UNITED NATIONS

DEPARTMENT FOR DEVELOPMENT SUPPORT AND MANAGEMENT SERVICES (DDSMS)

THE EXPERIENCE OF DDSMS IN WATER RESOURCES ASSESSMENT, PLANNING, DEVELOPMENT AND MANAGEMENT

Prepared by

Division for Environment Management and Social Development

Natural Resources and Environment Planning and Management Branch

United Nations

New York

September 1995

FOREWORD

This report provides a summary of the experience gained in the water resources field by the United Nations Department for Development Support and Management Services (DDSMS) and its predecessors over the last 30 years. A longer report was originally requested by the United Nations Development Programme (UNDP) to cover a number of case studies, which provide documentation of experience in UNDP-funded projects executed by the United Nations in water resources planning and management. That report has been completed and submitted to UNDP. Parts of it are being used to prepare this report.

DDSMS is in a unique position since it is involved in the normative activities of the United Nations as an integral part of the UN secretariat, defining global development policies, and at the same time it implements technical cooperation projects and programmes in the field, which are funded by UNDP and other sources. DDSMS is thus able to operationalize the concepts articulated at major international conferences through its field projects. It can also feed back the results of its experience to global fora.

Since the mid-1960s, assistance has been provided by the Department to developing countries in water resources exploration, assessment, planning, development and management. The former Water Resources Branch, now part of the Natural Resources and Environment Planning and Management Branch, has gained an excellent reputation for its technical assistance throughout the developing world.

The work carried out in developing countries aims to assist them to develop their own capacity in all relevant aspects of surface and groundwater resource development and use through training, technology transfer and building or strengthening national institutions. The Department has been providing assistance also in: water policy and legislative frameworks; medium and long-term management strategies; macro-economic planning tools; hydro-environmental impact assessments; hydrogeological and hydrological studies; and rural water supply and sanitation programmes. Information on those activities is presented in this report.

TABLE OF CONTENTS

12. Qatar
13. Small island developing states
14. Senegal
15. Tanzania
16. Yemen

B. Example of types of issues addressed
1. Rural water supply
2. Groundwater resources
3. Non-conventional water resources
4. River training and navigation

ANNEXES

Annex 1a. List of UNDP financed water projects
Annex 1b. Current UNDP finances projects in water resources
Annex II. List of projects financed by others
Annex III. List of seminars and technical meetings
Annex IV. List of publications

INTRODUCTION

In recent years a consensus has begun to emerge among international policy makers and water resources specialists around the world that the world is facing an impending water crisis. The vice-president of the World Bank has recently predicted that the conflicts of the next century will be fought over water, not oil or politics. The World Bank report, introduced by vice-president Ismail Serageldin, points out that 80 countries already have water shortages that threaten health and the economy and that 40 per cent of the world's population have no access to clean water or sanitation. As industrial, urban and agricultural demands rise, and as population continues to grow, the situation is deteriorating. Supply cannot keep pace with growth of demand, as populations soar and cities expend at unprecedented rates. The situation in the Middle East and northern Africa is "precarious", and Northern China, western and Southern India and parts of Pakistan, South America and much of Mexico are at the limit of their exploitable water resources.

Much of sub-Saharan Africa is in semi-permanent crisis, and many countries are accelerating the process of desertification. Fifty Chinese cities face acute shortages as the groundwater levels fall one or two metres a year. Meanwhile, water quality is rapidly deteriorating in developing countries as effluent discharge and over-abstraction go unchecked.

Water resources specialists in the United Nations and its specialized agencies have been aware of this deteriorating situation and have been urging a more proper approach to conservation and management of water resources, since before the United Nations Water Conference in 1977. Unfortunately, in many countries other national priorities took precedence -- industrialization, food production, energy generation, etc. These developments had a negative impact on the water resources and environment of a number of developing countries and countries in transition and the lack of sensible regulatory provisions has only accelerated the deterioration.

Over the years the United Nations and its specialized agencies have been at the forefront of efforts to improve water resources development and management to forestall water shortages, promote equitable development and avoid potential conflicts. The Department for Development Support and Management Services (DDSMS) and its predecessors have traditionally supplied the expertise in water resources development and management in the United Nations Secretariat. The Department was involved with improving access to water supply through exploration and development of water resources to meet the needs of urban and rural populations, agriculture and industry. An overriding concern of the Department has always been to view the water resources as a whole, and not to single out one sub-sector. Assistance was provided to governments through institutional capacity building in exploration, assessment, planning, development, management, protection and conservation of water resources, as well as in legislation.

New approaches are now required to help rapidly developing economies achieve sustainable growth, maintain environmental integrity and resolve the conflicting demands upon limited water resources. Integrated water resources development and management, using the hydrologic basin as the basic unit, stresses the need to view water resources in a holistic way. An essential element of such an approach is the consideration of the socio-economic system and the supporting ecosystems. The long-term sustainability of these systems hinges upon a sound understanding of their inter-relationships and co-evolution. The United Nations, through DDSMS, wishes to promote this holistic approach to water resources management in its work in developing countries and economies in transition. This approach requires the participation of all users in order to obtain realistic and equitable allocations of water among users, with special consideration given to the urban and rural poor.

As can be seen from the examples provided in the text, there has been an evolution in the Department's approach from water resources development to capacity building and sustainable development. DDSMS is providing assistance in techniques to mobilize communities and facilitate access to other potential partners in water resources conservation and development. It is recognized that sustainable development will depend on the participation of users in decisions relating to the allocation of water, equitable pricing structures and conservation of the resource through water quality controls and restrictions on use. Much of the future work of the Department is likely to be focused on formulation of policies, legislation and guidelines for sustainable water resources development and management.

PART I

History and Activities of the Department

A. History of DDSMS

Since the inception of the United Nations system's technical assistance programme to developing countries in the early 1960s, the United Nations Secretariat itself has been a major player in this endeavor. While most of the United Nations specialized agencies are concerned mainly with one development sector, the United Nations has been providing technical assistance in a number of different sectors and cross sectoral areas, including natural resources, energy, infrastructure, cartography, economic planning and public administration.

It was the United Nations Department of Economic and Social Affairs (DESA), one of the largest United Nations departments, that was entrusted with technical cooperation and technical assistance to the many newly emerging developing countries. Technical assistance operations were handled by the Office of Technical Cooperation (OTC). OTC was supported in turn by other United Nations administrative offices such as Personnel and Finance and backed up technically by several substantive offices such as the Centre for Natural Resources, Energy and Transport (CNRET), the Statistical Office, the Centre for Development Planning etc.

In 1978 the entire technical cooperation and technical assistance operations of the United Nations Secretariat were consolidated into the new Department of Technical Cooperation for Development (DTCD). With all the administrative and technical functions concentrated in the new department, its project execution capabilities and its technical cooperation capacity improved considerably. It was functioning like a United Nations specialized agency, and as such it was one of the largest in the UN system. At the same time it retained its normative functions as a policy-making organ of the United Nations. The dynamic between the global policy making activities and the operational execution of projects at the national level increased and both functions were subsequently enhanced.

As part of a major reorganization of the United Nations Secretariat in March 1992, several United Nations substantive offices and DTCD were merged into the new Department for Economic and Social Development (DESD). A restructuring of this department a year and a half later (1993), resulted in the sub-division of DESD into three smaller departments of which the new Department for Development Support and Management Services (DDSMS) continued to execute technical cooperation projects in natural resources, among other areas, including water resources and retained the *de facto* status of a United Nations executing agency.

When relevant, the DESA, DTCD, DESD and DDSMS acronyms will be used in this report. Otherwise all will be referred to as "the Department". Water resources were dealt with by a Water Section under DESA and as the Water Resources Branch under the DTCD and DESD. Now, under DDSMS, the water resources unit is within the Natural Resources and Environment Planning and Management Branch. In the report the term water resources unit will be used, which does not imply any official organizational entity.

B. Background: the water resources context

Water resources development has always been one of the main development areas of governments and external support agencies (ESAs) alike. Water resources, however, are developed to support other sub-sectors such as water supply, irrigation, hydropower, navigation etc. Most often, therefore, water resources are studied, planned and developed independently by and for the various end users in these sub-sectors. This approach is very much entrenched in governments as well as in most External Support Agencies (ESAs) and is reflected in the institutional arrangements of these entities and in many cases also in the water laws of a country. In many countries water resources development, planning and management are dealt with by different ministries according to the end use of water; many ESAs also handle water on a sectoral basis. In the United Nations system, FAO deals with water for irrigation and drainage, WHO with water quality and community water supply and sanitation, IMO with navigation, etc. Although this sectoral and end-user approach to water resources development and management may have been useful, in more recent years it has given way to more rational integrated planning and development of water resources in many developing countries. The current trend in water resources projects executed by the United Nations is to support a more integrated approach, recommending that one agency be responsible for all aspects of water resources. This trend is apparent in a growing number of developing countries.

Moreover, in many countries surface water and groundwater are treated as two separate water resources. There is a lack of understanding of the close physical relationship between surface and groundwater. As a result the assessment, planning, development and management of these resources is very often carried out by different government agencies. Some ESAs have the same deficiency.

The water resources unit of the United Nations, which is cross-sectoral and multidisciplinary, has the advantage of being impartial and holistic in its approach to water resources. It is concerned with integrated water resources management, as well as multi-purpose and multiple objective water projects. This approach, supported by a very strong technical team of experts, has made the water resources unit of DDSMS exceptionally suitable to tackle complex water resources problems in developing countries.

C. The experience

Throughout the years the water resources unit has dealt with practically all aspects of surface and groundwater resources: exploration, assessment, planning, development, use, management, protection, conservation and legislation in a large variety of environments in developing countries. The water resources unit is also concerned with complex water resources issues, such as conjunctive use of surface and groundwater, river basin planning and development, transboundary issues, aquifer system hydraulics, river training, river navigation, coastal engineering, flood control and all aspects of water management. The water resources unit has also dealt extensively with non-conventional water resources such as desalination of sea or brackish water and sea transport of water. It introduces as required, traditional, modern and state-of-the-art technologies in the field of water resources, according to the level of development and the needs of a given country. The methods can range from shallow well digging operations for rural water supply to preparation of

complex water resources development and management schemes for large urban areas; from basic hydrogeological studies to intricate river basin water management models. During the last decade the water resources unit has made special efforts to introduce the use of computers for water resources data banking, data processing and data presentation, as well as for complex computation, modeling and Geographic Information Systems (GIS).

A great deal of attention is given to the process of capacity building, through institution-building and human resources development in the field of water resources in developing countries. In many countries, this has included a strong focus on community participation and involvement of women, as well as an effort to link water resources development to poverty alleviation. Some examples can be cited of the involvement of all stakeholders through water forums and participatory management.

The Department and the water resources unit have gained this vast experience through the implementation of the following types of activities:

- Formulation and execution of all types of water resources projects;
- Provision of short-term advisory services in water resources;
- Major substantive contributions to intergovernmental and interagency bodies such as the ECOSOC Committee on Natural Resources, the ACC Subcommittee on Water Resources, the Steering Committee for the International Drinking Water Supply and Sanitation Decade and the Commission on Sustainable Development;
- Organization of inter-regional seminars and workshops on water resources;
- Preparation of publications on water resources;
- Development of software for water studies and management.

Whether through execution of projects, advisory services, intergovernmental bodies, seminars or publications, special attention has been given to socio-economic issues, capacity building, sustainable development and the environment, as well as water legislation and administration. Since 1962, the Department and its water resources unit have formulated and executed close to 500 water projects in 110 developing countries, 30 regional projects and five inter-regional water projects. A list of projects implemented by the Department is presented in Annexes I and II.

D. The normative activities of DDSMS

In addition to its project execution responsibilities, mainly supported by overhead resources, the Department carries out a number of activities which are supported by Regular Budget and Regular Programme resources and its Regular Budget staff, briefly summarized below.

. Advisory services

The Department's direct assistance to developing countries has been in the form of technical advisory services provided by senior specialists in many different development disciplines. The cost of the services is borne by the UN Regular Programme of Technical Cooperation. The water

resources unit has had two to four such specialists (Inter-regional Advisers) at all times during the last 20 years. They cover different aspects of water resources development, such as hydrology, hydrogeology, water well drilling, water resources engineering, river training, river navigation, water resources legislation and institution building. Regular Programme resources are also used for Advisory Missions of Technical Advisers and Ad Hoc Consultants.

The Inter-regional Advisory services are rendered to developing countries at the request of governments. The advisers may spend up to one month in a given country and advise the government on specific water problems in their area of expertise. They assist governments to prepare requests for securing external assistance as well as to finalize project documents for UNDP financed projects. Very often they also organize short training sessions for national personnel.

Throughout the years several hundred missions have been carried out by the advisers and consultants to almost all developing countries. Through these missions and project implementation, the water resources unit has been exposed to practically all of the water problems in developing countries and economies in transition around the world.

2. Parliamentary services and inter-regional seminars

The Department's advantage is that it is involved in both operational and normative activities of the United Nations. The value added that DDSMS provides to developing countries is the iterative nature of its work: it tests out in its operational field projects the concepts articulated in the international arena, and modifies its approach based on results. These results are then fed back to intergovernmental bodies, which can draw lessons from the experience and in turn make realistic recommendations to governments, and include them in global programmes of action.

The Department provides substantive servicing in the water resources sector to parliamentary bodies such as the ECOSOC Committee on Natural Resources. Moreover, it has been entrusted with the organization of major global conferences on water. With the active participation of the Water Section, the DESA organized the United Nations Water Conference in Mar del Plata in 1977, which led to the International Drinking Water Supply and Sanitation Decade (IDWSSD), 1981-1990. The water resources unit had a key role in preparing the International Conference on Water and the Environment that was held in Dublin in 1992. The Department has also played a very active part in the work of the ACC Subcommittee on Water Resources and the Interagency Steering Committee for Water Supply and Sanitation.

For the last 20 years or so, the water resources unit has been organizing several inter-regional seminars and workshops each year. They covered a large variety of subjects of interest to different developing countries around the world, including river basin planning and management, non-conventional water resources, planning of multiple objective water resources projects, water quality management, small island water management techniques, groundwater economics and many more. Normally there are some 30 to 50 participants from developing countries at each seminar. The cost of participation by developing country representatives is mainly borne by the UN Regular Programme of Technical Cooperation. Many seminars or workshops are jointly organized with other UN agencies or with bilateral donors. See Annex III for a partial list of seminars and technical meetings.

3. Technical publications

As part of its Regular Budget activities, the UN water resources unit has prepared and published some 30 technical publications as part of its Water Resources Series on a variety of water resources subjects. Notable among these publications is a set of eight publications on the groundwater situation in most parts of the world grouped by region or subregion. In addition, the water resources unit published about 25 other documents, mostly proceedings of seminars and workshops and other technical reports, as well as numerous background papers for intergovernmental bodies such as the Committee on Natural Resources. See the list of publications in annex IV.

4. Use of computers and software preparation

Since the beginning of the proliferation of personal computers in the early 1980s, the water resources unit has recognized the great potential of using computers in water resources studies. Computers were introduced to many developing countries through water projects and several regional and inter-regional seminars.

In 1986 a water project in Bermuda started to develop dedicated software for groundwater studies. This software was further developed and improved in a groundwater project in Nepal. The software package includes such applications as hydrogeological calculations, pumping test analysis, graphic presentation of hydrochemical data, well logs, cross sections and maps. It has a rudimentary DOS-based database as well as simple groundwater modeling capabilities. Over 300 copies of the United Nations Groundwater Software (UNGW) were distributed to developing countries, and training has been provided to hydrogeologists and other water specialist in over 40 countries.

The development of a much more advanced groundwater software was completed at the beginning of 1995. This version, which is a dedicated hydrogeological information system, works under Microsoft Windows. It has more applications than the DOS version, a relational database, and very advanced graphics (mapping and charting) capabilities. This Groundwater for Windows (GWW) can be adapted by the user to work in any language for which there is a Windows version. Copies of this version (manual and diskettes) have been made available to developing countries since April 1995.

E. Issues given special attention

As mentioned above, the Department has consistently given special attention to a number of development issues, which are described in this section.

1. Socio-economic dimension

In many instances the issues or the problems that a project has to tackle are not only technical. Water resources development, whether for rural water supply or for irrigation, is invariably intertwined with the local socio-economic situation and even with the cultural background of the

people in the project area. Whereas the technical solutions to water problems may be very similar in many places, countries or even continents, the socio-economic dimension and the cultural environment differ greatly from project to project. Bringing a project to a successful end depends therefore on the degree of understanding of the socio-economic and cultural environment in the project area.

The water resources unit, particularly through its work in rural water supply projects in Africa, has been aware of the importance of the socio-economic and cultural dimensions in these kinds of grassroots projects. The water resources unit has developed a methodology for achieving success in these projects. It includes public education related to safe drinking water and community participation in the construction of water wells and latrines and their maintenance. Special attention is given to the crucial role of women in relation to water management. Over the years of its involvement in the water resources sector, the United Nations changed its approach from one which emphasized the provision of "hardware" to one that emphasized "software" or the "bottom-up" approach, i.e., participation of user groups, the community and NGOs as a means to project sustainability.

2. Capacity building

One of the goals of the United Nations technical assistance programme is to assist developing countries in the process of building national capacities until such assistance will no longer be needed. The water resources unit has been working towards this goal on a continuous basis and can show appreciable progress in human resources and institutional development.

Almost every water project implemented by the Department includes a component for training of national professionals and technicians in relevant aspects of water resources assessment, planning, development and management, as required. Several thousands of national personnel have received on-the-job training throughout the duration of the projects. Study tours of 2-3 weeks to 3-4 months, and longer duration fellowships of 6 months to 2 years, have been awarded to many hundreds of fellows.

Assisting in the creation of new water resources entities or strengthening existing ones within a Government office is also one of the main objectives of most projects. In addition to training of national personnel, this activity also includes institutional and legal frameworks, the provision of equipment, instruments and materials according to the specific needs of each case. It also includes adaptation of suitable work methods, preparing work programmes, running the new or strengthened unit and carrying out actual work.

The Department and the water resources unit have implemented a number of projects whose main or only objective was training or creating a water institution. A $US 1.1 million project in Turkey was dedicated completely to training of 240 professionals and technicians of the State Hydraulic Works (DSI) through group study tours and individual fellowships.

Dedicated projects have assisted in the formation of the following water institutions:

- In Mendoza, Argentina the Centre for Economy, Legislation and Administration of Water was created. It is a national institution for training and research, with Latin American regional cooperation.
- The Institute for Water Studies was created under a UN project in Madras, India.

- The Karst Research Centre was created at the Hachetepe University in Ankara, Turkey. The Centre organizes frequent international symposia and other meetings on karst.
- The Central Materials Testing Laboratory and the International Waterlogging and Salinity Research Institute were established in Pakistan.
- The Water Resources Authority has recently been created in Yemen.

3. Sustainable development and the environment

Since water resources are normally developed for specific uses such as water supply or irrigation, attention has to be given not only to the sustainability of the water resource itself but also to the impact on the environment in general and on water resources in particular as a result of the water use. These issues, if not taken into account at the investigation and planning stage of water resources development, may adversely impact not only the immediate surroundings of the developed area but also far away areas in the same river basin. One of the most infamous cases of disastrous environmental impact is the irrigation development and the environmental disaster of the Aral Sea in the former Soviet Union. With UNDP assistance, the Department would like to contribute to efforts in Central Asian countries to improve their capacity to monitor water quality and environmental consequences of transboundary water use.

Sustainability aspects of water resources development are taken into consideration in water projects executed by the Department. In some countries (Yemen, Jordan and others) projects were set up to deal specifically with the sustainability of their water resources and protection of water quality. In those countries over-pumping of groundwater (the main water resource in the country) causes the depletion of aquifers. One of the main objectives of a groundwater investigation project in India was to assess the water logging problem that may occur as a result of a large-scale surface water irrigation scheme. In Yemen the Water Resources Authority has been established to oversee protection and allocation of all water resources on a sustainable basis.

