

INTEGRATED RURAL WATER MANAGEMENT

Volume I

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Integrated Rural Water Management
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Acronyms

ACC	Administrative Committee on Coordination
ACC-SWR	ACC Sub-Committee on Water Resources
FAO	Food and Agriculture Organization of the United Nations
GTZ	Gesellschaft fuer technische Zusammenarbeit
IPTRID	UNDP/WB International Programme on Technology Research in Irrigation and Drainage
IRC	International Water and Sanitation Centre (The Hague, Netherlands)
O&M	Operation and Maintenance
PEEM	joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control
TCDC	Technical Cooperation among Developing Countries
TORs	Terms of Reference
UNCED	United Nations Conference on Environment and Development (held in Rio de Janeiro in June 1992)
UNCHS	United Nations Centre for Human Settlements (headquarters: Nairobi, Kenya)
UNDP	United Nations Development Programme (headquarters: New York)
UNEP	United Nations Environment Programme (headquarters: Nairobi, Kenya)
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children Funds (headquarters: New York)
WASAD	FAO Action Plan on Water for Sustainable Agricultural Development
WB	World Bank (officially: International Bank for Reconstruction and Development, headquarters: Washington DC)
WHO	World Health Organization

Executive summary and action plan

The Second Technical Consultation on Integrated Rural Water Management was organized jointly by the Food and Agriculture Organization of the United Nations, the United Nations Children Fund, the World Health Organization, the United Nations Development Programme and the World Bank. The Consultation was hosted by WHO at its headquarters in Geneva, and WHO also formally presided over the event. It was, however, run as a facilitated, participatory meeting and all 21 participants and two observers contributed actively in the working group and plenary sessions that made up the meeting.

The Consultation started with a review of progress in the implementation of recommendations formulated at the First Consultation, held in Rome in March 1993. The ensuing discussions served to set the stage for a realistic review of the technical focus of the Consultation: approaches and mechanisms for the UN agencies to cooperate at the country level towards establishing closer links between Operation and Maintenance of Domestic Water Supply on the one hand and Irrigation and Drainage on the other. Three aspects of this subject were covered: technology aspects, community involvement/education and training aspects and economic/financial aspects. The discussions on each of these aspects followed a similar pattern: identification of important issues, selection of potential areas for collaboration and formulation of joint action. In the final session of the Consultation the actions formulated under each of the three headings were synthesized into an Action Programme, the details of which are to be worked out and presented to the ACC Sub-Committee on Water Resources when it holds its 16th session in New York in October 1995.

The Action Programme is presented below. The outcome of group deliberations is presented in the main body of the report and the documents prepared for the Consultation (a progress report on the recommendations of the First Consultation, three issues papers, two background papers and three country reports) are presented in a separate volume.

Action Programme agreed by the Second Technical Consultation on Integrated Rural Water Management.

Preamble

The UN System agencies meeting in Geneva for the Second Technical Consultation on Integrated Rural Water Management (FAO, UNICEF, WHO, UNDP, WB) have agreed to collaborate towards the implementation of the following activities and to carry out these activities in an innovative manner:

1. To develop a strategy, for application at country level, for multi-sectoral, multilevel training aimed to achieve greater community involvement in rural water projects, with a focus on Operation and Maintenance, specifically addressing:

- ❖ the development and testing of training modules including those aimed at decision makers;
- ❖ the development and testing of training kits for use at the local level;
- ❖ effective monitoring and evaluation of the outcomes.

UNDP and FAO will take the lead in promoting this activity. They will communicate on the subject with the eleven agencies represented in the ACC Sub-Committee on Water Resources and will prepare a presentation for the 16th session of ACC Sub-Committee in October 1995. At the ACC Sub-Committee meeting selection criteria will be discussed and two or three countries will be selected for the testing of training materials. In addition, it is foreseen that pilot training activities will be carried out, as a means to encourage a culture of collaboration among agencies at country level. Suggested countries for such pilot projects include Uganda, India and Ethiopia.

2. To carry out joint case studies of

- ❖ collaboration between the sub-sectors responsible for domestic water supply, and irrigation and drainage;
- ❖ national policies regarding standardization and selection criteria of equipment and technology;
- ❖ mechanisms for credit and financing domestic water supply and sanitation, and in irrigation and drainage.

UNICEF and the UNDP-World Bank Water and Sanitation Programme offered to initiate this activity by drafting a brief concept paper and Terms of Reference which will be completed and sent to the Rural Environmental Health Unit of WHO, Geneva, by 1 September 1995. They will consult with all eleven agencies represented in the ACC Sub-Committee on Water Resources and prepare a presentation for the 16th session of the Sub-Committee in October 1995, to stimulate interest and identify potential cases and possible resources.

3. To develop a global water technology network building on the existing networks such as the hand pump technology network.

UNICEF will take the lead; it will carry out a survey of other networks and report to the other agencies with suggested actions.

4. To examine how to broaden the WHO/FAO/UNEP/UNCHS PEEM activity on promoting health messages through agricultural extension workers in integrated rural water management, by bringing in UNICEF, UNDP and the World Bank. The PEEM Secretariat in WHO will take the lead to prepare a document for the 16th session of the ACC Sub-Committee meeting, in close coordination with its counterparts in FAO.

5. To prepare a plan to catalogue training courses, materials and methods and make the catalogue available at country and global level; activities to be carried out by the International Reference Centre, The Hague, the Netherlands.

Reports on all the above activities will be submitted to the Rural Environmental Health Unit of the World Health Organization in Geneva by 1 September, prior to presentation at the 16th Session of the ACC Sub-Committee on Water Resources (New York, 4-6 October 1995).

Next consultation

There was a clear consensus among the participants of the Consultation that this type of forum was most useful to promote inter-agency collaboration in the area of integrated rural water management, as recommended in Chapter 18 of Agenda 21. There should, however, be a well defined technical focus (such as Operation and Maintenance for this second Technical Consultation) for workable products to result. It was agreed that UNDP and UNICEF would jointly explore whether they could host the next, Third Technical Consultation on Integrated Rural Water Management, maintaining the current frequency of the event, i.e. once every two to two-and-a-half years. UNDP and UNICEF would report on this at the 16th session of the ACC-SWR and propose options for the technical focus of the next Consultation.

Introduction

The Second Technical Consultation on Integrated Rural Water Management was hosted by the World Health Organization at its Geneva headquarters from 27 to 30 June 1995. The five cosponsoring agencies (FAO, UNICEF, WHO, UNDP and the World Bank) were all represented by one or more staff members. In addition, there were three invited participants from Member States (Morocco, Namibia and Turkey), one representative of a bilateral agency and two observers. The list of participants is presented in Annex 1.

The main objective of this type of consultation is to promote and strengthen inter-agency collaboration between the UN organizations directly involved in rural water management, particularly in connection with their technical cooperation and capacity building activities at the country level. The declining availability of freshwater resources and the degradation of their quality due to pollution are reasons for serious concern. The rural sector accounts for the biggest share of water use, with agriculture using about 80% of freshwater withdrawals in developing countries. Two crucial issues that need to be addressed are the efficiency of rural water use (often, 60% of the diverted water does not reach the crops) and the fragmentation in water resources development and management by user groups: irrigation, domestic water supplies and rural (agro-)industries.

