

# Proceedings of the International Workshop WOMEN IN WATER MANAGEMENT

Al Akhawayn University in Ifrane, Morocco

26 - 28 March 2007



UNESCO Chair

"Water, Women and Decision Power"



Edited by:

Dr. Asma El Kasmi, General Workshop Chair

Dr. Ahmed Legrouri, Proceedings Chair

Dr. Bouziane Zaid, Organizing Committee Chair

**inWent**  
Internationale Weiterbildung  
und Entwicklung gGmbH



**UNESCO**  
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**جامعة الأخوين**  
**AL AKHAWAYN**  
**UNIVERSITY**



# WORKSHOP ORGANIZED BY



UNESCO Chair  
"Water, Women and Decision Power"



Title: Proceedings of the International Workshop  
WOMEN IN WATER MANAGEMENT

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Al Akhawayn University in Ifrane, Morocco

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\* AUI: Al Akhawayn University in Ifrane

\*\* ONEP: Office National de l’Eau Potable







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## **PRESENTATION OF THE UNESCO CHAIR “WATER, WOMEN AND DECISION POWER”**

**Date of Creation:** April 2006

**Country:** Morocco

**University:** Al Akhawayn, Ifrane

**Responsible for the Chair:** Dr. Asma El Kasmi

### **Objectives:**

- Strengthening women’s capacities in water sectors, particularly through training and research
- Sustainable management of water resources
- Regional and international cooperation / Functional networks for capacity building in water sectors
- Contribution to the protection of the environment, to the improvement of rural populations living conditions and, more generally, to the Millennium Development Goals

### **Overview of Activities for 2006-2007:**

- Awareness Campaign on ‘Water, Education and Health’ aimed at rural populations in the Middle Atlas Region (Dayet Ifrah) with a special emphasis on the contribution of women in local development (September 2006)
- Integrated ‘Douar’ (nomad village) Development Project. Pilot project to reinforce local capacities in Dayet Ifrah, (population 1000) with a participative approach. Activities include training, improvement of conditions for access to drinking water and sanitation, and creation of income generating activities for women (on-going activity)
- Founding Member of the UNESCO Network ‘Women, Science, Technology and Development’ that includes Argentina, Brazil, Burkina Faso, Ivory Coast, Morocco, Pakistan, Sudan and Togo with 2 main objectives: (1) Implementation of a program for training and research in science and technology with a gender perspective (2) Training of women and adolescent girls in the sustainable management of resources (notably water) within a scientific and technological framework (on-going activity)
- Scientific Committee of the WHEP Program (Women, Health, Education Programme) Academy of Sciences, Institut de France, Paris (October 2006)
- Conference “Water Right Against Poverty”, Florence, Italy, (November 2006)
- Training course “Reform of the Water and Sanitation Sectors in Francophone Africa” organized in Rabat by the World Bank Institute, InWent-Capacity Building International, the African Association for Water (AAE-WUP) and the National Office for Potable Water in Morocco (November 2006)
- Operational Collaboration with the World Bank Institute to mainstream gender in water and sanitation sectors with pilot projects in MNA, AFR and EAP Regions (on-going activity)

- Organisation of the International Workshop “Women in Water Management” in collaboration with InWEnt-Capacity Building International, the National Office for Potable Water in Morocco and Al Akhawayn University in Ifrane (March 2007)

**National Partners:**

- Al Akhawayn University in Ifrane (AUI)
- National Office for Potable Water in Morocco (ONEP)
- Moroccan League for the Protection of Children
- Faculty of Sciences, University Mohammed V, Agdal, Rabat
- Pole of Competency Water & Environment, Faculty of Sciences Semlalia, Marrakech

**International Partners:**

- InWEnt, Capacity Building International, Germany
- UNESCO Network ‘Women, Science, Technology and Development’
- World Bank Institute, Washington D.C.

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## FOREWORD

Water is the most important natural resource as it has a decisive influence on life. Its availability, in terms of quantity and quality, has a strategic impact on sustainable development. During the 20<sup>th</sup> Century, world population tripled, while world demand for water increased six-fold. In addition to populations needs for drinking water, various factors also contribute to this demand such as agricultural intensification, industrial expansion and climate change. Water being a shared resource, there is a fierce competition amongst all concerned sectors and at times also between nations. Therefore, efficient water management is not only the key to economic development and environmental sustainability but is also a vital ingredient in socio-political stability.

During the last two decades, numerous national and international initiatives have been launched in order to improve drinking water supply and sanitation services for populations and many efforts have been directed towards designing sustainable low-cost technical solutions in most of water-related sectors. Good progress has been achieved but several health, social and economic problems persist that are linked to scarcity and non-efficient management of water resources.

Today, 1.1 billion persons don't have access to a minimum quantity of potable water, 2.4 billion are lacking sanitation and 5 million, from which 3 million children, die every year because of water-related diseases. Many countries will not be able to meet the targets set by the Millennium Development Goals relative to water and sanitation by 2015.

An interesting lesson learned from experiences worldwide is that financial viability and technical solutions are not enough for securing equitable access to water resources, neither for the durability of water infrastructures. There are other equally important aspects such as regulations, legal and institutional rights, social relations, cultures and traditions. More attention needs to be given to water governance and particularly to participatory community-based approaches that incorporate gender perspectives.

Far too often, decisions and commitments related to water use and management do not tackle the equitable division between women and men for work, power, benefits, access to and control of resources. A striking example is that in most cultures, and may be more so in Arab countries, women are primarily responsible for the use and management of water resources, sanitation and health at the domestic level, and yet they are hardly ever involved in decisions concerning the design and location of facilities. Women and girls are often the ones who have to walk long distances and spend many hours every day fetching water which negatively impacts girls schooling and hinders the involvement of women in more productive and income-generating activities. It is critical that specific demands, needs, concerns and experiences of women and men from all social groups be taken into account in water development projects. It is also important to work equally towards building capacities for women and men in order to successfully face the multiple challenges encountered in water management.

Strengthening women's capacities in water-related sectors is justified by at least two reasons:



1. Increasing efficiency, since a more active and meaningful contribution of women in the design, implementation, monitoring and evaluation of policies, programmes and projects will guarantee that water supplies are provided and managed in a more sustainable way.
2. Women empowerment through improved skills and greater say in decision-making and in resource management with broader goals of equality within the society, contribution to poverty alleviation and social inclusion.

It is true that the importance of both women and men involvement at all levels of decision and implementation in water management has been recognized, at least since the 1977 United Nations Water Conference at Mar del Plata, and repeatedly emphasized during the International Drinking Water Supply and Sanitation Decade 1981-1990. The issue has been raised at international conferences including the Convention on the Elimination of all forms of Discrimination Against Women, CEDAW, in 1979, the Dublin International Conference on Water and the Environment in 1992, the Beijing Conference in 1995, the United Nations Conference on Environment and Development held in Rio in 1992, the Johannesburg Plan of Implementation in 2002, the 13<sup>th</sup> session of the United Nations Commission on Sustainable Development in 2005 and the 4<sup>th</sup> World Water Forum in Mexico in 2006.

The workshop “Women in Water Management” held in Morocco on 26-28 March 2007 aimed at constructively reflecting this general acceptance for a more effective participation of women in water-related development efforts. It focused on translating paradigms into concrete actions and accurate mechanisms to ensure that women’s capacities be strengthened, their voices heard at all community levels and most importantly that their professional skills be recognized and capitalized on within water institutions.

The workshop was organized in collaboration between InWent-Capacity Building International, the National Office for Potable Water in Morocco and the UNESCO Chair “Water, Women and Decision Power” of Al Akhawayn University in Ifrane. It gathered some 20 professionals from Algeria, Egypt, Jordan, Lebanon, Tunisia, Yemen and Morocco who shared ideas, exchanged experiences and joined efforts in order to set appropriate strategies for strengthening women’s capacities in the field of water while taking into account the specific challenges facing Arab countries. The workshop was also enriched by the participation of leading experts from UNESCO, FAO and the World Bank.

The objectives of the “Women in Water Management” workshop were mainly to:

- Comprehend the situation in each of the participating countries concerning the role of women in water management, capitalize on lessons learned, highlight opportunities and identify limitations that can be overcome by capacity building activities and transfer of technologies and best practices.
- Go beyond the simple desirability of balanced roles between men and women, and define what women can contribute to the efficient management of water and how it can be put into practice.
- Discuss and evaluate the relevance of affirmative action policies and gender-biased laws that aim to encourage women’s participation such as awards, facilitated access to micro-credits, quota systems...

Strengthening women's capacities in the water sector involves ongoing processes rather than on-off efforts and cannot be achieved in one single event. The workshop "Women in Water Management" that took place in Ifrane, Morocco, in March 2007 capitalized on existing capacity building activities in the MENA region and added a solid building block towards achieving measurable results.

The outcomes of the workshop included concrete proposals for actions and follow-up measures that will be implemented and/or supported by the participants and their institutions.