4. Water Legislation

Without adequate water legislation, regulations, and water resources administration capacity and the needed institutional arrangements, even the best water planning and management schemes could not be implemented effectively. The water resources unit and the Department are very much aware of this and are very active in advising developing countries on water legislation and the needed institutional arrangements. This is carried out through missions of inter-regional advisers on water legislation to the countries, and through projects, seminars and publications.

Proposals for water legislation and institutional arrangements have been prepared for a large number of developing countries. Several countries such as Cayman Islands, Mozambique and Oman, have adopted and enacted the proposed legislation and/or the proposed institutional arrangements. More than 25 other countries are in the process of considering draft water legislation and proposals for institutional arrangements made by the Department.

In assisting in water legislation the Department promotes the development of structural legislation that, by legally assuring water rights and existing uses, promotes investment and protects indigenous people. At the same time the Department encourages the enactment of regulatory

norms with a view to: protecting the resource base; assuring optimal, beneficial and effective water use; and preventing monopolization and misallocation of water. Regarding institutional arrangements, the Department, considering contemporary needs for unbiased water management, sees benefit in the independence of water institutions.

5. Optimal use of water resources

Maximizing the socio-economic benefits of water resources in a sustainable manner, without adversely affecting the environment (or with a minimal but acceptable environmental impact) is the ultimate goal of water resources development and management. To achieve this goal, the following elements are required:

- Adequate knowledge of sustainable water resources potential;
- Projections of water use and water demands;
- Understanding of the socio-economic context;
- Consideration of environmental issues relevant to land and water resources and their use;
- Adequate water resources planning;
- Knowledge of national economic and social development strategies;
- Availability of qualified human resources;
- Adequate water installations;
- Appropriate water resources management schemes;
- Efficient and effective use of water; and
- Legal framework and appropriate institutions.

The Department has been assisting many countries in the quest for maximizing the benefits from their water resources, and has been concerned with all of the above elements for achieving these benefits at different levels depending on the country's development level and its specific needs. Several of the examples referred to in part II demonstrate the Department's experience in assisting developing countries to work toward maximizing the benefits of their water resources. Projects in Chile, Tamil Nadu, Yemen, Senegal, Jamaica and Haiti are good examples.

F. Assessment and outlook

Throughout the 30 years of technical cooperation and technical assistance to developing countries, the Department gained an unparalleled experience in handling practically all aspects of water resources. However, it is not only the technical experience that was accumulated, but also the ability to adapt to the evolving situation and conditions in the developing world. Providing the proper technical assistance at the right time is the key to the effectiveness of the assistance programme.

The Department, working at the same time on many projects in different countries with different needs and absorptive capacities, has succeeded in cooperating with the local UNDP offices, to tailor projects for each case. In the early 1970s, for example, in Latin America some projects were

already working on assessment, planning and development of water resources and their optimal use, while many projects in Asia were concentrating on water resources exploration, assessment and capacity building. At the same time in Africa a number of projects were set up to provide water supply and sanitation to meet the basic needs of rural populations. In recent years, while DDSMS has provided assistance to some countries in improving their water resources policies and legislation, along with strengthening their planning and management institutions, in others the emphasis is on water resources planning and management using state-of-the-art technologies and methodology. At the same time progress in several African countries required a shift in the type of assistance from simple water supply projects to integrated water management and the use of advanced technologies, including databases, GIS and modeling.

In a very large number of developing countries, capacity building that was provided through the UN technical assistance system and other donor-financed projects in the water sector achieved such levels that many aspects of water resources assessment, planning and development are being competently carried out by national professionals. There is a need in many of these countries for specific technical support that varies greatly from country to country and from case to case, depending on the level of socio-economic development and the problem to be addressed.

The Department has been able to adjust continuously its mode of operation to fit the needs of developing countries, and will do so in the future. New arrangements for providing technical assistance, introduced in the early 1990s, have been embraced by the Department, and are used increasingly as the DDSMS input to UNDP-financed water resources programmes and projects. The technical advisers are able to draw on the institutional memory accumulated over the years to provide assistance at the upstream policy and programme formulation stage, and to provide technical monitoring and evaluation during implementation.

The Department is well aware of the evolving and growing needs in the developing world and the recommendations and concepts being articulated at major international conferences. Through technical assistance programmes financed by UNDP and other donors, and through its own Regular Programme activities, DDSMS is ready to tackle new challenges with special attention to capacity-building, poverty alleviation, protection of the environment and sustainable development.

Part II

Examples of case studies

A glance through the list of projects in Annex I, gives a good picture of the wide range of activities, environments and countries that the water resources unit has been involved with throughout the years. To demonstrate further, this part contains short descriptions of 16 selected case studies and descriptions of several issues frequently dealt with by the unit.

A. Examples of country case studies

1. Burkina Faso

Burkina Faso is a land-locked Sahelian country in West Africa. It has an area of 270,000 km^2 and a population of over 10 million. The country faces grave water problems: scarcity of perennial surface water resources; limited groundwater resources in crystalline formations that cover 80% of the country; land degradation and erosion; and frequent long droughts. The ongoing UNDP/DDSMS "Water and Regional Development" programme follows 25 years of the Department's involvement in the development of water resources in Burkina Faso. The current programme is focused on support to local initiatives of motivated entrepreneurs to obtain water for food production. In parallel, a participatory approach to basin planning has been launched with accompanying instruments (basin models and simulation tools/GIS on water resources and uses). The goal is to ensure rational, equitable and long-term water allocations among competing uses, mainly between intermediate size towns and rural irrigation schemes in areas with very limited water resources.

The programme includes the following elements:

- two series of 300 public water meetings throughout the country, open to all the actors of the civil society;
- facilitation of contacts between the motivated local groups and other qualified partners (NGOs, consulting firms, banks, etc.). Local groups are provided a forum in which to present their "project briefs" and their feasibility studies (technical, water resources, financial, socio-economic and organizational elements);
- promotion of promising projects with financial organizations;
- inventory of water resources, water uses and water constraints at the basin level;
- hydrologic measurements and modeling for simulations of long-term water usage in the basin, with scenarios for various water developments;
- capacity building and training of water resources specialists in decentralized institutions.

The programme was initiated in response to the reality that access to water, especially in Sahelian and arid countries, presents a huge potential for motivating local entrepreneurs to increase food production, but also presents risks of long-term over-exploitation. Water development may therefore not be sustainable, unless the numerous spontaneous local initiatives are closely supervised. The operational strategy consists of a combined support to local initiatives, empowerment of basin stakeholders, new decision making and regulation principles.

2. Chile

Northern Chile is one of the world's richest areas in minerals, including copper, nitrates, lithium and other elements. Export of those minerals, particularly copper, is the main source of Chile's foreign exchange earnings.

The region is also the driest place in the world. The main source of water is snow melt on top of the many snow-capped volcanoes that rise to elevations of 5,000 - 6,000 m along the eastern border of the region. Snow melt infiltrates into the fractured volcanic rocks and re-appears in springs, as base flow in rivers, in water- logged areas (vegas) and as seepage into the many salt lakes (salares). All the water resources in the area are mineralized to different degrees. Even the best waters have to be treated to remove arsenic before they can be used for human consumption.

Most of the known surface water resources of the region were tapped and diverted to urban and industrial uses, as well as to several agricultural areas. The development of the region's water resources was done piecemeal throughout the years without any general planning. There was no clear idea of the occurrence of groundwater resources and their flow regimes in the region. The information on surface water resources and the flow regimes of rivers was incomplete and inaccurate.

The project CHI/69/535 "Water Resources Development in the Norte Grande", covered an area of 250 by 500 km (125,000 km^2). It collected, processed and assessed meteorological and hydrological data. Geological mapping and geophysical investigations preceded the drilling of 102 exploration and test wells, with a total of 15,000 metres of drilling. All the hydraulic structures, pipelines, irrigation systems and urban water supply systems, as well as the water-use practices by the mining industry, were reviewed and evaluated prior to the preparation of the water resources development and management plan. Special attention was given to specific issues such as: recycling of waste water in mineral processing; reducing water losses from urban water distribution systems; and improving the primitive irrigation systems.

The project showed that the total surface and groundwater resources potential in the region is 300 million cubic metres/year (MCM). With the existing practices of water use by the different sectors, this potential will be completely used up by the year 2005. The project proposed several measures to increase water availability and decrease water demand by the main users of water resources, for example:

- Improve irrigation systems and agricultural practices.
- Use and re-use waters of low quality in mineral processing.
- Control groundwater levels in vegas to reduce evaporation losses.

- Reduce water losses in distribution systems in urban areas.
- Apply a restrictive rate of per capita water consumption growth.

With these and other measures, the project selected the best alternatives for allocating water of different qualities from the different resources to all the present and known future users and prepared an optimized plan for development and use of water resources in the region. The average cost (1977) of 1 m^3 of water in the region, if the recommended conservation measures were introduced, was estimated at US$ 0.17. Without conservation it would probably be US$ 0.30. Beyond 2005 additional water resources would have to come from far away or from desalination at a cost of at least US$ 1.00 for one m^3. Total investment for implementing the development of water resources with conservation by the year 2005 (according to 1977 prices) was estimated at US$ 115 million. Without conservation the cost would be US$ 307 million.

Several of the recommendations of the project were implemented since 1977. Waste water is treated and recycled at the copper ore processing facilities at Chuquicamata. Irrigation and agricultural practices were improved in some places, resulting in a great savings of water. A second pipeline was built for the water supply of Antofagasta. More conservation work and the opening of a new large copper mine are planned for the next few years. Adhering to the conservation and other recommendations made by the project will enable economic development of the Second Region to continue well into the 21st century.

A similar water resources assessment and planning was carried out by the project in the Forth Region. The main water use there is irrigation.

3. China

north eastern Huang- China's semi-arid Huai-Hai Plain supports some of the country's largest urban/industrial concentration and most intensive irrigated agriculture. The roughly half million square kilometres straddles 5 provinces and includes the municipalities of Beijing and Tianjin. The Plain comprises the lower reaches of the Huang (Yellow), Huai and Hai river basins which drain into the Bo Hai Sea across a broad alluvial plain. The plain is estimated to have some 180,000 km^2 of arable land of which 56% is irrigated. Groundwater development in the Plain started in the mid-1940s with the advent of major irrigation projects. By the early 1980s it had become apparent that in many areas of the Plain, groundwater abstraction was exceeding rates of natural recharge.

Water use planning and management in the Republic of China, though a critical factor in the development of the economy as a whole, has not been based upon the use of empirical data and systematic mathematical models. The result, particularly in areas of high population density such as North China, has been severe water shortages and in some cases, declining water quality. The rapid development of industrial and agricultural production is leading to shortages of fresh water and the problem of water pollution is becoming increasingly acute.

The North China Water Resources Management Project (CPR/88/068) was implemented by DDSMS and the People's Republic of China State Science and Technology Commission to provide the Chinese Government with access to technologies and expertise in water resources, economics and decision support systems which were only available outside China.

The 33 month project (1991-1993) provided development assistance and technical training in integrated resource management including: macro-economic based, multiple objective water resources planning processes, economic and water resource mathematical optimization modeling, development of information systems, and implementation of a decision support system. The project also provided assistance in the coordination of water resources information and management objectives among agencies. The development of a comprehensive database on hydrologic, economic and socio-economic information is a major accomplishment of this project.

Water resources management and macroeconomic models were also produced to conduct resource management, policy and economic studies tackling specific problems at eight study centres in seven provinces or municipalities. The information, training and models developed by this project encourage integrated resources management and provide new methods for decision makers to analyze alternatives and possible consequences of policy actions.

The techniques and the capacity to use them are already being applied in another DDSMS-assisted project, the Water Master Plan for North Xinjiang, to be completed in 1995. The main input is coming from the North China Water Resources Research Centre established under the North China Water Management Study project, in conjunction with the Institute of Water Conservancy and Hydro-electric Power Research. There is consequently a further transfer of capability to the Xinjiang Water Resources Bureau.

The groundwater investigation project (CPR/81/036), which operated from 1982 to 1988 ,carried out an assessment of the natural recharge of groundwater in the Huang-Huai-Hai Plain.

4. Guatemala

Most of the UN/UNDP groundwater projects that were formulated and executed in many countries in the late 1960s and during the 1970s, included in addition to hydrogeological studies, the creation of a national capacity in groundwater exploration assessment and development. That entailed the formation of new institutions that would deal with groundwater, or new groundwater units within existing organizations. The projects trained national professionals and technicians and in most cases also provided all the required equipment and materials for carrying out groundwater studies (drilling machines, heavy and light vehicles, geophysical and laboratory instruments, pipes etc.). Continuous support on the part of UN/UNDP for four to six years was needed to establish a national capacity in hydrogeology in countries where there had been none. Argentina, Chile, Paraguay, Bolivia, Costa Rica, Nicaragua, El Salvador and Guatemala were among the countries in Latin America where such projects were implemented. The Guatemala project described below is a good example.

Guatemala, with an area of almost 110,000 km^2, is located in Central America south of Mexico. The backbone of the country is a volcanic mountain chain (Sierra Madre) that runs parallel to the Pacific coast. The climate is tropical, hot and humid in the lowlands and pleasant on the highlands.

Guatemala City is the capital with a population of around 2 million. It is situated in a inter-mountain tectonic valley 25-28 km long and 15-18 km wide at an elevation between 1,200 to 1,000 metres. Average rainfall over the valley is between 900 and 1300 mm/year. The water supply to the city is based on groundwater from wells drilled into volcanic and alluvial aquifers. Drilling wells and pumping groundwater is not controlled, since the country still does not have

adequate water legislation or tools to administer water resources use. The uncontrolled pumping exceeds recharge and, as a result, groundwater levels have been declining continuously for the last 30 years. The UN/UNDP executed two projects in Guatemala:

GUA/72/011: Groundwater Studies: The project strengthened the capacity of the groundwater unit of INSIVUMEH (National Institute for Seismology, Volcanology, Meteorology and Hydrology), to carry out the required studies for developing groundwater in the country. In addition the project carried out very thorough geological, hydrological, geophysical, hydrogeological and hydrochemical investigations in the valley of Guatemala and its immediate surroundings. It used mostly conventional hydrogeological methods, but also made use of such technologies as environmental isotopes and groundwater modeling.

GUA/85/008, Water Legislation in Guatemala: The situation of the water sector in Guatemala was as follows:

- Water legislation was outdated and fragmented, without policy guidelines and institutions designed to promote integrated water management;
- There was no economic assessment of the role and value of water resources within the general economic framework of the country;
- The system for water resources management was user-oriented, with each main institution related to water resources having its own area of jurisdiction and competence (agriculture dealing with water requirements for agriculture, energy with hydropower etc.).

The project produced the following outputs:

- A proposal for institutional improvement of the water sector. Based on this proposal, the Government of Guatemala created the Secretariat for Water Resources, which is responsible for water resources policy.
- A draft proposal for water resources legislation which is being considered by the Government.
- A set of policy suggestions related to: the economics of water resources, including the need to provide cost-effective water services; the principle of self-financing of urban water supply and sanitation services; the need to evaluate water projects and programmes according to efficiency principles; and the implementation of the polluter pays principle.
- Recommendations for the updating and consolidation of the registration of water connections and the system of water charges.

5. Haiti

Haiti (27,000 km^2, population 6 million) occupies the western half of the Island of Hispaniola. Two-thirds of the country is mountainous, the remaining part is mostly coastal plains. The climate is tropical with rainfall of 400 to 2000 mm per year unevenly distributed and dry periods lasting from 3 to 6 months. Information on the country's surface and groundwater resources was partial and inaccurate and there were misconceptions on the availability of these resources.

An early UN/UNDP project, HAI/79/001, Study and Management of Groundwater Resources (1979 - 1982) was followed by a second project, HAI/86/003, Development and Management of Water Resources (1987 - 1991). The project focused on the following issues:

- Strengthening the operational capacity of the National Water Authority (SNRE).
- Assessment of surface and groundwater resources
- Assisting the establishment of the Water Resources Planning and Coordination Authority
- Preparing the Water Resources Master Plan.

The project created also a computerized water resources databases and made extensive use of GIS (geographic information systems) for water resources planning.

6. India: Tamil Nadu State

Tamil Nadu state with an area of 130,000 km^2, occupies the southeastern tip of the Indian peninsula. It has three major physiographic zones: (1) western mountainous terrain; (2) central elevated terrain with undulating topography; and (3) eastern wide flat coastal plain. All three units are traversed by river valleys with a predominant north western to south-eastern trend.

Tamil Nadu has a hot tropical climate with two monsoon seasons, the main northeast monsoon lasts five to seven weeks from October to December, and the southwest one from June to September. About two-thirds of the total yearly precipitation of 800 to 1,400 mm occurs during the short northeast monsoon. Droughts are quite common and severe devastating droughts are not a rare occurrence in the state.

Both surface and groundwater resources are equally important to satisfy the water demand in the state. There are 16 main rivers in the state, most of them originating within the state borders. The largest and by far the most important river, the Cauvery, originates in Karnataka (mainly) and Kerala states.

There are many tens of thousands of wells in Tamil Nadu. Most of them are shallow dug wells in alluvial and hard rock areas equipped with small suction pumps. There are also several thousands of deep drilled wells equipped with turbine pumps.

Tamil Nadu is a predominantly agricultural state. The great majority of its more than 55 million people live in villages and small towns, but urban and industrial centres are rapidly growing, accompanied by growing water demand. Madras, the state capital, had about 3 million people in 1982 and is expected to have 5 million in the year 2000.

Most of the water resources of the state have already been developed. The main water related issues of Tamil Nadu are: (1) Water supply for Madras; (2) the Cauvery delta; and (3) the other 10 major river basins in the state.

The United Nations has been involved in the water problems of Tamil Nadu State in general, and in the specific water supply problems of Madras City, since 1965. The Department implemented six projects, of which five were financed by UNDP (total $US 4.38 million) and one by the World Bank ($US 1.32 million). The first project, IND/65/549, explored and assessed groundwater in the northern half of Tamil Nadu, giving special attention to the Madras water supply problem. The

project identified additional groundwater resources including additional water for Madras. The second project, IND/68/598, assessed the groundwater situation in the Cauvery Delta which is the main agricultural area in the state. It showed that with the correct conjunctive use of surface and groundwater resources, the irrigated area, particularly that for second and third crops, can be increased considerably.

The existing water resources (mainly surface water) for the Madras City water supply system are not sufficient, and in extreme dry years (such as 1983), the City water supply dried out completely. Two projects dealt with this problem: IND/78/029 and IND/86/011. The projects carried out very careful assessments of the available water resources for Madras, looked at the existing water works and reviewed the management practices of the water supply system. The project showed that with improvements to the existing water works, construction of additional water works to tap additional water and a proper water resources management plan, it would be possible to supply Madras with water even in dry years. All the proposed works were detailed technically and their cost was calculated. The project prepared an elaborate total water resources model to be used as a tool for managing the water supply system of the City. During the second project period some of the proposed works were constructed, including additional well fields, artificial recharge facilities and a hydraulic barrier to arrest sea water intrusion into a coastal aquifer.

The project IND/82/058, while strengthening the Institute for Water Studies in Madras, carried out surface and groundwater resources assessment in nine major river basins in Tamil Nadu State and surveyed the existing water works and irrigation systems in these basins. It prepared a computerized data bank and entered into it some 400,000 water-related data points collected over a period of 10 to 50 years.

A very detailed water resources and water use assessment project (IND/85/X01) in three major river basins in Tamil Nadu was carried out by the Department with World Bank financing. The project also reviewed present water management practices in the basins and recommended improvements. Computerized models were prepared for each basin as tools for better management of the total water resources of the basins for different uses. The project carried out a study of the existing water legislation and administration and drafted a proposal for a new water law, regulations and the needed supporting institutions.