This Consultation, like the previous one, brought together the UN agencies that are directly involved in rural water management. Improved inter-agency coordination and collaboration is crucial if the goals set in chapter 18 of Agenda 21 are to be met (Chapter 18: *protection of the quality and supply of freshwater resources: application of integrated approaches to the development, management and use of water resources*). This Consultation should therefore be considered part of the UN agency follow-up to the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. It should also be seen in the light of recommendations made at the Ministerial Conference on Drinking Water and Environmental Sanitation (Noordwijk, the Netherlands, 22-23 March 1994).

The First Technical Consultation was held at FAO headquarters in Rome from 15 to 19 March 1993. It covered the areas of policy reform, research and development and capacity building related to integrated rural water management in their broadest context. The focus of the second Consultation was on the interfaces and options for collaboration between Operation and Maintenance (O&M) in rural water supply/sanitation and in irrigation and drainage for agricultural production, at the country level.

The approved agenda and tentative programme of work of the Consultation are presented in Annex 2. For all practical purposes, a skeleton agenda was developed (as presented at the top of the next page), and at the beginning of each day, the programme was updated and activities established.

	Day 1: Tuesday	Day 2: Wednesday	Day 3: Thursday	Day 4: Friday
Morning 0900-1200	Plenary Opening Plenary Progress report	Plenary 1st review outputs Working Groups Technology Plenary Comm. Involvement Train. & Educ.	Plenary Econ./Finance Working Groups Econ./Finance	Plenary Areas and Actions Next meeting Closure
Afternoon 1400-1700	Plenary Technology Working Groups Technology	Working Groups Comm. Involvement Train. & Educ. Plenary Discussion	Working Groups Econ./Finance Plenary Discussion	

Objectives

The objectives of the Second Technical Consultation were:

- ❖ to review progress in the implementation of the recommendations made at the first technical consultation;
- ❖ to discuss current constraints on inter-agency coordination/collaboration in this field;
- ❖ to review the role of O&M in the different aspects of rural water management and to discuss options for the integration of O&M activities in the sub-sectors of irrigation and drainage, and drinking water supply and sanitation;
- ❖ to recommend approaches for inter-agency activities to assist countries in integrating collaborative rural water management, in particular O&M, through policy formulation and reform, technology innovation, capacity building and community involvement.

The outputs of the Consultation should contribute to the individual agencies strategies related to the sustainable development and management of freshwater resources and in particular to the UN Secretary-General's initiative for intensified support for the African continent. With the information generated by the Consultation, the individual agencies will be better equipped to respond, in a coordinated fashion, to the needs of developing countries.

Opening session

The Consultation was opened by Mr G. Ozolins, Director of the WHO Division of Operational Support in Environmental Health, who spoke on behalf of the Director-General of the World Health Organization, Dr Hiroshi Nakajima and of the Executive Director, Health and Environment, Dr Wilfried Kreisel.

Mr Ozolins reiterated the objectives of the consultation, which were, in short, to find new and better ways for inter-agency cooperation in the field of rural water management, particularly at the country level. This should lead to more efficient and effective ways of addressing problems. The recommendations made at the first Technical Consultation had met with a range of follow-up activities, such as the missions organized by the WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control to the Mekong and Zambezi River Basins in response to the advocacy of an integrated river basin approach.

While some of the disappointment with the level of achievement in implementing action recommended by UNCED was justified, particularly from the international perspective, the situation in many individual countries reflected substantial development and change in terms of policies affecting the environmental aspects of development, of environmental legislation and institutional arrangements and in terms of capacity building leading to self-reliance in assessing, appraising and managing their environment.

WHO continued its efforts to ensure that in the context of policy and institutional change, the health perspective is effectively addressed. This implied awareness creation of development sectors and the health sector alike, and capacity building which would allow human health to be considered at the crucial decision making moments in the planning of development projects. The activities carried out as part of WHO's Global Strategy on Health and Environment were all geared to bringing health concerns to the forefront in decision making. Standing out among these were a number of country initiatives carried out with UNDP, aimed at formulating National Action Plans for Health and Environment.

Among other agency initiatives, FAO's Action Programme of Water for Sustainable Agricultural Development should be mentioned for its effective, country directed approach where inputs from other UN agencies have been actively sought.

Operation and Maintenance, the technical focus of this consultation, had long been recognized as an indispensable but often forgotten component of both domestic water supply and irrigation projects. Integration to some extent of O&M activities at the country level should lead to economies of scale and cross-fertilization of ideas. Mr Ozolins warned, however, that at times when budgets were tightening up, there often was a trend towards allocating funds to core activities at the expense of inter-agency efforts. He expressed the hope that the present Consultation would provide an opportunity for all agencies to reaffirm their commitment to interagency action in the field of integrated rural water management.

Process

The framework provided by the approved programme of work was followed in structure, but discussions moved from plenary to small working groups and the facilitation processes allowed time to be gained so that the consultation could be closed at the end of the day on Thursday 29 June. The consultation used a process of facilitation to increase interaction and to model the collaborative and participatory techniques advocated by the participating UN Agencies. Six traditional plenary sessions were integrated into a variety of small groups and facilitated plenary sessions. The work was organized around three themes: technology, community involvement/training and education, and, economics and finance. It was designed to meet the main goal of the meeting which was to identify a few do-able actions that could enhance collaboration between UN agencies, make a difference at the country level and to which participants could commit.

On the first day the Consultation was opened with a welcome and opening statement on behalf of the host Organization, WHO. This was followed by introduction of participants and a sharing of expectations for the meeting. FAO, the host of the First Technical Consultation, reported on progress made in the implementation of its recommendations, followed by a facilitated plenary discussion. In the afternoon, the issues paper on technology aspects was presented jointly by UNDP and FAO. In the facilitated discussion which followed participants identified common aspects and differences in technology used in the two water sectors.

After the plenary participants broke into three small groups. One adopted a Policy and Planning perspective and the other two a Management and Institutional perspective. Each group identified key issues, areas of collaboration and actions. These small groups completed their work during the first part of day two.

By mid-morning of day two, the World Bank presented the issues note it commissioned on economic and financial issues, followed by a discussion on these aspects in connection with Operation and Maintenance. A brief presentation on the situation in Turkey served to illustrate a number of issues from a country perspective. After lunch, participants worked in one facilitated group where they identified areas of collaboration and actions regarding economic and finance aspects of O&M. This list was then categorized according to whether items focused at the country or international levels and under one or more of the following headings: studies, developing national policies, actions at the country level and mobilization of resources. After categorization, the items were prioritized. The closing plenary of day two was devoted to the analysis of the written outputs of the three small groups on technology. This discussion resulted in identification of a few key technological considerations.

Day three opened with a presentation by WHO and a facilitated discussion of Community Involvement/Training and Education in Operation and Maintenance of domestic water supply and irrigation systems. UNDP gave an introduction on the Global Water Partnership. Participants from Morocco, Namibia and Turkey were then asked to share their reflections on what had so far been discussed at the workshop. Next, participants brainstormed, in one facilitated work group, on key areas of collaboration and actions regarding Community Involvement/Training and Education. This list was categorized according to whether items focused at the country or international levels. They were also categorized according to whether they pertained to training, developing understanding, collaboration and evaluation.

A small group, along with the facilitator, reviewed all the outputs up to this point and found eleven key actions which seemed to be strongly supported by the group. In the final plenary session participants reviewed these actions and discussed criteria which could be applied to create an action programme for collaborative implementation. After much discussion on how specific or general these could be, the group took a break while participants from the UN agencies tried to reach an agreement. This produced the skeleton six point action plan presented in this report. The plan was subsequently written out, refined and approved by all participants. The Consultation then agreed on the structure, contents and lay-out of the report. The final agenda item called for a brief discussion as to whether or not another Consultation should be held, when it should be held and which agency should host it. The work being accomplished, the meeting was adjourned by Dr. D.B. Warner of WHO at the end of day three.

