

WATER FOR PEACE IN THE JORDAN RIVER BASIN

MARCH 2003, DRAFT REPORT



THE OBJECTIVE OF THE WATER FOR PEACE IN THE JORDAN RIVER BASIN PROJECT IS TO DEMONSTRATE THAT WORKING TOGETHER TO SOLVE A REAL, URGENT AND FUNDAMENTALLY TRANSBOUNDARY PROBLEM THROUGH CONCRETE ACTIONS CAN HELP CREATE THE NETWORK OF INTERDEPENDENCIES NEEDED TO FOSTER WIDER PEACE AND STABILITY.

Alongside, and to a large extent as a result of, the political crisis in the Middle East, there is also a worsening water crisis which currently leaves thousands without adequate drinking water, threatens agriculture and the environment, prevents development and adds to the tension between the peoples of the region. This project aims at raising the interest and involvement of local people all over the basin in order to send a message to the Governments that the time for unilateral management has passed. At the same time, experts from around the basin will work together to develop joint strategies, mechanisms and innovative solutions to the critical problem of water scarcity.

Six main activities have been carried out during implementation of the current phase of the Jordan project:

- I.** Activity (1.1): Assessment of the Current Extent of Conflict in the Basin
- II.** Activity (1.2): Identification of Levels of Public Awareness of Conflict
- III.** Activity (2): Assessment of Strategies for Developing New Water Resources
- IV.** Activity (3): Establishment of Joint Water Resources Data Base
- V.** Activity (4): Water Related Pilot Educational Projects
- VI.** Activity (5): Regional Experts Workshops
- VII.** Activity (6): Public Information

Project Staff:**Technical Team:**

- Dr. Kamel O. Mahadin, Project Leader
- Dr. Tarek Tarawneh, Assistant/Expert
- Dr. Mohammad Bani Hani, Scientific Adviser
- Dr. Kamel Qaisi, Expert
- Dr. Bashar Smadi, Expert
- Eng. Avadis Sarbakyan, Expert
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IRC, WAMAD, UNIMED, BRIDGE INTERNATIONAL

I. ACTIVITY 1.1: ASSESSMENT OF THE CURRENT EXTENT OF CONFLICT IN THE BASIN

- Detailed study of the history of conflicts/interdependence on water.
- Identify causes and measure extent of conflicts.
- Detail the time spans of the conflicts/categorize intensity.
- Construct a conflict intensity scale.
- Trace history of peace and cooperation negotiations, assess and determine the reasons for success and/or failure and shortcomings.
- Investigate inter relationships between “water conflicts” and other conflicts.

Water Conflicts in the Jordan River Basin

Team Members:

Dr. Tarek Tarawneh

Dr. Kamel O. Mahadin

Dr. Mohammad Bani Hani

Baidar Ouais

The team is still working on constructing the conflict intensity scale and investigating inter-relationships between "Water conflicts" and "other conflicts", which will be presented in the next report. *(see Annex 1)*

II. ACTIVITY 1.2: IDENTIFICATION OF THE LEVELS OF PUBLIC AWARENESS OF CONFLICT

- Focus groups, Survey questionnaires, Lectures
- Identify reduced levels of awareness
- Develop strategies and methodologies to increase public awareness

Team Members:

- Hasan O. Mahadin
- Dema Ma`ayta (Coordinator, Researcher)
- Wisam Obeidat (Researcher)
- Abdalla Daradka
- Waleed Jarrar (Researcher, Computer technician)
- Haya Fataftah (Secretarial)

Focus groups were created to measure the levels of public awareness of water conflict. These focus groups were established as a result of workshop 1, where three major focus groups were formed: one headed by a parliamentarian with five stakeholders to deal with the political dimension of the issue; the second group is headed by an expert with ten members (Experts, local NGOs and Media) to deal with joint educational issues; and the third group is led by the Chairman of the Jordan Valley Farmers' Association (Eng. Sulaiman Al-Gzawi) to deal with level of awareness amongst the Jordan Valley farmers and locals (between Jordan, Palestine and Israel).

Also as a result of Workshop 1, the first questionnaire was developed on the impact of individual behaviour on the water problem in the region. The second questionnaire came out as a result of Workshop 2 (held in October, therefore not included in this report) and now is under preparation by a team of Jordanian researchers to test awareness of the conflict among the more educated stakeholders and the farmers group.