7. Jamaica

Jamaica is a mountainous island country located in the north-western Caribbean Sea with an area of 11,000 km^2 (230 X 80 km) and a tropical climate. Rainfall is 1,500 mm/yr. in the coastal areas and 3,000 to 5,000 mm/yr. in the mountains. In spite of the seeming abundance of rainfall, Jamaica is experiencing water problems. The uneven distribution of water both in time and location, competing demands on the same resources by different sectors, and water resources pollution mainly from the bauxite industry, place great stress on water resources in many and large parts of the country.

The need for a country-wide water resources development master plan was recognized in Jamaica several years before the project was conceived. Both national and international experts recommended the preparation of such a plan in several memoranda and reports. The project The

project, JAM/83/004, National Water Resources Plan, operated in the country from 1984 to 1989 with external inputs of $US 785,000.[1] The main activities of the project were:

- Inventory of country-wide water resources;
- Identification of water resources development needs and the possibilities for water resources development
- Preparation of simulation models for regional water resources development and use;
- Planning of water resources development schemes;
- Integrating all of the above into a National Water Resources Development Master Plan;

The project produced the National Water Resources Development Master Plan, which was its main objective. Taking into account the water needs of the different sectors and the availability of water resources, the Master Plan presents a series of schemes consisting of renovation or upgrading of existing water works and construction of new ones that, if implemented within a reasonable period of time, will satisfy the water requirements of all sectors to the year 2015. The unit costs of water as well as the total cost of each scheme were also estimated.

Most of the results of the Master Plan were obtained by using state of the art computer models. Modification of schemes or recalculation of costs can easily be done by entering updated data into the variable components of these models. This flexibility makes the Master Plan an even more valuable tool for optimal management and use of water resources in Jamaica. Since the end of the project, the Master Plan has been updated periodically with new data; a water resources master planning unit, which was envisaged by the project, will be created once the new Water Act is adopted.

8. Lesotho

The Kingdom of Lesotho (30,648 km^2) is dominated by the basaltic highlands (1,750-3,500 m asl) that occupy 75% of the country in its north-western sector. The mean annual rainfall over the predominantly mountainous terrain of Lesotho varies between 500 and 1,000 mm, with 85% falling in the summer months (October - April). Surface water generated on this highlands is drained by tributaries of the Vaal/Orange River, the westward flowing system that dominates the hydrology and economy of water hungry South Africa. These waters are the main exportable natural resource of Lesotho and a source of hard currency.

The UN/UNDP project, "Strengthening the Hydrological Services in Lesotho", (LES/84/011), commenced in January 1986. The project was designed, in part, to assist the implementation of a major water transfer scheme that would contribute to national income and regional cooperation. The other part was to strengthen the hydrological services in Lesotho as a whole and to support the hydrological component of the Lesotho Highlands Water Project (LHWP). In attempting to strengthen the Hydrology Division, the project had five principle objectives:

[1] UNDP $US 328,250, Government of Israel $ 231,250 and UN Trust Fund $ 225,500.

- Expand and improve the hydrometric network.
- Carry out field work to support LHWP and other water-related projects.
- Introduce hydrometric data processing.
- Expand and improve water quality and sediment discharge monitoring and carry out hydrological studies.
- Train national staff.

In March 1988 a major flood destroyed many existing installations, and project resources were diverted to repair the existing network. Instead of installing the planned 75 stations (50 with automatic recorders) only 3 recording stations, 4 manual stations and 2 permanent cableways were completed. However, good progress was reported with discharge measurements and data processing to obtain flow sequences for the LHWP catchments and compile a 1980-85 data yearbook. The scope of the project's training programme was limited by time and financial constraints, with limited in-country training organized.

9. Morocco

Morocco (area 447,000 km^2, population 27 million), in located in the north-western corner of Africa and an is arid to semi-arid country. Agriculture is the main economic activity of the country and irrigation has been practiced in Morocco for hundreds of years.

Groundwater is an important resource in Morocco. Currently about 25% of the total water usage in the country (10,800 MCM/year) comes from groundwater resources. This volume of groundwater use is well above the total sustainable exploitation of the country's aquifers. The Department's involvement in Morocco's water sector was through two groundwater projects (mainly nationally-executed): MOR/79/002, Exploration of deep groundwater (1980 - 1983) and MOR/86/004, Exploitation and management of deep groundwater resources. A follow-up project will deal with strategies for groundwater exploitation in Morocco.

Strengthening national capacity to deal adequately with proper exploitation and management of groundwater was one of the main objectives of the two projects. While the capacity of Morocco to manage its own water resources is already highly proficient, capacity building will still continue in the follow-up project.

10. Nepal

Nepal, a land-locked mountainous Himalayan country has a narrow band (800 km long and 10 to 40 km wide) of lowlands along its southern border. This area, known as the Terai, is part of the vast Gangetic plain and is Nepal's main region for present and future agricultural development. More than half of the Nepalese live in the Terai and their number is growing.

There are adequate surface and groundwater resources in the Terai to irrigate most of its arable land (over 1.7 million ha). At present about 500,000 ha are irrigated by surface irrigation schemes, and some 179,000 ha by 600 deep and 35,000 shallow tubewells. Conjunctive use of surface and groundwater, as well as integrated water resources development (including hydropower and

irrigation), in several major river basins, will eventually provide the water and the energy required for irrigating the entire arable land of the Terai. This level of development is decades away and in the meantime further development of irrigation in the Terai will be based on groundwater.

For the next 10 years or so, and wherever possible, irrigation development in the Terai will be based on shallow tubewells. Drilling shallow tubewells is inexpensive and is done by several local methods and machines. The tubewells are 30 to 40 metres deep with 100 to 150 mm casing and screens and are equipped with centrifugal pumps that discharge 4 to 30 litres per second.

The main purpose of the UN/UNDP project, NEP/86/025, Hydrogeological investigations in the Terai, was to delineate the areas in the Terai where shallow tubewells could be drilled and to make a preliminary assessment of the shallow aquifer potential in these areas. The project operated in the Terai from 1987 to 1992 with UNDP inputs of US$ 728,000.

The project drilled more than 400 exploration, test and observation shallow wells and collected additional hydrogeological data from more than 600 wells from all of the 20 districts of the Terai. Close to 350 pumping tests were conducted and more than 60 chemical analyses were made. All the accumulated data, including periodic water level records, are still processed and presented using the United Nations Groundwater Software. Several groundwater models have also been prepared, using the same software.

For each district, reports have been prepared containing information on the shallow groundwater potential and with maps showing the areas where shallow groundwater can be developed. Through the project a permanent unit responsible for the hydrogeological data bank and groundwater information system was established within the Department of Irrigation (DOI). The unit was equipped by the project, and its professional staff were trained on-the-job as well as abroad. At the end of the project the unit was capable to continue the collection and processing of additional hydrogeological data and to maintain and expand the Nepali hydrogeological data bank. It will be able to provide needed hydrogeological information for the development of shallow groundwater in the Terai.

11. Pakistan

The Indus river plain in Pakistan (area 310, 000 km^2, population close to 120 million) stretches for about 1,300 km from the base of the Siwalik range to the Arabian Sea and covers an area of about 2.1 million ha. It is an alluvial basin filled with 300 to 500 metres of sand, silt and clay beds. It forms a thick, mainly phreatic, aquifer system.

Large scale irrigation projects started in the Indus plain at the end of the last century. Leakage from unlined canals and irrigation return-flow increased groundwater recharge well beyond the drainage capacity of the natural aquifers. As a result water levels rose at a rate of up to 0.5 metres per year. In many areas water levels rose 20 to 30 metres in 80 to 100 years. The rate of water level rise slowed down when it came close to the ground surface because of direct evaporation and evapotranspiration. This in turn caused salination of groundwater and soil at the root level. Crop yields decreased considerably and large areas had to be abandoned at a rate of 29,000 ha per year. In total, over 2 million ha of irrigated land had gone out of production.

The UN involvement in the Pakistan water sector is mainly in institution building. Through project PAK/87/006, Central Materials Testing Laboratory (1987 - 1995), a laboratory for testing building materials for hydraulic structures (dams, canals, gates etc.) was established. The UNDP input of $US 3.35 million was spent mainly on lab equipment and training. Prior to the establishment of the lab, many types of material testing had been done abroad, delaying construction of hydraulic works.

A second institution was established under project PAK/83/022, International Water Logging and Salinity Research Institute (1985 -1990, $US 2.0 million). Waterlogging and salination of soil and groundwater is in many places in the world a direct result of development of irrigation without adequate drainage This is a problem with devastating economic and social consequences that developers and policy makers only recently started to comprehend.

12. Qatar

Qatar (population 485,000) occupies a peninsula 180 km long and 85 km wide extending northward from the Arabian land mass into the Gulf. It is an arid country, with a yearly rainfall of 50 to 80 mm and with very hot and humid summers. Groundwater, the only natural water resource of Qatar, is heavily over-exploited.

Project QAT/91/002, Study of Artificial Recharge of Groundwater in Northern Qatar is being nationally-executed by the Ministry of Municipal Affairs and Agriculture, with DDSMS as cooperating agency, providing technical advice and supervision of the project implementation. The project is fully financed by the Government through UNDP. The project has been under implementation since 1992 and is expected to be completed in 1995.

The project is studying the feasibility of large-scale groundwater recharge schemes to replenish depleted aquifers and to improve groundwater quality that has deteriorated because of over-exploitation. The over-exploitation caused sea-water intrusion and the upconing of saline water from below. If the present situation is not reversed, Qatar's fresh groundwater resources will be depleted completely in 10-12 years.

The complexity of the hydrogeological situation in Qatar requires a very thorough study to determine whether the situation could be reversed by artificial recharge of groundwater and whether artificial recharge would be technically feasible. The methodology that is being applied to determine the general hydrogeological condition of the area and the characteristics of the two water-bearing zones in northern Qatar, will enable water specialists to prove the technical feasibility of large-scale artificial groundwater recharge schemes and to plan the recharge work.

The project has made a number of recommendations, concerning optimal location of groundwater recharge areas and their configuration, potential sources of water for recharge, management of water resources, control of water quality contamination by irrigation, etc. A follow-up programme has been approved by the Government which includes a long-term pilot water injection scheme, study of the water intrusion and analyses of water management options. DDSMS will be closely monitoring the follow-up through TSS services.

The project's results are relevant not only to Qatar but to other countries in the Middle East such as Bahrain, Libya, Oman and Yemen which have similar problems of aquifer depletion, water quality deterioration and saline water intrusion.

13. Small island developing states

Water supply problems on small islands are many times more severe than on large islands or on continents. The small size of these islands, their geology, topography and climatic conditions contribute to the water problem. Most small islands are either flat calcareous low lying islands (Bahamas, Cayman, Kiribati), elevated calcareous islands (Bermuda, Tongatapu) or volcanic islands (Montserrat, Comoros, Samoa). All three types of islands greatly differ from each other but in all of them it is difficult to store surface water (in dams) and there are very limited groundwater resources. The water supply problem becomes even more severe in islands with a low annual rainfall or a very short rainy season.

Because of these limitations, many island countries cannot satisfy the water demand for human consumption from one source alone. They have to develop two or even three different sources of water (Bermuda). These may include in many islands expensive non-conventional water resources, such as desalinated sea water (Cayman and Marshall Islands) or brackish groundwater (Bermuda), and import of water by tankers or barges (Bahamas, Nauru). The costs involved in developing a multi-source water supply system are very high, and not all developing island countries can afford them. To accomplish this and to design and build the water supply systems, highly trained and qualified professionals and technicians are needed. The lack of trained personnel is a problem in most developing countries, but it is more acute in small island countries with a small population.

The water resources unit of the United Nations has been providing technical assistance in the field of water resources to most of the developing island countries since 1961. The assistance includes all the aspects of conventional water resources exploration, assessment, planning, development, use, protection, conservation and legislation. Over the last 20 years or so, the water resources unit was also involved in the assessment, planning and development of non-conventional water resources, such as desalination of sea or brackish water, re-use of reclaimed waste water and transport of water. To date the Department carried out water projects in more than 30 developing small island countries. The United Nations allocated large sums of money from its Regular Programme budget to small island countries. This was done by: providing the services of interregional and technical advisers to most of the small island countries in the world; organizing and financing three international seminars on water problems in small island countries (Barbados 1980, Bermuda 1985 and Fiji 1989); and financing the first stage of large scale regional water projects in the Caribbean and the Pacific.

14. Senegal

Senegal (area 196,000 km^2 , population 8.5 million) is a Sudano-Sahelian country located at the western tip of Africa. The country has abundant groundwater that is used mainly for human consumption. Because of the high cost of groundwater, irrigation is done mainly with surface water (48,000 ha in the Senegal River valley). There is a great potential for rural development in

the country, and such development would reduce the migration of people from rural areas to already stressed urban areas.

One important factor in development of rural and semi-urban areas is water resources. Lack of adequate water resources development plans, water management schemes and inadequate institutional arrangements are some of the prevailing problems. The UN/UNDP project SEN/87/006 ($US 2.0 million) that began in the country in May 1992 has made the following contributions to the water sector:

- Strengthening the planning capacity of the Ministry of Water;
- Preparing and implementing a National Water Resources Master Plan that integrates water resources management plans of seven river basins or sub-basins;
- A diagnostic of the water sector in Senegal.

The project introduced a methodology for water resources management, and the national authorities are using conventional and state-of-the-art technologies such as GIS to carry out the work. A foundation has been built for rational water resources development and management and it is now for the government and donors to follow up on the project's results.

15. Tanzania

The Republic of Tanzania in East Central Africa (population 28 million), extends over an area of some 837,000 km^2. The climate ranges from humid to semi-arid, with yearly rainfall of around 500 to 750 mm for most of the country, but attain 2,500 mm in highland areas.

The main objective of the UN/UNDP project in Tanzania (UTR/89/004) was to prepare a water resources development master plan for the Arusha region and to build national capacity for dealing with surface and groundwater development. The project operated in the country from 1990 to 1994, with a UNDP input of $US 1.3 million.

The master plan has yet to be completed for some of the Districts but the improved technical capacity of the Water Master Planning Coordination Unit (WMPCU) will enable the national team to carry out the additional work required.

There is a great interest in the master plan from governmental and non-governmental organizations for possible follow up investment in water resources development for water supply and irrigation.

16. Yemen

The Republic of Yemen is a semi-arid country in the southwest Arabian peninsula. Project YEM/88/001 addressed the issues related to inadequate water resources planning and management in Yemen, which resulted from the depletion of groundwater reserves due to overpumping. This caused water levels to drop, shallow wells to dry up, the cost of pumping to increase, and a deterioration in water quality. The overpumping undermined the sustainability of the resource base. In the course of project implementation, the following activities were carried out:

- The reserves of both surface and groundwater were assessed in order to determine the sustainable potential of water in the country.
- Present and future water requirements for agriculture were assessed and industry and municipal water supply requirements were estimated through the year 2010.
- Wastewater treatment and sanitation were assessed; and environmental issues related to water were studied.
- Two planning programmes were carried out as pilot exercises to demonstrate the comprehensive water resources planning and management methodology, based on water management modeling. The project has created a computerized database and a planning support system.
- A number of nationals were trained in various aspects of water resources evaluation, planning and management.
- Recommendations were prepared for the Government to rationalize the use of the country's water resources and to improve water management in order to ensure the sustainability of the resource base.

The project advocated a comprehensive approach to water resources planning and management. As a planning and management exercise, the project addressed the most pressing issues related to overexploitation of groundwater resources in critical areas.

The Project provided a venue for all national organizations active in the water sector, to sit together and to analyze how water resources could better be managed to meet the requirements of the different sectors. The need for an independent Water Resources Authority was also recognized by the Government, which requested UNDP's assistance in setting up such an authority. The project, which supports the Government's efforts in this field, is currently being implemented, and the Authority was created on 24 May 1995.

The project provided the vehicle for coordination of activities of various donors (both bilateral and multilateral) and those of national organizations in the water sector. The Water Sector Donor Coordinating Mechanism was set up under UNDP, for which the project provided substantive and administrative support.

Public awareness of the critical situation of water resources and the need for effective water management has been created with the project's support. This was achieved through several nationwide seminars/workshops on various aspects of water development and management, which provided the mass media with an opportunity to present the issue to the total population.

It was realized in the course of project implementation that in the environment of Yemen, where tribal customs are still strongly felt everywhere, meaningful water resources management could not be exercised without the participation of tribal chiefs and other community representatives. A new UN/UNDP programme aims at bringing together Regional Development Authorities, Local Councils, NGOs, tribal authorities, farmers' associations, and other water users to develop a meaningful water management system or organization to ensure rational use of water resources at the community and provincial levels, following the basic principles which would be recommended by the national Water Resources Authority.

B. Examples of types of issues addressed

1. Rural water supply

Even before the beginning of the IDWSSD (Water Decade) in 1981, the Department and its water resources unit were involved in many rural water supply and sanitation projects. The Department has executed a large number of rural water supply projects in Africa as well as in other continents and in small islands. Several of the above mentioned case studies deal mainly with rural water supply.

Most rural water supply development is based on groundwater development through large diameter dug wells or drilled wells equipped with hand-pumps or with a pulley for bailing water with a bucket. In some places, motorized pumps have been installed as well as windmills and solar pumps. Where applicable, surface water resources and springs are tapped for rural water supply.

Many improvements in rural water supply systems have been developed through UN/UNDP executed projects, including better methods for constructing dug wells, improvement of hand-pumps, management of systems at the community level and involvement of women in operation and maintenance.

The main difficulties in the execution of many of the rural water supply projects are less of a technical nature, and more of a socio-cultural and logistical nature, mainly because of the remoteness of the working sites in many cases. Transport of people, equipment and construction materials to remote and widely dispersed villages is one of the main problems in implementing rural water supply projects.

The key for the success of these projects however lies in the appropriate approach to the socio-economic and cultural environment in the project area. As explained earlier in this report, involving the community in the construction and the maintenance of water supply systems is a prerequisite for success in a rural water supply project.

In this respect, UN/UNDP projects have developed a methodology for adapting rural water supply and small-scale irrigation projects to local conditions, based on participation at the grassroots level. One of the best examples is in Burkina Faso, where Water Forums have been established with a general policy of community participation in the development process. A Water Forum consists of about 20 villages and through this Forum information on water supply options and sources of funds for development of water is exchanged. Similar methods of involving the community at the decision making level as well as in construction and maintenance of water supply systems were developed for many other areas.

2. Groundwater resources

More than half of projects executed by the Department have been dedicated to groundwater exploration, assessment and development. The projects cover almost all hydrogeological, physiographic and climatic environments where groundwater can be found. A large number of projects deal with groundwater in alluvial and other granular non-consolidated and consolidated water-bearing formations (aquifers). Many of these projects are in large alluvial plains such as the

vast Indus-Gangetic plains and the Paraguayan Chaco, in coastal areas and in valleys including inter-mountainous valleys in the Andes. Most of these areas have arid to semi-arid climates.

Many groundwater projects have been implemented in other hydrogeological environments such as hard rock (igneous and metamorphic) areas, volcanic areas and karst areas where exploration and assessment of groundwater are much more difficult. Vast areas of hard rock are found in Africa and India, where many of the rural water supply projects are located. Several methods for selecting better drilling sites, including remote sensing and advanced geophysical methods, have been developed by these UN/UNDP projects.

Several projects in Central America and in the Caribbean and Pacific islands have involved groundwater exploration and assessment in volcanic areas. In many volcanic areas the chaotic structure of lava flows and volcanic ash and mud-flow deposits (lavinas) require special experience in groundwater exploration and assessment. The experience gained through the projects in Central America in the 1970s has been used since then by national hydrogeologists in Guatemala, Costa Rica and other countries in the region.

Karst areas (cavernous calcareous rocks) pose a special problem. Most of the normal methods of groundwater exploration and assessment are not valid in karst terrain. The flow of groundwater in karst is through fissures, solution conduits and caves that are difficult to locate, and it is even more difficult to quantify that flow. One of the best and largest karst areas in the world is in Turkey. Several UN/UNDP karst exploration projects were implemented in that country for groundwater assessment and for solving geotechnical problems related to dams construction. In the Karst Research Centre that was established with the assistance of these projects, new and improved karst investigation methods have been developed.