Progress report

The First Technical Consultation on Integrated Rural Water Management had resulted in a comprehensive set of recommendations for inter-agency action in the broad areas of policy formulation and reform, research and development and capacity building.

FAO prepared a progress report on the implementation of these recommendations, based on inputs requested from the five UN agencies. This document is included in volume two of the present report. The conclusions of the exercise served as a basis for discussion, with the objective to use the experience as an example of what can realistically be expected from an integrated, multisectoral approach. This would then provide a framework for the formulation of workable recommendations on collaboration in Operation and Maintenance by the two sub-sectors.

In its conclusion, the progress report states the following:

The first Technical Consultation clearly brought out two issues: (1) the complex nature of rural water resources management, in particular the linkages between irrigation (agricultural water use) and water needs for drinking, sanitation and rural health; and (2) the interaction between the various UN agencies in the sphere of rural water management. The Consultation re-affirmed that an integrated approach is vital to sustainable management of water resources in the rural sector and that inter-agency collaboration is the best suited strategy for the UN system to assist Member States in a productive and cost-effective manner.

The scope of the first Technical Consultation was very broad and so were the recommendations, which are too many to be followed-up in a practical sense. As evident from the paper, follow-up by the agencies in implementing the recommendations was only moderately successful, at best. There are several reasons for this situation listed below:

- ❖ *There is no formal mechanism among the participating UN agencies for joint implementation of programmes. PEEM (the joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control) is perhaps an exception in this context. Although the ACC Sub-Committee on Water Resources has established a number of Working Groups for this purpose, they are practically non-functional as far as joint programming is concerned.*
- ❖ *Most UN agencies are faced with a lingering “financial crisis” and under such a situation, the organizations give priority to their own “regular programme” activities which are mandated by their respective Governing Bodies. This results in inadequate staff time and funds for inter-agency activities.*
- ❖ *Lack of external funding for coordinated activities hinder implementation of joint programmes. Even if the financial situation of UN agencies improves, it is unlikely that they can implement joint programmes without external funding. The response from multi- and bilateral funding sources has been poor. It was believed that the UN would secure additional (extra-budgetary) funds to implement Agenda 21, but this is not happening.*
- ❖ *Inter-agency collaboration at the “country level” is found to be even more difficult. Agency representatives at the country level seem to be preoccupied with the activities of their own agencies and their respective national ministries.*

However, the need for joint action among UN agencies is becoming increasingly evident. The UNDP/World Bank initiative, the Global Water Partnership” could prove an effective mechanism for joint implementation of programmes. The Water Supply and Sanitation Collaborative Council is functioning relatively well, but there is room for improvement. The joint WHO/FAO/UNEP/UNCHS PEEM has worked reasonably well until now, but apparently requires change and is approaching a stage of revitalization.

It is important that recommendations for joint inter-agency activities be based on the realities of budget and human resources that would be made available by the respective agencies. However, an over-riding factor is the relevance of the programme itself to the Member States and the value of the programme in assisting national governments to manage their water resources to achieve sustainable development and national capacity building.

In the ensuing discussion, the first question raised addressed the fact that seemingly, many of the activities listed in the progress report would have been done anyway. The real issue, however, was not **what** had been done, but **how** it had been done. Indeed, many of the activities were scheduled to be carried out by one of the agencies anyway at the time of the First Consultation, but its success had been in achieving that single agency activities had been implemented in an inter-agency fashion. This alone justified the regular organization of this type of Technical Consultation.

It was clear that at the country level a range of options for inter-agency activities existed, both of a formal and an informal nature. The UNDP Resident Coordinator had a responsibility to involve the appropriate specialized agency staff working at country level in technical cooperation activities pertaining to their agency's mandate, but in reality situations varied from one country to the other. There was certainly a need to develop or further strengthen a culture of collaboration among UN agency country staff.

At the same time it would appear that global coordination mechanisms for inter-agency activities are totally dissociated from similar mechanisms at the field programme level. UNDP is seriously attempting to bridge this gap by providing financial support for field level coordination. Similarly, recent strengthening of links between the Regional Development Bank, in particularly the Asian Development Bank, and the World Bank had demonstrated the potential for inter-agency collaboration.

Technical discussions

Integration of Operation and Maintenance of
rural domestic water supply and sanitation,
and irrigation and drainage

Common aspects and differences

Before embarking on the technical discussions on the three selected aspects of Operation and Maintenance, the group identified, in a plenary survey of opinions, the common aspects and differences between rural domestic water supply and irrigation and drainage in relation to operation and maintenance. These are listed below:

Common aspects

- ❖ For a sustainable development of both rural domestic water supply and irrigation, protection of the catchment area and the water resources is essential.
- ❖ Water quality is of crucial importance in both rural domestic water supply (for human health) and in irrigation (for optimal production), even though quality indicators and standards may differ.
- ❖ In a broad sense, the technologies involved in rural domestic water supply and irrigation are similar; in both cases, the choice of technology also has immediate implications for Operation and Maintenance.
- ❖ Training to build and strengthen local capacity in the field of service and maintenance addresses the same issues.
- ❖ Both for rural domestic water supply and sanitation and for irrigation, project implementation at the lowest level is desirable
- ❖ At the household level, the requirements for drinking water supply and small scale irrigation are closely related; the organization of communities so they take charge of the Operation and Maintenance of water supply systems and irrigation schemes follows, by and large, similar models.
- ❖ Issues of cost sharing and water demand management are equally important in rural domestic water supply and irrigation

Differences

<u>Irrigation and Drainage</u>	<u>Rural Water Supply and Sanitation</u>
Production oriented with a clear economic perspective (this implies management differences and a difference in political visibility)	Addressing a basic human need and is therefore service oriented
Conveyance systems are different	
Energy supply systems are different	
Land tenure is an issue	Land tenure is not an issue
Attracts development investment and private capital easily	Does not attract investment easily, particularly not private investment
Disciplines people's life style	Does not play such a disciplining role
Is associated with strong environmental concerns	No important environmental concerns
Rotational delivery of water is an accepted practice	Delivery is demand related and rotational delivery is not acceptable
Subsidizing less common (and the trend is towards reducing existing subsidies)	Subsidizing common for reasons of social equity
More private sector oriented	More public sector oriented

Technology aspects

Introduction

FAO and UNDP jointly presented the salient issues of a synthesis paper on technology aspects, which in turn was prepared on the basis of two background documents, commissioned by FAO and by UNDP, respectively. The synthesis paper and the background papers are included in volume two of the present report.

In the introduction the overlapping aspects of technology maintenance of rural water supply and sanitation and of irrigation and drainage were alluded to, as well as the requirement of user group involvement in both cases. Water quantity and water quality can be sources of potential conflict in both sub-sectors and call, in part, for technological solutions. Currently, UNDP is focusing in on the issue of household water security, in terms of potable water and water for small scale irrigation. The Operation and Maintenance requirements in rural drinking water supply and sanitation and in irrigation and drainage are presented in the tables 1 and 2 on pages 18, 19 and 20.

While the focus of the Consultation is on rural water management, a complete desegregation from the urban situation would be artificial. In particular the peri-urban areas should build on rural solutions to their drinking water and sanitation problems.