Special attention was given to cultural specificities of the MENA region, to the issue of leadership of women in water sectors and to ways for building a functional regional network.



## LIST OF PARTICIPANTS

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**BENSAID, Samir**, Director Cooperation and Communication, National Office for Potable Water in Morocco (ONEP), Rabat

**CHAMLOU, Nadereh**, Senior Advisor, Office of the Chief Economist, Middle East and North Africa Region, The World Bank, Washington D.C. (Video communication)

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**HUMADI, Arwa**, Head of GIS Department, Local Water and Sanitation Corporation- Aden, Yemen

**JAAIT, Mokhtar**, Head of Division for Water Resources, National Office for Potable Water, Morocco

**JUHARI, Nadia**, Sustainable Development Expert, Jordan

**KFOURI, Claire A.**, Water Supply and Sanitation Specialist, Sustainable Development Department, Middle East and North Africa Region, The World Bank, Washington D.C.

**LEGROURI, Ahmed**, Dean of the School of Science and Engineering, AUI, Morocco

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**RAMSUNDERSINGH, Atem**, Senior Program Officer, World Bank Institute, Washington D.C.

**TARHOUNI, Jamila**, Head of Water Sciences and Technology Laboratory, INAT, Tunisia

**ZAID, Bouziane**, School of Humanities and Social Sciences, AUI, Morocco







## **PROGRAM OF THE WORKSHOP**

### **Monday, 26 March 2007**

#### **10:00-11:30 Opening Ceremony**

10:00-10:10 Pr. Rachid Benmokhtar, President of Al Akhawayn University and President of the Observatory for the National Initiative for Human Development in Morocco

10:10-10:20 Mr. Rachid Balafrej, Advisor to the Minister for Planning Territory, Water and Environment in Morocco

10:20-10:30 Mr. Samir Bensaid, Director Cooperation and Communication, National Office for Potable Water in Morocco

10:30-10:40 Mrs. Renée Clair, Division of Basic and Engineering Sciences, UNESCO, Paris

10:40-10:50 Mr Philippe Quéau, Head of UNESCO Multi-Countries Office for Maghreb

10:50-11:00 Mr. Reza Najib, FAO, Regional Office for North Africa

11:00-11:10 Dr. Ahmed Said Ould Bah, ISESCO

11:10-11:20 Mrs Nadereh Chamlou, Senior Advisor, Office of the Chief Economist, Middle East and North Africa Region, The World Bank (Video Communication)

11:20-11:30: Ms Alexandra Pres, Head of Water Portfolio, InWEnt, Berlin, Germany

#### **11:30-11:50: Coffee Break and Press Communication**

#### **11:50- 13:00 Session I:**

##### **Women in Water Management: Means and Not End**

Chairpersons: Pr Michael Peyron , School of Humanities and Social Sciences, AUI, Morocco and Ms Claire A. Kfoury, Water Supply and Sanitation Specialist, Middle East and North Africa Region, The World Bank

11:50-12:10: Dr. Asma El Kasmi, UNESCO Chair “Water, Women and Decision Power”  
“Women in Water Management: Specific challenges linked to Arab countries”

12:10-12:30: Mrs. Nadia Juhari, Sustainable Development Expert, Jordan  
“Building functional regional networks in MENA region in water sectors: role of women”

12:30- 13:00: Discussion

#### **13:00-14:30: Lunch Break**

**14:30- 18:30 Session II:**

**Situation in MENA Countries: Existing Capacity Building Activities, Lessons Learned, Limitations and Opportunities.**

Chairpersons: Mr Mokhtar Jaait, Head of Division for Water Resources, National Office for Potable Water, Morocco and Ms. Khadouja Mellouli, Program Officer, Centre of Arab Women for Training and Research (CAWTAR)

14:30-14:50: Eng. Arwa Humadi, Head of GIS Department, Local Water and Sanitation Corporation-Aden, Yemen

14:50-15:10: Dr. Rasha El-Kholy- Assistant Manager of NAWQAM Project, National Water Research Center

15:10- 15:30: Eng. Mona Fakih - Head of Department of Hydraulic Structures, General Directorate of Hydraulic and Electric Resources, Minister of Energy and Water, Lebanon

15:30- 15:50: Mrs Nadia Juhari, Sustainable Development Expert, Jordan

**15:50-16:10 Coffee Break**

16:10- 16:30: Pr Michael Peyron , School of Humanities and Social Sciences, AUI, Morocco

16:30- 16:50: Mrs Sonia Bellache, Ministry of Agriculture and Rural Development, Algeria

16:50- 17:10: Mrs Jamila Tarhouni, Head of Water Sciences and Technology Laboratory, INAT, Tunisia

17:10- 17:30: Dr. Asma El Kasmi, National Office for Potable Water, Morocco

17:30- 17:50: Pr. Guemouria Noura, Faculty of Sciences Semlalia, Marrakech, Morocco

17:50-18:00: Movie “A Culture and a Future” Contribution from the Ministry for Planning Territory, Water and Environment in Morocco

18:00- 19:00: Discussion

**Tuesday, 27 March 2007**

**9:00-9:30 Report and Summary of the Results of Day 1**

Dr. Bouziane Zaid, School of Humanities and Social Sciences, AUI

**9:30-12:30 Session III**

**Programs and Mechanisms for Strengthening Women’s Capacities in Water Sectors within International Organizations:**

Chairpersons: Eng. Arwa Humadi, Local Water and Sanitation Corporation, Aden, Yemen and Mrs Jamila Tarhouni, Head of Water Sciences and Technology Laboratory, INAT, Tunisia

9:30- 9:50: Ms. Claire A. Kfour, Water Supply and Sanitation Specialist, The World Bank

9:50- 10:10: Mrs. Renée Clair, Division of Basic and Engineering Sciences, UNESCO, Paris

10:10- 10:30: Mr Reza Najib, Integrated Natural Resources Management Officer, FAO

10:30- 10:50: Ms. Khadouja Mellouli, Program Officer, Centre of Arab Women for Training and Research (CAWTAR), GEWAMED Project Coordinator, Tunisia

10:50- 11:10: Dr. Youssef Filali-Meknassi, Head of Sciences Department, UNESCO Multi-Countries Office for Morocco, Algeria, Libya, Mauritania and Tunis

11:10- 11:30: Discussion

**11:30-11:40 Coffee Break**

**11:40- 12:30: Campus Tour**

**12:30-14:00: Lunch Break**

**14:00-15:30 Presentation and Dialogue**

Mr. Atem Ramsundersingh, Senior Program Officer, World Bank Institute  
**Leadership and Change of Water Sector Organizations: Values Women Represent in Providing Leadership to the Water Sector**

**15:30-15:50 Coffee Break**

**15:50-18:00 Round Table I**

**Towards Achieving More Efficient Roles for Women in Water Management**

Moderators: Mr. Atem S. Ramsundersingh, Senior Program Officer, World Bank Institute; Dr. Asma El Kasmi, UNESCO Chair, Morocco

1. How can strategies for women empowerment be used in strengthening women's capacities in water,
2. How can capacity building measures in water specifically target women
3. How to capitalize and use existing initiatives (national, regional, international)
4. Role to be played by participants and their institutions
5. What support could be provided by UNESCO/InWEnt/WBI/WB/FAO

**19:30 Gala Diner**

**Wednesday, 28 March 2007**

**9h-9:30 Report and Summary of the Results of Day 2**

**Ms Yousra Benchrif, Development and Communication Department, AUI**

**9:30-11:00 Round Table II**

**Road Map Towards Building a Functional Regional Network**

Moderators: Ms. Khadouja Mellouli, Program Officer, Centre of Arab Women for Training and Research (CAWTAR); Mrs. Nadia Juhari, Sustainable Development Expert, Jordan

1. Strategic action plan
2. Follow-up measures
3. Activities for 2007-2008

**11:00-11:20 Coffee Break**

**11:20-12:30 Closing Session and Press Release**

**Dr. Asma El Kasmi, UNESCO Chair & Dr. Bouziane Zaid, School of Humanities and Social Sciences, AUI**

**12:30-14:00: Lunch Break**

**14:00 – 22:00 Cultural Visit to the City of Fez**





## **OPENING CEREMONY**





**Pr. Rachid Benmokhtar Benabdellah**

President of Al Akhawayn University in Ifrane  
President of the National Observatory of Human Development, Morocco

President Benmokhtar Benabdellah pointed out to two important facts that were later repeated throughout the opening ceremony. First, the world, and the MENA region more specifically, are facing major challenges related to water scarcity, and these challenges call for immediate action. Second, women play an important role in water management. Women have multiple responsibilities when it comes to the use and management of water. They play a key role in preserving water resources especially that they are often in charge of children's education, teaching them good practices related to water.