In the large numbers of groundwater projects practically all the classical and state-of-the-art methods and technologies in groundwater exploration, assessment, development, management, protection and conservation are used as required.

3. Non-conventional water resources

There are many countries or areas without sufficient surface or groundwater resources to satisfy their basic needs and they resort to non-conventional water resources. The water resources unit and the Department have been involved in exploration, planning and producing non-conventional water resources in many countries. The activities include:

- Advising on the economics and selection of desalination facilities in Bermuda, Bahamas, Cayman Islands and Marshall Islands.
- Planning and installation of household and community water supply systems based on rain water catchments in Turks and Caicos Islands and Tuvalu;
- Re-use of waste water for irrigation, industries and mining in India (Madras) and Chile;
- Transport of water by tanker in the Bahamas and Dominica.

In addition the Department organized an Inter-regional Seminar on Non-Conventional Water Resources in Developing Countries in Curacao in 1985 and prepared two technical publications on these issues.

4. River training and navigation

Paraguay and Parana rivers: For the last 30 years the Department has been involved in the problem of the navigability of the Paraguay and Paraná rivers. This important water way allows ocean going vessels to reach Paraguay, western Brazil and Bolivia in the heart of South America.

Five projects[2] ware executed by the Department in investigation and planning improvements along this water way. Total UNDP inputs were more than $US 5.0 million.

In 1993 the Department played a major role in preparing a sub-regional project for the navigability of the water way (HIDROVIA). The project financed by UNDP and the Inter-American Development Bank (IDB), involves the five countries that are in the Paraguay and Paraná river basins (Bolivia, Brazil, Paraguay, Argentina and Uruguay). This project will be followed by IDB investment of $US 100 million.

Bangladesh: In Bangladesh, Among the 20 or so water projects executed by the Department, several projects[3] were dedicated to river training and navigation as well as to strengthening of the River Research Institute. Special attention was given to stabilizing river banks for river crossing.

[2] RLA/65/235, PAR/75/007, ARG/75/12, PAR/80/002, PAR/84/002.

[3] BGD/72/008, BGD/76/005, BGD/80/013, BGD/81/046.

ANNEXES

LIST OF UNDP FINANCED WATER PROJECTS

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
AFG/68/518/W/01/01	01/01/68	ESTABLISHMENT OF A WATER MANAGEMENT DEPARTMENT	1,234,831	0	23/04/80	01/12/68	4/80 C
AFG/71/010/C/01/01	07/07/71	WATER RESOURCES DEVELOPMENT	10,072	0	31/12/71	01/01/71	12/73 C
AFG/71/018/G/01/01	22/12/71	GROUNDWATER INVESTIGATION	363,435	0	31/07/77	01/12/71	12/76 C
ARG/70/013/E/01/01	07/12/70	DEVELOPMENT AND CONTROL OF GROUNDWATER HYDRAULIC BASINS	53,350	0	01/09/74	01/01/71	12/73 C
ARG/71/544/P/01/01	01/01/71	WATER ECONOMY, LAW AND ADMINISTRATION RESEARCH AND TRAINING INSTITUTE	585,170	0	31/08/81	01/12/70	8/81 C
ARG/73/006/K/01/01	18/04/75	WATER RESOURCES DEVELOPMENT	205,852	0	15/05/80	01/08/75	12/79 C
ARG/74/008/C/01/01	29/08/75	INSTITUTO DE INVESTIGACIONES SOBRE USO Y CONSERVACION DEL AGUA	57	0	19/05/77	01/11/75	12/75 C
ARG/78/005/L/01/01	12/10/78	NOROESTE ARGENTINO HIDRICO, FASE II	506,695	31,140	14/07/83	01/11/78	7/83 C
ARG/81/006/E/01/01	18/04/83	DESARROLLO DE LOS RECURSOS HIDRICOS EN EL NORESTE ARGENTINO	20,088	0	22/11/90	01/04/83	11/90 C
ARG/81/018/P/01/01	16/[illegible]/82	[illegible] DE INFORMACION HIDRICA	49,999	289,149	09/09/91	01/04/82	1/85
ARG/83/002/F/01/01	13/06/83	[illegible] ESOURCES DEVELOPMENT	79,000	9,468,000	07/08/86	01/0[illegible]/83	1/84
ARG/90/009/D/01/01	26/09/90	SISTEMA DE ALERTA HIDROLOGICO DE LA CUENCA DEL PLATA	0	977,969	05/08/93	01/10/90	10/93
BEN/78/004/M/01/01	29/03/79	COORDINATION DU PLAN NATIONAL D'APPROVISIONNEMENT EN EAU DU MILIEU RURAL	640,429	0	23/05/84	01/01/79	12/84 C
BEN/83/009/E/01/01	03/08/84	PLAN DIRECTEUR DES RESSOURCES EN EAU	364,077	0	27/05/87	01/01/84	11/90 C
BEN/85/004/P/01/01	07/02/86	ASSISTANCE A LA DIRECTION DE L'HYDRAULIQUE POUR LA PREPARATION D'UN PLAN DIRECTERUR DES RESSOURCES EN EAU	1,201,720	0	17/05/94	01/01/86	1/88
BER/79/002/M/01/01	10/10/79	GROUNDWATER RESOURCES AND MANAGEMENT	97,517	22,000	20/06/86	01/08/79	9/79
BER/86/001/H/01/01	21/08/86	ADVANCED GROUNDWATER MODELLING AND SOFTWARE DEVELOPMENT	47,890	0	13/07/92	01/10/86	7/92 C
BGD/72/008/L/01/01	15/12/76	HYDROLOGICAL SURVEY	1,451,177	0	07/06/83	01/04/77	12/84 C
BGD/72/014/F/01/01	30/01/73	WATER RESOURCES DEVELOPMENT	86,809	0	16/07/79	01/04/73	12/78 C
BGD/74/009/R/01/01	11/03/77	GROUND WATER SURVEY	2,615,690	0	10/06/85	01/03/77	12/84 C
BGD/76/005/I/01/01	05/05/77	ASSISTANCE TO THE RIVER RESEARCH INSTITUTE	95,290	0	04/05/83	01/04/77	12/83 C
BGD/79/010/W/01/01	13/02/80	WATER BALANCE STUDIES NORTH EAST AND NORTH WEST BANGLADESH	941,824	0	06/10/86	01/04/80	10/86 C
BGD/79/021/O/01/01	10/04/80	ADVISER TO BANGLADESH WATER DEVELOPMENT BOARD	324,608	0	27/07/87	01/09/79	7/87 C
BGD/80/013/P/01/01	26/05/81	PLANNING CELL FOR THE MINISTRY OF FLOOD CONTROL, WATER RESOURCES AND POWER	902,440	0	27/07/88	01/05/81	7/88 C
BGD/81/013/J/01/01	24/11/83	GROUND WATER DEVELOPMENT STUDIES, PHASE II	510,137	0	28/05/89	01/07/83	5/89 C
BGD/81/045/B/01/01	05/12/83	SURFACE WATER RESOURCES IN BANGLADESH	204,722	0	10/06/84	01/12/83	12/84 C
BGD/81/045/E/45/01	29/11/81	SURFACE WATER RESOURCES IN BANGLADESH	390,573	0	05/12/83	01/03/81	12/83 C
BGD/81/046/S/01/01	27/04/83	RIVER RESEARCH INSTITUTE	2,994,387	0	05/05/92	01/05/83	5/92 C
BGD/83/003/L/01/01	05/12/83	SURFACE WATER RESOURCES IN BANGLADESH-DEVELOPMENT OF DATA BANK	961,115	0	24/05/89	01/12/83	5/89 C
BGD/84/010/L/01/01	01/12/84	REHABILITATION OF WATER DEVELOPMENT PROJECTS	682,679	0	09/06/92	01/12/84	6/92 C
BGD/85/062/M/01/01	01/06/86	PLANNING CELL MINISTRY OF IRRIGATION,WATER DEVELOPMENT AND FLOOD CONTRO	272,056	0	25/05/89	01/04/86	5/89 C
BGD/87/016/I/01/01	15/08/88	CONSOLIDATION AND DEVELOPMENT OF COMPUTER APPLICATIONS IN THE WATER RESOURCES SECTOR.	266,620	0	23/12/92	01/07/88	12/92 C
BGD/87/021/S/01/01	22/11/88	DEVELOPMENT ORIENTED SCHEMES FOR THE BANGLADESH WATER DEVELOPMENT BOARD - FOOD FOR WORKS PROGRAMME	2,021,149	0	16/06/94	01/08/87	1/89
BGD/88/054/J/01/01	16/09/91	WATER RESOURCES INFORMATION PROJECT	4,601,300	0	19/06/94	01/01/89	4/89

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
BHA/74/004/H/01/01	21/07/74	WATER RESOURCES DEVELOPMENT	170,925	0	01/06/79	01/07/74	12/78 C
BHA/78/003/H/01/01	06/07/78	WATER RESOURCES DEVELOPMENT AND MANAGEMENT	731,656	0	21/09/84	01/07/78	9/84 C
BHA/82/001/P/01/01	06/09/82	WATER ABSTRACTION TRANSPORTATION AND SUPPLY	367,677	0	28/06/90	01/01/83	6/90 C
BHA/86/004/I/01/01	01/12/88	WATER RESOURCES MANAGEMENT - NEW PROVIDENCE	562,195	0	31/12/93	01/12/88	12/91
BKF/72/039/H/01/01	27/03/74	EAU ET HYDRAULIQUE	393,980	0	15/05/78	01/01/74	12/78 C
BKF/74/022/H/01/01	04/07/75	ETUDES DES EAUX SOUTERRAINES DANS LES BASSINS DE LA BOUGOURIBA ET DU PONI	473,282	0	10/06/82	01/07/75	6/82 C
BKF/75/007/B/01/01	12/04/76	ETUDES EN VUE D'AMENAGEMENT INTEGRE DU BASSIN DE LA VOLTA NOIRE	0	0	01/04/77	01/07/75	12/76 C
BKF/75/007/B/45/01	13/08/76	AMENAGEMENT INTEGRE BASSIN DE LA VOLTA NOIRE	10,096	0	01/04/77	01/01/75	12/76 C
BKF/80/001/H/01/01	15/09/80	RENFORCEMENT DE LA DIRECTION DE L'HYDRAULIQUE ET DE L'EQUIPEMENT RURAL	2,113,500	0	18/05/89	01/10/80	10/81
BKF/83/003/J/01/01	19/04/83	ASSISTAN E A UN PROGRAMME DE FORAGE D'EAU	587,659	0	27/05/87	01/05/83	5/87 C
BKF/84/U08/D/96/01	28/05/84	CREATION ET MISE EN SERVICE D'UNE BRIGADE D'APPROFONDISSEMENT DE PUITS	90,000	0	05/05/86	01/06/84	1/85
BKF/85/W01/B/72/01	25/09/85	PROMOTION D'UN OUTIL POUR LE PORTAGE DE L'EAU	17,121	0	10/03/89	01/07/85	1/86
BKF/86/001/H/01/01	13/06/86	APPUI AUX ACTIVITES DU SECTEUR EAU DU PLAN QUINQUENNAL 1986-1990	2,722,687	0	08/12/93	01/07/86	1/88
BKF/88/002/G/01/01	19/04/89	MISE EN PLACE D'UN SYSTEME DE COLLECTE ET TRAITEMENT D'INFORMATIONS SUR LES RESSOURCES EN EAU	785,637	0	26/05/92	01/03/89	3/90
BKF/89/012/F/01/01	01/05/90	APPUI AUX ACTIVITES DU SECTEUR EAU DU PLAN QUINQUENNAL	906,941	0	11/08/92	01/05/90	1/91
BKF/93/001/B/01/01	03/06/93	EAU ET DEVELOPPEMENT REGIONAL	231,940	0	11/11/93	01/07/93	1/94
BOL/68/514/H/01/01	01/01/68	GROUNDWATER DEVELOPMENT IN THE ALTIPLANO	1,618,893	0	15/06/77	01/02/69	12/76 C
BOL/73/008/H/01/01	07/09/73	HYDROLOGY STUDY COCHABAMBA	1,084,154	0	30/04/81	01/12/73	12/80 C
BOL/78/006/H/01/01	21/07/78	INVESTIGACION DE AGUAS SUBTERRANEAS EN EL VALLE CENTRAL DE TARIJA	552,259	0	14/05/82	01/07/78	12/81 C
BOL/85/010/K/01/01	31/07/85	DESARROLLO HIDROELECTRICO DEL AREA DE CACHUELA	234,882	48,547	05/10/90	01/07/85	10/90 C
BOT/72/021/D/01/01	05/09/72	HYDROGEOLOGY	54,499	0	05/01/77	01/04/73	12/76 C
BOT/81/001/B/45/01	26/07/83	OKAVANGO GROUND WATER INVESTIGATION	3,523	0	26/07/83	01/01/81	12/81 C
BRA/71/561/J/01/01	14/01/72	MULTIPURPOSE WATER DEVELOPMENT OF THE YAGUARON RIVER BASIN	199,936	0	15/03/77	01/01/72	12/76 C
BRA/86/014/H/01/01	13/11/86	INSTITUTIONAL AND LEGAL SUPPORT TO THE NATIONAL IRRIGATION PROGRAMME	191,723	0	16/09/91	01/11/86	1/87
BRA/87/011/K/01/01	15/01/87	ENVIROMENTAL IMPACT WATER AND SANITATION	332,744	0	31/08/92	15/01/87	8/92 C
BUL/71/045/E/01/01	13/12/71	GROUND WATER RESOURCES	2,525	0	23/06/75	01/01/72	12/74 C
BUL/72/038/D/01/01	22/01/73	METHODS OF STUDYING, DESIGNING AND STRENGTHENING OF LANDSLIDE TERRAINS	600	0	09/08/76	01/01/73	12/75 C
BUL/72/041/C/01/01	04/05/73	PROBLEMES SPECIFIQUES DE LA CONSTRUCTION DE BARRAGES	2,608	0	23/06/75	01/05/73	12/74 C
BUL/74/059/D/01/01	18/11/74	EVALUATION DES RESSOURCES DES EAUX SOUTERRAINES	1,515	0	07/07/77	01/01/75	12/76 C
BUL/74/060/B/01/01	18/11/74	TRAITEMENT ELECTRONIQUE DE L'INFORMATION DANS L'ECONOMIE HYDRAULIQUE	1,200	0	09/08/76	01/01/75	12/75 C
BUL/84/001/B/01/01	09/10/84	PARTICIPATION IF FIFTH WORLD CONGRESS ON WATER RESOURCES	3,030	0	02/12/86	08/06/85	12/86 C
BUR/62/505/C/01/01	01/05/62	MU RIVER IRRIGATION SURVEY	1,157,306	0	30/06/72	01/08/67	12/72 C
BUR/68/513/S/01/01	01/01/68	DEVELOPMENT OF THE SITTANG RIVER VALLEY	3,150,254	0	28/04/81	01/01/69	12/79 C
BUR/70/014/C/01/01	15/07/70	WATER RESOURCES DEVELOPMENT TRAINING (UNIVERSITY OF ROORKEE, INDIA)	7,538	0	30/06/73	01/01/70	12/73 C

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
CAF/75/003/B/01/01	28/05/76	ETUDE NATIONALE DES RESSOURCES HYDRAULICS EN REPUBLIQUE CENTRAFRICAINE	3,101	0	02/04/79	01/05/75	12/78 C
CAF/84/006/I/45/01	16/02/84	RECHERCHE D'EAUX SOUTERRAINES	372,157	0	18/04/88	01/01/84	12/88 C
CAF/86/003/S/01/01	03/07/86	ENQUETES ET PREPARATION D'UN PLAN DIRECTEUR POU L'HYDRAULIQUE VILLAGEOISE	1,011,332	0	16/06/94	01/05/86	1/90
CAF/86/004/U/01/01	15/10/86	APPUI TECHNIQUE AUX PROGRAMMES D'HYDRAULIQUE VILLAGEOISE	2,348,699	0	16/07/93	01/07/86	1/88
CAF/91/015/D/01/01	01/10/93	MISE EN VALEUR DES RESSOURCES EN EAU EN REPUBLIC CENTRAFRICAINE	1,527,600	0	03/06/94	01/01/93	1/97
CHA/70/006/B/01/01	18/08/70	IMPROVEMENT OF INSTRUMENTS AND METHODS OF HYDROLOGICAL OBSERVATION AND MEASUREMENTS	10,562	0	31/12/71	01/01/71	12/72 C
CHA/70/007/B/01/01	30/09/70	GROUNDWATER HYDROLOGIST	26,000	0	31/12/71	01/01/71	12/72 C
CHA/70/009/B/01/01	12/11/70	HYDRAULIC MODEL STUDIES OF FOOD CONTROL	5,010	0	31/12/71	01/01/71	12/72 C
CHD/71/510/I/01/01	29/12/72	APPROVISIONNEMENT EN EAU DES ZONES RURALES	597,560	0	19/05/78	01/10/72	12/78 C
CHD/76/009/L/01/01	29/10/77	RENFORCEMENT DU SERVICE DES AMENAGEMENTS RURAUX D'HYDRAULIQUE (SERARHY)	767,390	0	18/08/84	01/01/77	12/83 C
CHD/76/009/F/45/01	10/02/78	ASSISTANCE AU SERVICE DES AMENAGEMENTS RURAUX D'HYDRAULIQUE (SERARHY)	15,621	0	21/04/81	01/01/78	4/81 C
CHD/83/C04/A/94/01	15/07/87	PROJET D'HYDRAULIQUE VILLAGEOISE ET PASTORALE DANS LE REGIONS DU GUERA ET DU OUADDAI	6,157,536	0	15/07/87	01/01/85	1/90
CHD/83/016/D/01/01	18/08/84	RENFORCEMENT DES RESEAUX FORAGES PASTORAUX ET VILLAGEOIS	64,821	0	24/05/86	01/06/84	12/90 C
CHD/85/004/P/01/01	02/07/85	ASSISTANCE PREPARATOIRE POUR LE DEVELOPPEMENT ET L'EXPLOITATION DES RESSOURCES HYDRAULIQUES RURALES	7,784,588	0	14/12/92	01/06/85	7/87
CHD/90/005/I/01/01	01/10/90	CENT-VINGT FORAGES DANS LE OUADDAI ET LE GUERA	1,441,001	0	02/06/93	01/10/90	10/92
CHI/69/535/Q/01/01	01/06/69	WATER RESOURCES DEVELOPMENT IN THE NORTE GRANDE	1,588,011	0	04/11/82	01/01/71	11/82 C
CHI/72/021/C/01/01	23/10/72	HYDRAULIC RESOURCES PLANNING	5,555	0	01/09/74	00/00/00	12/73 C
CHI/80/004/B/01/01	08/07/80	GIRA DE ESTUDIOS SOBRE EXPLORACION Y APPROVECHAMIENTO DE AUGAS SUBTERRANEAS Y MATERIAS CONEXAS EN CHINA	5,398	0	09/07/81	01/06/80	12/80 C
CKI/72/017/E/01/01	17/01/73	INTERNATIONAL SYMPOSIUM ON WATER RESOURCES PLANNING	5,818	0	28/05/75	01/12/72	12/74 C
CMR/71/516/K/01/01	01/01/71	GROUNDWATER INVESTIGATION AND PILOT DEVELOPMENT	769,423	0	10/08/81	01/01/71	8/81 C
CMR/74/013/G/01/01	24/09/74	DRILLING AND EXPLORATION OF GROUNDWATER (CRYSTALLINE ZONE)	1,112,711	0	18/08/81	01/11/74	8/81 C
COI/79/005/M/01/01	12/10/79	RECHERCHE ET MISE EN VALEUR DES EAUX	1,222,622	0	18/06/87	01/10/79	12/91 C
COI/84/U02/E/96/01	27/09/84	RECHERCHE ET MISE EN VALEUR DES EAUX	294,189	0	26/05/87	01/01/84	1/87
COI/86/001/K/01/01	22/07/86	ASSISTANCE AU MINISTERE DU PLAN ET DE L'EQUIPEMENT POUR LA MISE EN VALEUR DES RESSOURCES EN EAU	807,641	0	07/10/91	01/01/86	12/91 C
COS/65/502/G/01/01	01/06/65	GROUNDWATER SURVEYS IN THREE SELECTED AREAS	877,216	0	01/09/74	01/01/66	12/73 C
CPR/81/036/O/01/01	26/03/82	GROUNDWATER RESOURCES EVALUATION OF THE HUANG-HUAI-HAI PLAIN (FIRST PHASE STUDY OF SHALLOW GROUNDWATER NATURAL RECHARGE	513,298	0	20/05/88	01/03/82	5/88 C
CPR/88/068/H/01/01	02/04/90	WATER RESOURCES MANAGEMENT IN NORTHERN CHINA	3,418,463	0	23/06/94	01/04/90	1/93
CVI/75/001/I/01/01	12/11/75	RECHERCHE ET MISE EN VALEUR DES EAUX SOUTERRAINES	556,342	0	06/10/80	01/01/75	10/80 C
CVI/75/016/C/01/01	05/09/75	CONSULTATION EN DESALINATION	3,450	0	04/06/81	01/06/75	6/81 C
CVI/77/S01/B/64/01	17/10/77	RECHERCHE ET MISE EN VALEUR DES EAUX SOUTERRAINES	182,269	0	08/01/80	01/01/77	2/79
CVI/77/002/D/01/01	31/10/77	RECHERCHE ET MISE EN VALEUR DES EAUX SOUTERRAINES	25 [illegible]	0	07/09/79	01/01/77	12/78 C