Inadequate Operation and Maintenance gives rise to a vicious circle of declining services to clients and declining participation of user groups in Operation and Maintenance activities. Ideally, technology that makes Operation and Maintenance more effective should be promoted, but research by IPTRID (the International Programme on Technology Research in Irrigation and Drainage) has shown that technology issues are often subservient to institutional constraints.

The association between Operation and Maintenance of rural domestic water supply systems and human health is clear; a similar relationship exists between Operation and Maintenance of Irrigation systems and health (particularly vector-borne diseases) and this should perhaps be publicized more.

Discussion

At the start of the plenary discussion, the feeling was expressed that integration between the two sub-sectors on technology issues was perhaps the most difficult of the three areas under debate at the Consultation. It was clear, as the example from Turkey showed, that the introduction of new technologies in irrigation (for instance, modern water delivery devices such as sprinkler and drip irrigation) was driven by farmer demand, with cost aspects as the key criterion. Current debate in the drinking water supply and sanitation sub-sector is on the issue of a demand based approach, which as far as technology is concerned, would mean offering different technologies and adopting them to the desires of the community. It should be borne in mind that the fragmentation of water management by user group is a concept of administrators and does not relate to the everyday experience at the community level. It is therefore difficult, for example, to convince communities they should not collect their drinking water from irrigation canals (for obvious health reasons).

Integration at the higher administrative levels had successfully occurred as far as resource management was concerned, but the question remained why it had not occurred at the level of Operation and Maintenance.

Subsequently, the participants broke up into three working groups as described under **Process** above. The policy/planning perspective was defined (not exclusively) as: the framework of decision making criteria and procedures for the planning of water resources development and management, and the existing and potential legal tools which can be applied to influence the development and management. The institutional/managerial perspective was defined (again, not exclusively) as: the capacity, in terms of human resources and institutions, to deal with the management of water resources; financial allocations to allow for the operational aspects of water resources management; arrangements among institutions operating in the different water sub-sectors.

The outputs of the working group sessions are presented below, with the comments made at the subsequent plenary session incorporated into them.

Table 1 O&M requirements of irrigation technologies (sheet 1)

<i>Project element</i>		<i>O&M requirements</i>	<i>Scope for community involvement</i>	<i>Capacity building needs</i>
Headworks	Dams, diversion weirs, gravity intakes	Spillway operation, desilting, flow regulation, reservoir management	Essentially a central activity, but requiring user inputs to determine demand	Not applicable
	Pumped surface water intakes	Fuel security, skilled mechanics for pump maintenance and repair, desilting and screening	Central activity	Not applicable
	Pumped groundwater	Fuel/power security, local skilled mechanics for pump maintenance and repair, spare parts, tubewell rehabilitation, pollution prevention if also for CWS	Best managed locally by a private operator or WUA	Skills training for local private mechanics, standardization, technology appraisal (e.g. solar pumping)
Conveyance to and distribution in project area	Canals - unlined	High maintenance demands, often requiring heavy equipment for desilting, weed control, etc. Vigilance needed to avoid vector breeding, seepage	Can involve local labour – preferably to line the canal using available skills and materials (e.g. bricks, flagstones)	Establishment of production facilities with appropriate training for masons, labourers, etc
	Canals - lined	Desilting, public safety, leakage surveillance	Local employment for manual desilting (to avoid damaging lining)	Awareness raising for public health and safety protection
Control systems	Buried pipes	Preferred option where practical to inhibit illicit abstraction and avoid high land take. Favoured over canals for local distribution systems, to reduce seepage losses. Low maintenance requirements if silt is excluded	Local employment opportunities for concrete pipe construction in construction phase, or extension	Establishment of production facilities and skills training
	Automated control (costly but useful to provide efficient and equitable distribution)	Telemetered data, sometimes with computer modelling to actuate releases via regulators, distributors, valves and meters, demanding appropriate skills in operators and mechanics	Minimal scope in the short term, potential for skilled operators to be employed locally after training	Human resources development and information sharing on developing technologies
	Manual control	Simplified control devices, such as proportional distributors require coarse adjustment and comparatively simple maintenance	Local labour for activating controls to a schedule developed by private operator or WUA	Data processing support for scheduling releases, some skills training for maintenance

Table 1 O&M requirements of irrigation technology (sheet 2)

<i>Project element</i>		<i>O&M requirements</i>	<i>Scope for community involvement</i>	<i>Capacity building needs</i>
Field application	Surface methods	Where used, siphons, gates or valves will need basic maintenance, furrows, drainage ditches and pipes need periodic clearance	Entirely the responsibility of the farmer	Guidance is advisable to avoid excessive water use.
	Sprinkler systems	Technology ranges from hand-moved to fully automatic linear-move or centre-pivot. Equipment, including pumps, needs maintenance by skilled mechanic. Drainage must be kept functional	Farmers may acquire the necessary skills for maintenance or employ private mechanics	Information on technology choice and protection from overselling, promotion of improved proven water-saving technologies (e.g. LEPA)
	Micro-irrigation	Drippers, bubblers, microjets need to be inspected and cleared regularly. Booster pumps, where used need skilled maintenance and guaranteed power/fuel supplies. An efficient system when properly maintained and operated. Can be computer controlled	Viability depends on users having the necessary skills for daily inspection and maintenance. Skill level needed depends on complexity of system.	Information on appropriate systems, training in O&M, support for initial capital investment.

Table 2 O&M requirements of community water supply systems

<i>Project element</i>		<i>O&M requirements</i>	<i>Scope for community involvement</i>	<i>Capacity building needs</i>
Intake works	Surface water intakes (rivers, lakes, streams)	Protection from pollution, clearing of screens, desilting of chambers, weed control	All activities within the capacity of a local caretaker. Access rights may be needed for source protection	Education and training in the importance of preventing contamination
	Drilled wells	Drilling rig and lifting equipment needed for initial installation and for occasional replacement of screen or casing or redevelopment/deepening of well. Otherwise maintenance needs are minimal, but surrounds need protection from contamination	Caretaker can readily cope with well protection. Special skills and equipment needed in case of well failure	Education and training in the importance of preventing contamination. Access to support services for well repairs. Backup supplies
	Dug wells	Pollution prevention, occasional maintenance of cover slabs. Minimal internal maintenance if well is concrete lined.	Readily maintained by local caretaker. An economic self-improvement option for open wells	Awareness raising on pollution prevention and promotion of self-improvement option
Pumping systems	Mechanical pumps	Secure supplies of power and/or fuel, skilled mechanics for pump maintenance and repair, availability of spare parts, maintenance of pump chambers and screens.	Can be managed by a village water committee with access to a private mechanic or support from the local water agency.	Training of local mechanics, financing mechanisms to pay for parts and labour, distribution system for spares.
	Handpumps	Periodic replacement of wearing parts. Some handpump designs need special lifting equipment for repairs to submerged cylinders (VLOM designs do not). Cleanliness of aprons and surrounds.	Modern handpump designs suit local maintenance, often by trained women caretakers.	Training of villagers, access to spare parts and emergency support. Guidance on choice of pump
Water treatment	Solar/wind pumps	Periodic replacement of wearing parts (wind pumps may require lifting gear).	More likely to be used in combination with irrigation, with maintenance support available from WUA or private operator	Training of mechanics, access to spares
		Chemicals for on-site chlorine generation, desludging of settlement tanks, cleaning of roughing filters, backwashing and periodic surface-layer replacement of slow sand filters	With the right technology choice, local trained operators can handle village water treatment plants under control of the village water committee or local water agency	Skill training, advice on technology choice, favouring multi-barrier systems, information exchange to share experiences.
Piped supply systems	Leakage repairs, maintenance of taps, valves and meters, maintenance of soil cover to pipes	Trained plumbers needed regularly (from private sector or local agency). Village water committee needs extra skills	Trained plumbers needed regularly (from private sector or local agency). Village water committee needs extra skills	Training of plumbers, financing mechanisms to pay for parts and labour, distribution system for spares

