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ECA/RCID/24/98

ECONOMIC COMMISSION FOR AFRICA

**Sixth Annual Meeting of the
Interagency Group for Water in Africa**

**Rabat, Morocco
26-28 May, 1998**

REPORT OF THE MEETING

June 1998



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REPORT OF THE MEETING

I. Organization of the Meeting

1. The sixth annual meeting of the Interagency Group for Water in Africa (IGWA) was held at Rabat, Morocco from 26 to 28 May 1998. The meeting was hosted by the Morocco Office of the World Health Organization - Eastern Mediterranean Office (WHO/EMRO) in close collaboration with and considerable logistic support from the Office Nationale de l'Eau Potable (ONEP) of the Government of Morocco. The Alexandria, Egypt office of WHO/EMRO* at Alexandria, Egypt kindly facilitated coordination of all correspondence between WHO/EMRO/Rabat, ONEP and the Economic Commission for Africa (ECA) which serves as the secretariat of IGWA. ECA convened and serviced the meeting including preparation of all necessary background documents and its final report in close collaboration with WHO/EMRO, and ONEP.

II. Attendance

2. Representatives from the following UN and other agencies attended/participated at the meeting: FAO (Accra), UNICEF, UNIDO, UNDP, UNESCO, (all from Morocco Offices), the World Bank (Washington and Abidjan), UNHCR (Geneva), WHO (Geneva), WHO/EMRO (Alexandria and Rabat), WHO Regional Office (Brazzaville), UNFPA (Amman), UNECA (Addis Ababa and Tangier), WMO (Geneva), the Zambezi River Authority (ZRA) (Lusaka), the Arab Maghreb Union (UMA), ONEP, the Ministry of Interior and the Ministry of Environment of the Government of Morocco. A representative of the Southern Africa Development Coordination (SADC) (Lesotho) participated at the meeting as observer. The UNEP (Nairobi), UNESCO (Paris) and IAEA (Vienna) sent in written information materials to the meeting. The list of participants is attached to this report at Annex 1.

III. Opening of the Meeting (Agenda Item 1)

3. The meeting was opened by Mr. Ecihabi, Director of Laboratories, on behalf of the Director General of ONEP. In his welcoming address, Mr. Ecihabi emphasized the importance of water resources in the development of the Kingdom of Morocco. He thanked UNECA and WHO for choosing Morocco as host for the meeting.

4. Mr. K. Khosh-Chashm, WHO/EMRO Regional Adviser, in his opening remarks, welcomed the participants on behalf Dr. H. Gezairy, the WHO Regional Director for Eastern Mediterranean Office. He also conveyed the greetings of Mr. Zeribi, the WHO Representative in Morocco, who was away on duty. He thanked the Royal Government of Morocco, especially ONEP for providing an excellent arrangement for the meeting. He commended the excellent role of UNECA in the promotion of water development in Africa. He emphasized the importance of water for human health and for life as a whole and recalled the most prevalent water-related diseases as malaria, schistosomiasis, diarrhoeal diseases etc. He called for joint activities among IGWA members in areas such as water conservation, pollution prevention, treatment and reuse of wastewater. In this respect, he mentioned activity of the Regional Land and Water Resources Task Force in the Eastern Mediterranean Region. WHO/EMRO is the focal point and coordinating agency for this Task Force. In this connection, he noted excellent collaboration between WHO, FAO and UNESCO.

5. In his opening remarks, Mr. S. Jugessur, Senior Economic Affairs Officer, ECA/SRDC/NA expressed UNECA's gratitude to his Majesty the King Hassan II, the Government and the people of Morocco for their hospitality. He drew the participants' attention to some of the facts and figures which characterize the crucial role of water in Africa. He noted that agriculture was mostly rainfed while the irrigation potential of African river basins remained largely untapped; 65% of rural population and 25% of urban dwellers lack access to adequate potable water. As regards sanitation facilities, the figures are respectively 73% and 43%. Mr. Jugessur concluded his remarks with the hope that this IGWA meeting would come up with clearly defined interagency joint activities to meet the challenges of water development in Africa.

6. Mr. A.F. Hoque, Senior Economic Affairs Officer of the UNECA secretariat (Addis Ababa) thanked the Government of Morocco, particularly ONEP, for co-hosting the meeting and providing all the facilities. He mentioned that this was the first time in the six-year history of IGWA that the Government of a member State was kind enough to host the annual meeting of IGWA. He also thanked WHO/Alexandria and WHO/Morocco for hosting the meeting and for making all arrangements. Mr. Hoque especially welcomed those who were in attendance for the first time, i.e. the SADC, UMA and the UNFPA representatives. It was hoped that the latter's participation would open up further avenues for cooperation among the IGWA member agencies. The representative of UNECA emphasized the need for enhanced interagency cooperation and for interagency joint activities in water sector in Africa. He outlined some of the needed follow-up activities such as seminars, workshops, study tours, etc. which could form the basis for interagency cooperation. He invited the participants to conceptualize joint activities which could serve as the yardstick of success of IGWA.

IV. Election of the Bureau (Agenda Item 2)

7. The sixth annual meeting of IGWA elected the following as the bureau for 1998-1999:

- a. Mr. K. Khosh-Chashm, WHO/EMRO (Alexandria/Egypt): Chairman
- b. Mr. M.J. Tumbare, Zambezi River Authority (Lusaka/Zambia): Vice-Chairman
- c. Mr. S. Allemu, World Bank (Washington) and Mr. Sonou, FAO (Accra): Rapporteurs

V. Adoption of Agenda (Agenda Item 3)

8. The provisional agenda prepared earlier by the IGWA secretariat (ECA) was discussed and amended to accommodate new items. The adopted agenda is enclosed at Annex 2.

PROCEEDINGS OF THE MEETING

VI. Study on Inter-Country and Inter-Agency Cooperation for Integrated Development of Water Resources of the Zambezi River Basin (Agenda Item 4).

9. This study was prepared earlier and presented at the meeting by the representative of the UNECA secretariat. Background information on prior decisions and on activities leading to the study was given as introduction. Following introductory remarks, the major features of the study were highlighted. Among these were the technical characteristics of the Zambezi River Basin, its socio-economic indicators and the sub-regional cooperative settings in the basin. Issues related to the implementation of the ZACPRO under ZACPLAN, particularly the establishment of the Zambezi River Basin Commission (ZAMCOM) were also elaborated. Finally, the following conclusions and recommendations were summarized from the study and presented to the meeting:

Conclusions:

- a. Excellent cooperative environment that is conducive to inter-country cooperation exists in the SADC subregion;

- b. The pace of implementation of the ZACPLAN/ZACPRO activities has not been as rapid as it was expected;
- c. Establishment of ZAMCOM needs intensive negotiations among the Zambezi basin countries;
- d. The role of UN agencies in the area of water resources in the basin has been limited;
- e. Bilateral support for water projects in the basin were mostly donor-driven and did not always address priorities set by Zambezi riparian countries.