Preface

Many countries suffer a deficit in water resources, and the Jordan basin countries are no exception. Therefore, these states are dedicated to striving to exploit the available resources in order to achieve the maximum benefits for their populations. This is realized through legislation, new administration, comprehensive awareness, and field studies. The Water for Peace team realizes the critical problem facing Jordan due to the shortage in water resources. Thus it has contacted the specialized parties in an attempt to convey studies and research projects on water shortage and the preservation of available resources.

The project aims at investigating the importance of individual behaviour and public awareness in limiting water misuse.

The first part of this activity consists of an historical overview of the water situation in Jordan and a simple illustration dealing with two selected pilot study areas. The second part unfolds the data analysis collected through distributing a questionnaire, in addition to personal interviews conducted during the field visits to the two areas. The third part includes the researchers' recommendations according to the data study and analysis.

In order to study the problem of individual behaviour, the team has devised the following hypotheses:

1. Mobilizing advocacy and raising awareness requires field training in order to choose the suitable advocacy programs that illustrate the problem and determine the citizens' role in solving it. This would lead to full awareness of all the aspects of the problem and establishing the best method to deal with the problem.
2. The environmental legislation in Jordan allows building without leaving land areas fit for digging water tanks; this leads to the loss of large amounts of rainwater, which could have been otherwise used to diminish the water problem.
3. The citizen's interaction with the water problem is related to his need. Therefore, people living in rural areas will respond more actively and positively to the challenges posed by the water problem than those in metropolitan areas, due to their need for large amounts of water for their agricultural and cattle-raising activities. If need is not acute, people will not make sufficient effort to address the problem or alter personal behaviour to adapt to conserve water.

The study methodology started with posting public information notices about the water situation in the study regions. Interviews with pertinent officials were then made to estimate the importance of different aspects of the problem. Next, an experimental questionnaire was prepared and distributed initially to a random sample of residents in order to arrive at a new and more suitable formulation of questions. The questions were modified and rewritten after considering the completed forms and were then printed in two versions, the first pertaining to a rural area and the other to an urban area (each has distinct questions due to the difference in the natures of daily activities). During distribution of the questionnaire a large number of

random people were also personally interviewed in an attempt to receive more detailed and comprehensive feedback.

The most important conclusion reached after studying the results of the questionnaires from the two areas was that residents in the rural areas are more aware of the problem than those of the urban areas. This is due to acute water shortage in rural areas, which led to heightened awareness and induced a positive reaction and interest in the issue amongst the people surveyed. This is what the team called “total awareness,” i.e. the compliance of positive behaviour with problem awareness.

Abstract

Jordan has realized progress and development in a wide range of social, economic and political fields. The most important of the social developments are the demographic changes which came about as a result of the immigration of new residents, largely due to wars in the region. This has led to increasing pressure on the Kingdom’s limited natural resources, including water. Through the study it became evident that it is essential to broaden citizens’ horizons through the media and all available resources, concerning the best use of water and adhering to set legislation to improve individual behaviour so that the country may protect its sources for the future.

Recommendations

The results of the survey and consultations have made it evident that the water problem in Jordan is a diverse one. To reduce water waste, the team has devised a set of recommendations that should help pave the way toward solving the problem in Jordan. These recommendations revolved around two aspects:

1. Legislation
2. Education and information

Legislation

The team realized a deficiency in the existing rules and regulations related to water consumption and land organization. The team emphasizes the importance of the following points:

1. Setting new water distribution laws that ensure fair and balanced water distribution to all areas.
2. Devising a law regulating agriculture and crops according to the available water resources. Shifting towards planting crops that require less water.
3. Imposing increasing financial costs, in due course, in order to offset increasing water consumption.
4. Revising the building laws in order to leave efficient space for building reservoirs and tanks to save rainwater.
5. Facilitating loans for citizens to build such reservoirs.