Working Group 1: policies, planning and legislation

Issues (in the order of priority)

1. Standardization (policies for standardization, i.e. certification of specific minimum performance indicators, without jeopardizing technological progress or competition and preventing corruption) for internal coordination and for coordination of bilateral support)
2. Investment policies:
 - ❖ Private sector investment in Irrigation and Drainage should include an allocation covering the installation of Water Supply and Sanitation for affected communities.
 - ❖ Community-based irrigation development should promote technology ensuring income generation rather than just food security. (For such development to be sustainable, both objectives normally need to be addressed; however, the illustrative example was used from Zimbabwe, where the rather unconventional introduction of sprinkler irrigation had allowed small holder farmers to produce high value crops and generate a considerable capital surplus that could be used for community development projects).
3. Policies and criteria for technology selection that is based on the needs and ability of the community to pay, while ensuring equity
4. Policies to ensure that, in the case of water scarcity, a shift to ground water development and use for irrigation should include a Water Supply and Sanitation component (this was illustrated by an example from Indonesia, developed under the Regional UNDP/WB Water Supply and Sanitation Programme).
5. Policies promoting improved water use efficiency in irrigation development

Areas for collaboration

All five issues provide suitable areas of inter-agency collaboration and will, in fact, only yield optimal results if there is effective collaboration between UN agencies at the country level.

Action plan

The group developed an action plan for issue number 1, which was identified as a first priority.

Objective

To assist countries in developing sound policies and strategies to implement standardization of equipment and technologies in water management (rural water supply and sanitation, and irrigation and drainage)

Expected outputs

- ❖ Country case studies on policy review and analysis
- ❖ Based on country case studies a set of recommendations on policy reform concerning standardization
- ❖ Improved and strengthened standardization regulations

Activities

- ❖ To assess the policy situation with respect to standardization in selected countries in the relevant (sub) sectors. To facilitate the analysis some countries should be selected on the basis of their track record of excellence in this field, others because of their less satisfactory performance and recurrent problems.
- ❖ To determine which ministries/institutions play a role in decision-making over standardization and under which policies. The standardization of equipment and technology should cover the whole water sector
- ❖ To analyse the determining factors of country differences; this analysis of policy issues in individual countries in the two sub-sections (Irrigation and drainage; Water Supply and Sanitation) should lead to an identification opportunities for mutual reinforcement

Working Group 2: institutions/management

Issues and areas for collaboration

Rural domestic water supply and sanitation services and irrigation and drainage services are usually operated, maintained and managed by different groups with different motives, objectives and background. Thus, the integration of management and operations and maintenance of irrigation and water supply and sanitation schemes may be difficult to implement at the local level and there is a risk it may even affect such services negatively. The group felt, however, that both sub-sectors can benefit from common support services intended to improve both water supply and sanitation and irrigation efficiency. The following issues were singled out as potentially suitable for country level inter-agency approaches.

Coordination. There is a need for better coordination and integration of resource management planning at the appropriate levels. The management of water resources should be conducted through the active involvement of the different water users (domestic water, irrigation, industry etc.)

Demand. Any cooperation between the domestic water supply and irrigation sub-sectors should be driven by demand. The level and intensity of such cooperation should be defined according to local conditions and should be decided on the basis of a possible synergy derived from the cooperative process involving services from both sub-sectors.

Information. There is a gap preventing the flow of information between rural water supply and sanitation and irrigation and drainage groups. Mechanisms should be designed to facilitate the

exchange of useful information between decision-makers, managers and operational staff responsible for services in both sub-sectors.

Private sector. The involvement of the private sector should be considered as a possible alternative for Operation and Maintenance of both water supply and sanitation, and irrigation and drainage facilities. The financial and regulatory aspects involved in privatization should, however, be given special attention as they are crucial and may greatly affect the sustainability of this option.

Setting standards. Standardization of materials and equipment, and the development of mechanisms for quality certification should play a major role in optimizing cost-effectiveness of Operation and Maintenance. Currently, there is a wide range of technologies, equipment and materials used in both sub-sectors. The resources needed in terms of spare parts, trained personnel etc. are so huge as to hinder the performance of water supply/sanitation and irrigation/drainage service.

Existing institutes. The creation of institutional frameworks for the promotion of a more integrated approach of Operations and Maintenance in the two sub-sectors should be avoided. The initiatives and actions within a joint framework should be undertaken through arrangements between already existing institutes.

Action plan

1. To promote and distribute to international and national agencies the tools (documents, training packages, guidelines) produced by the Operation and Maintenance Working Group of the Water Supply and Sanitation Collaborative Council. Conversely, the materials available on Operation and Maintenance of irrigation schemes should be promoted within the drinking water supply and sanitation sub-sector.
2. To disseminate relevant information on training courses and training Materials on rural domestic water supply/sanitation and irrigation/drainage among all potential beneficiaries within both sub-sectors. The appropriate UN agency should take the lead in ensuring an effective flow and dissemination of information to and at the country level.
3. To encourage joint UN missions to assist Member States in the development of integrated rural water management projects and to promote stronger links between local representatives of UN agencies through incentives.
4. Member States should be encouraged to develop standards and quality certification mechanisms which would benefit both the rural domestic water supply and sanitation, and the irrigation and drainage sub-sectors.

Working Group 3: institutions/management

Issues

There should be a focus on households and communities (water supply, irrigation, livestock) and their expressed demand for services

Technology choice should be on the basis of:

- ❖ willingness to pay
- ❖ implications for maintenance (cost + availability of spare parts) and operation (e.g. easy of operation for women and children of water supply/pump)
- ❖ availability of credit or credit guarantee

There should be clear awareness that at the household and community level the users are also the decision makers. Similarly, it should be appreciated better that expressed demand for technology may interfere with efforts to standardize

At regional level a number of services are needed for:

- ❖ technology choice options
- ❖ distribution and sales of equipment and spare parts
- ❖ technical services (mechanics)

These services could be part of the public or of the private sector

Rural water projects will be stimulated by the availability of credit and/or credit guarantee with support of an intermediary (e.g. NGO), or credit through local banks with support from national and/or international agencies and development banks.

Areas for collaboration

At the community level: the establishment of water committees responsible for water supply and irrigation (examples: India, Benin).

At the regional level: collaboration between water agencies based on expressed demand by communities.

At the national/central level:

- ❖ creation of an enabling framework of policies and regulations;
- ❖ setting norms, quality control;
- ❖ organization of training services;
- ❖ adaptation of curricula of higher education of water supply and irrigation engineers so they reflect community demand matters and common aspects and differences between water supply and irrigation and areas of integration of services;
- ❖ preferential import duties and local taxes for equipment and supplies.

At the international level: financial support directly to action points (e.g. local banks funding, with consent of national government; need for collaboration between sectoral/technical and planning/financial ministries); social development funds as potential sources of funding for multiple purposes.

The UN system can assume a role in pointing out pros and cons of innovative approaches, as an honest broker, and promote documenting and testing new approaches outlined above and make available or assist in mobilizing resources.