Recommendations:

- a. The pace of work for integrated development of water resources of the Zambezi Basin within the framework of ZACPLAN should be accelerated;
- b. The process of negotiations leading to the establishment of ZAMCOM should be accelerated without having to wait for entry into force of the SADC Protocol on sharedwater course systems in the subregion.
- c. The UN and other international agencies should play a more active role in facilitating negotiations and in promoting cooperation in the development of sharedwater resources in the basin. They can also support in establishing Centres of Excellence for training and higher education in water resources development and management in the SADC subregion.
- d. Meetings of and dialogues among the Zambezi basin countries will facilitate the negotiation process leading to the establishment of ZAMCOM. A special meeting on cooperation in the Zambezi basin in conjunction with the SADC Roundtable Conference on sharedwater resources can enhance the process. This Roundtable conference is scheduled to be held sometime towards the end of 1998.
- e. Donor support and assistance should focus on the implementation of ZACPRO activities identified and chosen by the riparian countries themselves;
- f. Establishment of a Zambezi Development Fund (ZAMFUND) would facilitate and accelerate the development of the basin; and

- g. Actions for an African Convention on Transboundary Resources including sharedwater resources should be initiated.

Discussions on Agenda Item 4

10. The study was well-received by the meeting and the participants commended the ECA for its efforts and endorsed the study. The meeting considered the study timely and pertinent and elaborately discussed the issues addressed in the study and further recommended the following:

- a. Emphasis should be provided on capacity building activities especially in inter-country negotiating process to level the playing field for all riparian countries and enhance dialogue and cooperation;
- b. Increased donor sensitivity is required to the needs felt and identified by the riparian countries themselves;
- c. Donor support to facilitate ratification and entry into force of the SADC Protocol on shared watercourse systems is necessary;
- d. There is strong need for taking stock of ongoing water related activities in the SADC sub-region;
- e. A format for harmonization of baseline data and information should be developed and implemented on a systematic basis;
- f. Increased support is required from the UN and other international agencies to facilitate and enhance dialogue among the riparian countries leading to the establishment of ZAMCOM;
- g. The establishment of ZAMFUND is a good idea that may develop in line with progress made in the realization of ZAMCOM and depending on increased riparian commitment for cooperation in integrated water resources management of the Zambezi River Basin;
- h. Linkages between the ZACPRO activities and sub-regional programs must always be explored and optimized; and
- i. Consultation and coordination between IGWA member agencies and inter-governmental organizations (IGOs) in the subregion such as the SADC Water Sector Coordination Unit, the Zambezi River Authority (ZRA) etc. are essential;

11. In this connection, the representative of FAO offered to cooperate with ZAMCOM and provide technical assistance in:

- i. the establishment of a water management model (similar to the one developed for the Niger river basin, and
- ii. in the formulation of water laws and regulations.

12. In concluding discussions on this agenda item, the Chairman of the meeting commended ECA for an excellent work done in this area and noted that the meeting received the study well and endorsed its recommendations specially those pertaining to the establishment of ZAMCOM, ZAMFUND and to the work leading to the African Convention on transboundary resources. He also emphasized the need for donor sensitivity to the priorities set by the recipient countries in bilateral and multilateral financing of water-resources projects in the Zambezi river basin. He further emphasized the need for baseline data on water development in the basin and for sharing such information among all stakeholders.

VII. Water Situation in North Africa - Issues and Challenges in the 21st Century (Agenda Item 5)

13. A paper on water situation in North Africa was prepared and presented by the ECA-North Africa Subregional Development Center (ECA/SRDC-NA). The presentation focused on two major components: (i) Analysis of actual situation and (ii) technologies for water management. Background data and information were given on the situation particularly on:

- Availability and withdrawal of renewable water resources;
- Water demand pattern;
- Dependency on externally (out of the subregion) produced surface water resources;
- Fossil and recycled groundwater.

In addition, water quality problems and some measures to resolve these problems were identified.

14. With regard to technologies for water management, the issues of techniques and technologies, the need for efficient and environmentally safe, low-cost and manageable technologies, and the need for integrated approach were emphasized.

Available technologies for water harvesting, for stemming losses in water supply systems, for irrigation, for wastewater treatment and for desalination were also presented in brief. Pertinent policy issues, such as water tariffs, customer sensitivity, maintenance, incentives, and long-term sustainability were highlighted. The report recommended the following:

- a. Cooperation in research programs among IGWA member agencies;
- b. Joint sponsorship of training programs;
- c. Use of remote sensing and radio-isotope technologies for water assessment, water quality monitoring and management;
- d. Use of creative media for promotion of environmentally sound water technologies;
- e. Development of sub-regional policies, plans and strategies for sustainable management of water resources;
- f. Development and use of electronic network to setting up data bases on water institutions and experts; and
- g. Harmonization of program cycles of the different UN and other agencies and pooling resources together.

15. The report was well-received by the participants and provoked quite interesting discussions that contributed to sharing of information and experience in water loss control, wastewater re-use, irrigation technologies, the role of incentives in proper use of technologies, etc. The meeting recognized the following:

- a. The need for developing and harmonizing national and subregional regulations and standards on water quality whenever or wherever feasible and conditions permit;
- b. The importance of exchange and dissemination of knowledge and information on water and waste-water technology options;
- c. The necessity of taking stock of existing guidelines and technologies and for developing tool kits for specific needs;
- d. The need for water demand management tools;

- e. The increasing importance of community and NGO participation in water management and introducing incentive mechanisms to enhance sustainability;
- f. The convergence of information, technology and community participation and the need for IGWA to promote these themes in collaboration with all concerned parties; and
- g. The work required to be undertaken for informed decision makers to choose between wastewater treatment and desalination options to increase supply.

VIII. WMO Activities in Africa - Areas for Cooperation and Collaboration (Agenda Item 6)

16. A report on the above topic was presented by the representative of WMO. Brief information on major events and constraints facing the national hydrological services in the last twenty years that led to the design of WMO's "Hydrology and Water Resources Programme (HWRP)" were given as introduction. It was also mentioned that the main interest of the HWRP has been centred on operational hydrology with focus on the assessment of quantity and quality of water resources. The presentation highlighted the following major activities in Africa being undertaken by WMO including joint activities with other agencies.

- a. The development of World Hydrological Cycle Observing System (WHYCOS) and its regional components (MED; SADC; AOC; CONGO; IGAD; NILE HYCOS) and the mechanisms for coordination;
- b. Hydrological Information Referral Service - INFOHYDRO dealing with dissemination of information related to institutions and their activities on hydrology;
- c. Comprehensive assessment of freshwater resources of the world;
- d. Publication of "Water Resources Assessment - Handbook for the Review of National Capabilities" and WMO plan to organize workshops on subregional basis to introduce the handbook;
- e. Publication of the 5th Edition of "WMO Guide to Hydrological Practices;"

- f. WMO contribution to the celebration of March 22nd as World Day for Water; and
- g. The forthcoming 7th Session of the WMO Regional Association for Africa Working Group on Hydrology and the training workshop for the SADC subregion.

Elaborate information was presented on the concepts, technological base and capabilities of WHYCOS and its regional components. The process and status of implementation of regional HYCOS components in Africa were also presented.

17. The meeting discussed the WMO report elaborately. Of particular interest to the meeting were issues associated with:

- Cost implications of regional HYCOS projects;
- Aspects of transfer of the system to the national agencies, specifically maintenance and sustainability;
- The selection criteria of regional centres;
- Constraints in data acquisition and information exchange;
- Lack of groundwater data.

18. The meeting received the WMO report well and recommended that:

- a. More specific mechanisms be developed to ensure the sustainability of the regional HYCOS after being implemented;
- b. Inter-agency collaboration on capacity building (training, workshops) should be enhanced;
- c. Similar activities for groundwater data should be initiated and strengthened through greater involvement of and collaboration with relevant agencies;
- d. Concrete measures should be taken at both regional and country levels to bring the importance/value of hydrological data to the attention of policy makers; and

- e. Use the opportunities created by WHYCOS Programme to maximize the collection and exchange of data nationally and regionally.