Education and information

This is an important element towards solving the problem, for through such instruction individuals and officials become more aware of the importance of the water problem and how to deal with it. This is done on several levels:

1. The first is dedicated to water employees and specialists. Seminars and educational courses should be conducted to show the water situation in the Kingdom and the

- entire Basin, and explain the programs and implemented schemes needed to obtain the highest efficiency in planning and work.
2. The second concerns individuals from different sectors of society, who should be reached through media campaigns, which are the fastest way to reach the greatest number of individuals.
 3. Thorough programs and plans for field training and direct communication with citizens should be devised to direct them towards the behaviour most conducive to saving water. The result would be a worthwhile economic profit for the citizen and the country.

In setting these recommendations, this project is consistent with the research studies of other countries, such as Bahrain. Bahrain conducted research to reduce the demand for water, and in due course it has made several recommendations, the most important of which emphasize the necessity of raising the efficiency of water use by reducing household water and other areas of use. This is achieved by adhering to public awareness programs and informing the people. In addition to maintaining and improving water pipe networks and stopping leakages, the Syrian experience in this field also depended upon reusing sewage water for irrigation.

As for similar recommendations taken from related studies in the Jordan region, there are several development studies regarding water economics. One of which is the Water Ministry study in cooperation with the German institution for technical cooperation, GTZ. This institution emphasized the necessity of providing and saving water, refining polluted water and reusing it. This study emphasized the significance of implementing an instructional guidance campaign for all of the community to reach a suitable solution before things become worse in the future. Hopefully, in presenting these recommendations and conveying this research, the official authorities will deal with this issue seriously and directly attempt to solve this problem by following such recommendations.

Our research team feels that the first priority to solve the water problem is conducting research according to the experimental approach, to substantiate the results of this research and present it accurately.

III. ACTIVITY 2: STRATEGIES FOR DEVELOPING NEW WATER RESOURCES

- Explore the different options (soundness, economic feasibility).
- Identify projects with the potential to serve all riparians.
- Evaluation of: Gaza desalination facility, Red Sea-Dead Sea Project, Joint Jordanian-Israeli Desalination facility, Grey water recycling, expanding wastewater re-use, etc.



*Drilling deep water-supply well,
South Jordan Desert*

According to the project's activity time chart, the development of strategies will not be finalised until the outcome of the focus groups is completed (expected November 30th) the work for activity 2 is to be fully completed within the second week of December. This report outlines the activities already underway.

The Red Sea-Dead Sea Canal project (RSDSC):

Team members:

- *Eng. Avedis Serpikian, Former Secretary General-Jordan Valley Authority.*
- *Dr. Kamel O. Mahadin*
- *Dr. Mohammad Bani Hani*

Introduction

The study for the determination of the feasibility of the RSDSC comprises two phases. Phase 1 consists of the evaluation of alternative arrangements to determine the scale of development and its technical feasibility, to list environmental impacts with suggestions for mitigating measures, and to assess, on a preliminary basis, the economic feasibility and financial viability; all leading to a recommendation of the advisability of further study. In Phase 2, the location and arrangement would be finalized and the economic and environmental feasibility assessed.

Development Objectives

The principal development objective of the RSDSC is to provide a sustainable source of potable water for the JRV and surrounding areas using the process of hydrostatically supported reverse osmosis (RO). In addition, during the course of the investigation, a potential objective was identified which is to halt the decline in the level of the Dead Sea or increase the level to a pre-selected limit.

Initial Environmental Assessment

Two major environmental trends are evident. In the Dead Sea and within the Dead Sea Basin Environmental Division as a whole, the continuing decline in the level of the Dead Sea is resulting in diminishing landscape values, losses to potential for future conventional tourism; and the possibility of continuing land-collapse phenomena. The second unavoidable major

current trend is the ever-increasing demand for water on both sides of the JRV, which will have to be met from somewhere.

Potential Positive Impacts

It is apparent from the interim environmental assessment that most of the positive impacts of the RSDSC would be in the Human Environment category, especially regarding social and socio-economic issues. It is equally evident that much greater on-site advantages are possible for the Jordanian side of the JRV and its people.