UN system agencies can work together on basis of their competence/experience, e.g. WHO on health issues, water supply and sanitation, water quality; FAO on irrigation and drainage; UNICEF on drilling, water system equipment/supplies (strong country presence); UNDP on grant funding, capacity building, field level coordination through UN resident coordinators; the UN capital development fund on small-scale funding (US\$ 1-5 million); the WORLD BANK on large-scale loans/credits; leverage with national government ministries especially finance ministries; and, ESCWA and other Regional Economic and Social Commissions on awareness creation and training.

UN agencies should undertake joint missions, when and if appropriate.

Sustainable livelihood: Communities (one or more together) can conclude a partnership contract on a fifty/fifty financial basis with regional government services under which the latter perform services to address expressed needs of communities not only for water but also for electricity, schools, transport and other services.

Action plan

To carry out case studies of successful integration of rural water management at household level (Household Water Security), which should include both rural domestic water supply/sanitation and irrigation/drainage and which should provide entry point for multiple development interventions. Such a case study could, for example, be carried out in Morocco

To identify countries with good potential for interagency collaboration for the implementation of a pilot project within the context of a larger programme

To support existing UN initiatives:

- ❖ ACC Task Force on Africa (lead agency: UNEP)
- ❖ Global Water Partnership (lead agency: UNDP/WB)
- ❖ AFRICA 2000 (lead agency: WHO)
- ❖ National Programmes of Action (lead agency: UNICEF)

To establish a Global Water Technology Network for community water applications (both water supply and irrigation)

To promote a dialogue at the country level between UN agencies and government on integrated rural water management at community level (including other interested parties), in context of sustainable livelihood. Examples of activities could be: workshops, annual meetings, UN Water Day. At the same time, to promote a dialogue between countries using the Technical Cooperation between Developing Countries (TCDC) approach.

Community involvement, education and training aspects

The unabridged version of the issues paper commissioned by UNICEF and WHO is included in volume two of the present report. An introduction of the paper touched upon the most salient points it raised. Community involvement had evolved over the past 20 years from a subject hardly mentioned at the Mar del Plata Conference to a concept whose various aspects had received international recognition and support at such events as the Global Consultation in New Delhi, the Dublin International Conference on Water and the United Nations Conference on Environment and Development. The issues paper went into great detail about the various relevant programmes of the individual agencies as well as about their inter-agency activities in connection with water resources development and management for rural areas.

Two key issues could be distinguished in Operation and Maintenance of water projects, i.e. the water resource itself, largely linked to the availability and quality of water, and the involvement of the community. The level of involvement had an impact on water use efficiency, water quality and reliability of services.

The inter-dependence of urban, peri-urban and rural systems and users was an important consideration: drinking water supply techniques developed for rural areas would prove their value in peri-urban areas, and urban effluents could be used, after some level of treatment, for irrigation purposes.

In the area of training there were numerous examples of successful courses and there was a great deal of potential for agencies to collaborate in this area and mutually reinforce each other's efforts. The six draft recommendations from the issues papers formed the starting point for a further discussion:

1. Continue collaborative programmes and projects with components relating to rural water development and management, operation and maintenance, health and community participation as at present and prepare an inventory of these on a national and regional basis. Where possible and appropriate, include projects additional to those with UN system support.
2. Establish criteria to identify projects and programmes with potential for replication and design a format for reporting and analysis. Select examples suitable as case studies on Operation and Maintenance in relation to particular aspects of rural water management (for example, institutional arrangements, community participation, environmental health, irrigation), compile and publish these, preferably by region. Make such material available to institutions responsible for information and training of personnel engaged in the above activities.
3. Depending on national interest and responses to the above, consider introducing a network and database for reporting on activities meeting pre-determined criteria and providing access to and an exchange of information. (N.B. this requires decisions on location, and some minor staff and equipment resources for a system using e-mail, not hard copy material which proved impractical in previous attempts at information exchange by the ACC ISGRW).
4. With support from agencies' national and regional representatives, the invitation of UNESCO and the involvement of UNDP with its Resident Representatives/Coordinators, and building on national campaigns and programmes (e.g. Water Days) approach national

ministries of health, education, and those responsible for water resources, the environment, agriculture and rural development to discuss and assess the desirability of and opportunities for introducing material into national curricula, at levels from primary school to graduate and professional training courses. The objectives will include an increase in the awareness, understanding and capabilities of the community in improving the conservation, protection and management of water resources and associated benefits to human health and the environment. Report regionally on this investigation, analyze the results and, if justified by demand, develop suitable material for national testing and eventual adoption and incorporation into national curricula.

5. In any publications, training material, education curricula etc. produced by, or with the support of the UN system, draw attention to the importance of sanitation as an essential complement to community water supply, for the protection of water resources, the environment and human health and to the need for users of water supply and sanitation systems to participate in their planning, design and maintenance.
6. In contacts among UN organizations engaged in water resources development and management programmes, and between UN organizations and bilateral and multilateral agencies involved in similar work, develop common approaches to creating an appreciation of the importance of Operation and Maintenance among professional staff, both national and international, and of the potential sustainable economic, social and environmental benefits offered by the commitment of human and financial resources in such activities.

Discussion

With a host of meetings and workshops of community involvement over the years, there was no lack of documentation and materials on the subject. A recent state-of-the-art publication was the IRC/WHO *Community management*. The main issues to address were how to effectively and consistently use this material in all projects at the country level and how the subject could be more strongly promoted as a part of education and training programmes. Several pilot projects had shown the great value of community involvement and participatory approaches, but at the same time such projects had been difficult to bring to scale. Institutionalization of community involvement would positively contribute to the solution of this problem, which in part appeared to be linked to the current perception of the concept as an add-on to development projects. The integrated planning of rural water supply and sanitation projects and small-scale irrigation would add an extra dimension to the promotion of community involvement: the nature of drinking water supply facilitates the involvement of the community, and linked with irrigation, it may overcome the conflict situations that sometimes arise in the development of the latter.

One obvious bottleneck had been shown to be timing. The process of community involvement takes a long time, and this may clash with the tight time table development projects, and particularly water projects normally have. The question was where community involvement could best be introduced in the project cycle. In addition, there was a dearth of people with the appropriate skills to serve as intermediary between project management and communities.

The UN had a key role to play in influencing politicians and assisting in the creation of political will to strengthen community involvement in Operation and Maintenance of rural water projects. This should also include generating the support of the non-health sectors: health workers are too often under-supported, and even if they receive a remuneration of some sort they may not have the operational support to actually carry out their work at the community level. This came back to the notion that government commitment to the production oriented agriculture sector is greater than to the health sector.

The approach of teaching engineers about health issues had been taken up by the WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control. In a first, conventional attempt in 1986, prototype programmes had been developed for incorporation into the curricula of engineering schools. A field test in five engineering schools demonstrated that only the shortest (ten hour) curriculum, aimed at awareness creation, was useful - curricula are too overloaded to allow for additional subjects. The major lesson that had been learned from this experience was that one should not aim at making mini health experts out of engineers. Currently, a detailed proposal had been developed for a flexible set of modular, self learning materials for engineering students on the subject of health.

Clearly, the UN system is not geared towards bringing education right down to the community level, it can only assist in developing training strategies that aim at that level. The selection of collaborative training institutes is crucial and the choice often extended beyond traditional disciplinary boundaries. Similarly, innovative vehicles to bring messages to the rural communities should be explored. The promotion of environmental management for vector control through agricultural extension workers was quoted as an example.

In the subsequent identification of potential areas for collaboration several categories were listed:

Develop common understanding, at the country level

Strengthening of UN agencies at the country level, bring them together and have them develop programmes to increase public awareness.