IX. Study on African River and Lake Basins - The Need for a Regional Approach to Environmental Management (Agenda Item 7)

19. This paper introduced by the representative of UNIDO provided an overview of the large river and lake basins in sub-Saharan Africa. Many rivers and lakes suffer from low runoff and flow. Lake Chad is the most hit as the lake has been reduced to less than a tenth of its original water surface area in less than a hundred years.

20. Although there are more than 54 transboundary river basins in Africa, the basic concern remains quantitative water conservation within each country. Joint management of the river courses passing through their territories is also a concern. Environmental management of the shared river courses has been neglected. The paper reviewed the problems that are threatening the environmental quality of the African river basins: the fast growing population of the continent, their activities around and on the river courses, the localized improper use of natural resources, the disposal of industrial waste into the water body and on land within the basin, especially waste generated by agro-processing, chemical, pulp and paper, metal processing, mining and textile industries. Modernization and intensification of agricultural practices and livestock production are major sources of non-point pollution of surface and groundwater. The critical interdependence of upstream and downstream environmental management activities is evident. Especially critical is the non-existence of a comprehensive legal environmental framework; its consequences can be seen at all levels of the basins. This confirms the need for inter-country collaboration for joint environmental management of the shared river and lake basins.

21. Setting up a water quality management policy and drafting a pollution control programme with standard criteria and guidelines are urgent and complicated tasks. Examples of European environmental management standards were shown.

22. UNIDO provided case studies from the Moroccan context in support of the report. It was emphasized that there was a need for ecologically sustainable industrial development, combining macro level framework interventions with private sector direct interventions at the enterprises level, including the use of National Clean Industrial Production Centres (NCPCs) jointly with UNEP and for programmes on the management of industrial waste. The ultimate goals of the NCPC programme of UNIDO is to facilitate the incorporation of the concept of cleaner

industrial production and industrial waste management in the national environmental policy of developing countries and economies in transition.

23. The meeting recommended the following for future action, within the IGWA context with UNIDO support.

- Organize workshops for different levels of the river basin management personnel
- Promote exchange of experience between African river basin management personnel and worldwide and regionwide institutions.

X. FAO's Special Programme for Food Security in Africa (Agenda Item 8)

24. The FAO's Special Programme for Food Security (SPFS) was launched in September 1994 to help eradicate food insecurity in Low-Income Food Deficit Countries (LIFDCs). This objective is pursued through:

- i. Rapid increase in agricultural productivity and other food production;
- ii. Reduction in year-to-year variability in production on an economically and environmentally sustainable basis thereby reducing disruptive variations in the food supply and maximizing national food self-reliance;
- iii. Income generation at household level to ease access to food.

In doing so, the programme is guided by five basic principles: national ownership, focus on areas and food crops with high potential, participatory philosophy, environmental sustainability, and gender sensitivity.

25. The implementation of the SPFS follows a phased approach comprising:

- i. Formulation of National Programme;
- ii. Implementation of the pilot phase;
- iii. Expansion phase;
- iv. The Water Control Component; and the

v. Partnership programme.

The Water Control Component

26. This phase of the programme lays emphasis on water management for rapid increase of productivity and food production. It favours small-scale, low-cost water development schemes for reasons including:

- Small-scale irrigation can be based on farmers' existing knowledge;
- Planning and development are more flexible;
- Technical, managerial and entrepreneurial skills can be found locally;
- Social infrastructure requirements are reduced;
- External input requirements are lower.

27. Based on successful development experiences, the programme is promoting:

- i. Water harvesting techniques which can help increase yields three to four times compared with dryland farming;
- ii. Inland Valley Swamp Development; for they have high productivity potential in both dry and wet seasons;
- iii. Low-lift Pump Schemes whose costs for operation allow individual or small groups' ownership;
- iv. Peri-urban irrigation; an important source of income and nutrition for urban population; but its development is hampered by insufficient access to clean water and associated health problems
- v. Use of shallow aquifers offering easy access to water as a result of low capital cost and private investment by individuals and small groups of farmers;

28. A number of bilateral donors including Italy, Netherlands, Belgium, France and Spain are already supporting the programme. South-south cooperation has been established between Vietnam and Senegal, Morocco and Burkina Faso and others.

29. FAO has signed Memoranda of Understanding with the World Bank, the African Development Bank and the Islamic Development Bank. UNDP, IFAD and WFP are also collaborating with FAO. It is expected that more UN agencies will establish similar partnership programme to support the SPFS. Joint activities may cover small-scale water development schemes, including drinking water supply and sanitation for communities involved in the Programme, the re-use of treated wastewater for periurban agriculture, socio-economic constraints analysis, policy reform, capacity building.

30. The paper was well-received. The ensuing discussion threw more light on the following:

- The need for a 2-3 year pilot phase as demonstration phase involving farmers;
- The criteria for selecting LIFDCs and the need for periodic updating of the list;
- The wide scope of the programme in terms of targeted population as 42 out of 53 African countries are LIFDCs;
- The usefulness of South-South Cooperation;
- The need to use WHO guidelines when promoting the re-use of wastewater for peri-urban irrigation.

31. The meeting commended FAO for the basic principles of SPFS, i.e. national ownership, participatory philosophy, environmental sustainability and gender sensitivity. It was recommended that efforts be made at country level for effective inter-agency cooperation in support of this programme which aims at ensuring food security and poverty alleviation.

XI. Discussion on Status of Implementation of the Water Component of UNSIA (Agenda Item 9)

32. Although not represented at the meeting, UNEP, as a co-chair (with the World Bank) of the Water Working Group of UNSIA sent a briefing note and a status report to the meeting. This note and the report which are annexed to this report recalled the four objectives developed by the Water Working Group, namely:

- i. Assuring sustainable use of and equitable access to freshwater with emphasis on targeting water needs of majority poor;
- ii. Household water security focusing on drinking water and sanitation;
- iii. Fresh water resource assessment focusing on regional water assessment in shared river basins;
- iv. Water for food security focusing on irrigated agriculture.

33. The meeting reviewed the report and:

- i. Agreed that most UN agencies have been implementing activities related to the four objectives set above; but these activities were not being appropriately considered as inputs to the UNSIA.
- ii. Recorded that many agencies were collaborating towards achieving the four water goals although not in the framework of UNSIA, e.g. WHO and UNICEF collaboration on water supply and sanitation; FAO's Special Programme for Food Security (SPFS) laying emphasis on water control as entry point has been started in three of the four "focus" countries, i.e. Mali, Mozambique and Ethiopia. More than 20 African countries are currently at different stages of being covered by this FAO Programme.
- iii. A number of the World Bank activities in the SADC region, the Nile basin and in West Africa were also mentioned in this regard.
- iv. The meeting agreed that IGWA was not in a position to play a lead role in monitoring and reporting on the progress made and needed on the implementation of the UNSIA; the Water Working Group of UNSIA led by UNEP and the World Bank being the appropriate and responsible agency for these purposes.
- v. Recommended that IGWA member agencies explore the possibility of identifying and compiling information on all recent, ongoing and planned activities of IGWA member agencies

which contribute clearly to the achievement of the UNSIA objectives;

- vi. requested UNEP to present at the 7th meeting of IGWA the paper being prepared by UNEP and WMO on how to speed up the UNSIA implementation.

