regional cooperation, for example in the context of specialized regional collaborative centres. It was noted that some SIDS and other countries are particularly vulnerable to natural disasters.

## **VII. RESPONDING TO CHALLENGES: THE WAY FORWARD**

Ministers identified a number of challenges that need to be addressed in the course of the policy year in an effective follow-up of CSD-12 consistent with the programme of work adopted at CSD-11 with a view to strengthening implementation to meet the agreed goals and targets in the areas of water, sanitation and human settlements, including:

- Mobilizing resources from all sources – international, regional, national and local, public and private – to meet the MDGs and JPOI goals and targets;
- Including water, sanitation and human settlements in NSSDs and PRSPs, and ensuring that NSSD and PRSP processes are inclusive and nationally driven and that their implementation is monitored;
- Strengthening governance at all levels to ensure proper and efficient use of scarce resources;
- Improving inter-agency cooperation and cross-sectoral coordination among international organisations in accordance with their mandates and JPOI, as well cross-sectorial cooperation and donor coordination at the national level contributing to JPOI implementation;
- Enhancing the role of partnerships in mobilizing new and additional resources, and encouraging those that effectively contribute to meeting national needs;
- Building capacity for water management, sanitation and human settlements planning and development in developing countries, with financial and technical assistance from developed countries and international organisations. Capacity building at the local level is particularly important in view of the trend toward decentralization of service provision;
- Increasing the transfer of appropriate technologies and scientific and technical cooperation;
- Disseminating knowledge and experience, particularly on low-cost and locally adapted approaches and technologies, and scaling up successful experiences;
- Strengthening monitoring, assessment and reporting mechanisms to improve decision making and to enable measurement of progress toward targets, while recognizing the need to reduce the reporting burden;
- Addressing the special needs of Africa, SIDS and land-locked developing countries;
- Enhancing the roles and status of women, as participants and agents of change, and mainstreaming gender in planning, decision making and management;



- **Accelerating implementation of commitments to develop IWRM and water efficiency plans by 2005, addressing economic development, poverty reduction, environmental protection and sustainable consumption and production, including water efficiency in agriculture;**
- **Increasing recognition of the importance of sanitation and hygiene to health, poverty reduction and other aspects of sustainable development, as a basis for mobilizing public and private resources;**
- **Addressing the major challenges to urban planning and land-use management posed by rapid urbanization, and ensuring the effective participation of local authorities and communities, including the poor, in these processes;**
- **Improving the conditions in informal settlements, including through linking them to the broader urban and national economies, creating employment opportunities and promoting entrepreneurship among the poor, in particular for women.**