(also: *training, coordination*)

Extension of the joint UNICEF/WHO sanitation guide to cover other areas.

(also *training*)

Develop common understanding, at the global level

Attitudinal change within UN agencies and their staff.

Develop common understanding, at both country and global level

Development of a common UN approach and adoption of a skeleton programme with the nationals in an intellectual partnership

Promotion of the sharing of participatory methods in both sectors, consensus on better approaches and creation of a joint bibliography on approaches

(also: *coordination and collaboration*)

Development by UN agencies of training and dissemination strategies for the country level, which include specific goals and aim at decision making levels as well as grass roots levels.

(also: *coordination*)

Development of a simple protocol for joint evaluation of activities to date.

(also: *evaluation*)

Training (development of techniques and materials), country level

Promotion of the involvement of women in designing training programmes and collaborative rural projects.

Development of a means to effectively transfer information to potential users at the country level with an emphasis on training.

Promotion of common extension approaches to water, agriculture and health together

(also: *common understanding*)

Training (development of techniques and materials), both country and global level

Development of training kits for community education.

Development of a programme of joint capacity building for agency headquarters and field staff on methods of community involvement and its institutionalization.

Coordination of training at all levels, with a two level approach: aimed at the community and aimed at UN staff

(also: *coordination*)

Increase the corps of people, who become trainers of trainers, recruiting from those who are already working in the area of community involvement (e.g. corps of international volunteers, Peace Corps etc.)

Means of Coordination and collaboration, country level

Establishment of pilot projects at community level (national government, community leaders) for integrated rural water management, with joint system performance, health and agricultural indicators.

More consultation between governments and the UN when dealing with community base.

In the final discussions, the potential areas for collaboration listed above served as a source for the development of the action programme.

Economic and financial aspects

The discussion note was presented that had been commissioned by the World Bank. This note is included in volume two of the present report.

In the introduction the legacy of failure of O&M in water supply and sanitation was recalled; this had led to the principle that development of rural drinking water supply and sanitation should build on the local situation. An example from Indonesia illustrated this, where locally produced hand pumps are used in rural water supply and sanitation projects on a large scale. In case of breakdown, there is local capacity to repair them. For externally funded projects there may be donor pressure to procure more sophisticated pumps produced in the donor country. As a consequence, there usually is no local capacity to take care of repair and maintenance.

The group's attention was drawn to the parallels identified in the discussion note between water and sanitation associations and water user associations in Irrigation and Drainage, and the opportunities for integration this offered, provided clear cost-sharing rules were developed.

The possible role of NGOs and the private sector was referred to, but a word of caution was needed so that NGOs would not take over the role of donor agencies. Also, the private sector effectiveness at the local level was questioned.

In addition to the points raised, there was an increasing importance of the urban-rural interface: as an example, water districts in secondary urban centres in the Philippines are playing an active role in providing the surrounding rural areas with water for both domestic and small-scale irrigation purposes. Both sub-sections not only share structures of community organization, but they should also both operate on the principle of demand management, and O&M management at the lowest possible administrative level.

Two examples illustrating the potential for integrating irrigation and drainage, and rural water supply and sanitation came from India (successful micro watershed management) and Indonesia (ground water development for both irrigation and domestic water supply). It was finally reiterated that any project activity should have a capacity building component aimed to contribute to a "learning culture"

In the ensuing discussion a major issue was that of communities' willingness to pay for water. In Namibia unwillingness to pay was a major problem and communities used many devious ways to sabotage metering systems or other regulatory measures. It was observed that external support agencies that fund projects that provide water supply services for free without considering the demand are partly to blame. Two regions in Sulawesi served as a good example for this: in one area community involvement had inspired the local people to generate their own financial means to support the development they desired, while in the other area where a bilateral agency had covered everything, there was an attitude of apathy and disinterest.

To a large extent the same phenomenon was seen in irrigation and drainage: the change from subsidized water provision to user payment meets with a lot of resistance. Inequity is an important factor in this context. In Pakistan, for instance, the services provided benefit a rural elite which is taking advantage of the system of subsidies. Irrigation and drainage, however, often require main infrastructural works whose management, operation and maintenance goes beyond the capacity of local user associations. In more advanced countries the trend is neverthe

less towards devolution of responsibilities for these major headworks as well. Mobilization of local resources is a key issue in irrigation development - too much reliance on donor support in the past has driven prices up to levels that stifle further development (In Africa in particular: 15,000 to 18,000 US\$ per hectare).

There were diverging views as to the motivation of people with respect to willingness / unwillingness to pay; unwillingness to pay for water was, in any case, not a phenomenon restricted to developing countries, the USA being a case in point. UNDP studies had shown that people, in particular women, were in principle willing to pay for water and sanitation. People may be unwilling to pay for the same product they have been getting for free in the past; unwillingness to pay may also indicate people do not want the particular product or service as it is being offered. A clarification of health issues related to safe drinking water has shown to be a good incentive for People to better appreciate the value of safe drinking water; UNICEF gave the example of Guinea Worm Infection in West Africa. There are few situations where willingness to pay is directly related to access or no access to water - maximizing one's own personal situation is a general human driving force and in this case may lead people to decide for free sources of water rather than to pay for safe drinking water.

On two other issues raised in the paper it was stated that the process of decentralization needed a transition period where the government remained involved, committed and supportive. Similarly, the mobilization of the private sector may lead to a drop in O&M services, both in rural drinking water supply and sanitation, and in irrigation and drainage, as the private sector may not be prepared to address this. It was also pointed out that private sector did not refer to large scale enterprises. In Bangladesh, for instance, the private sector had been instrumental in the expansion of tubewells for drinking water, mainly through small scale private sector business (local borehole drillers, operators etc. etc.). Reference was also made to the provision of community-based credit schemes for rural water project, and in this connection the role of the Grameen Bank in Bangladesh was mentioned.

The group went on to list important issues which interagency collaboration could effectively address, and to cluster these in accordance with agreed areas of activity and geographical focus. Guiding principles were also defined, as follows:

1. The adoption of demand management as a fundamental pre-requisite.
2. Achievement of the highest possible level of user/public participation.
3. The creation of an enabling framework.
4. In all decision making and project implementation, agencies should always consider the capacity to manage project operation.

As a result, the following clusters were developed:

Country focus, studies

Development of guides to involve water user groups to help them manage rural water projects.

International focus, studies

A state-of-the-art study (covering rural water supply and sanitation, irrigation and drainage and common aspects) of lessons learned and documenting ways of effective cost recovery.

Preparation of case studies on successful community based credit schemes for rural water projects and their use to prepare a conceptual framework to promote such schemes.

(also: *resource mobilization*)

Studies on the potential for credit guarantees to local banks - including a look at the role of NGOs and international agencies to increase financial flows.

(also: *resource mobilization*)

Design mechanisms for fund raising to implement, operate and maintain common water projects.

(also: *resource mobilization*)

The use of social development funds which are destined to meet basic needs (it was suggested that the World Bank should undertake such studies).

Country focus, development of policies

UN support to countries to formulate proper cost recovery systems.

Promotion of budget allocations for drinking water whenever ground water resources are developed for irrigation.

Development of consistent agency policies for water development at country level, leading to jointly designed projects.

(also: *action*)

Establishment of institutional mechanisms between government agencies to promote integrated projects - this should be explicitly included in government agency budgets.

(also: *action, resource mobilization*)

International focus, development of policies

A lead role for ESA/UN agencies in the formulation of policies on cost recovery
Both country and international focus, development of policies

Establishment of common methods and criteria for evaluating project for financing.