34. The meeting under this agenda item also took note of the information materials sent to the meeting by UNESCO and IAEA. These materials were copied and circulated among the meeting participants. However, they were discussed at the meetings. They were not included in its agenda. These information along with the briefing note and the report on status of implementation of the UNSIA water component sent in by UNEP are included at Annex 3 to this meeting report.

XII. Identification of Inter-agency Joint Activities and Development of Strategies and Modalities for Implementation (Agenda Item 10)

35. The Chairman of the meeting emphasized the crucial importance of this agenda item and drew attention of the participants to focus on major converging themes that emanated from discussions and recommendations made based on the different reports and studies. In this regard, he stated that:

- Information exchange
- Technology options and guidelines for their selection and
- Community participation are those converging themes where the potentials for inter-agency collaboration exist.

36. The meeting recognized the importance of joint activities in the area of information exchange and these were identified as follows:

- Facilitating awareness of ongoing water related ventures at the country and regional levels so as to avoid duplication of activities and misuse of resources;
- Identification and dissemination of best practices in the water sector, and
- Identification of gaps in water-related activities and exploration of modalities to fill these gaps.

37. It was also recognized that inter-agency collaboration on information exchange should, in principle, follow a simple, do-able approach and should build upon lessons learnt from past successes and failures. After intensive discussions and exchange of ideas on possible options, the following strategies were formulated:

- a. Various mechanisms for information exchange at the country level exist. These are for example, Data Base for UN Common Country Assessment, UNDP as a focal point for UN agencies for country information, donor coordination committees, resident mission contacts, etc. Focus must be made on information exchange at sub-regional and regional levels;
- b. There is a need to contact and involve existing global, regional and sub-regional organizations for coordination and information exchange such as the Global Water Partnership (GWP), the World Water Council (WWC), the UN Administrative Committee on Coordination (UN-ACC) and its Sub-committee on Water Resources, Water Supply and Sanitation Collaborative Council. Strengthening IGWA's linkages with these and other global and regional fora is vital;
- c. A combination of innovative information exchange mechanisms such as electronic mail should be used with traditional methods such as workshops, meetings and roving seminars etc.;
- d. Limit information exchange, for the beginning, among IGWA members and potential cooperating partners;
- e. Establish IGWA focal points at agency level for information exchange and follow-up activities and facilitate their endorsement by their respective agencies;
- f. Facilitate inter-regional communication between river basin organizations (RBOs), sub-regional water sector institutions, etc. A good beginning could be convening a meeting of existing and the nuclei of potential RBOs in Africa; and
- g. Undertake information exchange on planned training programs/workshops highlighting objectives, criteria, desired output, input required, etc.

38. The meeting discussed collaboration in areas of water technology selection. It was agreed that joint exercises should focus on identifying what is available in

Africa. The identification should go further to depict best practices for specific water sub-sectors emphasizing on proven and successful technology options. For these purposes ECA/SRDC-North Africa will serve as a focal point with contributions from FAO Regional Office for Africa on irrigation technology; WHO-Geneva on water supply and sanitation, and WHO Regional Office for Eastern Mediterranean on wastewater treatment and re-use. It was decided that the findings and recommendations of this exercise will be presented by the ECA/SRDC/North Africa and reviewed at the next IGWA meeting.

39. Due to the extensive nature of community participation and time constraint, the meeting agreed that the issue remains on the agenda to be discussed on the next IGWA meeting. It was also suggested that in the next IGWA meeting a presentation be made by a panel of 3/4 agencies e.g. UNICEF, WHO, FAO, UNHCR, UNFPA and others on their experience in this area.

XIII. Dates, Venue and Host Agency for the Seventh Annual Meeting of IGWA (Agenda Item 11)

40. The Chairman opened this agenda item by inviting volunteers to host the 7th IGWA meeting. Participants were informed that so far UN agencies hosted IGWA meetings with the exception of this meeting where Morocco - a member country acted as co-host. It was noted that an expectation to have a sub-regional water institution as the next host was communicated earlier at the beginning of this meeting to SADC Water Sector Coordination Unit and to the Zambezi River Authority (ZRA). The Chief Executive of ZRA responded to the meeting that despite their eagerness, they would not be able to host the next meeting. The representative of FAO kindly offered, subject to further confirmation, to host the 7th IGWA meeting in Accra/Ghana sometime in May/June 1999. As a second option, the WMO representative offered, subject to further confirmation, to host the next meeting in Geneva/Switzerland in September 1999. The meeting graciously endorsed the respective hosts, venues and dates.

XIV. Other Issues (Agenda Item 12)

41. Under this agenda item, the meeting accepted the proposal made by the World Bank to reinforce the IGWA secretariat by way of establishing a voluntary support group of individual participants to assist the secretariat in specific tasks between now and the next IGWA meeting. The following individuals subject to confirmation by their agencies agreed to render limited assistance to the ECA secretariat for the said period:

	Name	Organization	Sub-Regional Focus
1.	Mr. M.J. Tumbare	ZRA/Lusaka	Zambezi River Basin
2.	Mr. S. Alemu	World Bank/Washington	Southern Africa
3.	Mr. M. Woldu	World Bank/Abidjan	West Africa
4.	Mr. K. Khosh-Chashm	WHO/EMRO/Alexandria	North Africa
5.	Mr. J.L. De Pedro	ECA/SRDC-NA/Tangier	North Africa

XV. Agenda for the Next Meeting

42. The ECA, acting as the secretariat of IGWA, requested contributions of ideas and themes from the meeting participants for proposed provisional agenda for the 7th annual meeting of the Group. After extensive discussions, the meeting agreed on the following to be included, among others, in the provisional agenda for 1999.

- (i) A Paper on Water Technology by ECA/SRDC-NA with assistance from WHO, FAO, WB, and WMO
- (ii) A presentation by UNEP on UNEP/WMO joint paper being prepared on how to speed up the UNSIA implementation process
- (iii) Community - participation and partnership: a panel discussion by interalia, WHO, FAO, UNHCR, UNFPA, UNICEF and others

XVI. Adoption of the Report (Agenda Item 13)

43. The meeting reviewed the draft report, prepared by the rapporteurs with assistance from the IGWA secretariat, paragraph by paragraph. A lot of corrections, additions and deletions were made. The secretariat was authorized by the meeting to incorporate the changes agreed upon into the report before it is finalized and disseminated. The meeting then adopted the draft report subject to incorporation of the agreed upon changes.

XVII. Closing of the Meeting (Agenda Item 14)

44. The closing ceremony was attended by some senior officials of WHO/Rabat and ONEP including Mr. A. Affia, Directeur de la Formation. In his closing remarks, the Chairman thanked the Moroccan Government and ONEP in particular for hosting the meeting. The representative of ECA thanked Mr. Affia for taking time out to be present at the closing ceremony and thanked all those who worked hard behind the scene, e.g. the secretaries, photocopiers, the WHO/Rabat facilitator, the drivers etc. and thanked ONEP and WHO for arranging everything in order to make the task of meeting participants convenient. He also thanked the Bureau of the meeting for their hard work and thanked the Chairman for guiding the proceedings of the meeting. In his closing remarks Mr. Affia thanked ECA and WHO for choosing Morocco as the venue for the meeting. He expressed hope that the collaboration between ONEP and the UN System in general and WHO and ECA in particular would continue in the future.