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
CVI/79/001/G/01/01	01/11/79	RECHERCHE ET AMENAGEMENT DES RESOURCES EN EAUX	550,193	0	16/06/83	01/01/79	12/82 C
CVI/82/004/K/01/01	30/06/82	RENFORCEMENT DE LA DIRECTION DES SERVICES D'EXPLOITATION ET DE GESTION DES EAUX SOUTERRAINES	1,139,334	0	27/05/87	01/07/82	11/90 C
CVI/86/001/J/01/01	03/06/86	ASSISTANCE PREPARATOIRE POUR LE DEVELOPPEMENT DES RESSOURCES HYDRAULIQUES AU CAP VERT	377,065	0	28/05/90	01/05/86	12/90 C
CVI/87/001/H/01/01	05/06/87	ASSISTANCE A LA JUNTA DOS RECURSOS HIDRICOS (JRH)	1,554,876	0	21/06/93	01/09/87	1/89
CZE/70/011/E/01/01	16/11/70	MULTIPURPOSE EXPLOITATION OF WATER RESOURCES	0	0	17/11/75	01/11/75	12/74 C
DJI/86/001/O/01/01	08/07/86	ASSISTANCE A L'EVALUATION ET A L'EXPLOITATION DE NAPPES ALLUVIALES	569,814	0	12/06/92	01/05/86	6/92 C
DOM/69/003/I/01/01	25/09/69	HYDROLOGY	173,185	0	20/06/78	01/02/70	12/76 C
EGY/70/571/I/01/01	01/01/70	INTEGRATED DEVELOPMENT AND SETTLEMENT OF NEW LANDS IRRIGATED BY THE HIGH DAM WATERS	895,788	0	01/12/74	01/12/70	12/75 C
EGY/71/007/E/01/01	08/03/72	NILE CONTROL AND DEVELOPMENT OF ITS WATER	2,500	0	21/07/75	01/04/72	12/74 C
EGY/73/023/O/01/01	21/03/74	ASSISTANCE TO THE HYDRAULIC RESEARCH AND EXPERIMENT STATION, DELTA BARRAGE	1,523,862	0	31/05/83	01/01/74	5/83 C
EGY/81/036/Q/01/01	17/03/82	ASSISTANCE TO THE HYDRAULICS AND SEDIMENT RESEARCH INSTITUTE, DELTA BARRAGE, PHASE II	920,729	0	15/03/90	01/01/82	3/90 C
ELS/65/502/E/01/01	01/01/65	GROUNDWATER SURVEY OF THE METROPOLITAN AREA OF SAN SALVADOR	727,875	0	28/09/73	01/01/66	12/73 C
ELS/78/005/R/01/01	08/11/78	PLAN MAESTRO DE DESARROLLO Y USO MULTIPLE DE LOS RECURSOS HIDRAULICOS	973,486	0	15/10/84	01/01/79	12/83 C
ETH/72/001/I/01/01	19/06/73	ACTIVATION OF THE NATIONAL WATER RESOURCES COMMISSION	390,407	0	27/05/77	01/02/73	12/76 C
ETH/74/009/G/13/01	05/08/74	REGIONAL WATER DEVELOPMENT OFFICE-WOLLO & TIGRE PROVINCES	222,482	0	21/05/79	01/10/74	12/78 C
ETH/75/005/P/01/01	22/09/75	STRENGTHENING OF THE EXECUTIVE ORGAN OF THE NATIONAL WATER RESOURCES COMMISSION, PHASE II	2,918,528	0	12/06/84	01/07/75	12/84 C
ETH/77/006/I/01/01	30/06/78	TECHNICAL ASSISTANCE TO THE WOLLO REGIONAL OFFICE OF THE ETHIOPIAN WATER RESOURCES AUTHORITY	607,349	0	12/06/84	01/11/77	12/83 C
FIJ/69/001/D/01/01	27/02/70	HYDRO-GEOLOGICAL SURVEY	59,303	0	19/01/73	01/01/71	12/73 C
FIJ/71/006/P/01/01	09/12/71	HYDROGRAPHIC SURVEY UNIT	704,150	0	16/06/81	01/01/72	6/81 C
FIJ/73/012/D/01/01	13/02/74	PRELIMINARY STUDY OF THE FLOOD PROBLEMS OF THE REWA RIVER DELTA	2,051	0	08/09/76	01/09/73	12/76 C
FIJ/74/003/O/01/01	14/11/74	FELLOWSHIP IN HYDROGEOLOGY	39,410	0	24/08/82	01/09/74	8/82 C
FIJ/80/016/N/01/01	12/05/81	HYDROGRAPHIC SURVEY, PHASE II	253,194	0	20/08/87	01/01/81	8/87 C
GAM/74/007/M/01/01	21/09/74	RURAL WATER SUPPLY	442,191	0	26/06/84	01/01/75	12/83 C
GAM/74/007/M/45/01	30/05/79	RURAL WATER SUPPLY	769,369	0	26/06/84	01/01/79	12/84 C
GAM/82/T01/H/71/01	03/03/82	PRELIMINARY INVESTIGATION OF GROUNDWATER & EXPERIMENTATION OF PUMPING SYSTEMS	390,789	0	12/05/87	01/02/82	1/87
GAM/82/X04/D/64/01	18/09/84	NATIONAL STRATEGY FOR THE ENVIRONMENTALLY AND SOUND MANAGEMENT OF GROUND WATER RESOURCES, PHASE I	51,478	0	22/06/89	01/01/84	1/85
GAM/82/008/H/01/01	23/12/82	RURAL WATER SUPPLY AND GROUNDWATER DEVELOPMENT	1,258,028	0	27/10/88	01/01/83	11/90 C
GAM/87/012/V/01/01	01/07/87	GROUNDWATER RESOURCES PLANNING AND DEVELOPMENT	1,448,411	0	11/05/94	01/07/87	1/88
GBS/75/024/E/01/01	08/08/75	RIVER BASIN DEVELOPMENT	51,487	0	23/06/78	01/10/75	12/77 C
GBS/75/034/E/01/01	29/11/75	MISE EN VALEUR DES EAUX SOUTERRAINES	83,284	0	23/06/78	01/10/75	12/77 C
GBS/77/001/S/01/01	31/12/77	ETUDE DE L'AMENAGEMENT DU RIO CORUBAL	2,490,974	0	09/06/87	01/01/77	11/90 C
GBS/77/002/M/01/01	02/12/77	HYDRAULIQUE RURALE	781,463	0	01/06/84	01/03/77	12/84 C
GBS/82/007/O/01/01	15/10/82	HYDRAULIQUE RURALE	1,489,734	438,596	16/05/88	01/07/82	11/90 C
GBS/87/002/K/01/01	30/06/87	ASSISTANCE A LA DIRECTION GENERALE	3,253,079	0	05/10/93	01/01/87	1/91

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
		DES RESSOURCES HYDRIQUES					
GBS/90/003/E/01/01	01/10/92	HUDRAULIQUE VILLAGEOISE DANS LES REGIONS D'OIO ET DE GABU	1,955,714	0	27/05/94	01/10/92	10/97
GBS/93/001/A/01/01	05/01/94	CONTRIBUTION A LA MISE EN OEUVRE DU SCHEMA DIRECTEUR POUR LE SECTEUR DE L'EAU ET DE L'ASSAINISSEMENT	470,500	0	00/00/00	01/07/94	7/96
GHA/71/016/E/01/01	09/09/71	HYDROLOGY AND WATER RESOURCES	24,091	0	04/07/75	01/01/72	12/74 C
GRN/85/001/K/01/01	03/07/85	WATER RESOURCES ASSESSMENT AND DEVELOPMENT	98,867	0	20/08/91	01/05/85	8/91 C
GUA/72/011/P/01/01	25/06/73	GROUNDWATER STUDY	1,063,215	0	06/04/81	01/04/73	4/81 C
GUA/85/008/L/01/01	25/09/85	ESTRUCTURACION INSTITUCIONAL DE LOS RECURSOS HIDRICOS	78,043	0	24/09/91	01/11/85	9/91 C
HAI/79/001/Z/01/01	23/11/79	REINFORCEMENT OF GROUNDWATER SERVICES	1,306,242	0	18/04/88	01/01/79	4/88 C
HAI/79/001/D/45/01	14/01/81	REINFORCEMENT OF GROUNDWATER SERVICES	66,779	0	17/04/89	01/01/81	1/82
HAI/86/003/L/01/01	11/03/87	DEVELOPPEMENT ET GESTION DES RESSOURCES EN EAU	2,327,909	0	17/07/92	01/04/87	1/91
NOR/81/003/B/01/01	25/06/81	DETECTION AND SUPPRESSION OF LEAKAGE IN WATER SUPPLY SYSTEM	3,135	0	24/05/82	01/10/81	12/81 C
HUN/71/012/D/01/01	27/01/72	WATER MANAGEMENT	7,325	0	20/04/72	00/00/00	12/73 C
IND/60/515/C/01/01	01/12/60	CAVITATION RESEARCH CENTRE	498,437	0	30/06/72	01/01/61	12/72 C
IND/65/549/B/01/01	01/01/65	GROUNDWATER SURVEYS IN RAJASTHAN AND UTTAR PRADESH	806,300	0	31/12/71	01/07/66	12/72 C
IND/65/558/B/01/01	01/06/65	GROUNDWATER INVESTIGATIONS IN MADRAS STATE	976,342	0	30/06/72	01/07/66	12/72 C
IND/68/598/G/01/01	01/06/68	GROUNDWATER INVESTIGATIONS IN MADRAS STATE (PHASE II)	706,550	0	11/11/74	01/06/69	12/74 C
IND/70/044/B/01/01	20/01/71	NEW TECHNIQUES IN DESIGN AND CONSTRUCTION OF HIGH EARTH AND ROCKFILL DAMS	6,566	0	31/12/71	01/04/71	12/72 C
IND/71/005/C/01/01	12/04/71	CAVITATION RESEARCH CENTRE, POONA	16,818	0	30/06/73	01/07/71	12/73 C
IND/71/038/D/01/01	29/06/71	SOIL IN-SITU FOUNDATION AND EARTH DAMS	7,990	0	09/03/72	01/01/71	12/73 C
IND/71/050/C/01/01	31/08/71	NATIONAL WATER GRID PROJECT	15,250	0	31/12/71	01/10/71	12/73 C
IND/71/601/B/01/01	01/01/71	COASTAL ENGINEERING RESEARCH CENTRE AND DEVELOPMENT OF HYDRAULIC INSTRUMENTATION	3,715,336	0	07/04/82	01/01/70	12/81 C
IND/71/614/N/01/01	01/01/71	GROUNDWATER SURVEYS IN RAJASTHAN AND GUJARAT	686,653	0	18/10/78	01/04/71	12/78 C
IND/73/042/V/01/01	21/09/77	HYDROMECHANICS DIVISION AT THE CENTRAL WATER AND POWER RESEARCH STATION	1,359,420	0	30/05/86	01/09/77	7/86 C
IND/73/043/W/01/01	21/09/77	EXTENSION OF THE COASTAL ENGINEERING RESEARCH CENTRE AT THE CENTRAL WATER AND POWER RESEARCH STATION	1,615,983	0	21/05/86	01/09/77	5/86 C
IND/74/009/R/01/01	23/09/74	GROUNDWATER STUDIES IN THE GHAGGAR RIVER BASIN IN PUNJAB, HARYANA, AND RAJASTHAN	1,735,044	0	17/05/83	01/10/74	12/82 C
IND/75/020/Y/01/01	21/09/77	EXTENSION OF HYDRAULIC INSTRUMENTATION CENTRE	2,645,894	0	26/05/86	01/09/77	5/86 C
IND/75/076/E/01/01	30/05/79	ADVANCED TECHNIQUES IN RESERVOIR ENGINEERING	11,777	0	03/05/82	01/02/79	5/82 C
IND/78/029/V/01/01	09/09/80	HYDROGEOLOGICAL AND ARTIFICIAL RECHARGE STUDIES-MADRAS	1,106,866	0	27/09/88	01/10/80	9/88 C
IND/78/033/Q/01/01	20/01/81	ARTIFICIAL RECHARGE STUDIES IN MEHSANA AREA AND COASTAL SAURA, GUJARAT	470,520	0	24/08/88	01/04/81	10/88 C
IND/80/006/V/01/01	01/07/80	SYSTEMS ENGINEERING FOR INTEGRATED DEVELOPMENT OF WATER RESOURCES IN INDIA	1,214,482	0	28/09/88	01/10/80	9/88 C
IND/81/038/T/01/01	16/11/81	HYDRAULIC STRUCTURES RESEARCH CENTRE	4,510,131	0	31/05/91	01/12/81	5/91 C
IND/82/058/M/01/01	04/07/83	STRENGTHENING THE INSTITUTE OF WATER STUDIES, MADRAS, TAMIL NADU	604,564	0	19/05/89	01/07/83	1/86
IND/84/011/P/01/01	07/09/84	GROUND WATER STUDIES INKASAI AND SUBARNAREKHA RIVER BASINS	1,498,572	0	12/01/93	01/01/85	1/93 C

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
IND/84/024/D/01/01	08/02/85	FELLOWSHIPS IN WATER RESOURCES	243,713	0	28/06/87	01/01/85	6/87 C
IND/85/063/D/01/01	24/03/89	IMPROVEMENT OF SURFACE WATER HYDROLOGICAL OBSERVATIONS IN THE PENINSULER RIVER BASINS OF INDIA	41,208	0	26/02/91	01/03/89	2/91 C
IND/85/069/M/01/01	10/07/85	HYDROMECHANICS DIVISION (SUPPLEMENTARY ASSISTANCE)	709,195	0	31/05/91	01/07/85	5/91 C
IND/86/011/M/01/01	18/09/86	WATER RESOURCES DEVELOPMENT AND MANAGEMENT (PHASE II), MADRAS	820,506	0	12/01/93	01/11/86	1/93 C
IND/90/008/J/01/01	30/04/90	AUTOMATED OPERATION OF IRRIGATION CANAL SYSTEM	691,899	0	30/05/94	01/07/90	1/94
INT/70/371/G/01/01	01/11/70	INTERREGIONAL SEMINAR ON CURRENT ISSUES OF WATER ADMINISTRATION	99,816	0	15/05/75	01/01/71	12/74 C
INT/72/109/E/01/01	07/08/74	INTERREGIONAL SEMINAR ON RIVER BASIN AND INTERBASIN DEVELOPMENT	55,716	0	23/05/[illegible]	[illegible]08/74	12/77 C
INT/76/010/D/01/01	04/05/77	STUDY TOUR ON WATER RESOURCES MANAGEMENT IN CHINA	92,105	0	06/08/80	16/05/77	8/80 C
INT/87/634/A/18/01	26/02/87	UNDERGROUND WATER DEVELOPMENT	10,000	0	26/02/87	01/01/87	1/88
INT/92/006/B/01/01	21/01/92	CONSULTATIVE FORUM ON THE ECONOMIC SOCIAL AND ENVIRONMENTAL IMPACT OF WATER MANAGEMENT STRATEGIES IN THE MIDDL	80,000	0	26/10/92	01/02/92	2/93
IRA/73/014/C/01/01	30/04/73	WATER RESOURCES DEPARTMENT (PLAN AND BUDGET ORGANIZATION)	1,274	0	14/06/75	30/04/73	12 73 C
IRA/73/015/G/01/01	18/03/74	CO-ORDINATION OF WATER RESOURCES DEVELOPMENT	152,118	605,947	13/05/80	01/04/74	12/80 C
IRA/77/029/C/01/01	26/04/78	WATER RESOURCES DEVELOPMENT	114,202	214,051	19/05/81	01/06/78	12/81 C
IRA/85/015/P/01/01	29/08/85	STRENGTHENING THE WATER RESOURCES RESAERCH INSTITUTE(WRRI)	831,938	0	16/02/93	01/10/85	2/93 C
IRA/89/025/G/01/01	10/04/90	TECHNICAL ADVICE IN DAM CONSTRUCTION	359,980	8,007	12/07/94	01/04/90	10/90
ISR/66/516/F/01/01	01/06/66	ELECTRODIALYSIS PILOT PLANT, MASHABEI SADE	645,411	0	12/08/75	01/01/68	12/74 C
ISR/73/004/B/01/01	13/04/73	WATER PRETREATMENT AND EQUIPMENT IMPROVMENT FOR MEMBRANE PROCESSES	7,500	0	30/06/75	15/05/73	12/74 C
JAM/73/012/D/01/01	19/10/73	WATER RESOURCES PLANNING	72,429	0	23/06/78	01/08/73	12/76 C
JAM/83/004/R/01/01	27/08/84	NATIONAL WATER RESOURCES DEVELOPMENT MASTER PLAN	66,625	254,208	28/06/93	01/09/84	6/93 C
JOR/87/003/F/01/01	31/07/89	WATER RESOURCES POLICIES PLANNING AND MANAGEMENT	356,762	299,984	17/07/93	01/07/89	7/91
JOR/92/007/D/01/01	26/03/92	STRENGTHENING OF THE NATIONAL CAPACITY IN WATER RESOURCES PLANNING	400,000	0	06/06/94	01/04/92	4/95
KEN/80/004/E/01/01	14/08/80	CATCHMENT CONSERVATION AND REHABILITATION PROGRAMME IN THE LAKE BASIN REGION (LBDA)	5,849	0	21/11/84	15/09/80	12/82 C
KEN/82/001/M/01/01	05/07/82	LAKE BASIN RIVER CATCHMENT DEVELOPMENT	1,521,942	0	11/05/88	01/07/82	12/90 C
KIR/87/006/F/01/01	29/12/89	WATER ASSESSMENT PLANNING AND MANAGEMENT.	422,671	0	11/08/92	29/08/88	1/89
KUW/68/502/G/01/01	01/01/68	WATER RESOURCES CENTRE, KUWAIT CITY	487,370	0	17/08/75	01/06/68	12/75 C
KUW/79/006/F/01/01	21/11/79	IMPROVEMENT IN SUPPLY MANAGEMENT	0	391,704	13/06/83	01/08/79	12/82 C
LEB/70/014/E/01/01	18/09/70	ADVISER IN GROUNWATER AND CONNECTED SUBJECTS	93,200	0	07/10/75	01/04/71	12/74 C
LES/72/007/C/01/01	25/01/72	WATER LAW	7,500	0	00/00/00	00/00/00	12/73 C
LES/72/033/C/01/01	17/08/72	WATER LAW	14,044	0	00/00/00	00/00/00	12/73 C
LES/72/057/C/01/01	21/09/72	WATER LAW, LEGISLATION AND ADMINISTRATION: RESEARCH AND DRAFTING	10,100	0	00/00/00	00/00/00	12/73 C
LES/77/044/A/01/01	19/10/79	ASSISTANCE TO WATER RESOURCES DEVELOPMENT	298	0	19/10/79	01/01/78	12/78 C
LES/77/044/C/45/01	06/06/78	ASSISTANCE FOR WATER RESOURCES DEPARTMENT; HEAD OF WATER RESOURCES BRANCH (OPAS)	71,774	0	10/06/80	01/01/78	6/80 C
LES/80/837/L/84/01	01/01/82	FINANCIAL CONTROLLER, WATER AND SEWERAGE BRANCH (OPAS)	208,723	0	30/04/87	01/01/82	1/86
LES/84/011/P/01/01	16/08/85	STRENGTHENING OF HYDROLOGICAL	752,288	0	26/06/91	01/08/85	12/90 C