Al Akhawayn University in Ifrane (AUI) is giving high priority to the issues of water and women, first because of its location in the Atlas Mountains considered as Morocco's water reservoir and the biodiversity characteristics of the region. Also, many projects are taking place at AUI that are targeting community development and women empowerment such as the Hillary Clinton Women's Empowerment Center, the Center for Environmental Issues and Regional Development, the Integrated Development Project at Dayet Ifrah led by the UNESCO Chair "Water, Women and Decision Power", the Azrou Community Development Center dedicated to health and vocational training; literacy program; health and education programs and woman empowerment.

AUI is looking for more opportunities to coordinate all these actions, which are tied up to the other function of Pr. Benmokhtar as President of the National Observatory of Human Development (ONDH). The main objectives of the National Initiative for Human Development, launched by His Majesty King Mohammed VI are to fight poverty and promote development programs. President Benmokhtar could use the work and recommendations of this workshop to design better public policies regarding development and fight against poverty.

The current workshop is very timely since a huge national development project is being launched; the Moroccan Association for Science, Innovation and Research (MAScIR). The budget of the association is estimated at 500 million Dirhams (roughly 60 million US dollars). In addition to AUI and the Universities of Fez and Meknes, the other partners have largely contributed to this project, including the Caisse de Dépôt et de Gestion (CDG), the Ministry of Industry, Hassan II Academy of Sciences and Techniques, and the National Center for Scientific and Technical Research (CNRST). This association, whose main objective is to promote research activities, has amongst its priority areas water and environment.



**Mr. Rachid Balafrej**

Advisor to the Minister for Territory Planning, Water and Environment  
Morocco

Mr. Balafrej pointed out the fact that the MENA region is most affected by water scarcity. 50% less rain is expected in the near future. He delineated some actions undertaken by the Ministry for Territory Planning, Water and Environment in Morocco (MATEE): New infrastructures and new policies were initiated by the government. Morocco has set a long term program for water preservation and sanitation as well as solid infrastructures to provide access to water to every Moroccan.

The first World Water Forum was held in Marrakech in 1997: the first initiative in the world is a Moroccan idea. Morocco's water policies have been praised by many international organizations.

Major approaches to water management focused essentially on technical expertise and technical solutions. As it has been proven, water is more of a social and behavioral problem than a technical problem, hence the importance of implementing a socio-economic approach.

The new approach to water management includes the emphasis on the participation of all actors because water involves many institutions. A research study undertaken by InWEnt in 2001 in Morocco led to the conclusion that there is a need to focus on women.

We have to have a culture of dialogue because water is everybody's concern, it is crucial for all.

**Mr. Samir Bensaid**

Director Cooperation and Communication  
National Office for Potable Water (ONEP)  
Morocco

Mr. Bensaid pointed out the fact that ONEP is a public operator and a tool in the hands of the Moroccan government. Its missions span the whole water cycle and include planning for potable water at the national level, production and distribution of potable water as well as sanitation. ONEP covers the majority of the Moroccan territory in urban and rural areas.

ONEP has a culture of technicians and engineers and is now giving increased attention to social issues. The engineers are engaging in water projects in rural areas and are therefore learning more about how to manage water resources through the interaction with local populations, things they did not necessarily learn in engineering schools. Multidisciplinary and participative approaches are essential for success.

The UNESCO Chair “Water, Women and Decision Power” helps open new horizons for ONEP not only through increased interaction with the University but also with the community at large. More emphasis is now put into gender as well as sociological and cultural approaches.

**Mrs. Renée Clair**

Division of Basic and Engineering Sciences,  
UNESCO, Paris

Mrs. Clair informed the assembly about the full support of Sonia Bahri, the officer in charge of the UNESCO Chair/UNITWIN Programme, in Higher Education Division, at UNESCO.

Mrs. Clair pointed out the importance of celebrating and supporting women scientists, women as participants in the scientific progress. She expressed her satisfaction with how things are progressing at Al Akhawayn University in Ifrane (AUI) and its UNESCO Chair. AUI is a place where many initiatives take place.

The reason behind the creation of a UNESCO Chair at AUI instead of an association is mainly because this university is dedicated to serving as a locomotive for development. The theme “Water, Women and Decision Power” was also selected for the creation of two other chairs in Brazil and Ivory Coast that share similar interests and orientations.

The UNESCO Chair at AUI is part of the Network “Women, science, technology and development” which gathers six others UNESCO Chairs (Argentina, Brazil, Burkina Faso, Ivory Coast, Pakistan and Sudan).

Finally, Mrs. Clair pointed out that the themes of “Women, Science, Technology and Development” and “Sustainable Water Management” have been chosen as major research themes by the Africa-Asia Development University Network: A partnership for Making Science and Technology Work for the Poor, launched by UNDP in collaboration with UNESCO.

**Dr. Youssef Meknassi**

Representing Mr Philippe Quéau,  
Head of UNESCO Office for Maghreb

Dr. Meknassi pointed out the importance of organizing such a meeting on women and water management and how it relates to the achievement of the Millennium Development Goals. He stressed the relevance of empowering women as well as the preservation of natural resources.

In Morocco, 85% of water is used for agriculture, 65% of this water is not used optimally. More work is needed to improve the quality of water management programs.

The UNESCO Office for Maghreb is engaging in several activities to promote and reinforce women's capacities and to involve them in the decision-makings relating to water. Such activities include the production of video clips, pamphlets, and organizing workshops to sensitize rural population. The UNESCO Office also works on encouraging young girls, who are about to reach higher education, to choose scientific careers, and to sensitize the families and the teachers to encourage these girls to pick scientific professions.

The UNESCO Office in Rabat is pleased to support the UNESCO Chair "Water, Women and Decision Power" and to be part of its endeavors.



**Mr. Reza Najib**

Integrated Natural Resources Management Officer,  
Regional Office for North Africa, FAO, Tunisia (FAOSNE)

Mr. Reza pointed out the fact that FAOSNE is welcoming collaborations at regional and international levels. Starting 2007, the meetings have been directed towards issues of natural resources, natural sciences integration and human development.

There is a need for an action plan for women and development; gender and development. However, there is a lack of information especially on women issues. There is a need for databases that also provide country profiles. These databases are vital for any planning activity we may undertake.

The presence of FAOSNE and its partners (CAWTAR, Centre of Arab Women for Training and Research and INAT, Institut National d'Agronomie de Tunis) in the present workshop will allow building collaborations with the UNESCO Chair and other regional participants.

**Dr. Ahmed Said Ould Bah,**  
Head of Cabinet  
Representing Mr. Abdelaziz Touijri,  
Director General of ISESCO

Dr. Ould Bah pointed out that ISESCO (Islamic Education, Science, and Culture Organization) is interested in the program of the UNESCO Chair “Water, Women and Decision Power” and in the organization of conferences for Islamic countries.

There are 3 levels of importance of this workshop that call for the contribution of ISESCO:

1. The workshop is in line with the strategic objectives of ISESCO in terms of education and the blend of scientific, technical as well as cultural aspects.
2. Common grounds with other partners: the program of the UNESCO Chair will allow connections with other partners and funding sources.
3. The location of the activities of the UNESCO Chair that provide good links and collaborations between several countries in the MENA region.

Finally, Dr. Bah stated that the issues of water and women were very important to ISESCO member states.

**Mrs. Nadereh Chamlou**

Video Communication

Senior Advisor, Office of the Chief Economist, MENA Region, World Bank

Presented by Ms. Claire A. Kfoury, Water Supply and Sanitation Specialist, Sustainable Development Department, MENA Region, World Bank

In her video communication, Mrs. Chamlou pointed out that in its mission to fight poverty, the World Bank focuses on water and women. She stated that men and women have different roles. Young girls walk long distances to fetch water as a result they miss educational opportunities. Women are responsible for providing water to their families. Men use water differently: for crops and agriculture.

Mrs. Chamlou delineated three areas of importance:

1. Women as direct users of water for household activities; therefore safe water can reduce the time devoted to these activities;
2. Women as caretakers: if children are sick that takes considerable time from women;
3. Women's own health is affected by dirty water: miscarriage, birth defects, etc.

With better water quality and availability, women can spend less time with water issues and devote more time to education.

Mrs. Chamlou concluded that men and women are equally concerned and affected. Men and women need to be equally consulted and their input valued in an equal manner.

**Dr Asma El Kasmi**

UNESCO Chair “Water, Women and Decision Power”  
Al Akhawayn University in Ifrane  
National Office for Potable Water  
Morocco

Dr. El Kasmi addressed special thanks to InWEnt for being the main co-organiser of the workshop and for providing the necessary funds to allow this regional experts meeting to take place in Ifrane.

InWEnt, through its Head of Water Portfolio Ms. Alexandra Pres, has been involved since the very early stages in the conception of this workshop as well as in the definition of its expected outcomes. Ms Pres was supposed to be present in Ifrane but because of a last minute change she had to stay in Berlin.

The role of women in water management has received a great attention from InWEnt for many years now and a workshop on this issue was organised at ONEP in 2001. Also a study on professional women and water management in Morocco was carried out for InWEnt and published in 2003 and its results will be discussed during the workshop.