45. The Chairman then formally declared the sixth meeting of IGWA closed.

LIST OF PARTICIPANTS

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ECONOMIC COMMISSION FOR AFRICA

Sixth Annual Meeting of the Interagency Group for Water in Africa

**Rabat, Morocco
26-28 May, 1998**

Agenda Adopted by the Meeting

1. Opening of the meeting and opening remarks.
2. Election of officers of the bureau of the meeting.
3. Adoption of Agenda.
4. Presentation (by ECA) of a study on intercountry, interagency cooperation in the Zambezi River basin and discussion on possible interagency cooperation for follow-up actions recommended in the study .
5. Presentation of a report (by ECA North Africa Subregional Development Center) on water situation in North Africa - Issues and Challenges in the 21st Century.
6. Presentation (by WMO) on water resources assessment activities in Africa.
7. Presentation (by UNIDO) of a study on African river and lake basins - the need for integrated environmental management and discussion thereon with a view to determining possible forms of cooperation with other IGWA member agencies.
8. Presentation (by FAO) on its Special Programme on Food Security in Africa with emphasis on its water component and discussion thereon with a view to fostering interagency cooperation at country levels.
9. Discussion on status of implementation of the water component of the UN Special Initiative on Africa (Based on briefing notes and status report faxed by UNEP to the IGWA secretariat on the eve of the meeting).

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10. Identification of interagency joint activities and modalities of their implementation.
11. Date, venue, and host agency for the Seventh annual meeting of IGWA.
12. Any other business.
13. Adoption of report of the meeting.
14. Closing of the meeting.



United Nations Educational, Scientific and Cultural Organization
Organisation des Nations Unies pour l'éducation, la science et la culture

Water Resources Activities in Africa

Summary

The present note summarizes the main activities implemented or planned in the field of hydrology and water resources in Africa, mainly in the framework of the International Hydrological Programme (IHP). It should be noted that UNESCO has two Regional Offices for Science and Technology in Africa, one in Nairobi, covering Africa South of the Sahara and a second one in Cairo for the Arab Region. Both have a Regional Hydrologist in charge of regional activities in hydrology.

1. Assessment and management of water resources,

In the IHP framework, a special project was devoted to gathering knowledge obtained during the last fifteen years (1980-1995) on the hydrology and limnology of **The Great Lakes of Africa**, shared by several countries, as a contribution to their national management. The following two monographs on hydrology and limnology of the lakes have been published and distributed to African countries:

- Monograph on Lake Victoria
- Monograph on Lakes Tanganyika and Malawi

Based on these documents, a comprehensive study of the main similarities and differences of the Great Lakes of Africa was prepared and is being published by UNESCO.

Discharge of selected rivers of Africa. In co-operation with all African countries and with a contribution from the Global Research Data Centre (GRDC - Germany), a specific document was published by UNESCO in 1995, presenting, for the first time, the main hydrological data available in Africa on river discharge. This document is intended to help in water resources assessment and hydrological research and encourage African countries to pursue their surface water monitoring.

Lesotho Highland Water Project (1995-1997) . UNESCO is conducting a review of the environmental impact assessment, environmental action plan of the Lesotho Highland Water Project Phase 1b before the start of its next phase, and strengthening Lesotho's national capacity for environmental assessment planning and monitoring of water projects (financed by UNDP).

Mauritania (1996-1998) *Integrated Management of water resources of the Ouedane Oasis* is an interdisciplinary project carried out by SC/HYD in co-operation with the Culture and Education Sectors (financed by BMZ).

Chad Management of groundwater resources for sustainable development of the Lake Chad Basin. This project which started in 1998 is funded by Germany and implemented in collaboration with the Lake Chad Basin Commission.

Groundwater resources of the Kalahari desert. A regional workshop will be organized in 1998 in Gaborone (Botswana) with the participation of representatives from Namibia, Botswana, Zambia and South Africa with the aim of assessing present knowledge of groundwater resources of the Kalahari desert and prepare a project document to help make assessments of these resources.

Regional Aquifer of Iullemeden. A regional workshop will be organized in 1998 in Niamey (Niger) with representatives of Mali, Niger and Nigeria sharing the water resources of the regional aquifer of Iullemeden. The objective is to initiate a regional project aimed at assessing non-renewable resources of the aquifer.

Groundwater vulnerability mapping. A regional workshop will be organized in 1998 in Ouagadougou (Burkina Faso) to introduce methodologies for groundwater vulnerability mapping to help countries in western Africa to plan for protection of their groundwater resources.

Conference on drought management in Africa. The conference, planned to be held in 1999 in South Africa, is to address scientific and management aspects of droughts. Its aim is to pave the way for establishing national and regional strategies to face drought problems.

2. Research activities in the field of hydrology

Research activities on river flow regimes (FRIEND project). The FRIEND (Flow Regimes from International Experimental and Network Data) project is a co-operative research activity developed at regional level in the framework of the International Hydrological Programme (IHP), with the support of UNESCO and the contribution of scientific institutions. The main aim is to develop knowledge on flow regimes of African rivers, as a basis for rational management of surface water resources. The project is implemented by African hydrologists and includes an important component of capacity building with the introduction of new technologies and the training of African hydrologists in the use of these technologies. Each FRIEND group establishes a coordination centre which hosts a regional data base supplied with data from the related countries for research activity needs.

Three Regional Groups have been established in Africa so far:

- **FRIEND Western and Central Africa**
Established in 1992
Thirteen countries involved
Coordination Centre in Abidjan (Côte d'Ivoire)
- **FRIEND Southern Africa**
Established in 1991
Eleven countries involved
Coordination Centre in Dar Es Salaam (Tanzania)
- **FRIEND Nile Basin**

**Six countries involved
Coordination Centre in Dar Es-Salaam (Tanzania)**

The research results are discussed in scientific seminars organized each year, and the MAB results are published by UNESCO for distribution to the related countries. A fourth phase of research activities started in 1998 to be completed in 2001 by the organization of the Fourth FRIEND Conference in Côte d'Ivoire.

Hydrology of humid tropics In Africa. The aim of this project, implemented in the IHP framework, is to develop hydrological research activities as well as training and technology transfer on water-related issues of the humid tropics and other warm humid regions of Africa. The project was launched in Western and Central Africa in 1994, during a meeting held in Abidjan, Côte d'Ivoire and the following topics were selected :

- integrated watershed management
- tropical forest hydrology
- groundwater contamination
- management of freshwater in coastal lagoons.

Another **Humid Tropics Programme for East Africa** was established during a regional meeting held in Mauritius (November 1997). It selected the following topics to be addressed:

- groundwater assessment, mapping and recharge
- water balance studies
- integrated river basin management
- water quality monitoring and protection
- women, environment and water.

Project on Wadi Hydrology A workshop was held in Cairo (June 1996) with the aim of launching regional co-operation in the field of Wadi hydrology (ephemeral river hydrology). A network of organizations inside and outside the Arab Region was established with the *Arab Center for Studies of Arid Zones and Dry Lands (ACSAD/ Damascus)* as the coordinating organization. The main components of the project include: research and development; operation and management; management and capacity building.

3. Education and Training

Regular post graduate courses sponsored by UNESCO.

Dar-Es-Salaam (Tanzania) An 18 month course in water resources engineering is conducted in English at the University of Dar Es Salaam.

Ouagadougou (Burkina Faso) Two courses of 9 months' each in the field of mobilization of water resources and agriculture hydraulics are conducted in French at the *Ecole Inter -Etats d'Ingénieurs de l'Equipement Rural*.

Cairo (Egypt) A 2 month course on Environmental hydrology for arid and semi-arid regions is held regularly at the University of Cairo, Egypt.