Key positive impacts are considered to be as follows:

- A major contribution will be made to the projected freshwater deficits in Jordan, Israel and the PA.
- The restoration of Dead Sea levels to the natural levels prior to the 1960s will result in the restoration of the original and currently declining landscape values in the Dead Sea Basin and the enhancement of the potential for tourism.
- Increased income and employment opportunities will be realized during construction;
- The Dead Sea Basin settlements, the chemical works, and the tourism areas will be supplied with domestic and industrial water.
- The RSDSC would act in many ways as the keystone of bi-national development within the Middle East Peace Process.
- Finally, all of these positive factors would combine to improve the overall quality of life of the people within the Project Area.

Off-site, the RSDSC potable water supplies would have numerous positive impacts on human and environmental issues. The major geopolitical impact is seen as nation-wide in the countries concerned. A considerable proportion of the RSDSC water supplied to the Amman region would become available, subsequent to treatment, as return flow. In addition, improvements in human carrying capacity, settlement, social attitudes, incomes, employment also will be realized.

Potential Negative Impacts

The potentially negative impacts are significant, but quite limited. A large proportion are significant only during the RSDSC construction period.

There are no major or moderate impacts on physical or biological issues. In the human issues area, negative impacts are restricted to the net moderate negative impact envisaged on the potash works. There are three concerns: the stability of the evaporation pond dikes with a rising Dead Sea level, the stability of the dikes during discharge of chemically unsaturated reject water or flood water, and the impacts of the change in chemistry and concentration of the Dead Sea on the mineral recovery process.

Impact Mitigation

The main reason for the limited overall negative impact of the RSDSC Project as now conceived is the emphasis that has been placed on the environmental component in the current pre-feasibility study. The identification of potential environmental problems early in the planning process has encouraged designs which specifically took these problems into account. The following are especially relevant to the low negative impact assessment.

- The design of most of the conveyance as a free flow system and the incorporation of leakage control systems that have, as their goal, “zero” leakage, have substantially diminished most of the negative impacts identified in previous concepts of the RSDSC;
- Locating the intake along the border better protects the marine ecology;
- Locating the RSDSC wholly within Jordan avoids numerous potential problems in relation to the much greater socio-economic activity and almost continuous extent of protected areas along the Israeli side of the Project Area;
- The omission of major storage or balancing reservoir removes significant environmental threats, especially in Wadi Jamal.

Conclusions and Recommendations

The main conclusions from the engineering, environmental and economic studies are as follows:

- The best use of the elevation difference between the Red Sea and the Dead Sea is for the production of fresh water by reverse osmosis desalination.
- A demand exists for the fresh water production from the Project.
- Any of several alignments are appropriate for the conveyance of water from the Red Sea to the Dead Sea.
- The Project should be sized to produce about 851 million cubic meters of fresh water each year.
- The Project represents a viable solution to meet the long-term water demands.
- The financial cost of water would be between US \$1.30 and \$1.55 per cubic meter.
- Construction of the conveyance and transmission facilities is technically feasible and the use of the desalination technology has already been demonstrated by other facilities, although the size of the desalination project is larger than any existing facility.
- Environmentally, the RSDSC should be preferred to its most obvious alternative: coastal desalination in Aqaba and Gaza.
- Overall the environmental impacts of the RSDSC would be positive.
- A need exists to continue the study of the Dead Sea and to perform more hydrogeologic surveys in the Wadi Araba/Arava Valley.

As a result of these conclusions it is recommended that Phase 2 studies, which involve the refinement of the design of the major features and studies suitable for funding, be performed.

In addition, the Dead Sea studies proposed as a part of the Sector Studies should be supported as should a joint Jordanian/Israeli hydrogeologic survey.

IV. ACTIVITY 3: ESTABLISHMENT OF A JOINT WATER RESOURCES DATA BASE

- Data Accumulation
- Comparisons and cross-checkings with existing data
- Definition of best management practices for maintaining and updating database
- Identifying the most suitable entities to be responsible for maintaining database
- Identifying most appropriate strategies for utilizing the database.