Dr. El Kasmi closed the opening ceremony by presenting the program of the workshop and also thanked all the organisers, participants and guests.

**SESSION I**

**WOMEN IN WATER MANAGEMENT:  
MEANS AND NOT END**

**Chairpersons**

**Pr. Michael Peyron , School of Humanities and Social Sciences, AUI, and  
Ms. Claire A. Kfour, Water Supply and Sanitation Specialist, Middle East  
and North Africa Region, The World Bank**

**Women in Water Management:  
Specific Challenges Linked to Arab Countries\***

Dr. Asma El Kasmi, UNESCO Chair “Water, Women and Decision Power”

Speaker delineated

- Water growing crisis is manifested by the lack of drinking water and sanitation, as well as the inefficient management of water. As a result, many countries are lagging behind the MDG's.
- Countries in the Arab Region share many common grounds but there are specificities for each country that need to be taken into account. There are several reasons to strengthen collaborations and transfer of know-how such as rising water scarcity, low to medium HDI, low local water technology.
- One has to define what role(s) for women in water management; what they can contribute; how to put into practice and subsequently design appropriate capacity building measures.
- Strengthening women’s capacities in water management requires differentiating their roles, levels of intervention and responsibilities.
- There are different roles for women in water management: women at household level; women at the community level; professional women in water organizations.
- Some actions that target women at household level: equitable access to water and sanitation, increase school attendance for girls; involvement of women in income generating activities; decrease water related diseases through hygiene education.
- Examples of measures that target women at community level: training in operation, equipment, management and finance. Participatory approach: involvement in local water users associations. One has to be careful about risks: stereotypes that ignore differences between women; cost of participation; unpaid tasks for women.
- Concerning women at the professional level, there is a need for more women in technical, management and decision-making positions. Capacity building actions include increasing girls’ enrollment in water related programs; mechanisms for gender mainstreaming in institutions: sex disaggregated data, budgetary issues, training, planning and evaluation, men championing gender approach.

*\* Abstract of the paper in Annex 1*

**Building Functional Regional Networks in MENA Region in Water Sectors:  
Role of Women**

Mrs. Nadia Juhari, Sustainable Development Expert, Jordan

Speaker delineated

- Existing networks in water sector in the MENA region such as the Arab Water Council, the International Union for Conservation of Nature (IUCN-WESCANA). .
- Purpose: share experiences and build knowledge. .
- Challenges:
  - \* Limited beliefs on women's competency,
  - \* Role of women is underestimated at policy level,
  - \* Work depends on external funding
  - \* Involvement of professional women is limited for various reasons.
- Success elements:
  - \* Commitment of members;
  - \* Clear objectives,
  - \* Availability of financial resources;
  - \* Support of policy makers;
  - \* Empowerment of women,
  - \* Links with current local, regional, and global networks.

## **SESSION II**

### **SITUATION IN MENA COUNTRIES: EXISTING CAPACITY BUILDING ACTIVITIES, LESSONS LEARNED, LIMITATIONS AND OPPORTUNITIES**

#### **Chairpersons**

**Mr Mokhtar Jaait, Head of Division for Water Resources, ONEP, and  
Ms. Khadouja Mellouli, Program Officer, Centre of Arab Women for Training  
and Research (CAWTAR)**



## YEMEN\*

**Eng. Arwa Humadi**

Head of GIS Department,  
Local Water and Sanitation Corporation - Aden

Speaker delineated:

- Yemen is the least developed country according to the HDI
- UNDP report: cultural traditions continue to keep women at lower status. Men control assets.
- Gender development index: 133 rank out of 143 worldwide.
- Women take on the responsibilities of getting water; sometimes it takes a full day.
- This causes absences from school, affecting the health of girls: relationship between education, health and water.
- Women and water crisis: rainwater structures deteriorate and women suffer the most. Percentage of households headed by females in rural areas 12.2%, 10.4% in urban areas.
- Role of women differ by geography: e.g. in mountains and high plateaus: irrigation controlled by men, women's role not recognized.
- Challenges: gender inequalities; lack of communication and shared decision making; lack of representation of women in government organizations.
- Many opportunities and initiatives taken to improve the situation of women.

### Recommendations:

Men should be included in gender trainings and awareness campaign. “As men are the decision-makers right now, if they acknowledge and understand better gender issues, they will be facilitators.”

*\* Abstract of the paper in Annex 1*

## EGYPT\*

### Dr. Rasha El-Kholy

Assistant Manager of NAWQAM Project  
National Water Research Center, Egypt

#### Speaker delineated

- Need for Integrated Water Resource Management (IWRM)
- Data on gender role in water management in Egypt
- Different projects:
  - \* National Water Research Center (NWRC),
  - \* Water Associations Project,
  - \* Water Management Project in Fayoum,
  - \* Water Press and Communication,
  - \* Publications and reports
- Institutional level: no discrimination

#### Recommendations and vision for the future:

- Awareness campaigns must be need driven and upon a Rights Based Approach RBA;
- Building the capacity of women/men working in relevance with gender issues TOT;
- Men representatives should be involved in all campaigns /workshops / meetings, etc;
- On the regional level: regional association for Arab women to exchange experiences;
- Creating a "Gender Geographic Profile" (women status, problems faced and services/ facilities given) from local to the regional level where countries could be grouped based on geography, topography social conditions: Maghreb counties, Egypt/Libya/Sudan etc.

*\* Abstract of the paper in Annex 1*

## LEBANON\*

### Eng. Mona Fakh

Head of Department of Hydraulic Structures,  
General Directorate of Hydraulic and Electric Resources,  
Ministry of Energy and Water, Lebanon

#### Speaker delineated

- Data on water resources in Lebanon, there is increasing demand with stagnant resources.
- Women's role in water management: data on women's participation in water management at the institutional level.
- Field where gender is no longer a problem: Lebanese Institutions, NGO's, UN organizations
- Challenges:
  - \* Number of women specialist in water is limited,
  - \* Male hegemony;
  - \* Women get paid less.

#### Recommendations:

Giving gender the importance it deserves; involve men in women's water activities and programs, training programs targeting women in water management with scientific and technical tools, insure women's participation in decision making, planning, implementation, and management.

Government, non-governmental and donor organizations involved in water management should address gender issues in their water programs, through their policies, procedures and personnel.

*\* Abstract of the paper in Annex 1*

## **JORDAN\***

**Mrs Nadia Juhari**

Sustainable Development Expert, Jordan

### Speaker delineated

- Data on population and water resources in Jordan
- Demand is higher than supply
- National initiatives: National Water Master Plan by the Ministry of Water and Irrigation (MWI) supported by GTZ.
- Water efficiency and Public Education for Action (WEPIA): 110 women trained as sales agents for simple, cheap, easily installed water saving devices (WSDs). 160 female preachers were trained to train others in water saving devices, in home maintenance and plumbing, do house audits
- Encourage use of grey water at house level
- Vocational Training Corporation (VTC) training programs include plumbing course for women at national level free of charge.
- Lessons learned: improved communication between technical staff and women, less technical language, more adapted to audience; Learning by Doing is more effective; Families headed by women to be targeted.

### Some recommendations:

- Establish database on previous projects that include components relevant to women role in water management.
- Establish database on professional women working in water sector at public and private sectors and NGOs.
- Providing incentives for professional women.

*\* Abstract of the paper in Annex 1*

## ALGERIA\*

**Mrs Sonia Bellache**

Ministry of Agriculture and Rural Development, Algeria

### Speaker delineated

- Data on population, water resources, representation of women in water management
- Conventional and non conventional water resources.
- Conventional water resources: provided number of cubic meters of water collected in different parts of Algeria.
- Non conventional water resources: re-use of treated urban waste water. Waste water to be possibly reused in agriculture: 600 hm<sup>3</sup> / year. Desalination of sea water: could constitute an additional solution for the satisfaction of the needs of drinking water and industry.
- A survey was conducted in 7 prefectures of Algiers:  
Results: Farms are owned by men, women's work remain invisible. Participation in irrigation: vary according to the region.
- The speaker mentioned many constraints like cultural traditions ...etc.

### Some Recommendations:

- Improvement of the living conditions of the rural populations through the improvement of the basic infrastructures
- Promote equitable access and full participation of women, on an equal footing with men, with the decision-making at all levels...
- Improve access to information.