The aim of this project, which was launched in 1996 for a period of 4 years, is to improve quality of life for women in Sub-Saharan Africa by facilitating access to water resources and contributing to the improvement of water resources management. The project is based on several training activities and pilot projects. Pilot projects have been launched in Burkina Faso, Mauritania, Mali and South Africa. Training courses have been organized in Mauritania (October 1997) on gender and development with popular focus on water resources management. UNESCO, in co-operation with UNICEF, will implement a programme in Southern Africa (SADC region) and Eastern Africa aimed at establishing guidelines for participation by women in water supply and sanitation programmes.



**UN SYSTEM-WIDE SPECIAL INITIATIVE ON AFRICA
STATUS REPORT ON WATER ACTIVITIES**

BACKGROUND

(1) Origin of Special Initiative

Declaring that Africa represented "the foremost challenge of global development", and was "a test case for international cooperation for development and for the United Nations", the UN Secretary General launched the UN System-wide Special Initiative on Africa in the Fall of 1994, as a follow-up to the ACC discussions on Africa. The discussions included (i) the need to develop further practical initiatives to maximize the support provided by the UN System to African development, and (ii) raising the priority given to African in the international agenda. The Initiative was to focus on a few issues of the highest priority, and make every effort to mobilize and coordinate the efforts of African Governments and Africa's development partners to achieve their stated goals.

(2) Components of Special Initiative

The Secretary General established a Steering Committee to carry out the Special Initiative, co-chaired by the Administrator of UNDP and the Executive Secretary of ECA. Initial membership comprised UNEP, FAO, UNESCO, UNICEF, World Bank, ILO, WMO, DPCSD and UNFPA.

The bulk of the work of the Special Initiative was to be carried out by five inter-agency Working Groups, established under the guidance of the Co-Chairmen and the Steering Committee. The five Working Groups comprised:

- Water (under chairmanship of UNEP)
- Food Security (under chairmanship of FAO)
- Governance (under chairmanship of UNDP)
- Social and Human Development (under chairmanship of UNESCO)
- Resource Mobilization (under chairmanship of World Bank)

(3) Water Working Group

The Steering Committee felt the UN was in "an excellent position to understand the importance of water in Africa's future". Bridging concerns of peace and development, the UN may have a comparative advantage in helping Africa's poor peoples and its states to better assure sustainable and equitable water supplies and their use particularly at household levels. As a key priority of the Initiative, it was intended that the UN play a lead and supporting role in ensuring more equitable and sustainable use of water in Africa.

To this end, the cooperating agencies comprising the Water Working Group were UNEP (Chair), UNDP, FAO, UNICEF, World Bank, ECA, WMO, UNIDO, WMO, SADC, UNESCO.

The Working Group identified four major water priorities, including:

- Assuring Sustainable and Equitable Freshwater
- Household Water Security
- Freshwater Assessment
- Water for Food Security

- Build in success/performance criteria to be monitored and evaluated.

The need for this specific information on agency implementation plans was forwarded to the Working Group members, in order that they might appropriately augment the information being forwarded to UNEP.

(4) Meeting of Informal Water Working Group

The Group has met a couple of times (New York, Washington, Paris) and essentially focused on:

- (i) Discussion (and revision as necessary) of ongoing and anticipated activities in support of implementation of the water objectives of the Special Initiative;
- (ii) Agreement on "lead agencies" for specific objectives;
- (iii) Identification of indicators for measuring success in implementation of water objectives;
- (iv) Identification of "focus areas" (countries) for coordinated UN agency activities in implementing water objectives.



UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

**BRIEFING NOTES PREPARED IN CONNECTION WITH THE MEETING
OF THE INTERAGENCY WORKING GROUP FOR WATER
IN AFRICA (RABAT, MOROCCO).**

UN SYSTEM-WIDE SPECIAL INITIATIVE ON AFRICA (UNZIA):
A SNAPSHOT OF IMPLEMENTATION CONSTRAINTS AND CHALLENGES AHEAD

1. Background

- UNEP is co-chair (with the World Bank) of the Water Working Group, and its secretary as well.
- UNZIA was developed with a great deal of visibility by the UN to focus on "African Survival and Development Issues".
- It is guided by a Steering Committee comprising UN agency heads, and focuses on five major areas: (i) WATER (chaired by UNEP); (ii) FOOD (chaired by FAO); (iii) GOVERNANCE (chaired by UNDP); (iv) SOCIAL & HUMAN DEVELOPMENT (chaired by UNESCO) and (v) RESOURCE MOBILIZATION (chaired by WORLD BANK); it has a total price tag of US\$25 billion over ten years.
- The Water Working Group developed four water objectives, namely:
 - (i) **Assuring Sustainable Use of and Equitable Access to Freshwater** - Primarily UNEP-developed objective, focusing on equitable and sustainable use of freshwater resources, and particularly targeting water needs of the poor majority of Africans (subsequently broadened to Integrated Water Management, as a general umbrella for the remaining three objectives);
 - (ii) **Household Water Security** - primarily focusing on drinking water and sanitation issues. (UNICEF, WHO, UNDP and World Bank were primary organizations for implementing objective);
 - (iii) **Freshwater Assessments** - primarily focusing on regional water assessments in shared river basins, and observing systems, (spearheaded by WMO and UNESCO);
 - (iv) **Water for Food Production** - primarily focusing on irrigated agriculture. (FAO was lead agency for objective).
- Each objective has several components. It was estimated it would cost about US\$ 50 million dollars over ten years to implement all four water objectives;

2. Progress Made to Date

- Progress has been slow for a variety of reasons, but largely revolving around the following issues:
 - (a) Most, if not all the UN agencies concerned, have so far not made substantial financial allocations specifically for the UNZIA. This situation is complicated by the absence of any tangible efforts to mobilise extra-budgetary resources. There thus appears to be, to a very large extent, no significant individual agency budgetary allocations specifically directed to the UNZIA, and no resource mobilisation scheme.
 - (b) Most agencies point to their on-going activities as representing their "inputs" to the UNZIA and few have been able to mobilise the funds needed for any impactful action. This situation has left some African countries wondering whether it is not "business as usual."

- (c) The African Ministerial Conference on the Environment (AMCEN), the Permanent Representatives to the UN Office in Nairobi, as well as some donors (e.g. Norway) did request for progress reports. This was provided, but the progress so far made is largely limited to:
 - (i) Refining objectives of the water components of the UNSIA and identifying lead agencies, as noted above;
 - (ii) Identifying four "focus" countries (Mali, Mozambique, Ethiopia, Uganda) and one international riverbasin (Zambezi) for concerted/collaborative UN agency efforts to address four water objectives (while at the same time continuing with normal agency programmes throughout Africa);
 - (iii) Identification and compilation of information on all ongoing activities of UN agencies in Africa, particularly in the four focus countries;
 - (iv) Contacting UNDP Resident Representatives of four focus countries to determine country interest in concerted UN efforts, as noted above.
- (d) The participating agencies, could, by mainstreaming the UNSIA within their respective agency work programmes, advance, significantly, the implementation of the UNSIA's water components. Such mainstreaming should include better institutional arrangements within the relevant departments of the agencies for the UNSIA for all the five major areas. Another major point of leverage could have been a more active role and advocacy on the part of all the UN System Regional Offices in or for Africa.
- (e) Noting the large price tag of the Special Initiative, most African countries are closely watching to see whether the UN's resolve to carry it out will be demonstrated this time around.