Team members:

- *Prof. Kamel Qaisi – University of Jordan*
- *Dr. Bashar Smadi -- Al-Hashimia University*
- *Eng. Mohammad Abu Ajamieh*
- *Eng. Wisam Obeidat*
- *Waleed Jarrar*

1. The data gathering was carried out in a systematic way whereby 20 professors and experts were requested to provide state of the art research and literature in the following areas:
 - Water conflicts
 - Water use in arid zones and semi-arid zones
 - Water sharing
 - Water in the Middle East
 - Riparian countries in the Middle East
 - Rivers of the Middle East
 - Joint water projects in the Middle East

Data accumulation was done through contacts in riparian countries via government bodies, in Syria, Jordan and Palestine, with the exception of Israel (up till now we could not get any information except from the EXACT project). The following databases are completed:

Jordan Data:

Rainwater, Dams, Water use in the Jordan Valley for agriculture and drinking water resources, ground and underground water, and all data related to government and non-government activities.

Palestine (West Bank and Gaza Strip) Data:

- Physiographic central mountain belt system eastern escarpment, western slopes Jordan Rift Valley
- Hydrology, climate, rainfall
- Surface water run off
- Rivers, streams and wadies, springs, ground water recharge
- West Bank ground water, basins
- Dead Sea basin, Jordan Valley basin
- The Gaza Strip basin
- West Bank and Gaza Strip water system

Syria Data:

- Physiograph, climate
 - Water resources, rivers, springs
 - Water basins
 - Ground water
 - Water project
 - Dams along Yarmouk river
 - Future water use
 - Conflict between Turkey and Iraq
 - The 1990`s water case
2. A main computer link has been established between the M.K. Associates center and the two professors, one at Al-Hashemia University to define and update the database, and the other, Professor Qaisi, who is in charge of creating a web site dedicated to this activity.
 3. The question of the various entities to be in charge is still under investigation; hopefully the database will be established in three or four universities in the riparian countries, and the team is investigating appropriate strategies for utilizing the centre.

V. ACTIVITY 4: WATER RELATED PILOT EDUCATIONAL PROJECTS

- Evaluate/plan the establishment of such projects
- Evaluate establishment of centres to address various issues related to water.
- Identify suitable locations for such projects; define management strategies, services, and feasibility of such institutions.
- Identify the main beneficiaries of such institutions
- Prepare preliminary plans and recommendations for such projects

Team members:

- *Dr. Kamel O. Mahadin, Project Leader*
- *Dr. Nidal Katamin(Dean of Research and Higher Education –Al- Hashimeyah University)*
- *Dr. Bashar Smadi (Al- Hashimeyah University)*
- *Malak Mahadin*
- *Dema Mayta*

This activity was related to two activities within our project: first the need to measure the levels of public awareness of conflict and other related issues in the Jordan Valley. Therefore the team received useful feedback from Workshop 1., as well as from the behavioural research group, and the following projects were outlined as a result of the research:

1. Training workshops on water issues and awareness problems, to target teachers at high school level. The idea is to have two sessions during each semester, each for a one week duration. Each session will have 30 teachers as participants; this should be a 2-year program targeting both male and female teachers.

2. Training seminar for the Farmers Association, for selected participants at three levels:
 - Educated farmers
 - Non-educated farmers
 - Farms labourers

This should consist of three training seminars per year each of a two-week period; this program should last 5 years to cover a wide spectrum of users.

3. Regional workshops to be held at Jordan University (Hashimeyah University and the University of Jordan) with the participation of Damascus University (Syria), Al-Najah University (Palestine) and Technician University (Israel) for officials, farmers, and investors within the Jordan Valley.
4. Higher educational program to teach participants about all the issues of citizen participation, public awareness, leadership and management of water. These programs and the regional workshops are currently being prepared by Bridge International Institution.

VI. ACTIVITY 5: REGIONAL EXPERTS WORKSHOPS

a) Brainstorming session (1), July 10th 2002

The Water for Peace in the Jordan Basin initiative organized a one-day brainstorming session on July 9th. The main topic of this session was to introduce the project and to stimulate ideas about water conflicts in the region. The Session was chaired by H.E Dr. Kamel O. Mahadin (the former Minister of Water in Jordan and the project Director), co-chaired by Dr. Bertrand Charrier, the Executive Director of GCI, and attended by the following members:

- H.E. Dr. Mohamad Bani Hani, Former Sec. General of Jordan Valley Authority Project Senior Advisor
- Dr. Tarek Tarawneh, Assistant project manager
- Eng Adham Abaza, Project Coordinator
- Eng. Biadar Owais, Research Assistant
- Mrs. Malak Mahadin, Public relation advisor
- Dr. Amal Hijazi, USAID



The targeted groups were identified as Civil Society/General public, the local & regional authorities, and the parliamentarians.