\* *Abstract of the paper in Annex 1*

## TUNISIA

### **Mrs Jamila Tarhouni**

Head of Water Sciences and Technology Laboratory,  
INAT, Tunisia

#### Speaker delineated

- Tunisia is the smallest country in North Africa. It has very impressive women's participation in public and private sectors.
- In terms of gender water uses, at the house level, it is the entire responsibility of women. At the farm level, the responsibility is shared with men. Women responsibility is dependent upon:
  1. their social status (single/widow, land and resources owner)
  2. the farm size: more the size is small, more the women involvement is increased, men look for work somewhere outside
- Women have an important role in irrigation. A comparison of women's work in dry areas and in irrigated areas has shown that in dry areas, the activities are extensive, seasonal and concentrated in 4 to 6 months. However in irrigated areas, several activities must be done at the same period. Women activities become time consuming and hard. These activities have negative effects on women and children (living conditions, schooling and on their education)
- Constraints:
  - \* Difficult access to the market
  - \* Market is far from the production area
  - \* Market opening time (4-7) is not convenient for women
  - \* Limited access to loans for women because they don't own property;
  - \* Traditions and cultural heritage.

#### Some Recommendations:

- More effective involvement of women in decision making
- Improve the access of women to information
- The importance of involving women as well as men in water resources management is not to be seen only important for improving women's situation, but also as essential factor for effective development, utilization and management of water resources.

## MOROCCO\*

**Pr Michael Peyron**

School of Humanities and Social Sciences, Al Akhawayn University in Ifrane

Based on his extensive work in the Middle Atlas region in Morocco, and his knowledge of such communities, Pr. Peyron situates water use by women in its cultural context.

- Water, in traditional Atlas Mountain societies, is understandably respected as a vital resource requiring careful management.
- When women walk long distances to get water, they become very thrifty in their water use but once tap water is installed then the notion of thrift goes away; Pr Peyron calls this the “robinet” syndrome. It is important to remember that availability encourages water waste.
- It is important to consider the relationship between men and women: Traditionally, women fetched water for domestic purposes, and men did agricultural work. Today the situation is sometimes different: situations when women take on the jobs of men, because of immigration etc.
- Traditionally the Berber culture is known for its respect of water with rituals that testify that.
- Management of guest-houses in Tassawt valley (Central High Atlas, 2000-2005) has revealed tourism-related abuse of water resources irrespective of water shortages.

### Recommendations for remedial strategies:

- Fight pollution;
- Restrict water use during drought periods;
- Conduct awareness campaigns.

Conclusion: women are more careful with water than men. Same is true for micro-credits. **Development initiatives should focus on women.**

Word of warning: The “gender approach” is one of those concepts like “sustainable development”, or “green tourism” that should not be concocted solely by office-bound boffins and then applied to whichever situation they are supposed to target. Otherwise, once implemented in the field, they may be visualized as inadequate and/or irrelevant, simply because the survey(s) they were based on failed to take into account certain important local criteria, especially properly functioning networks already in place. This could also apply (which God forbid!) to “women in water management”, should well-meaning, apparently sound strategies devised in solemn conclave be based on inaccurate field-work; or if there is insufficient follow-up to recommendations spelled out at end of conference – as sometimes happens.

\* *Abstract of the paper in Annex 1*

## MOROCCO\*

**Dr. Asma El Kasmi**

National Office for Potable Water in Morocco (ONEP)  
UNESCO Chair “Water, Women and Decision Power”

### Speaker delineated

- Data on water management in Morocco and the role of ONEP.
- Women situation in Morocco with focus on water sectors.
- Participation of women in water institutions public and private.
- Evolution of data on women’s participation at ONEP since InWEnt’s study in 2001.
- On going activities (UNESCO Chair/ONEP) to strengthen women’s capacities in water: research projects; training of trainers; awareness and communication campaigns; integrated development project in rural areas; regional and international cooperation.
- Lessons learned: need to listen to local populations to understand their priorities and be flexible in adjusting goals and methodologies to population needs (participative approach).
- Opportunities: considerable experiences and know-how in the Region that can be capitalized on through joint efforts and collaboration for training and implementation of pilot projects (ex: workshop and awareness campaign in collaboration with ONEP/InWEnt/IUCN).

### Some recommendations:

- Capacity building measures not limited to women as water users but also target professional women in the “water world” and female students. Increase competency at all levels.
- Careful about giving more tasks to women and no rewards (even for mastered tasks).
- Water is closely linked to education and health and therefore it is important to involve other actors than only water specialists.

*\* Abstract of the paper in Annex 1*



## MOROCCO\*

**Dr. Noura Guermouria**

Faculty of Sciences Semlalia, Marrakech, Morocco

### Speaker delineated

- Crop water requirements in semi-arid area of Tensift Al Haouz (Marrakech) and relation with women's life conditions.
- Research project in Tensift Al Haouz with objectives:
  - Create a knowledge base for a sustainable and integrated management of water in the Marrakech region area
  - Propose models for monitoring water in agriculture (FAO-56, STICS, SVAT...)
  - Examine the role of women as users and as researchers
- Problems identified:
  - Declining rainfall and increase in the consumption of water
  - Agriculture uses between 70 and 80% of freshwater
  - Necessity to manage in a sustainable way water resources and to adopt best practices and to improve the water supply in different areas
  - Quantification of water lost to the atmosphere through evapotranspiration:
    - ⇒ Modelisation (operational model: FAO-56....)
    - ⇒ Measurements (Eddy covariation, scintillometrie...)
- Three major international collaboration projects:
  - \* SUD-MED: Functioning and hydro-ecologic resources in semi-arid region (Tensift, Morocco): characterisation, modelling and prevision.
  - \* WATERMED: Water use efficiency in natural vegetation and agricultural areas by remote sensing in the Mediterranean basin.
  - \* IRRIMED: Improved management tools for water-limited irrigation combining ground and satellite information through models.

### Recommendations:

Use experiences and know-how of local NGO's and involve them in strengthening women's capacities in water management and reducing poverty.

*\* Abstract of the paper in Annex 1*

## DISCUSSION AND RECOMMENDATIONS

The following questions were raised: How to perform non formal education and awareness campaigns? What tools to use? What trainers? What target groups?

The discussion led to some recommendations:

- Need for good communicators
- Adapt communication tools and topics to audiences
- Let the community choose their leaders; simplify the concepts
- Train trainers from local actors who have close interaction with populations: nurses, teachers, water institutions employees...
- Acknowledge the role of men in the campaigns, especially in rural areas
- Take into account the cultures and how they allow or restrict access to women
- Best not to use books, rather use photos, graphic illustrations, leaflets, use population's dialects, don't use translators (as much as possible)
- Use local knowledge, legends, fairy tales on water and the power of women (women as brave as men) that help give ideas on how to approach women and water management. Work with elder women.

It was agreed that similarities among MENA countries should facilitate collaboration to find solutions to problems that are often the same. The workshop on public awareness organized in collaboration between ONEP/IUCN/InWEnt on the week of March 19<sup>th</sup>, 2007 is a good example of collaboration between experts from MENA region on capacity building, training of trainers, exchange of experiences, success stories...

Participants also discussed a very relevant point regarding the implications of the work done on policy making. It is important to involve policy makers and the media in order to influence the establishment of new laws and regulations that empower women. There is a need to use approaches like media advocacy to have a clear strategy to target public opinion and put pressure on policy makers to change laws.

In countries where women are members in the parliament, it is important that they be members in the parliamentary committee which deals with water issues, like: water law and regulations, water policy, discuss and accept water strategy plan.

Recommendation was made to involve academia and to strengthen collaborations between water organizations and universities and also among universities.

## **SESSION III**

# **PROGRAMS AND MECHANISMS FOR STRENGTHENING WOMEN'S CAPACITIES IN WATER SECTORS WITHIN INTERNATIONAL ORGANIZATIONS**

### **Chairpersons**

**Eng. Arwa Humadi, Local Water and Sanitation Corporation, Aden, Yemen  
and Mrs Jamila Tarhouni, Head of Water Sciences and Technology  
Laboratory, INAT, Tunisia**

**Ms Claire A. Kfour**

Water Supply and Sanitation Specialist,  
The World Bank

Speaker drew up a review of women's situation in water and sanitation sectors. She also stressed the relationships between women, water and the Millennium Development Goals.

She gave examples of experiences of the World Bank in Brazil: Involving Local Communities in Low-Income Sanitation; and Lesotho: Gender as a Critical Variable in Rural Sanitation Program.

Ms. Kfour presented the Flagship reports:

1. Gender and Development in the Middle East and North Africa: Women in the Public Sphere
2. Making the Most of Scarcity: Accountability for Better Water Management in the Middle East and North Africa
3. Gender Mainstreaming in Water Resources Management Report, 2006

Ms Kfour emphasized the importance of indicators for project effectiveness, sustainability and replicability.

Among the lessons learned from project experiences:

- Gender is a central concern in water and sanitation
- Women's participation improves project performance
- Gender analysis is integral to project identification and data collection
- A learning approach is more gender-responsive than a blueprint approach
- Projects are more effective when both women's and men's preferences about "hardware" are addressed
- Women and men promote project goals through both their traditional and non-traditional roles
- Gender-related indicators must be included when assessing project performance and impact

**Mrs. Renée Clair**

Division of Basic and Engineering Sciences,  
UNESCO, Paris

Speaker presented the UNESCO Chairs Network: Women, Science Technology and Development and stressed the common goals of UNESCO Chairs:

- Practicing solidarity and cooperation
- Producing and sharing knowledge
- Promoting UNESCO values

Mrs. Clair insisted on the importance for a network to have a common project that takes into account the specificities of each UNESCO Chair.