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
		SERVICES					
LES/86/009/O/01/01	21/03/88	STRENGTHENING OF THE LESOTHO HIGHLANDS DEVELOPMENT AUTHORITY IN THE WATER RESOURCES FIELD	603,550	0	28/04/94	01/04/88	1/91
LIB/86/007/C/01/01	21/04/86	WATER RESOURCES DEVELOPMENT AND SOIL STUDIES	15,932	0	13/06/89	01/01/86	6/89 C
LIB/88/002/A/01/01	21/01/90	WATER RESOURCES DEVELOPMENT AND SOIL STUDIES	187,087	1,533,913	00/00/00	01/09/89	9/92
LIR/73/021/H/01/01	26/02/74	WELL-DRILLING PROGRAMME IN SUPPORT OF RURAL DEVELOPMENT	161,698	0	09/05/79	01/01/74	12/78 C
LIR/77/003/O/01/01	13/01/78	NIMF COUNTY WELL DRILLING PROGRAMME, PHASE I	546,544	0	03/06/84	01/01/77	12/83 C
LIR/77/004/S/01/01	11/05/78	WATER RESOURCES POLICY, MANAGEMENT AND LEGISLATION	954,379	0	29/02/88	01/06/78	12/86 C
LIR/87/004/J/01/01	23/12/87	REHABILITATION AND MAINTENANCE OF RURAL WATER SUPPLY FACILITIES IN LIBERIA	931,057	0	26/05/94	01/01/87	1/90
MAG/74/004/D/01/01	05/07/74	HYDROGRAPHIE	8,658	0	26/03/81	01/08/74	3'81 C
MAG/77/005/V/01/01	28/05/84	ASSISTANCE AU DEPARTEMENT HYDROGRAPHIE ET OCEANOGRAPHIE DE L'INSTITUT NATIONAL DE GEODESIE ET DE CARTOGRAPHIE	460,818	0	31/05/85	01/11/77	12/89 C
MAG/87/002/O/01/01	30/05/88	PROMOTION DES OUVRAGES D'EAU ET ASSAINISSEMENT A FAIBLE COUT EN MILIEU RURAL	2,963,258	0	13/07/94	01/07/88	1/93
MAT/78/004/B/01/01	15/08/78	WATER RESOURCES MANAGEMENT	385	0	01/06/79	01/09/78	12/78 C
MAT/78/006/M/01/01	22/03/79	DEVELOPMENT AND CONSERVATION OF WATER RESOURCES	193,811	0	10/06/83	01/01/79	12/82 C
MAT/88/004/C/01/01	15/07/88	MANAGEMENT OF THE FRESHWATER RESOURCES OF THE MALTESE ISLANDS	13,200	0	21/08/90	01/07/88	8/90 C
MAU/67/502/L/01/01	01/06/67	STRENGTHENING OF THE GROUNDWATER SERVICE	1,805,130	0	23/11/82	01/03/68	12/80 C
MAU/73/005/E/13/01	18/12/73	PROGRAMME DE TRAVAUX HYDRAULIQUES D'URGENCE ET MOYEN TERME EN MAURITANIE	500,222	0	24/05/78	01/10/73	12/77 C
MAU/76/001/B/01/01	01/02/77	ASSISTANCE COMPLEMENTAIRE AU PROGRAMME DES TRAVAUX HYDRAULICS D'URGENCE	83,649	0	17/05/77	01/01/76	12/76 C
MAU/77/S03/A/64/01	25/06/82	PROGRAMME DE MISE EN VALEUR DES EAUX SOUTERRAINES	470,926	0	25/06/82	01/01/79	1/84
MAU/77/002/M/01/01	21/10/77	PLANIFICATION DE L'UTILISATION DES EAUX	410,863	0	04/06/84	01/08/77	12/84 C
MAU/78/S01/A/64/01	29/12/82	PROGRAMME DE MISE EN VALEUR DES EAUX SOUTERRAINES	537,272	0	29/12/82	01/01/80	1/84
MAU/78/S03/A/64/01	06/06/80	PROGRAMME DE MISE EN VALEUR DES EAUX SOUTERRAINES: GESTION DU FONCTIONNEMENT DE L'ENTRETIEN DE 36 STATIONS DE POMPAGE	159,068	0	06/06/80	01/01/79	1/83
MAU/79/S03/A/64/01	28/02/79	PROGRAMME DE MISE EN VALEUR DES EAUX SOUTERRAINES: GESTION DU FONCTIONNEMENT ET DE L'ENTRETIEN DE 36 STATIONS DE POMPAGE	176,330	0	28/02/79	01/01/79	1/84
MAU/83/S03/O/64/01	12/05/84	PROGRAMME DE MISE EN VALEUR DES EAUX SOUTERRAINES: FONCTIONNEMENT ET ENTRETIEN DE 28 FORAGES	276,167	0	03/03/87	01/01/84	1/86
MAU/84/001/E/01/01	19/06/84	REPARATION DES PUITS DANS LE BRAKNA ET L'ASSABA	525,140	0	18/05/88	01/05/84	12/87 C
MAU/86/802/C/67/01	20/10/86	MISE EN VALEUR DES EAUX SOUTERRAINEE	212,259	0	24/01/90	01/01/86	1/90 C
MAU/86/S02/B/64/01	19/10/87	MISE EN VALEUR DES AUX SOUTERRAINES	146,900	0	20/10/87	01/01/86	1/88
MAU/86/002/G/01/01	27/01/86	MISE EN VALEUR DES EAUX SOUTERRAINES	739,010	0	18/05/88	01/01/86	5/88 C
MAU/87/008/J/06/01	05/10/87	PLANIFICATION HYDRALUQIUE	490,055	0	16/07/91	01/07/87	1/89
MAU/90/010/J/01/01	10/10/90	VALORISATION DE L'EAU POMPEE ET MAINTENANCE DES MOYENS D'EXHAURE	1,175,483	0	24/02/94	01/10/90	10/92

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
MAU/92/009/B/01/01	27/06/93	ASSISTANCE A LA CELLULE NATIONALE OMVS SUR L'IMPLANTATION, LA CONCERTATION ET LE SUIVI DU DEVELOPPEMENT DU FLEUVE SENEGAL	685,554	0	05/01/94	01/06/93	6/95
MEX/72/023/C/01/01	28/09/72	HYDRAULIC PROBLEMS	2,587	0	00/00/00	00/00/00	12/73 C
MEX/89/005/G/01/01	30/11/89	PREPARACION DEL PROGRAMA NACIONAL DE COOPERACION TECNICA INTERNACIONAL EN MATERIA DE AGUA	254,172	0	31/12/92	01/11/89	11/90
MIC/89/203/B/01/01	10/05/91	WATER RESOURCES ASSESSMENT AND DEVELOPMENT.	4,087	0	29/09/92	01/03/91	5/92 C
MIC/91/007/F/01/01	21/05/92	WATER RESOURCES ASSESSMENT	441,984	345,493	24/06/94	01/01/91	7/95
MLI/67/507/J/01/01	01/06/67	STRENGTHENING GOVERNMENT SERVICES FOR GROUNDWATER EXPLORATION AND DEVELOPMENT	1,011,079	0	31/05/78	01/01/69	12/78 C
MLI/74/001/D/45/01	25/01/74	GROUNDWATER EXPLORATION	1,704,915	0	28/06/78	01/01/74	6/78 C
MLI/76/004/P/01/01	30/12/77	EXPLOITATION DES EAUX SOUTERRAINES EN MILIEU RURAL	7,922,133	0	25/07/85	01/01/77	7/85 C
MLI/80/005/O/01/01	24/06/80	CREATION D'OASIS SUR LA ROUTE DU SEL	1,418,208	877,194	26/01/88	15/07/80	8/80
MLI/82/005/O/01/01	26/08/82	EXPLORATION ET EXPLOITAION DES EAUX SOUTERRAINES EN MILIEU RURAL (PHASE II)	3,038,746	0	30/06/86	01/07/82	6/86 C
MLI/82/005/G/45/01	12/11/83	EXPLOITATION DES EAUX SOUTERRAINES	1,133,229	0	30/06/86	01/01/83	11/90 C
MLI/82/018/C/01/01	06/04/83	ASSISTANCE A L'OPERATION PUITS	10,018	0	10/05/84	01/02/83	12/84 C
MLI/84/005/E/01/01	12/09/84	GROUNDWATER RESSOURCES	7,532,187	399,005	01/06/94	01/10/84	11/87
MLI/84/005/E/45/01	30/10/85	EAUX SOUTERRAINES	0	0	09/05/88	01/10/85	1/86
MLI/84/027/B/01/01	30/04/85	DEVELOPPEMENT DES RESSOURCES EN EAUX SOUTERRAINES DE LA REGION DE TOMBOUCTOU-TAOUDENNI ET AZAOUAD SUD	2,489,902	883,803	09/06/93	01/10/85	11/89
MLI/90/002/I/01/01	18/02/91	STRATEGIES ET PROGRAMMATION DU SECTEUR EAU A L'AN 2000	1,541,202	0	25/05/94	01/03/91	6/92
MLI/91/001/H/01/01	20/06/91	ASSISTANCE A LA CELLULE NATIONALE DE PLANIFICATION, DE COORDINATION ET DE SUIVI DU DEVELOPPEMENT DU BASSIN DU FLEUVE SEN	897,930	0	01/06/94	01/06/91	12/93
MLW/72/006/F/01/01	15/12/72	STUDY TO DEFINE THE IRRIGABLE AREAS OF THE LAKE MALAWI CATCHMENT	93,502	0	02/02/77	01/09/72	12/75 C
MLW/79/015/N/01/01	01/10/80	NATIONAL WATER RESOURCES MASTER PLAN, PHASE I: COLLECTION, PROCESSING AND EVALUATION OF DATA	634,557	0	18/11/86	01/04/80	11/90 C
MLW/80/003/I/45/01	21/05/80	LILONGWE WATER SUPPLY-MASTER PLAN FOR SOURCE AUGMENTATION AND DISTRICT WATER SUPPLIES, PHASE II	234,003	0	18/06/84	01/05/80	12/84 C
MLW/80/018/I/01/01	28/01/81	BOREHOLE MAINTENANCE	325,400	0	12/11/86	01/01/81	12/86 C
MLW/84/003/N/01/01	03/12/84	NATIONAL WATER RESOURCES MASTER PLAN PHASE II	472,575	0	29/04/88	01/10/84	11/90 C
MLW/88/021/E/01/01	21/06/88	GROUND WATER DATA COMPUTER UNIT	90,132	0	09/09/92	01/06/88	12/91 C
MON/88/011/F/01/01	14/03/89	ESTABLISHMENT OF GROUNDWATER INFORMATION SYSTEM	189,448	0	16/01/93	01/04/89	4/91
MOR/85/007/C/01/01	03/03/86	GESTION EAUX SOUTERRAINES	919	0	19/05/88	01/04/86	4/88 C
MOR/88/016/G/01/01	07/03/91	CONTRIBUTION AU DEVELOPPEMENT DE LA RECHERCHE ET DE LA FORMATION DANS LE SECTEUR DE L'EAU	115,014	0	25/05/93	01/04/91	10/91
MOT/74/006/D/01/01	30/09/74	WATER RESOURCES INVENTORY AT SOUFRIERE HILLS AREA	3,575	0	15/06/82	01/02/75	6/82 C
MOT/85/005/D/01/01	25/02/85	WATER RESOURCES DEVELOPMENT	179,072	54,033	18/10/93	25/02/85	3/87
MOZ/86/020/S/01/01	10/09/87	STRENGTHENING THE NATIONAL DIRECTORATE FOR WATER RESOURCES	3,242,998	0	11/06/93	01/01/87	5/88
MYA/74/039/E/01/01	28/04/75	WATER RESOURCES MANAGEMENT AND PROJECT DEVELOPMENT	278,929	0	03/06/83	01/09/75	6/83 C
MYA/88/005/I/01/01	11/05/90	UPGRADING THE IRRIGATION DEPARTMENT'S DATA COLLECTION AND DATA SYSTEM	1,281,748	265,485	10/06/94	01/04/90	4/93

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
NAM/79/W15/H/87/01	01/01/84	FELLOWSHIPS IN WATER DEVELOPMENT	17,052	0	25/09/91	01/01/84	9/91 C
NEP/80/023/0/01/01	09/09/83	TRAINING OF WATER RESOURCES ENGINEERS FOR IRRIGATION	875,898	0	18/11/92	01/09/83	11/92 C
NEP/86/025/0/01/01	24/02/87	SHALLOW AQUIFER HYDROLOGICAL INVESTIGATION IN THE TERAI	727,083	0	16/06/94	01/03/87	6/94 C
NEP/92/014/0/01/01	01/10/92	BAGMATI BARRAGE GATE SUPERVISION, INSTALLATION AND COMMISSIONING	403,501	0	30/05/94	01/10/92	10/94
NER/74/013/J/01/01	13/03/75	ASSISTANCE AU SERVICE LOGISTIQUE DE L'OFFICE DES EAUX DU SOUS-SOL (OFEDES)	282,923	0	24/05/82	01/10/75	5/82 C
NER/74/013/H/45/01	28/09/77	ASSISTANCE AU SERVICE LOGISTIQUE DE L'OFFICE DES EAUX DU SOUS-SOL (OFEDES)	138,066	0	24/05/82	01/01/77	5/82 C
NER/79/006/H/01/01	28/09/79	APPROVISIONNEMENT EN EAU	1,208,966	440,072	21/05/85	01/06/79	6/85 C
NER/83/802/E/67/01	23/09/86	EXPLOITATION DES EAUX SOUTERRAINES	313,831	0	21/04/89	01/01/86	1/87
NER/83/C02/0/01/01	31/05/84	EXPLOITATION DES EAUX SOUTERRAINES EN MILIEU RURAL (PHASE II)	2,398,959	0	30/06/89	01/07/84	12/89 C
NER/86/001/J/01/01	04/12/87	PLANIFICATION, MISE EN VALEUR ET GESTION DES RESSOURCES EN EAU SOUTERRAINE EN MILIEU RURAL	2,613,854	0	30/06/93	01/01/88	1/89
NER/87/021/H/01/01	28/02/89	GESTION, PRISE EN CHARGE ET MAINTENANCE D'OUVRAGES HYDRAULIQUES EN MILIEU VILLAGEOIS	1,900,148	182,600	16/08/91	01/01/89	1/90
NER/91/012/E/01/01	21/01/92	MAINTENANCE DES OUVRAGES HYDRAULIQUES	803,526	0	04/01/94	01/02/92	2/93
NER/91/013/F/01/01	21/01/92	GESTION DES RESSOURCES EN EAU	709,445	0	31/01/94	01/01/92	1/93
NER/92/007/B/01/01	15/04/93	APPUI AU PLAN EAU ET DEVELOPPEMENT	547,715	0	08/02/94	01/05/93	7/94
NER/92/008/A/01/01	14/04/94	MAINTENANCE ET REHABILITATION DES OUVRAGES HYDRAULIQUES EN MILIEU VILLAGEOIS.	620,442	0	00/00/00	01/01/94	1/95
NER/93/006/A/01/01	08/02/94	PLANNING AND MANAGEMENT OF THE WATER RESOURCES OF LAKE CHAD BASIN	68,410	0	00/00/00	01/01/94	1/95
NIC/67/508/K/01/01	01/01/67	GROUNDWATER INVESTIGATIONS IN THE PACIFIC COASTAL REGION (CHINANDEGA AREA)	960,860	0	28/06/77	01/07/67	12/76 C
NIC/73/007/I/13/01	24/08/73	UNDERGROUND WATERS-REHABILITATION OF WATER SUPPLIES TO AFFECTED AREAS	145,933	0	28/03/78	02/05/73	12/75 C
NIC/82/002/E/15/01	07/11/84	MANEJO DEL SISTEMA DE AGUAS TORRENCIALES	201,009	0	05/05/86	01/01/84	2/86
NIC/82/002/F/45/01	18/05/84	AGUAS PLUVIALES	48,000	0	06/05/86	16/03/84	5/86 C
NIR/83/004/H/01/01	31/05/85	WATER RESOURCES DEVELOPMENT IN RURAL AREAS - BENUE STATE	666,241	0	09/07/91	01/01/85	7/91 C
NIR/87/029/I/01/01	20/04/89	ASSISTANCE TO STRENGTHEN THE FEDERAL DEPARTMENT OF WATER RESOURCES	761,147	0	23/11/93	01/03/89	3/91
NIU/90/001/F/01/01	31/08/90	WATER RESOURCES ASSESSMENT AND DEVELOPMENT IN NIUE	26,406	5,310	10/06/94	01/07/90	7/92
PAK/73/032/B/01/01	18/06/73	ROUNDWATER INVESTIGATIONS IN SELECTED AREAS OF BALUCHISTAN	4,280,994	0	10/06/84	01/12/73	6/84 C
PAK/74/020/C/01/01	26/06/74	WATER RESOURCES DEVELOPMENT AND POWER	13,058	0	29/06/76	01/09/74	12/75 C
PAK/83/022/T/01/01	13/12/84	INTERNATIONAL INSTITUTE OF WATERLOGGING AND SALINITY CONTROL	2,008,824	0	22/09/93	01/03/85	4/90
PAR/69/516/J/01/01	01/01/69	INVESTIGATION OF GROUNDWATER RESOURCES IN CENTRAL AND NORTHWESTERN CHACO	877,774	0	28/08/75	01/01/69	12/74 C
PAR/72/004/J/01/01	04/09/73	GROUNDWATER DEVELOPMENT IN THE CHACO	730,966	0	27/05/80	01/07/73	12/78 C
PAR/88/009/G/01/01	14/12/88	DESARROLLO DE RECURSOS HIDRICOS DEL CHACO PARAGUAYO	270,813	0	13/10/93	01/01/89	1/90
PDY/86/006/I/01/01	27/10/86	PREPARATORY ASSISTANCE FOR THE DEVELOPMENT OF RURAL WATER SUPPLY	9,239	217,943	06/09/89	01/04/86	9/89 C
PHI/66/519/B/01/01	01/06/66	FEASIBILITY SURVEY FOR THE HYDRAULIC CONTROL OF THE LAGUNA DE BAY COMPLEX AND RELATED DEVELOPMENTAL ACTIVITIES	808,475	0	30/06/72	01/07/67	12/72 C
PHI/70/004/I/01/01	13/05/70	TECHNICAL ADVISER TO THE LAGUNA LAKE DEVELOPMENT AUTHORITIES	141,379	0	14/08/75	01/07/70	12/74 C