3. *Anticipated Activities for Immediate Future*

- (i) UNEP activities relevant to the UNSIA have begun and progress is being made.
- (ii) With regard to budgetary allocations, the UNEP Water Branch has this year allocated US\$100,000 during 1998-99 biennium for the UNSIA, on which basis a project document has been prepared and submitted to the SADC Water Sector Coordination and UNDP/Lesotho for their comments. The three (UNEP/UNDP-Maseru/SADC Water Sector Coordination Unit) are already collaborating in the preparation of a draft "Regional Strategic Action Plan for Integrated Water Resource Development and Management in the SADC Countries (1999-2004)". This effort is a major input to the SADC water sector roundtable process being spearheaded (and funded) by UNDP.
- (iii) The following documents have been prepared, printed and widely distributed to Governments in the region, as well as Nairobi-based missions:
 - (a) "Water for sustainable development in Africa: Key issues";
 - (b) "The Fair Share Water Strategy for Sustainable Development in Africa";
 - (c) "A brochure on the Fair Share Water Strategy in Africa".

4. *ECA/UNEP collaboration*

A joint ECA/UNEP mission visited the SADC countries in late 1997 to discuss areas of possible collaboration within the framework of UNSIA and Zambezi River Action Plan.

5. Catalysing further progress: What can be done now?

A) At the level of UNEP:

- (i) UNEP will continue its contribution to the UNSIA: namely, Development and Implementation of an Equity-driven "Fair Share" Approach, which focuses on ensuring access to freshwater resources for the poor majority of Africans. Its elements include:
 - (a) Assessing all future national and international water policies, plans, & programmes in terms of their economic viability, environmental sustainability and equity impacts, if it is determined these do not lead to some improvement in living conditions and prospects of poor majority, then a sustainable alternative must be found;
 - (b) Assistance to Governments to incorporate Fair Share Approach into national water development policies, plans and programmes, including relevant shared water resources;
 - (c) Assisting Governments in implementing Fair Share Approach, and in disseminating practical and affordable techniques to help majority of people get access to clean water in shortest possible time, including expansion of small-scale projects, even at expense of large-scale projects;
 - (d) Demonstration of application of Fair Share Approach in international riverbasin (being done in cooperation with SADC on the Zambezi River Basin);
 - (e) Assisting Governments to set up more effective drainage basin and regional agreements and institutions for avoiding/settling conflicts over equitable access and use of water resources.

B) At the level of the UN System

- It would be useful if IGWA can play a greater role in facilitating the implementation of the UNSIA. IGWA is well placed to play a lead role in monitoring and reporting on the progress made and needed on the UNSIA implementation.
- Agencies participating in the UNSIA should bring the UNSIA goals into the mainstream of their budgetary and institutional arrangements.
- IGWA may wish suggest action-oriented proposals on how to give additional impetus to the UNSIA. Another option is for the UN agency heads at the ACC Steering Committee level to jointly decide to allocate solid financial and manpower inputs as well as to ensure the implementation of promised roles as lead agencies for specific water objectives.
- The paper being prepared by UNEP and WMO will provide a basis for more reflections on how to speed up the UNSIA (work components) implementation.

ISSUES IN AFRICA

scarce. In many countries, saving water and making rational use of existing factors to ensure sustainable development. Pronounced demographic growth, increasing population, entailing a rapidly rising demand for industrial and domestic water, has put increasing pressure on the exploitation of available groundwater resources. However, there is a lack of knowledge of the aquifers, some of which are of a fossil nature. In the absence of appropriate management practices, these unique natural resources are vulnerable to over-exploitation with the risk of depletion of the resources, as well as to pollution.

The prevailing situation has prompted the United Nations to include water among the set of priorities of the System-wide Initiative on Africa (UNSLA), with the aim of assuring sustainable and equitable use of freshwater resources. In furtherance of relevant deliberations of the Board of Governors and Resolutions of the General Conference, and in support of national programmes pertaining to the water sector, the Agency established in 1988 the Regional Model Project RAF/8/022 which seeks to apply isotope hydrology to practical problems related to the assessment of groundwater resources in nine countries (Algeria, Egypt, Ethiopia, Morocco, Niger, Nigeria, Senegal and Sudan).

Isotope techniques have been widely recognised as indispensable tools, complementary to conventional hydrological methods, for water assessment and development. When appropriately integrated with other techniques, they provide unique information for assessing the dynamics and balance of aquifers.

The results of the project, so far, have proved relevant. Among other things, that the isotope and geochemical data gathered so far has proved relevant for management in the regions under investigation.

For example, in Morocco indicate a prevalence of fossil water in one of the study areas, disproving the existing concept of recent replenishment of the groundwater system. This information is useful in the management of the aquifer, in particular with respect to preventing over-exploitation of a given aquifer system. In Egypt, the interaction between groundwater in the Nile aquifer system and that in the adjacent Nubian sandstone deep aquifer were characterized. This issue is relevant to securing sustainable water supply for newly reclaimed land on the fringes of the Nile flood plain. Distinct isotopic signatures of the two aquifers have been found which will enable an estimation of the recharge sources of the aquifers under exploitation and, consequently, ensure sustainability of the resources, both in quantity and quality. Investigations conducted in the Moyale region of Ethiopia, where a large proportion of the human population of 3 million and one of the largest concentrations of cattle on the African continent are entirely dependent on groundwater, enabled identification of renewable groundwater resources and estimation of the renewal rate as well as mapping of non-renewable resources available for exploitation. Finally, in Senegal, a considerable amount of isotope and geochemical data has been gathered through field and laboratory activities. Modelling approaches based on this isotope data and complementary hydrogeological information will be initiated to re-assess the groundwater resources around Dakar. The areas of active recharge with the potential of sustainable extraction of water delineated by isotope results will be used as sites for future drilling of extraction wells within the scope of a World Bank financed development scheme for Dakar.

As a follow-up to the achievements made in the four countries involved in Phase I of the Model Project in Africa, Phase II of the project was started at the beginning of 1997, with the addition of Algeria, Mali, Niger, Nigeria and Sudan. Results to date from investigations in these countries are encouraging and are likely to provide useful information by the end of the project in 1998.

To expand further within the continent the experience gained under the Model Project (RAF/8/022), it was decided to include in the forthcoming (1999-2000) Technical Co-operation Programme, a second Model Project, especially designed to respond to the needs of selected countries in Eastern and Southern

Africa. The programming process of the envisaged activities was initiated in July 1997 through the preparation of a questionnaire which was submitted to the Member States concerned in September 1997.

To finalize the programming process, a meeting was arranged in Johannesburg from 16-20 March 1998. The meeting was attended by 16 representatives from Kenya, Madagascar, Namibia, South Africa, United Republic of Tanzania, Uganda and Zimbabwe. Country representatives included both officials from the water sector and from the ministerial departments in charge of IAEA national programmes. The following Technical Cooperation Projects are under consideration for the various countries:

Kenya

Development in the Merti-Habaswein-Yamicha triangle, a fertile range in the Isiolo District, in the east-central portion of Kenya, is limited by the availability of water, although the district currently supports about 100,000 people and 1 million livestock, as well as a refugee population of about 350,000. Watering points are not uniformly distributed and local overgrazing results from a concentration of human and animal population around the available sources of water. The Kenyan government is involved in developing water supplies in this region through the Water Resources Ministry and has committed over \$100,000 (US) to drilling operations. The Egyptian Government and other donors are providing additional assistance for water resource development in the region.