There is a need for partners such as banks, private sector and governmental funds. She also mentioned the involvement of the University as key part of the development of a UNESCO Chair.

Mrs. Clair announced the possibility for the UNDP to provide funding for a common project about women and water management.

The UNDP Program is aimed to develop a concrete idea on a partnership among universities, research institutions, NGOs and industries of Africa and Asia to share innovative technologies and solutions and adapt them to local conditions to serve poverty reduction. Each project will take a form of combination of some following elements: 1) research, 2) trainings, 3) documentation, 4) information / communication.

The Program is supported by the Governments of Algeria, Indonesia, South Africa and Japan, UN University, UNESCO and UNDP.

**Mr Reza Najib**

Integrated Natural Resources Management Officer,  
FAO

Speaker presented:

- FAO and the Natural Resources Management and Environment Department to promote gender equality in the access to, control over and management of natural resources, and agricultural support services.
- FAO and the gender mainstreaming in Water Resources Management in North Africa and Middle East Countries, through the expert meeting on “The role of women in the management of water with focus on the irrigated sector in North Africa and the Middle East countries”, that has been held in Hammamet, Tunisia, 18-20 April, 2006.

The objective of the workshop was to streamline gender involvement in the management of water resources in general, and irrigation water in particular, to identify the constraints faced by women and to develop an agenda for follow-up action by member countries and FAO as well as other concerned regional and international organizations, with the aim of addressing these constraints.

- FAO-CAWTAR pilot project on developing Gender-Sensitive Indicators (GSI) in AQUASTAT database with the objectives:
  1. Reduce the lack of information and data on gender in AQUASTAT,
  2. Strengthen the capacities of the intermediate executives
  3. Systematize the institutional process of the data of the gender-sensitive indicators.

The project covers three countries in North Africa (Algeria, Morocco and Tunisia).

**Ms. Khadouja Mellouli**

Program Officer, Centre of Arab Women for Training and Research (CAWTAR),  
GEWAMED Project Coordinator, Tunisia

Speaker delineated

- A short presentation of CAWTAR: its missions, objectives and the gender initiative in Environment and Natural Resources Management, with focus on water issues.
- A short presentation of the Arab Network for Gender and Development, @NGED.
- GEWAMED Project “Mainstreaming Gender Dimensions into Water Resources Development and Management in the Mediterranean Region”. The project started in 2006 with duration of 4 years. 18 institutions from 14 Mediterranean Countries participating in the implementation of the project.

The overall objective of the GEWAMED is to contribute to the mainstreaming of gender dimensions in the Integrated Water Resources Management (IWRM) in the Mediterranean Region, by promoting a dialogue among the countries of the Region and establishing regional and national information networks and coordination structures to promote the adoption of gender sensitive policies and build a common knowledge base.

The above mentioned objective will be achieved through the following strategic objectives:

- Building a national and regional shared knowledge base on gender issues, policies, actions and measures to support gender mainstreaming in all processes related to IWRM.
- Enhance the cooperation and dialogue among Mediterranean countries but also within each country promoting the exchange of information and its dissemination among national governmental agencies, NGO’s research institutions, international organizations, private sector and communication media involved in gender related issues and the water sector.
- Contribute to the adoption of national policies and other related instruments (strategies, approaches, guidelines, incentives and legislation) by involving decision makers and politicians in the processes of mainstreaming gender dimensions in IWRM.

The objectives will be achieved through building a national and regional shared knowledge base, improved cooperation among partners and external organizations interested in this subject through the participation in regional workshops and national seminars and contribution to the adoption of gender national policies and other related instruments.

**Dr. Youssef Filali-Meknassi\***  
**Head of Sciences Department**  
**UNESCO Maghreb Office**

Presentation included:

Some examples of how UNESCO is acting in the Maghreb. Its mission, objectives and the gender approach in Water Resources Management.

- Through AVICENNA Virtual Campus project UNESCO aims firstly to accelerate the adoption and the best use of ICT-assisted Open Distance Learning and in the context of the gender approach UNESCO aspires to give rural women a virtual mobility.

In the Maghreb they are three centers participating to the Avicenna Virtual Campus:

- Algeria: UFC
- Morocco: ENSIAS
- Tunisia: UVT

To date, the number of available courses is:

- 32 by the Algerian center,
- 10 by the Moroccan center,
- 16 by the Tunisian center,

By giving to women in rural areas a virtual mobility, Avicenna campus can remove to the Arab women one of the barriers to their access to high education. With Avicenna campus they can achieve a university degree without leaving their houses. They need simply an Internet connection.

Discussions are ongoing with Libyan and Mauritanian governments to join AVICENNA Virtual Campus (2007-2008).

- The UNESCO Office in Rabat is organizing seminars on “Training trainers in water management” (2006-2007) in 5 countries: Algeria, Libya, Mauritania, Morocco and Tunisia. In all the seminars that already took place the gender approach was discussed.
- To promote women in science. The UNESCO Office in Rabat is editing a DVD on the Maghrebin scientific women (2007). This DVD aims to persuade young women to choose a scientific career, specifically in those areas (e.g. rural) in which, for cultural reasons, the scientific careers are reserved to men.

*\* Abstract of the paper in Annex 1*



## DISCUSSION AND RECOMMENDATIONS

It was stressed that sanitation is not mentioned enough. Sanitation is a big problem in semi-arid and arid areas and solutions implemented which are copied from European countries are not appropriate for these countries. There is a need for new low-cost technology tools. It is obvious that there is a strong link between sanitation projects and women.

Participants are willing to work together in order to come up with a common project involving participants countries and institutions, InWEnt, UNESCO, UNDP, CAWTAR, the UNESCO Chair “Water, Women and Decision Power”. First steps would be:

- Define the priorities of the region
- Be specific about the population that the project should target
- Come up with a practical activity; regardless of the amount of money needed (funding can always be reached through a good project).

UNESCO-Paris could provide support (through the UNDP funds) for a common project with the UNESCO Chair “Water, Women and Decision Power” of AUI as focal point. The project can be presented by the Chair during the meeting in Cannes in June 2007 and will be extended to the network of UNESCO Chairs (Pakistan and Togo). Other partners can also be involved in the project such as associations and universities.

Emphasis was put on the fact that building a network should be in terms of common activities and not only in terms of communication. Adopting “network attitudes” and recognizing the role of connectors or ideas people to promote ideas and raise money. Suggestions were made to use unexplored tools like internet, TV shows and the media in general to promote the importance of women in water management.

Priorities are to answer local needs at the national levels and to build networks to serve a bigger role, which is creating links and sharing ideas and experiences in order to capitalize on the results already achieved by others.

Quality remains the best business card for any project. Adopting innovative ideas on how to instruct women for a better use of water resources should lead to a good quality project.

Suggestion was made to create a coalition with the Arab Water Council.

**DIALOGUE**  
**LEADERSHIP AND CHANGE OF WATER SECTOR**  
**ORGANIZATIONS:**  
**VALUES WOMEN REPRESENT IN PROVIDING**  
**LEADERSHIP TO THE WATER SECTOR**



## **Leadership and Change of Water Sector Organizations: Values Women Represent in Providing Leadership to the Water Sector**

### **Mr. Atem Ramsundersingh**

Senior Program Officer,  
World Bank Institute

Before addressing the issue of leadership, Mr. Ramsundersingh emphasized the importance of building network societies and adopting network attitudes. He put forward the role of connectors or ideas people to promote ideas and raise money.

Mr. Ramsundersingh suggested using unexplored tools like the Internet, TV shows and the media in general in order to promote the importance of women in water management.

During the dialogue, the following questions were discussed:

- What is the definition of leadership?
- How to define a good leader?

Some ideas and thoughts were shared among participants:

- A person, who orients others towards a common goal, has a vision, is accountable, can forecast and initiate change, creates team dynamics, empowers team members ...etc.
- A great leader or a level 5 leader is also inspiring, transparent, does things for the benefit of values. He or she has an interesting combination of professionalism and humbleness.
- Studies proved that leaders who make a change towards the level 5 went through rough life experiences (death of a relative for example)

To address the issue of women and leadership, Mr. Ramsundersingh raised the question of the types of unique talents that can be brought by women?

Some examples include sensitivity, intuition, emotion, etc.

However, the idea of difference between women and men leaders is debatable and was actually strongly questioned by some participants. Some argued that men and women are the sum of their own social and cultural background regardless of gender considerations.