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
PHI/74/016/C/01/01	04/12/74	ASSISTANCE TO THE NATIONAL WATER RESOURCES COUNCIL	311,979	0	14/07/77	01/03/75	12/76 C
PHI/88/028/F/01/01	14/09/90	STRENGTHENING THE WATER SUPPLY SECTOR IN GROUNDWATER DATA BANKING AND DISSEMINATION OF INFORMATION	830,196	0	19/04/94	01/08/90	8/93
PNG/77/004/G/01/01	31/08/77	ASSISTANCE IN THE IMPLEMENTATION OF A WATER DEVELOPMENT POLICY	261,829	0	23/04/81	01/11/77	4/81 C
POL/68/509/F/01/01	01/06/68	PLANNING THE COMPREHENSIVE DEVELOPMENT OF THE VISTULA RIVER SYSTEM	1,128,502	0	12/05/76	01/07/68	12/75 C
PRC/81/010/C/01/01	28/08/81	SYMPOSIUM INTERNATIONAL SUR LA GESTION DE L'EAU DANS LES ZONES INDUSTRIELLES	5,253	0	30/04/82	01/09/81	4/82 C
QAT/82/001/I/01/01	18/11/82	ASSISTANCE IN GROUNDWATER DEVELOPMENT AND CONSERVATION	0	314,349	14/10/89	01/10/82	10/89 C
RAB/78/014/H/01/01	25/07/79	WATE RESOURCES DEVELOPMENT AND MANAGEMENT	87,070	0	13/06/83	01/09/79	6/83 C
RAB/79/001/E/01/01	08/05/79	INTERREGIONAL MEETING OF INTERNATIONAL RIVER ORGANIZATIONS TCDC	58,851	0	02/12/82	01/05/80	12/81 C
RAB/79/011/C/01/01	19/05/79	INTERNATIONAL SEMINAR ON KARST HYDROGEOLOGY	3,127	0	06/08/81	01/10/79	12/80 C
RAB/80/023/C/01/01	18/07/80	STUDY TOUR ON GROUND WATER EXPLORATION AND DEVELOPMENT AND RELATED SUBJECTS IN CHINA	20,859	0	18/05/82	01/09/80	5/82 C
RAB/82/013/H/01/01	23/03/84	TRANSNATIONAL PROJECT ON THE MAJOR REGIONAL AQUIFER IN NORTH EAST AFRICA	450,418	0	13/02/91	01/04/84	2/91 C
RAF/65/052/D/01/01	01/01/65	FEASIBILITY SURVEY FOR THE REGULATION OF THE SENEGAL RIVER	951,937	0	31/12/71	01/01/67	12/73 C
RAF/66/080/E/01/01	01/01/66	DESIGN OF A SYSTEM OF WATER MANAGEMENT IN THE UPPER SENEGAL RIVER CATCHMENT	1,069,279	0	31/03/72	01/01/68	12/73 C
RAF/70/060/H/01/01	01/01/72	HYDROLOGICAL AND TOPOGRAPHICAL STUDIES OF THE GAMBIA RIVER BASIN	729,323	0	20/03/81	01/08/72	12/85 C
RAF/71/147/H/01/01	01/01/72	PLANNING THE DEVELOPMENT OF THE KAGERA RIVER BASIN	2,048,721	0	09/07/81	01/12/72	12/85 C
RAF/74/036/E/01/01	07/06/74	DEVELOPMENT OF THE MANO RIVER BASIN	437,635	0	01/06/79	03/06/74	12/78 C
RAF/74/082/H/01/01	14/04/77	ETUDE DE L'AMENAGEMENT INTEGRE DU BASSIN DU FLEUVE GAMBIE	1,104,472	0	25/07/83	01/10/75	12/82 C
RAF/74/309/D/01/01	14/02/75	SAHEL DROUGHT EMERGENCY AND MID-TERM GROUNDWATER SUPPLEMENTARY ASSISTANCE	282,311	0	15/05/78	01/11/73	12/78 C
RAF/76/317/D/01/01	14/08/76	APPROVISIONNEMENT EN EAU DES ZONES RURALES - N'DJAMENA (CHD-71-510)	317,188	0	19/05/78	01/01/76	12/78 C
RAF/77/044/B/01/01	01/12/77	STUDY TOUR ON WATER RESOURCES MANAGEMENT IN CHINA	100,308	0	12/01/81	01/04/78	1/81 C
RAF/79/028/G/01/01	10/02/81	INTERREGIONAL MEETING OF INTERNATIONAL RIVER ORGANIZATION	122,619	0	16/06/83	01/01/80	6/83 C
RAF/79/048/C/01/01	04/06/80	STUDY TOUR ON GROUND WATER EXPLORATION AND DEVELOPMENT AND RELATED SUBJECTS	20,180	0	27/10/83	01/09/80	1/84 C
RAF/79/053/D/01/01	27/07/79	ETUDE SOCIO-ECONOMIQUE DU BASSIN DU FLEUVE SENEGAL ET MISE EN PLACE D'UN SYSTEME D'EVALUATION DU DEVELOPPEMENT	480,427	0	11/06/81	01/07/79	6/81 C
RAF/80/048/D/01/01	01/04/81	ASSISTANCE AU PROGRAMME CEAO/CILSS D'HYDRAULIQUE VILLAGEOISEET PASTORALE	21,001	0	24/05/84	01/03/81	12/84 C
RAF/82/042/B/01/01	17/06/82	PREPARATION D'UN PROGRAMME D'HYDRAULIUE VILLAGEOISE DANS LE BASSIN DU NIGER	6,086	0	09/08/83	01/06/82	8/83 C
RAF/82/054/O/01/01	15/10/82	AMENAGEMENT D'UME PARTIE DE LA RIVIERE OUBANGUI	307,332	0	23/10/90	01/10/82	11/90 C
RAF/86/039/O/01/01	14/10/86	FORMATION D'INGENIEURS, TECHNICIENS ET OUVRIERS DE FORAGE D'EAU DES PAYS D'AFRIQUE CENTRALE ET	2,333,423	0	18/05/93	01/10/86	1/87

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
		OCCIDENTALE					
RAF/87/036/J/01/01	10/03/87	ASSISTANCE A L'EVALUATION CONTINUE ET A LA CONCERTATION DANS LE CADRE DE L'OMVS	2,169,200	0	12/02/92	01/03/87	1/88
RAF/88/029/G/01/01	13/02/90	PLANNING AND MANAGEMENT OF THE WATER RESOURCES OF THE LAKE CHAD BASIN	2,576,360	0	03/02/94	01/02/90	2/92
RAF/89/058/B/01/01	14/12/89	ASSESSMENT OF PROGRESS IN THE IMPLEMENTATION OF THE MAR DEL PLATA ACTION PLAN	162,000	0	23/09/92	01/01/90	1/91
RAS/79/048/F/01/01	31/05/79	INTERREGIONAL MEETING OF INTERNATIONAL RIVER ORGANIZATIONS, TCDC	57,107	0	24/11/82	01/05/80	11/82 C
RAS/80/009/B/01/01	16/07/80	STUDY TOUR ON GROUND WATER EXPLORATION AND DEVELOPMENT AND RELATED SUBJECTS IN CHINA	21,595	0	17/11/81	01/09/80	11/81 C
RAS/87/009/J/01/01	04/11/87	WATER RESOURCES ASSESSMENT AND PLANNING IN PACIFIC ISLANDS.	1,577,552	19,770	16/08/94	01/10/87	12/93 C
RAS/89/079/B/01/01	20/12/89	ASSESSMENT OF PROGRESS IN THE IMPLEMENTATION OF THE MAR DEL PLATA ACTION PLAN	152,000	0	24/12/92	01/01/90	1/91
REM/70/361/B/01/01	01/12/72	SEMINAR ON WATER PROBLEM IN LESS DEVELOPE (E.C.E) COUNTRIES	1,011	0	00/00/00	00/00/00	12/73 C
RER/71/203/J/01/01	01/01/71	INTEGRATED DEVELOPMENT OF THE VARDAR/AXIOS RIVER BASIN	1,675,683	0	30/07/82	01/01/71	7/82 C
RER/79/002/B/01/01	10/05/79	INTERNATIONAL SEMINAR ON KARST HYDROGEOLOGY	1,678	0	03/10/80	01/10/79	12/79 C
RER/79/005/F/01/01	16/05/79	INTERREGIONAL MEETING OF INTERNATIONAL RIVER ORGANIZATIONS TCDC	25,210	0	05/08/82	01/05/80	12/81 C
RER/80/006/C/01/01	07/04/80	STUDY TOUR ON GROUND WATER EXPLORATION AND DEVELOPMENT AND RELATED SUBJECTS IN CHINA	3,673	0	06/10/82	01/09/80	10/82 C
RLA/70/367/E/01/01	01/01/71	NATURAL RESOURCES DEVELOPMENT PROGRAMME	268,930	0	01/08/75	01/01/71	12/74 C
RLA/78/036/B/01/01	12/02/79	STUDY TOUR ON WATER RESOURCES MANAGEMENT IN CHINA, PHASE III (LATIN AMERICA)	99,170	0	29/05/80	01/04/79	6/81 C
RLA/82/023/O/01/01	30/12/82	WATER RESOURCES DEVELOPMENT IN THE CARIBBEAN	1,024,904	0	30/12/92	01/01/83	12/92 C
RLA/89/022/C/01/01	02/01/90	ASSESSMENT OF PROGRESS IN THE IMPLEMENTATION OF THE MAR DEL PLATA ACTION PLAN AND FINALIZATION OF STRATEGY FOR THE 1990S	38,000	0	07/07/92	01/01/90	1/91
ROK/70/006/H/01/01	14/10/70	WATER WORKS	10,184	0	13/06/77	01/07/75	12/74 C
ROK/82/014/L/01/01	04/08/83	GROUND WATER RESOURCES DEVELOPMENT	371,114	0	29/05/89	01/10/83	5/89 C
ROM/76/032/C/01/01	28/09/78	TECHNICAL ASSISTANCE FOR THE GURA APELOR DAM DESIGN	18,146	0	27/05/80	01/10/78	12/79 C
SAM/74/006/L/01/01	14/06/77	HYDRODATA COLLECTION	267,230	0	17/05/83	01/01/77	5/83 C
SAM/74/006/I/42/01	29/07/74	HYDRO DATA COLLECTION	104,638	0	31/05/82	01/10/74	5/82 C
SEN/73/003/H/13/01	18/12/73	PROGRAMME DE TRAVAUX HYDRAULIQUES D'URGENCE ET MOYEN TERME AU SENEGAL	534,238	0	10/09/79	01/10/73	12/78 C
SEN/87/006/L/01/01	19/03/90	PLANIFICATION DES RESSOURCES EN EAU	2,006,288	0	26/04/94	01/09/89	9/92
SIL/72/007/I/01/01	21/07/72	PILOT PROJECT FOR THE DETERMINATION OF THE SURFACE WATER RESOURCES	75,048	0	20/06/79	01/09/72	12/78 C
SIL/79/009/P/01/01	21/12/79	RURAL WATER SUPPLY	1,657,723	0	13/08/86	01/02/80	8/86 C
SIL/79/009/G/45/01	09/06/83	RURAL WATER SUPPLY	525,412	350,877	26/02/91	01/01/83	12/90 C
SIL/85/002/T/01/01	16/09/85	STRENGTHENING OF THE RURAL WATER SUPPLY UNIT	1,952,020	0	26/07/93	01/01/86	1/90
SOI/87/001/I/01/01	24/04/87	INTEGRATED URBAN WATER AND SEWERAGE ASSESSMENT AND DEVELOPMENT.	308,895	0	16/06/93	01/07/87	6/93 C
SOI/87/010/D/13/01	01/05/87	WATER WORKS REPLACEMENT.	62,720	0	21/02/90	01/04/87	1/88
SOM/69/002/C/01/01	06/08/69	NATURAL RESOURCES DEVELOPMENT	63,342	0	02/02/72	01/01/71	12/72 C

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
SOM/74/006/C/45/01	02/11/75	GROUNDWATER INVESTIGATION AND EXPLORATION	57,868	0	30/09/78	01/09/75	9/78 C
SOM/74/020/E/13/01	15/07/75	EMERGENCY WATER DRILLING	385,967	0	30/09/78	01/12/74	12/78 C
SOM/87/007/F/01/01	03/05/88	DROUGHT WATER RELIEF STRATEGY	472,870	0	05/07/91	01/05/88	7/92 C
SOM/90/032/B/01/01	05/11/90	STRENGTHENING OF THE WATER RELIEF UNIT	532,400	0	05/07/92	01/11/90	1/92
SRL/73/009/F/01/01	21/06/73	TRAINING IN DREDGING OPERATIONS	6,420	0	21/11/77	01/07/73	12/74 C
SRL/74/030/C/01/01	21/08/75	GROUNDWATER EXPLORATION AND DEVELOPMENT	24,240	0	16/04/79	01/09/75	12/78 C
SRL/75/007/D/01/01	03/03/75	FELLOWSHIPS TO ATTEND THE NINTH CONGRESS OF THE ICID IN MOSCOW IN JULY 75	8,102	0	21/11/77	01/09/78	12/76 C
STK/74/015/F/01/01	17/06/75	QUANTITIVE ASSESSMENT OF GROUNDWATER RESOURCES IN PASSETERREVALLEY	11,144	0	10/11/79	01/04/75	11/79 C
STL/85/002/D/01/01	24/07/85	WATER RESOURCES EXPLORATION AND ASSESSMENT	29,173	0	18/09/87	01/07/85	9/87 C
STV/83/003/D/01/01	08/08/84	WATER RESOURCES ASSESSMENT AND DEVELOPMENT	68,077	0	13/05/86	01/09/84	5/86 C
SUD/68/001/H/01/01	25/11/68	WATER DRILLING	543,825	0	09/06/79	01/02/69	6/79 C
SUD/71/549/D/01/01	13/06/73	ESTABLISHMENT OF HYDRAULIC RESEARCH STATION	8,800	0	12/11/73	00/00/00	12/73 C
SUD/72/003/G/01/01	10/09/73	STRENGTHENING GOVERNMENT SERVICES FOR WATER RESOURCES PLANNING, EXPANSION AND DEVELOPMENT	81,813	0	22/05/77	01/10/73	12/76 C
SUD/78/024/G/01/01	17/02/79	ASSISTANCE TO THE WAD EL MAGBOUL INSTITUTE FOR RURAL WATER TECHNICIANS	98,303	0	09/06/82	01/01/79	12/81 C
SUD/84/006/E/01/01	28/01/85	ESTABLISHMENT OF A WATER POINT MAINTENANCE UNIT ON THE WEST BANK OF THE NILE IN EQUATORIA REGION	83,261	274,600	18/09/88	01/12/84	1/89
SUD/86/096/I/01/01	21/12/88	ECONOMIC WATER PLANNING MODEL	1,230,959	0	18/04/94	01/01/89	4/90
SUD/88/014/I/01/01	21/12/88	RURAL WATER SUPPLY FOR THE NOMADS OF THE WASTERN REGION	828,344	0	22/12/93	01/12/88	12/90
SWA/73/002/E/01/01	02/03/73	STUDY OF THE SWAZILAND GOVERNMENT WATER ACT	12,125	0	29/06/77	01/03/73	12/76 C
SWA/73/006/S/01/01	02/10/73	WATER AND SEWERAGE MANAGEMENT PERSONNEL	325,864	0	20/08/85	01/01/74	1/77
TCI/86/004/F/01/01	17/12/86	WATER RESOURCES DEVELOPMENT AND MANAGEMENT	105,955	0	09/07/91	01/01/87	7/91 C
THA/83/004/M/01/01	09/08/84	GROUNDWATER DATA CENTRE	235,805	0	22/06/90	01/11/84	6/90 C
TOG/62/504/E/01/01	01/01/62	SURVEY OF GROUNDWATER AND MINERAL RESOURCES	1,326,874	0	17/11/72	01/03/63	12/73 C
TOG/71/511/I/01/01	01/06/70	GROUNDWATER EXPLORATION IN THE COASTAL REGION	525,577	0	11/05/77	01/06/70	12/76 C
TOG/75/008/S/01/01	14/03/78	STRATEGIE D'AMENAGEMENT DES EAUX DU TOGO, PHASE I	2,214,608	28,500	27/05/87	01/05/78	5/87 C
TON/73/003/D/01/01	25/06/73	DREDGING SURVEY	500	0	17/03/77	01/07/73	12/73 C
TRI/79/012/M/01/01	21/10/81	MARINE AND COASTAL ENVIRONMENT PROTECTION, POLICY AND LEGISLATION	18,034	0	23/08/88	26/10/81	8/88 C
TRI/87/003/F/01/01	10/11/87	DEVELOPMENT OF ENVIRONMENTAL WATER QUALITY STANDARDS	181,201	0	24/06/93	01/02/88	1/91
TRI/90/006/I/01/01	27/05/91	HYDROGRAPHIC DEVELOPMENT; BATHYMETRIC CHARTING OF THE EXCLUSIVE ECONOMIC ZONE (PHASE 1)	555,205	0	26/11/93	01/05/91	5/93
TUN/69/528/G/01/01	01/01/69	INTENSIFICATION OF GROUNDWATER EXPLOITATION IN NORTHERN AND CENTRAL TUNISIA	318,974	0	25/08/75	01/09/69	12/75 C
TUR/71/011/C/01/01	17/05/71	DEVELOPMENT OF THE WATER RESOURCES	1,741	0	31/12/71	01/07/71	12/73 C
TUR/74/042/E/01/01	28/03/75	STRENGTHENING GROUNDWATER INVESTIGATIVE CAPABILITY OF DSI	55,438	0	16/08/78	01/07/75	12/77 C
TUR/74/064/I/01/01	14/05/75	ASSISTANCE IN HYDRAULIC BACKFILLING FOR ETIBANK	86,936	20,000	11/12/81	01/06/76	12/80 C
TUR/77/006/T/01/01	21/04/78	TRAINING OF AND SUPPORT FOR THE PERSONNEL OF THE STATE HYDRAULIC WORKS DEPARTMENT (DSI)	692,462	361,753	02/01/90	01/01/79	7/89 C
TUR/77/015/L/01/01	05/04/77	STRENGTHENING THE GROUNDWATER	278,711	118,400	11/08/83	01/01/77	8/83 C