Promotion of schemes of financial incentives to reduce agro-chemical pollution in irrigation schemes which may burden Operation and Maintenance (including water treatment) of domestic water supply systems

Country focus, action at the community level

Establishment of a joint fund for pilot integrated rural water projects

Promotion of national sector involvement in rural Operation and Maintenance by building the capacity of the private sector in countries

Country and international focus, action at the community level

Establishment of a common water programme among UN agencies

Training

Flow of information among UN agencies and national groups on rural domestic water supply and sanitation, and irrigation and drainage - it was suggested the International Reference Centre or the Collaborative Council for Water Supply and Sanitation could be instrumental in this area.

Country and International focus, resource mobilization

Install mechanisms for debt swap in accordance with recommendations made in Agenda 21.

A number of priorities were determined from the above list of potential areas for collaborative action:

Priority 1 UN support to countries to formulate proper cost recovery systems.

Training.

Priority 2 Establishment of a joint fund for pilot integrated rural water projects.

Establishment of a common water programme among UN agencies.

Promotion of national sector involvement in rural Operation and Maintenance by building the capacity of the private sector in countries

A state-of-the-art study (covering rural water supply and sanitation, irrigation and drainage and common aspects) of lessons learned and documenting ways of effective cost recovery.

Design mechanisms for fund raising to implement, operate and maintain common water projects.

Development of consistent agency policies for water development at country level, leading to jointly designed projects.

Promotion of schemes of financial incentives to reduce agro-chemical pollution in irrigation schemes which may burden Operation and Maintenance (including water treatment) of domestic water supply systems

Install mechanisms for debt swap in accordance with recommendations made in Agenda 21.

Country expectations

Following the technical discussions, country participants were invited to relate their expectations and priorities to the Consultation.

Turkey

In Turkey Operation and Maintenance of some 670,000 hectares of irrigated land has been devolved to the farmer user groups. This devolution is expected to contribute to achieving the major objectives in existing irrigation schemes: increasing the yield while managing water resources better and using water more efficiently. Other than financing of new irrigation projects and the rehabilitation of existing ones by the appropriate UN agencies, the Turkish authorities expect assistance from the UN in the organization of workshops and seminars that will increase the capacity for farmer based irrigation management. An element of TCDC would allow to learn from experiences in other countries. The educational efforts should be geared to soliciting public participation and should therefore target farmer user groups exclusively. Technical cooperation will be needed in the area of pollution control of water resources, and in the future there may be scope for UN agency inputs to develop the use of waste water for irrigation.

Namibia.

Until 1990 rural domestic water supply and sanitation was a fragmented operation under seven different bodies in different parts of the country. In 1990 operations were centralized. Namibia has a clear policy of only improving service levels at the demand of and with the involvement of communities. There is, however, a problem to achieve sufficient community involvement, and the lack of extension staff is at the root of this. At the national level there is a coordinating body for domestic water supply activities; there is room for improvement when it comes to UN agency collaboration in this area.

Morocco

In Morocco there is a growing awareness of the limitation of water resources and the need to use them in a rational way. Over the past two years:

- ❖ a new water law based on the principle of involvement and participation has been adopted,
- ❖ a rural drinking water supply and sanitation master plan has been formulated: in less than a decade potable water should be within reach of 80% of the rural population,
- ❖ a national irrigation programme for 1993-2000 takes on two major challenges: expansion of the area under irrigation with 50,000 hectares per year during a five year period; and, improved agricultural productivity and enhanced management capabilities through an improved hydraulic performance, Operation and Management cost recovery and the strengthening of water user groups.

Morocco would like to work in an intellectual partnership with the United Nations agencies, receiving support in the formulation of policies and strategies and the implementation of programmes. With key policies in place, the question is now: how to translate the enabling environment into concrete action, and achieve sustainable results. Part of the structural adjustment programme for Morocco is a loan for welfare, including a sustainable livelihood component and this may provide a possible means of implementing the policies.

ANNEX 1

LIST OF PARTICIPANTS

Invited UN agencies

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*unable to attend

ANNEX 2

APPROVED AGENDA

1. Opening of the consultation
2. Objectives of the consultation
3. Approval of the proposed agenda and work plan
4. Review of progress in the implementation of the recommendations resulting from the first consultation
5. Comments by the agencies on additional collaborative initiatives
6. Technical discussions on Operation and Maintenance
7. Conclusions and recommendations
8. Arrangements for the next consultation
9. Closure of the consultation

PROGRAMME OF WORK

Tuesday 27 June

09:30-10:00 Opening Session

Agenda item 1: Opening
Agenda item 2: Objectives
Agenda item 3: Approval of the proposed agenda
and tentative programme of work

Relevant documents: TC/95/00 to TC/95/04

10:00-10:30 Coffee/tea

10:30-12:00 Agenda items 4 and 5: Review of progress
Comments by individual agencies

Relevant document: TC/95/05

Arrangements for two working groups on broad, cross-cutting areas: (1) policy framework, planning procedures and legislation; (2) institutional strengthening and management.

12:00-14:00 Lunch

14:00-15:00: Agenda item 6: Technical discussions

Presentation issues paper on **technology aspects**
of O&M
Plenary discussions

Relevant document: TC/95/06

15:00-15:20 Coffee/tea

15:20-17:00 Working group sessions on technology aspects

Relevant documents: TC/95/06 and
TC/95/09 to TC/95/12

Wednesday 28 June

09:00-10:30 Agenda item 6: Technical discussions (continued)

Working group sessions on technology aspects (continued)

Relevant documents: TC/95/06 and
TC/95/09 to TC/95/12

10:30-10:50 Coffee/tea

10:50-12:00 Technical discussions O&M:
Presentation issues paper on **community involvement/
education and training aspects of O&M, with special
reference to human health**
Plenary discussions

Relevant document: TC/95/07

12:00-14:00 Lunch

14:00-15:15 Agenda item 6: Technical discussions (continued)

Working group sessions on community involvement

Relevant documents: TC/95/07 and
TC/95/09 to TC/95/12

15:15-15:35 Coffee/tea

15:35-17:00 Working group sessions on community involvement
(continued)

Relevant documents: TC/95/07 and
TC/95/09 to TC/95/12

Thursday 29 June

09:00-10:00 Agenda item 6: Technical discussions (continued)

Presentation issues note on **economic and financial**
aspects of O&M
Plenary discussions

Relevant document: TC/95/08

10:00-10:20 Coffee/tea

10:20-12:00 Working group sessions on economic/financial aspects

Relevant documents: TC/95/08 and
TC/95/09 to TC/95/12

12:00-14:00 Lunch

14:00-15:15 Agenda item 6: Technical discussions (continued)

Working group sessions on economic/financial aspects
(continued)

Relevant documents: TC/95/08 and
TC/95/09 to TC/95/12

15:15-15:35 Coffee/tea

15:35-16:30 Plenary presentation of working group reports and
discussions

Evening: Drafting of conclusions and recommendations of the consultation

Friday 30 June

10:15-10:30 Coffee/tea

10:30-12:00 Agenda item 7: Technical discussions
Plenary presentation of draft conclusions and
recommendations of the consultation, discussions and
approval

12:00-14:00 Lunch

14:00-15:00 Agenda items 7 (continued if necessary)
Plenary presentation of draft conclusions and
recommendations of the consultation, discussions and
approval

15:00-15:30 Agenda items 8 and 9:

Arrangements next consultation
Closure of the consultation

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