Interesting points were made concerning feminine energy for men and women

**ROUND TABLE I**

**TOWARDS ACHIEVING MORE EFFICIENT ROLES  
FOR WOMEN IN WATER MANAGEMENT**

**Moderators**

**Mr. Atem S. Ramsundersingh, Senior Program Officer, World Bank  
Institute and Dr. Asma El Kasmi, UNESCO Chair, Morocco**

## **Towards Achieving More Efficient Roles for Women in Water Management**

The discussion focused on how could existing strategies and initiatives for women empowerment at national, regional and international levels be capitalized and used by the participants for strengthening women's capacities in water in their respective countries/institutions. How capacity building measures in water sectors could be specifically directed towards women. What measures can be undertaken by participants within their institutions to bring added value and what kind of support would be needed.

The issue of affirmative action policies and gender-biased laws that aim to encourage women's participation such as awards, facilitated access to micro-credits, quota systems was also discussed and evaluated based on participants' own-experiences.

Two questions were clearly raised:

1. What to do to get there,
2. What to be to get there?

Some suggestions and proposals were made about ways of improvement:

- Implement mentoring systems / coaching women who are in the "water business"
- More involvement in the political world
- Build alliances and coalitions
- Use one's own strength and go against the stream
- Find a niche and explore it
- Internships abroad in other organizations
- Quota systems based on competency
- Cultivate leadership.

## **ROUND TABLE II**

### **ROAD MAP TOWARDS BUILDING A FUNCTIONAL REGIONAL NETWORK**

#### **Moderators**

**Ms. Khadouja Mellouli, Program Officer, Centre of Arab Women for  
Training and Research (CAWTAR) and Mrs. Nadia Juhari, Sustainable  
Development Expert, Jordan**

## **Road Map Towards Building a Functional Regional Network**

For a network to function there is a need to implement actions together. To ensure sustainability, the network should not be donors driven but should be able to raise funds through quality projects.

The following suggestions were made concerning the strategy to be adopted:

- Focus on research, training and communication
- Define needs, targets and goals
- Link science and technology and fight against poverty. Women usually associated with human misery, it is important to include science in women's issues
- Popularize science in rural areas to strengthen women's capacities in water management
- Training of trainers, train specialists in women and water management
- Benefit from existing competencies and experiences of vulgarization. Example: "extensionists" in Tunisia
- Lack of women who are trained in water management with scientific and technical tools
- Work with science teachers at the high school levels
- Use of technologies in rural schools, install labs with basic equipment
- Traditional ways of doing things is also technology, what women are doing in their villages is valuable
- Involve partners from universities, NGO's, private sector and international organizations
- Link experiences in Asia and Africa
- Need for research on how to build programs to train trainers and how to develop better tools for training with the goal of translating ideals into actions. The keywords are: water, women rural areas, science and technology
- Involve trainers that belong to institutions that do not necessarily work in water: nurses, school teachers, community leaders ...
- Get support for the initiatives of the participants in their respective countries, involve political actors
- Integrate the designed trainings in the institutional educational system.



**WORKSHOP RECOMMENDATIONS  
AND FOLLOW-UP ACTIVITIES**

## **WORKSHOP RECOMMENDATIONS AND FOLLOW-UP ACTIVITIES**

The needs for strengthening women's capacities in the water sectors are extensive in the MENA region. The participants identified important missing links at different levels of decision-making: at the level of research, education and training, from government and non-government organizations to universities; at the level of policy, from NGO's to government policy-makers; and at the awareness level, from technicians and engineers to the end-users in rural and sub-urban regions. Hence, the areas in which capacity building is needed comprise technical, managerial, and awareness-related issues. The participants identified some tools to respond to these needs which included: (1) the creation of a taskforce for the exchange of experiences among the participant countries; (2) professional training to water management personnel in public, private and local institutions; (3) the use of media advocacy to reach out to policy makers; and (4) improvement of information and awareness campaigns.

The participants agreed to name their taskforce: The MENA Region Taskforce for Women in Water. The first task of this group is to develop a project proposal with the objective of strengthening women's capacity in integrated water management via science and technology. This project will be coordinated by the UNESCO Chair "Water, Women and Decision Power" (Morocco) and will be presented for discussion with other Chairs (Pakistan and Togo) in the UNESCO meeting in Cannes in June 2007. (Guidelines for the common research project are given in Annex 2)

The second task is to organize a series of workshops devoted to the training of trainers for strengthening women's capacities in integrated water management in MENA region. The first workshop is suggested to be organized in Tunisia and the proposed date is October 2007. The workshop would bring together three trainers from each of the participant countries (Algeria, Tunisia, Egypt, Jordan, Yemen, Lebanon and Morocco) with the collaboration of the partner institutions: UNESCO, INWENT, World Bank, FAO, UNDP, and CAWTAR. The location of the future workshops will rotate among the participant countries.

The program for training of trainers should be designed and implemented in collaboration with an institution that can deliver a certificate for the trainers such as InWEnt. Recommendation was also made to approach decision-makers at country levels to incorporate this training of trainers program in institutional educational systems in order to insure sustainability.

Among the suggested follow-up activities is the implementation of a discussion group on "Leadership and Change of Water Sector Organizations in the MENA Region" in collaboration with the World Bank Institute.

It was also agreed to work on the establishment of databases with country profiles on women's contributions in water management (Ex: professional women working in water sector: public, private sectors, NGOs...) in collaboration with CAWTAR and FAO.

All participants recognized the importance of reach out to decision-makers to translate the research results related to strengthening women's capacities in water management into policies and regulations.

The work and activities of the MENA Region Taskforce for Women in Water will be promoted via websites (UNESCO, FAO, InWEnt, CAWTAR, Universities, etc.) and through participations in conferences and in water associations.

Decision was made to communicate a message to the Arab Water Council in order to include the ongoing activities in the region on "water and women" among the priorities of the future Arab Water Institute

**ANNEX I**  
**ABSTRACTS AND PAPERS**

## **WOMEN IN WATER MANAGEMENT: MEANS AND NOT END SPECIFIC CHALLENGES LINKED TO ARAB COUNTRIES**

*Dr. Asma EL KASMI*

*UNESCO Chair “Water, Women and Decision Power”, MOROCCO*

One of the great human development challenges of the 21<sup>st</sup> century resides in overcoming the global water crisis. The generalization of access to clean water and adequate sanitation is strongly hindered by poverty, unequal power relationships and gender inequalities.

In order to achieve the goals and targets related to water and sanitation, it is mandatory that the generally recognized importance of involving both women and men at all levels of decision and implementation in water management be translated into concrete actions that ensure the effective participation of women in water-related developments efforts.

Beyond the simple desirability of balanced roles between men and women, there is a need to define what women can contribute to the efficient management of water, how it can be put into practice and accordingly design appropriate capacity building measures.

Strategies for strengthening women’s capacities in the field of water as means for improved management of water resources have many common ground rules worldwide but yet, focusing on the Arab Region introduces some specific challenges.

Out of the 1.1 billion people with no access to improved water, 37.7 million are from Arab States and from the 2.6 billion people with no access to improved sanitation, 80.1 million live in the Arab Region. There are delays in the Region for reaching the Millennium Development Goals for water (until year 2042) and for sanitation (until year 2019).

In the Region, rising water scarcity is a fact. The average annual share per inhabitant of renewable water resources is alarmingly decreasing. While it exceeded 4,000 m<sup>3</sup>/cap/year in 1950, it dropped to 1,050 m<sup>3</sup>/cap/year in 2003 and it is projected to be just over 500 m<sup>3</sup>/cap/year by 2025. Population growth is also an issue, the global population of the Region amounts to 300 million and is rising at a rate of 3% annually.

If one looks at human development, most of Arab countries are classified with medium to low Human Development Index (HDI) which takes into account different dimensions including life expectancy; adult literacy, enrolment at the primary, secondary and tertiary level as well as purchasing power, parity and income.

Despite these multiple challenges rapid progress is possible and interesting lessons can be learned from water and sanitation success stories in some of the Arab Countries.

The potential contributions of women in development are considerable and when it comes to water sectors women are key actors for the efficiency, sustainability and cost-effectiveness of projects.

Examples can be given for their different roles, levels of intervention and responsibilities in water management:

- Women at the household level as primarily responsible for fetching and using water, educating children in hygiene matters and understanding the impact of poor sanitation on health.
- Women at the community level as highlighted by the increased focus on the governance of water supplies and particularly on participatory community-based approaches for their management.
- Professional women in water organisations who contribute at the technical, managerial and decision-making levels. These include government institutions, civil society, private sector and international organisations.

Therefore, strategies for strengthening women's capacities in the field of water need to target each type of stakeholder through appropriate mechanisms.

## WOMEN IN WATER MANAGEMENT: CASE OF YEMEN

*Eng. Arwa Humadi*

*Local Water and Sanitation Corporation –Aden (LWSCA)*

Yemen is one of the least developed countries in the World. In Yemen, 47% of population lives under poverty line and experience poverty in a different way across class, race, age, disability, and gender. The situation of the Yemeni women is shaped by social, traditional and cultural factors which limit and restrict women's participation in social, economic and political development.