The objectives were identified and again the stress was on increasing political and public awareness in addition to mapping current and potential conflicts, identifying obstacles / incentives / benefits, and engaging riparian states in mutually beneficial, practical, and sustainable solutions that strengthen the dialogue between riparians.

The conflict scale prepared and presented by Dr. Tarawneh and Eng. Baydar also received comments and clarification from H.E. Dr. Bani Hani. H.E. Dr. Bani Hani corrected Eng. Baydar regarding the word “agreements” as there was never a formal agreement between riparian states but there were plans presented by outsiders or jointly with riparians to resolve the water conflict between Arabs and Israelis, H.E. Dr. Bani Hani gave his first-hand knowledge of historical events that led to conflicts and war prior to the 1994 peace treaty with Israel. Dr. Charrier stressed the importance of the water resources of the basin to the national resources of riparian states and the importance of equitable sharing of water rather than water rights, the importance of cooperation in the basin between states via strengthening the dialogue and envisioning integrated plans for the basin.

The idea of cooperatives, and their failure in Jordan, was discussed as a possible area to develop especially in such a way that the benefit can be felt by farmers via marketing of the produce. Dr. Charrier offered to contact partners at “LATA” where cooperatives are successfully implemented for data and cooperation to develop cooperatives in the Jordan valley, H.E. Dr. Kamel and H.E. Dr. Bani Hani talked about the farmers association. Both talked about why coops have failed while the association survived. All agreed that cooperatives could work in the valley if “marketing the produce” is achieved for crops that do not need much or high quality water. Thus achieving savings in water at the same time as economic benefits to the farmers.

The team pointed out the following recommendations and concerns:

1. The role of the stakeholders and the way to link with public and private agencies related to the water issue.
2. Establishment of a newsletter concerning the project, it should include GCI concept and role, the Water for Peace activities, the supporting agencies, and riparian country news.
3. The team revised the subject of the database. All agreed that there is no problem with obtaining Jordanian data. The Palestinian data is also available from Jordanian sources (before 1967), and from Dr. Anan Jayousy (after 1967), the Syrian data although difficult will be obtained via personal contacts and NGO's.
4. For increasing public awareness, the need to contact “VIPs”, Parliamentarians (especially those involved in agriculture in the valley), and NGO's was stressed, a pilot project between Israel, Palestine and Jordan was mentioned, and all participants agreed on changing the term “Water Rights” to “Water Sharing” and also to stress “benefits sharing”.
5. The need for National / Regional cooperation for water sharing, the need to expand current agreements, the need to stimulate ideas for Israeli- Palestinian cooperation, and the need to elaborate scenarios on basic needs of the peoples of the basin were discussed.
6. There is a need to re-evaluate existing regional joint activities / projects and to support one or more of these activities / projects. If possible, activities and projects based on scenarios with workable assumptions should be developed.

7. Assistance from other regions where similar studies are made and cooperatives are running efficiently was proposed as an alternative to getting assistance from Israel regarding the same matters. Also discussed was the size of farming units being too small.
8. It was determined that the current political conflict and its effect on infrastructure hinders much needed integrated development in the basin.
9. Discussion returned to the importance of strengthening public awareness via periodically issued newsletters, columns in newspapers, the use of non-biased media, and preparation of public opinion by presenting efforts of the team and GCI, preparation of public hearings, meetings with parliamentarians, etc.

Recommendations for public awareness component:

- Obtain feedback from stakeholders and the public to formulate scenarios
- Get the public acquainted with these scenarios
- Obtain approval from stakeholders

Following the workshop, Dr. Mahadin and Dr. Charrier met with H. E. Dr. Hazem El Nasser, Minister for Water and Irrigation in Jordan, and other members of the Ministry. The Minister reiterated his support for the Water for Peace project.

b) Regional Experts Workshop 1:



Water Conflict in Joint River Basins "The Jordan River Basin": Possibilities for Water Sharing and Regional Cooperation

Thursday, August 8, 2002

The workshop was held in the Days Inn hotel from 9:30 AM to 5:00 PM.