The Merti aquifer underlies a portion of this area and might provide additional water supplies, but the source and magnitude of its recharge is unknown. One possible source of recharge is the river Gwaso Nyiro, which ceases continuous overland flow in a swampy area about 80 kilometers to the west of the Merti aquifer. A second potential source of recharge is the Yamicha aquifer to the northwest, which may have a hydrogeological connection with the Merti aquifer. Isotope techniques offer a tool for distinguishing the contributions of different potential sources of recharge to the Merti aquifer, as well as assessing the sustainable yield of the resource. This information will help develop groundwater management plans and will potentially lead to a better distribution of water supplies for the region, thereby increasing food security and limiting environmental damage.

Madagascar

The proposed project seeks to improve the efficiency and effectiveness of an on-going rural water supply program funded by UNICEF. The UNICEF project involves drilling 500 water supply wells in an area covering several thousand square kilometers in southern Madagascar. Despite a clear need for improved water management in the region and potential for mutually beneficial cooperation with UNICEF, it was concluded that insufficient technical detail was available to justify full Agency commitment to the Madagascar proposal, as presented. Available data on the project area needs to be compiled by the local counterparts. An expert mission to Madagascar to visit the project site and assist in the development of a detailed proposal will follow within a few months. Madagascar is included in the training component of the Model Project, with full inclusion of a field program pending a favorable evaluation by the expert and the completion of a full project proposal incorporating the expert's advice.

Namibia

The Namibian proposal for IAEA support relates to an investigation of the Stampriet aquifer in the southeastern region of Namibia, in conjunction with conventional hydrogeological investigations to be funded by contributions expected from the government of Japan. The Stampriet is a large artesian aquifer system underlying the Kalahari sands. The aquifer is used to supply water to four major towns in the region and for irrigated farms. Previous studies of the Stampriet defined the basic hydrogeology of the aquifer and used isotopes to estimate the age of the groundwater in the system at 15,000 to 30,000 years. The nature and magnitude of any present day recharge to the system remains poorly defined however, hampering the implementation of management plans for sustainable use of the resource. More complete isotopic studies might be able to resolve these questions.

Based on discussion of the Namibian proposal, it was concluded that more information was required to gauge the effectiveness and impact of isotopic techniques on the proposed Stampriet study. The focus of any immediate work should be on further analysis of existing data and study of the recharge zone dynamics rather than artesian zone of the aquifer. Bilateral agreement was reached between Namibia and South Africa to pursue limited studies of the recharge mechanisms that might support later development of a detailed proposal for Agency assistance. In the interim, Namibia will participate in the regional training component of the Model Project and continue with conventional studies of the aquifer on a national basis.

South Africa

The project aims to establish the sustainability and vulnerability of fractured-rock aquifers in the Northern Province, South Africa. The proposal involves a pilot study to evaluate the Taai Bosch fractured/fault zone to increase understanding of similar regional systems in the Northern Province. Fault zones are the most productive areas for water development, but the recharge to the systems and their storage capacity are poorly understood. The water resources are also highly vulnerable to pollution as a result of rapid groundwater movement through fractures and isotope techniques can provide valuable information on the areas of recharge that require special protection. Previous work using conventional techniques and geophysics has defined many basic parameters, but several important questions could not be resolved without isotopes, including flow velocities toward the fault zone, recharge rates, storage, and the potential effects of water use on aquifer dynamics and the local ecology.

Beneficiaries of the proposed project include 100,000 directly affected persons living in the study area and, in the longer term, all 3.6 million inhabitants of the Northern Province. Groundwater resources are a high national priority for rural water supplies, but most previous groundwater studies in South Africa have focussed on sedimentary aquifers in the Kalahari and coastal regions. The proposed project will produce knowledge of hard-rock aquifer characteristics and other information needed to implement sustainable resource management plans.

Tanzania

The Tanzanian proposal aims at the groundwater assessment and management in the Mokutapora basin, an area that is the sole source of water for the city of Dodoma. Dodoma is a city of over 1 million in a semi-arid region of Tanzania. The city has grown rapidly over the past decade and additional growth is anticipated as a result of a planned move of the national capital from Dar Es Salaam to Dodoma. Increased water use and growing development in the Mokutapora basin has resulted in a decline in water levels by 3 to 5 meters. Nitrate pollution has increased from 33 mg/L in 1988 to 135 mg/L in 1993. Some boreholes also have become highly contaminated with coliform bacteria. The proposed project seeks to identify the sources of pollution and the migration paths of pollutants into the groundwater. This information will help establish groundwater protection zones and identify areas suitable for artificial recharge to increase water supplies. The project also seeks to refine estimates of the water balance in Mokutapora basin so as to prevent over-exploitation and to quantify the capacity of the basin soils to degrade pollutants such as nitrates.

Uganda

The Ugandan proposal seeks to add value to several ongoing projects funded through other donor agencies by incorporating isotope technology into their activities. The Water Resources Assessment Project (WRAP) is a five-year, \$11.3 million (US) project employing conventional hydrogeological techniques to quantify water availability and monitor water quality. Information from WRAP is shared with the \$47.0 million Rural Towns Water and Sanitation Programme (RTWSP) to help guide borehole locations and in developing guidelines on water resource protection and management. RTWSP in turn provides hydrogeological data to WRAP. Isotope techniques will complement the conventional data supplied by these projects, in particular helping to define the sources, magnitude, and timing of groundwater recharge and assessing the vulnerability of the aquifer to pollution as it is increasingly exploited.

The Ugandan project represents the second phase of isotopic investigations of groundwater resources in that country. Phase I investigated groundwater recharge and vulnerability in only a few localities and in hand-pumped wells producing water from either the deeper fractured rock aquifer or the upper weathered zone aquifer. Phase II will focus on two towns where motorized pumps have been installed in wells that tap both aquifers simultaneously. Phase II results will be used to confirm Phase I results and to provide a more detailed understanding of the relations between the upper and lower aquifers under the influence of high pumping rates. The results of this study will benefit at least 12 towns with similar hydrogeological conditions, affecting a population of about 500,000.

Zimbabwe

Proposals for three separate projects were presented. After considerable discussion and reflection one project in the Save River area was selected for inclusion in the Model Project. The study area comprises a 100 km by 40 km portion of the Save River alluvial basin. The groundwater resources in the area are heavily exploited for local agriculture and river flows through the region are managed to convey water from reservoirs in the north to large-scale sugar plantations in the south. Several aquifers with varying water quality are found in the region. Salinization is a major concern, both through migration of the brackish water present in some aquifers and through evaporation from irrigation or natural evaporation pans. Previous studies have not clearly defined the relations between these aquifers, their sources of recharge, and the connection between the groundwater resources and the Save River. Isotopic techniques are expected to offer a clear method of tracing mixing between the water bodies as well as identifying fluxes of evaporation and recharge.

ACRONYMS AND ABBREVIATIONS

ECA	Economic Commission for Africa
ECA/SRDC-NA	ECA Subregional Development Centre - North Africa
FAO	Food and Agriculture Organization
IAEA	International Atomic Energy Agency
SADC	Southern Africa Development Coordination
UMA	Union du Maghreb Arabe
UN	United Nations
UNACC	United Nations Administrative Committee on Coordination
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children Education Fund
UNIDO	United Nations Industrial Development Organization
UNSIDA	United Nations Special Initiative for Africa
WB	World Bank
WHO	World Health Organization
WMO	World Meteorological Organization
ZACPLAN	Zambezi Action Plan
ZACPRO	Zambezi Action Projects
ZAMCOM	Zambezi (River) Commission
ZAMFUND	Zambezi (Development) Fund
ZRA	Zambezi River Authority