PROJECT NUMBER	APPROVAL DATE	TITLE	UNDP AMOUNT	COST SHARING	LAST REVISION	OPERATIONS START DATE	ESTIMATED COMPLETION
		INVESTIGATIVE CAPABILITY OF THE STATE HYDRAULIC WORKS DEPARTMENT (DSI), PHASE II					
TUR/78/029/I/01/01	05/09/79	STRENGTHENING THE RESEARCH AND DEVELOPMENT CAPABILITY OF THE STATE HYDRAULIC WORKS DEPARTMENT (DSI)	161,784	158,500	08/07/85	01/08/79	7/85 C
TUR/81/004/R/01/01	10/12/82	ESTABLISHMENT OF HYDROGEOLOGICAL LABORATORIES FOR EDUCATION AND KARST WATER RESOURCES RESEARCH STUDIES	247,664	74,482	31/10/91	01/11/82	4/91 C
TUR/85/004/T/01/01	19/09/85	STRENGTHENING THE TECHNICAL CAPABILITIES OF THE GENERAL DIRECTORATE OF STATE HYDRAULIC WORKS (DSI)	386,072	573,226	01/11/93	01/09/85	1/86
TUR/88/007/K/01/01	16/09/88	SUPPORT TO THE INTERNATIONAL RESEARCH CENTER FOR KARST WATER RESOURCES	215,712	70,005	30/06/94	01/09/88	1/92
TUR/89/034/B/01/01	04/10/90	TRAINING OF AND SUPPORT FOR DSI PERSONNEL, PHASE II	-7,913	0	05/10/90	01/12/88	10/90 C
TUV/87/006/K/06/01	13/01/88	WATER SOURCES ASSESSMENT, DEVELOPMENT AND MANAGEMENT.	200,300	0	16/11/93	01/10/8	1/88
UAE/75/001/B/01/01	30/07/75	SURVEY OF COASTAL AREAS	1,750	0	21/12/77	15/05/75	12/75 C
UAE/92/001/B/01/01	27/05/92	REORGANIZATION OF THE ABU DHABI MUNICIPAL DRAINAGE SERVICE, PHASE I	0	69,000	27/07/93	01/05/92	9/92
URT/73/004/H/45/01	22/10/73	COORDINATION OF WATER MASTER PLANNING	58,923	0	10/07/80	01/10/73	12/78 C
URT/89/004/H/01/01	28/04/89	ARUSHA WATER MASTER PLAN	769,891	0	22/04/94	01/04/89	5/89
URT/89/004/H/06/01	23/03/90	WATER MASTER PLAN FOR ARUSHA REGION	544,000	0	22/04/94	01/10/89	10/92
URU/71/518/L/01/01	14/01/72	MULTIPURPOSE WATER DEVELOPMENT OF THE YAGUARON RIVER BASIN	277,791	0	20/04/77	01/01/77	12/76 C
VAN/87/013/B/13/01	20/11/87	URBAN WATER TANKS REPLACEMENT.	198,000	0	23/05/89	01/08/87	5/89 C
VAN/88/001/F/01/01	24/11/87	WATER RESOURCES ASSESSMENT AND DEVELOPMENT.	95,464	0	05/06/92	01/01/88	6/92 C
VIE/76/003/H/01/01	24/01/77	CONTRIBUTION TO A FEASIBILITY STUDY OF FOUR DAMS	4,753,449	0	03/06/84	01/02/77	12/84 C
VIE/76/004/K/01/01	02/05/79	STRENGTHENING OF GROUND WATER EXPLORATION ACTIVITIES	3,783,539	0	28/05/85	01/01/77	5/85 C
VIE/80/021/T/01/01	31/12/87	HYDRAULIC RESEARCH	1,607,396	0	04/06/94	01/09/85	10/86
VIE/81/004/W/01/01	29/12/81	GROUNDWATER EXPLORATION IN THE RED RIVER VALLEY AND THE MEKONG DELTA	1,795,467	0	09/06/92	01/01/82	6/92 C
VIE/87/020/K/01/01	19/09/89	COASTAL LITO-HYDRODYNAMICAL PROCESSES	694,055	0	04/06/94	01/06/88	8/88
VIE/88/007/J/01/01	19/02/90	STRENGTHENING THE UNDERGRADUATE EDUCATION AT THE WATER RESOURCES UNIVERSITY	675,700	0	02/06/93	01/09/89	9/90
VIE/88/015/I/01/01	19/02/90	RIVER DYKE MONITORING AND REPAIR	687,688	0	06/07/94	01/06/90	6/93
YEM/88/001/W/01/01	04/02/88	ASSISTANCE TO HIGH COUNCIL FOR WATER IN ESTABLISHMENT OF A TECHNICAL SECRETARIAT / PREPARATION OF A WATER MASTER PLAN	4,033,727	0	15/11/93	01/02/88	1/89
YUG/66/507/C/01/01	01/06/66	REGULATION AND MANAGEMENT OF THE SAVA RIVER	961,578	0	31/05/74	31/12/73	12/73 C
YUG/68/015/I/01/01	20/06/69	MORAVA HYDROSYSTEM OF FLOODS	27,035	0	05/09/75	01/12/69	12/75 C
YUG/72/019/K/01/01	03/08/73	COMPUTER CONTROL OF THE WATER RESOURCES SYSTEM OF THE MORAVA	300,388	0	13/05/80	01/07/73	12/79 C
ZAM/72/025/A/01/01	08/12/72	RURAL WATER SUPPLY DRILLING	4,300	0	08/12/72	01/04/73	12/73 C
(2) TOTAL WATER RESOURCES PLANNING AND DEVELOPMENT NUMBER OF PROJECTS 407			287,985,292	20,687,615			
(1) TOTAL UN NUMBER OF PROJECTS 407			287,985,292	20,687,615			

Annex 1b

CURRENT UNDP FINANCED PROJECTS IN WATER RESOURCES
(New financial arrangements)

Project No.	Project Title	US$
ANG/92/01C	Water Sector Diagnostic Assessment	75,000
ARG/90/009	Sistema de Allerta Hidrologica de la Cuenca del Plata	19,000
BAH/94/01C	Bahrain Water Resources Management	98,000
BKF/93/001	Eau et Developpement Regional (Phase Initiale)	14,250
BKF/93/002	Eau et Developpement Regional, Phase 2	85,500
BKF/96/	Eau et Developpement Reqional, Phase 3	28,500
BUU94/003	Water Quality Protection and Management, Martitza River Basin	19,000
CAF/91/015	Mise en Valeur du Secteur de l'eau en Rep. Centrafricaine	64,125
CAM/95/	Water Resources Management	150,000
CPR/91/140	Water Sector Diagnostics Assessment (Guizhou)--Meeting	78,200
CPR/91/144	Yellow River Delta	78,200
CPR/91/145	Master Plan of Water Resources Development in North Xiniiang	96,340
CPR/92/02C	North Xiniiang Preparatory Mission	40,000
CPR/94/02C	Guizhou Water Assessment	50,000
CUB/95/	Water Resources Management	50,000
ERI/95/	Water Resources Management	100,000
ERI/95/002	Rural Water Supply Formulation	129,250
GBS/90/003	Hydraulique Villageoise dans les Regions d'Oio et Gabu	67,750
GBS/90/C01	Hydraulique Villageoise dans les Regions d'Oio et Gabu	19,950
GBS/93/001	Mise en Oeuvre du Schema Directeur, Secteur de l'Eau	28,500

Project No.	Project Title	US$
GHA/88/017	Water Supply and Sanitation Management Eastern Region	42,750
IND/93/01C	Water Sector Assessment	106,000
INT/92/01C	Capacity Building for Sustainable Water Resources Development	200,000
INT/94/015	Review of UNDP's and UNDDSMS's Experience in Water Sector	30,000
INT/94/01C	Assessment of Water Sector in Bolivia	50,000
INT/94/01C	Assessment of Water Sector in Peru	75,000
INT/94/01C	China Water Legislation	50.000
INT/94/01C	Guizhou Water Assessment	75 000
INT/95/	Water Resources Management	60,000
INT/95/	Water Resources Management	50,000
IRQ/94/001	Rehabilitation and Maintenance of Water Supply Facilities	19,000
IRQ/94/002	Maintenance of Sewerage Facilities in Baghdad	64,125
MAG/93/01C	Diagnostic Secteur Eau	125,000
MAU/92/01C	Support to a 5-Year Investment Programme in Rural Areas	40,088
MAU/94/010	Hydraulique Rurale	28,500
MOR/92/020	Schema Directeur National d'Assainissement Liquide	40,000
MOR/94/01C	Groundwater Resources Management	50,000
MOR/94/002	Appui a la Preparation de la Reunion Sectorielle sur l'Eau	24,700
MOZ/92/005	Water Resources for Development	37,500
NEP/92/014	Bagmati Barrage Gate Supervision and Installation	9,500
NEP/92/01C	Water Sector Diagnosis	84,848
NEP/93/020	Water Sector Diagnostic Assessment and Programme Formulation	19,500
NER/92/007	Appui au Secteur Eau et Developpement	12,250

Project No.	Project Title	US$
NER/92/008	Maintenance et Rehabilitation des Ouvrages Hydrauliques	33,750
NER/94/002	Appui au Plan Eau et Developpement, Phase II	33,750
NIR/92/01C	Environment Planning	55,000
NIR/94/01C	Control of Erosion and Floods	55,000
PNG/92/01C	Water Sector Policy	30,000
QAT/91/002	Artificial Recharge of Ground Water in Northern Qatar	83,809
RAF/87/030	Harmonisation des Methodologies et des Outils Microinformat	76,500
RAF/88/029	Planning and Management of Water Resources-Lake Chad Basin	99,000
RAF/93/009	Gestion de 3 Fleuves Internationaux Africains amenages en	77,489
RAF/94/01C	International Water Resources in Subsaharan Africa	212,000
RAS/92/304	Pacific Water Supply and Sanitation Programme	38,000
RAS/94/300	SOPAC Pacific Water Supply and Sanitation	21,375
SEN/92/011	Planification des ressources en eau	29,750
SWA/95	Proposal for Water Resources Development Study	100,000
TRI/92/001	Microbiological Bathing Beach Water Quality Standard	4,750
VIE/92/023	Sea Dikes Engineering	37,750
YEM/92/01C	Water Management Strategies for Sustainable Development	86,000
YEM/92/056	Capacity Building in the Water Resources Sector	14,250
YEM/93/010	Strengthening of Water Resources Management Capabilities	252,418
YEM/94/011	Water Supply and Sewage Rehabilitation in Yemen	79,971
ZAM/87/X01	Kafue Action Plan	28,000
ZAM/92/01C	Water Sector Diagnostic Assessment	88,000
ZIM/95/	Water Sector Diagnostic Assessment	88,000
	Grand Total	**4,284,888**

Annex II

LIST OF PROJECT FINANCED BY OTHERS

Projects financed by UNCDF		US$
CAF/91/C03	Water Supply	3,711,000
CHD/83/C04	Rural Water Supply	2,762,000
GBS/83/COI	Rural Water Supply	5,356,000
GBS/98/C0I	Rural Water Supply and Sanitation	1,400,000
KIR/87/C02	Outer Islands Water Supply	1,234,000
TUV/87/C01	Water Supply	1,338,000
DJI/85/C01	Rural Water Supply	700,000
GAM/86/C02	Well Construction in Rural Areas	2,233,000
SIL/84/C01	Rural Water Supply	1,586,000
		20,320,000

Projects financed by UN Regular Programme		
CAR/79/R01	Regional Water Resources,Caribbean Islands	421,000
INT/86/R30	Pacific Islands Water Resources	205,000
INT/88/R41	Water Resources Management, Small Islands	100,000
		726,000

World Bank Projects		
IND/85/X01	Water Resources Management in Tamil Nadu	1,318,000
	GRAND TOTAL	22,364,000

Annex III

SELECTED LIST OF SEMINARS AND TECHNICAL MEETINGS

UN Interregional Seminar on Flood Damage Prevention Measures and Management, Tiblisi, USSR, September/October 1969

Meeting of the Ad Hoc Group of Experts on Water Requirements Forecasting, Hungary, May 1972

Interregional Seminar on Water Resources Administration, New Delhi, India, January/February 1973

UN Interregional Seminar on River Basin and Interbasin Development, Hungary, September 1975

United Nations Water Conference Mar del Plata, Argentina, March 1977

UN Workshop on Water Resources Planning Experiences in a National and Regional Context, Italy, June 1979

UN Workshop on Flood Damage Prevention and Control in China, China, October 1980

UN Interregional Seminar on Rural Water Supply, Upsala, Sweden, October 1980

Seminar on Water Resources Assessment, Development and Management in Small Oceanic Islands of the Caribbean and West Atlantic, Barbados, October 1980

Interregional Meeting of International River Basin Organizations, Senegal, May 1981

UN International Colloquium on Technical Co-operation among Developing Countries in Groundwater Resources Development, Zagreb, Yugoslavia, May 1983

Interregional Seminar on Non-Conventional Water Resources Use in Developing Countries Curacao, Netherlands Antilles, April 1985

Interregional Seminar on Assessment and Evaluation of Multiple Objective Water Resources Projects, Budapest, Hungary, October 1985

Interregional Symposium on improved Efficiency in the Management of Water Resources New York, January 1987

International Symposium on Ground Water Economics, Spain, October 1987

Interregional Meeting on River and Lake Basin Development with Emphasis on the Africa Region, Addis Ababa, Ethiopia, October 1988

Promotion of Women's Participation in Water Resources Development, Bamako, Mali, November 1988

UN Interregional Seminar on Water Resources Management Techniques for Small Islands Suva, Fiji, June/July 1989

Interregional Seminar on Water Quality Management in Developing Countries, Warsaw, Poland, September 1989

I Interregional Seminar on the Management of Water Resources in Arid Areas Tashkent, USSR, October 1989

Interregional Seminar on the Mobilization of Resources for Optimal Water Development, Allocation and Conservation, Venezuela, December 1990

Interregional Workshop on Aquifer Overexploitation in Developing Countries Canary Islands, April 1991

International Workshop on Testing of Training Modules on Women, Water Supply and Sanitation, Banjul, The Gambia, September 1991

Interregional Seminar on Environmental Aspects of Water Resources Development Bulgaria, October 1991

International Conference on Water and the Environment Dublin, Ireland, January 1992

Interregional Workshop on the Role of Women in Environmentally Sound and Sustainable Development, Beijing, China, September 1992

Workshop on Testing of Training Modules on Women, Water Supply and Sanitation Bangkok, Thailand, September 1992

Interregional Workshop on Application of Computers to Water Resources Management and Planning, Niger, October 1993

Interregional Training Seminar on a Macro-economic Multiple-Objective Approach to Regional Development and Management of Water Resources, Beijing, China, November 1993

Freshwater Consultative Forum, Geneva, Switzerland, December 1993

Annex IV

LIST OF PUBLICATIONS

Water Series

Management of International Water Resources: Institutional and Legal Aspects. Natural Resources/Water Series No. 1. E,F,S. Sales No. 75.11.A.2.

Ground Water Storage and Artificial Recharge. Natural Resources/Water Series No. 2. E,F,S. Sales No. 74.11.A.II.

The Demand for Water: Procedures and Methodologies for Projecting Water Demands in the Context of Regional and National Planning. Natural Resources/Water Series No. 3. E,F,S. Sales No. 76.11.A.I.

Ground Water in the Western Hemisphere. Natural Resources/Water Series No. 4. E,F,S. Sales No. 76.11.A.5.

Guidelines for Flood Loss Prevention and Management in Developing Countries. Natural Resources/Water Series No. 5. English. Sales No. 76.11.A.6.

River Basin Development: Policies and Planning (Vols. I and 11). Natural Resources/Water Series No. 6. English. Sales No. 77.11.A.4.

A Review of the United Nations Ground Water Exploration and Development Programme in the Developing Countries, 1962-1977. Natural Resources/Water Series No. 7. E,F,S. Sales No. 79.11.A.4.

Efficiency and Distributional Equity in the Use and Treatment of Water: Guidelines for Pricing and Regulations. Natural Resources/Water Series No. 8. English. Sales No. 80.11.A. II .

Ground Water in the Eastern Mediterranean and Western Asia. Natural Resources/Water Series No. 9. English. Sales No. 82.11.A.8.

Experiences in the Development and Management of International River and Lake Basins. Natural Resources/Water Series No. 10. E,F,S. Sales No. 82.11.A. I7.

Flood Damage Prevention and Control in China. Natural Resources/Water Series No. 11. English. Sales No. 82.11.A.13.

Ground Water in the Pacific Region. Natural Resources/Water Series No. 12. English. Sales No. 83.11.A. 12.

Treaties Concerning the Utilization of International Water Courses for Other Purposes than Navigation. Natural Resources/Water Series No. 13. E,F. Sales No. 84.11.A.7.

The Use of Non-Conventional Water Resources in Developing Countries. Natural Resources/Water Series No. 14. English. Sales No. 84.11.A. 14.

Ground Water in Continental Asia. Natural Resources/Water Series No. 15. English. sales No. 86.11.A.2.

Water Resources Legislation and Administration in Selected Caribbean Countries. Natural Resources/Water Series No. 16. English. Sales No. 86.11.H.2.

Institutional Issues in the Management of International River Basins: Financial and Contractu. l Considerations. Natural Resources/Water Series No. 17. E,F,S. Sales No. 87.11.A.16.

Ground Water in North and West Africa. Natural Resources/Water Series No. 18. E,F. Sales No. 88.11.A.5.

Ground Water in Eastern, Central and Southern Africa. Natural Resources/Water Series No. 19. E,F. Sales No. 88.11.A.5.

River and Lake Basin Development. Natural Resources/Water Series No. 20. E,F,S. Sales No. 90.11.A. 10.

Water Resources Planning to Meet Long Term Demand: Guidelines for Developing Countries. Natural Resources/Water Series No. 21. English. Sales No. 88.11.A. 17.

Non-Conventional Water Resources Use in Developing Countries (Proceedings of the Interregional Seminar in Curacao). Water Resources/Water Series No. 22. English. Sales No. 87.11.A.20.

Legal and institutional Factors Affecting the Implementation of the International Drinking Water Supply and Sanitation Decade. Natural Resources/Water Series No 23. English. Sales No. 88.11.A.21.

Ground Water in Eastern and Northern Europe. Natural Resources/Water Series No. 24. E,F,S. Sales No. 89.11.A.II.

Promotion of Women's Participation in Water Resources Development. Natural Resources/Water Series No. 25. E,F. Sales No. 90.11.A.24.

Criteria for and Approaches to Water Quality Management in Developing Countries. Natural Resources/Water Series No. 26. E,F,S. Sales No. 91.11.A. 1.

Ground Water in Western and Central Europe. Natural Resources/Water Series No. 27. E,F,S. Sales No. 90.11.A.25.

Other Water Resources Publication

Integrated River Basin Development: Report of a Panel of Experts. English.
Sales No. 70.11.A.4.

Solar Distillation as a Means of Meeting Small-Scale Water Demands. English.
Sales No. 70.11.B.I.

Triennial Report on Water Resources Development, 1968-1970. English.
Sales No. 71 .II.A. 15.

Abstraction and Use of Water: A Comparison of Legal Regimes. E,F,S. Sales No. 72.11.A. 10.

Proceedings of the Interregional Seminar on Water Resources Administration, New Delhi, 1973.

National Systems of Water Administration, English, Sales No. 74. II.A. 10.

Report of the United Nations Water Conference, Mar del Plata, 14-25 March 1977. English. Sales No. 77.11.A.12.

Water Resources Planning: Experiences in a National and Regional Context. Report of a United Nations Workshop convened in Italy, 18-29 June 1979.

Rural Water Supply. Report of a United Nations Interregional Seminar convened in Sweden, 6-17 October 1980. English.

Technical Co-operation among Developing Countries in Groundwater Resources Development: Report of a United Nations International Colloquium convened in Yugoslavia, 23-28 May 1983. English.

Application of Computer Technology for Water Resources Development and Management in Developing Countries. 1987. English.

Follow-up to the Mar del Plata Action Plan: Report of the Meeting. Interregional Symposium on Improved Efficiency in the Management of water Resources, New York, 5-9 January 1987. English, French, Spanish.

Ground Water Economics. Report of a United Nations International Symposium convened in Spain, 19-23 October 1987. English.

Assessment of Multiple Objective Water Resources Projects: Approaches for Developing Countries. 1988. English.

Water Resources Management Techniques for Small Islands. Proceedings of the Interregional Seminar convened in Fiji, 26 June - I July 1989.

Ground Water Development and Management in Developing Countries: 25 Years of United Nations Activities, 1963-1988. E,F,S. Sales No. 89.11.A.8.

Ground Water Software User's Manual. 1991. English.

Report of a United Nations Interregional Workshop on Testing of Training Modules on Women, Water Supply and Sanitation, Gambia, 2-6 September 1991. English.

Water Management since the Adoption of the Mar del Plata Action Plan: Lessons for the 1990s. 1991. English.

Legislative and Economic Approaches to Water Demand Management. 1991. English.

Integrated Water Resources Planning. 1991. English.

Report of the International Conference on Water Resources and the Environment, convened in Dublin, Ireland, January 1992.

Water Demand Management, Background Study for the International Conference on Water and the Environment

Software

Groundwater Software, Part one: Data Base and Utilities, Program diskettes and Manual December 1989.

Groundwater Software, Part two: Mathematical Models, Program diskettes and Manual December 1989.

Groundwater for Windows (GWW), Program diskettes and User Manual, December 1994.