Water Awareness objectives:

- Conveying water information and data to all social groups, using continuous methods urging them to care and take part in improved water management.
- Encourage the citizens to cooperate to face water problems, stop wasting water and over-withdrawal, eliminate illegal use, exploitation and the abuse of water resources.
- Building the trust between citizens/consumers and the water sector institutions in accordance with benefits to the nation and basin.
- Banning trespassing and sabotage of water facilities and maintaining them as national treasures essential for life, health, sanitation and social and economic development.
- Protecting water from contamination and saving the aquatic ecology of water basins and project sites.

- Raising citizens' awareness in regard to the water used for different purposes, and urging them to maintain the water pipe networks in their houses, farms and public facilities. Nevertheless, directing them to be aware of the health factors concerning bad water.
- Water conservation and demand management.
- Recognizing the respected persons and parties capable of influencing the public and interested in cooperating and helping the water sector.
- Increasing the role of specialists and the media in this field.
- Letting the specialists and interested parties participate in planning the strategies, workshops and procedures pertaining to different water activities, including the division of water shares, water prices and other sensitive water issues.

The workshop team illustrated several points pertaining to water awareness methods, the most important of which are:

- Providing accurate, evident and expressive information and data regarding the water situation, the water quality and its relation to the environment.
- Producing booklets, pamphlets, stickers, posters, TV interventions, CD's etc.
- Providing the financial and technical potential needed for the awareness program.
- Cooperation of all concerned parties and giving the priority to public awareness and "water use cut down" programs.
- Participation of parties representing large numbers of citizens such as schools, universities, youth centers, clubs, places of worship, unions.
- Setting up pioneering models of efficient water use in selected locations suitable as places of study and with a high rate of water-use like schools, hospitals, hotels, colleges, etc.

Obstacles:

- Awareness and economizing programs are not currently part of the decision makers' agendas.
- The over-dependency upon grants and foreign aid and not having a fixed budget from the government.
- The decrease in trust between the citizens/consumers and the Ministry of Water and Irrigation due to the imposed measures and lack of public participation.
- Ambiguous Jordanian rights in the appendix of the Jordanian Israeli water treaty.
- Increasing water prices in a manner not acceptable to the citizens.
- Limiting the amounts of water withdrawn from wells in ground water renewable basins to 150000 cubic meters for each well, those who exceed this are fined 250 fils for each cubic meter.
- Well drilling without permits amounted to 800 wells withdrawing more than 25 mcm of renewable water annually.
- Complaints of drinking and household water shortage and high bills.

Workshop Findings:

Finally there was a discussion of the possibility of cooperation as a substitute for conflict. In this discussion the audience also participated, which was made up of members of parliament, farmers, engineers, students, voluntary societies and newspapers:

1. The issues of Israel and Syria withdrawing excess freshwater from the basin, the effect this has on Jordan, the fact that international law has been impotent in resolving this problem, due to greater military power of these states and that Jordanian negotiators were near sighted in reaching agreements were discussed.
2. Water from the Al-Disi basin is being withdrawn in great amounts by Saudi Arabia. This is a general political problem in the region, as Israel and Saudi Arabia are withdrawing too much water. Officially no one in this region can drill for more than 500m, but many wells in this region are deeper than 500m. The problem is not the scarce resources but the management of these resources.
3. Water exploitation in the agricultural sector in large amounts is to no avail. The problem in Jordan is that leaders in this sector ignore water problems.
4. The Jordanian citizen is still absent in water related issues; he has always received and paid his bills, so he should participate as a concerned consumer.
5. Mr. Ahmad Abu Ajamea (Water Expert): no law permits any country to steal water from other neighbouring countries. There is a lack of coordination with Syria concerning wells. More than 250mcm of the Disi water reaches the Dead Sea from under ground. Withdrawal of ground water by Saudi Arabia from Disi exceeds 700 mcm per year, but Jordan can cooperate with Saudi Arabia and exchange valuable information.
6. Treaties do not solve anything if the problem is internal. Farming water consumed is 70% of the total; states have to update agricultural and irrigational methods.
7. The Syrian Israeli problem is not that of land and settlements, it is about water borders with Israel. People must be made aware and given the information available at the water authority.
8. The media plays a crucial role in raising the people's awareness.
9. Need to economize in agriculture and update irrigation methods.

Participants of Workshop (1):

<u>Participants</u>
Embassy of Switzerland
Embassy of The Netherlands
H.E. Dr. Mohammad Al-Sgoor
H.E. Mr. Nader Al- Dhyrat
H.E. Dr. Sluleiman Arabyat
H.E. Dr.Mohammad Masalha
Dr. Khalil Al- Lobani
Dr. Ahmad Innab
Dr. Fawzy Teemeh
Dr. Ibrahim Badran

Dr. Amal Hijazi
Dr. Moafak Al- Saqar
Dr. Khazi Rabab`a
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Eng. Awadis Sarbikyan
Eng. Mohammad Abu Ajameya
Eng. Ahmad Al-Keylani
Eng. Marwan Al-Tal
Eng. Ra`fat Al-Majali
Eng. Sulaiman Al-Ghaawi
Eng. Sary Zeeter
Eng. Sami Abbasi
Eng. Rakal Al-Faour
Mr. Mejhem Al-Sgoor
Mr. Hani Masalha
Mrs. Wejdan Talhuni Al-Saket
Mr. Rakan Al-Fao`or
Mrs. Hind Al-Faraj
Mrs. Laila Hamarneh
Mr. Hani Al- Hourani
Mr. Yousef Al- Hourani
Mr. Sameer Al- Shamayleh
Mr. Majed Towba
Mr. Ahmad Shaker
Mr. Gaith Al-Tarawneh
Mr. Faysal Malkawi
Mr. Bashar Al-Bitar
Mr. Bassam Al-Daqqaq

c) Visit to Israel of Water for Peace Project Manager:

It is of utmost concern to the whole project team, that the objective of increasing cooperation between Jordan basin states, and consulting experts from all states in the development of the project, be achieved to the greatest extent possible considering extremely difficult circumstances in the region.

In July 2002, Dr. Tarek Tarawneh visited Israel to represent the Water for Peace initiative at a conference in Tel Aviv on regional water scarcity problems. Dr. Tarawneh used this opportunity to present the Water for Peace in the Jordan River Basin project at a session chaired by H.E. Roni Milo, the Israeli Minister for Regional Cooperation, and also met

several members of the Palestinian Ministry of Planning, and other potential project partners from Israel and Palestine.

Also during this trip to Israel, Dr. Tarawneh visited the Peres Centre for Peace, which has been an important partner of Green Cross in the region for several years, building on the close relationship between Mikhail Gorbachev and Shimon Peres. The Peres Centre for Peace has since the first development of the Water for Peace project expressed its interest to be the main Israeli partners in the initiative. This interest is still very much present, and the Centre is trying to surpass political problems and remain supportive of the project. Dr. Tarawneh maintains regular communications with the Peres Centre and other contacts in Israel.

VII. ACTIVITY 6: PUBLIC HEARINGS AND INFORMATION

The activities aimed at informing the public about the project, and receiving input regarding their needs, awareness of the regional water situation, and recommendations for future improvements, are all heavily interconnected with the work being done to ascertain public awareness of the water conflict, and the organisation of the workshops.

The Focus Group meetings (described in Activity 1.2 above) have also been occasions for wider discussion with the public on all issues related to water, and for broadening peoples' knowledge of the basin-wide dimensions of the situation, and the goals of the Water for Peace initiative.

All information and documents developed by the project, including the results of the questionnaires and the proceedings of Workshops, are widely distributed (in English and Arabic) both to the specific focus groups and to wider representatives of stakeholders.

Website:

A website is currently under preparation which will allow the project to get more feedback from the public concerning the project activities, and allow people from all riparian states to access the information more easily. The demand for such a website has been made clear at the different meetings arranged and from consultations with stakeholders, private companies and universities. It will of course always be ensured that groups without internet access, especially rural people and farmers, are always able to access printed information.

Newsletter:

A newsletter aimed at raising awareness of water, and particularly water conflict-related issues in the region, and the progress of the Water for Peace project, has been created and the first edition circulated in Autumn 2002.

(see attached Annex II)

ANNEXES

Annex I: Assessment of Conflict in the Jordan River Basin

Annex II: Newsletter Cover Page