The rate of women participation in economic activity continued to decrease, which did not exceed 22.7% in 2000 as compared to 69.2% for males, despite the increase of this rate from 17.9% in 1995, due to the increase in the number of graduates from the educational system. and the increasing dependence of women participating in production and work in order to face up poverty.

Yemen is suffering from a pressing water crisis, the crisis recognized in the mid-90's, due to the overuse of groundwater resources for the agricultural sector. Annual withdrawals from groundwater resources are now exceeding renewable resources by up to 36% and in some other large Basin like Sana'a are exceeding 400 %.

Therefore, Yemeni Women are the first affected, directly or indirectly, by water depletion and the water crisis in Yemen. Yemeni women have to guarantee the fetching water for domestic purposes besides the other household tasks. They have also to compete with increasing roles either in traditional dry farming or in more recent irrigated agriculture. Young girls have less access to education because of taking on the responsibility of fetching drinking water and going out several times a day to fetch water for the whole family; often walking and carrying heavy containers on their heads or riding donkeys, they spend several hours each day going long distances on uneven landscapes between houses and their water sources. Women are underrepresented in decision-making positions, and have less access to credit, the labor market, and they work as unpaid labor in rural areas in family farms.

Water related tasks have become very tough work, consuming much time of the day, causing girls to miss time from school and affecting their health, as water containers are often very heavy. There is a very strong connection between domestic water, health problems and education. Many rainwater collection structures have deteriorated and women have to look for new resources.

***Yemeni women are still the first victim of water crisis and agricultural mutations, said a study titled "A brief overview of water and gender situation in Yemen." by Frédéric Pelat.***

Agriculture remains an important sector with up to 80 % of Yemen population still living in rural areas and nearly 60 % involved in family-based and traditional farming production, where women have an essential vital role.

" In 2001, the percentage of households headed by women in rural areas was 12.2 percent, but it was 10.4 percent in urban areas", according to the "Women and men in Yemen, Statistical

portrait” painted by the Ministry of Planning and International Cooperation, Central Statistical Organization (CSO), with the support of the Dutch cooperation and ESCWA.

Women have become more involved in irrigation operation and in water management due to men migrating to cities or Gulf countries to find new sources of income,”

Women are organizing water allocation and distribution for the various needs of the house and the family every day. They evaluate quantity, quality and prioritize water for drinking. Then they keep water for people’s hygiene. They will prioritize remaining quantities for washing the food, cleaning the dishes, cleaning the house, and might keep an amount of water for some animals. They will finally reuse remaining waters to water some plants mainly grown in pots or in very small plots beside the house, vegetables or flowers, according to their needs and preferences.

In the urban regions, the poorest women have the same preoccupations as any other women in rural areas regarding water: fetching the precious and bad quality resource from source in the city – mostly wells. Others will benefit from the municipality water projects which periodically supply houses or buildings with water that has to be stored by all means not to be lost. Some families have one or several tanks automatically storing water. Poorer women, as it is the case in Sana’a Old City, have the responsibility to use containers to collect and store the running water when the resource is flowing. These women have to be available and act very quickly and efficiently during these moments.

Women are often better at managing water resources and should therefore play a bigger role in policy-making to ensure access to safe drinking water and sanitation services and women also can transfer and exchange their knowledge and experience with others either in urban or rural.



# THE ROLE OF WOMEN IN EGYPT'S WATER MANAGEMENT

*Rasha M.S. El-Kholy*

*Assistant Manager of NAWQAM Project, National Water Research Center, Egypt*

## **1. Introduction**

Empowering the role of women in water management is about enhancing the participation of women water users in the identification and analysis of the action plan as well as implementation, monitoring and evaluation in order to achieve integrated water management with the participation of all water users.

## **2. The need for IWRM**

The Integrated Water Resources Management (IWRM) is a systematic path for the purposes of optimizing the water use in development and the allocation of the water resources. To maximize the economic and social welfare without damaging the continuity of environmental systems with the need to recognize the central role of women in the provision, management and conservation water resources.

IWRM grants the opportunity to create a paradigm shift in the management of water resources. The global environmental crisis, growing poverty in urban and rural areas and the continuation of gender inequality increase the need for a governmental approach in the exploitation and management of water.

Applying the IWRM requires a certain level of harmony between the different institutions, policy and regulatory frameworks, as well as considerate actions taking into account the environmental welfare and cross-cutting analysis of the various factors that influence. Policies should focus on water management and not be limited to making it available with what follows:

- Governments and stakeholders must be the key actors in water management.
- Governments should hold responsibility for national water quality monitoring as well as organizing and following-up with service providers from the private sector.
- Capacity building of local communities ensuring that women and men equally benefit from capacity-building initiatives.
- Recognition of the central role of women and men in the provision, management and conservation of water.

The IWRM which is based on the assumption that each individual involved up to governments and international organizations must share information and decision-making to achieve the best results. Women play the main role in the management of natural resources, and on their shoulders lie the burden of protecting and sustaining these resources for future generations.

## **3. Assessment of the gender role in water management**

The assessment was carried out on two levels:

1. Institutional level (analysis for some sectors of the Ministry of Water Resources and Irrigation MWRI)

## 2. Field level (female and male farmers)

### ***Results at the institutional level:***

There is no discrimination

### ***Results at the field level:***

- 20 - 30% of workers in the agricultural activities are female farmers.
- 30% of the land holdings are managed by female farmers.
- 10% of the landowners are women.
- 40% of the female farmers do most of field operations including irrigation.

MWRI is one of the pioneers in promoting the work of women in suitable jobs whether technical or administrative. It is clear that in the era of President Hosni Mubarak the situation of women has developed occupying many of the administrative and managerial positions. It should be noted that the first female engineer has been recruited by MWRI in 1965 and numbers had increased since then to 340 in 1995, or approximately 15% of the total number of engineers which reached 25 % in 2005.

## **4. Achievements of MWRI in the gender dimension**

### ***First: Advisory Panel for Egyptian/Dutch Projects***

- Preparation of the film "She cultivates, she irrigates," which presents the clear role of women in water management in the field and irrigation.
- Advisory analytical studies on the role of women in water management at the field and the administrative levels in MWRI upon which recommendations on how to enhance the role for either men or women were given.
- Holding workshops for leaders and decision-makers in MWRI to raise awareness on the concepts of gender issues in irrigation, drainage and water management.

### ***Second: National Water Research Center***

- Ensuring the implementation of activities related to gender, according to the work plan.
- Establishing a database that is inclusive of all personnel data as well as studies, researches and information available on gender in relationship with water.
- Developing and implementing a communication strategy.
- Producing and disseminating gender bulletins and flyers.
- Preparing a policy draft for the integration and empowerment of women in all activities, responsibilities and decision-making to ensure equality in distribution of burdens and benefits between men and women.
- Preparing and implementing seminars and workshops related to gender.
- Producing of a book on women and water.
- Training women (employees from the ministry and the National Water Research Center)

### ***Third: Irrigation Development Sector***

The impact of development of irrigation projects' on the national objectives is shown through:

- Encountering the principle of privatization through water users associations.

- No centralization in planning and implementation.
- Participation of beneficiaries, men and women in the implementation of development programs.
- Activation of the role of women in agricultural practices and ownership, marketing operations and decision-making.

#### ***Fourth: Water Associations Project***

Main streaming and activating the role of women in water associations:

- As a belief of MWRI in the effective role played by water users, it has put its future policy on the basis of increasing the effective participation of farmers, especially the users of irrigation water in the administration of the proper use of irrigation water.
- The project has been the implementation in four pilot areas to represent Egypt, which are: Sharkia, Kafr El-Sheikh, Nubaria and Qena governorates so the existence of women members appeared necessary in the formation of the representative committees and water boards where they are elected from residential and agricultural units.

#### ***Fifth: Water Management Project in Fayoum***

Water management in Fayoum improved the efficiency of irrigation management and drainage systems, which had an effect on raising the standard of living of farmers (men and women) through raising the income level and improving the environmental situation in the rural areas. To achieve these goals the project implemented a series of activities related to the management of water resources through the following main folds:

- Farmer participation in the management of irrigation and drainage systems (canal level).
- Farmer participation in the maintenance of waterways using sophisticated methods friendly to the environment.
- Farmer participation in setting priorities (of replacement and renovation of irrigation and drainage systems).
- The development and human capacity development with a focus on training farmers.
- The studies done on women's participation in water resources using some a worldwide experience in this area had ended up with a main recommendation which is the need to focus on raising women's awareness to importance of water and its protection.

#### ***Sixth: Water Press and Communication***

- MWRI plays an important role in raising the awareness of women's role in preserving the national wealth through national media campaigns carried out by the Unit.
- The Water Press and Communication Unit together with the Agricultural Policy Reform project, USAID and the Water Policy Reform program prepared a book in 1998 including several studies on samples from Egypt's regions.
- The Gender Unit was established within the organizational structure according to the ministerial decree No. 465 of 2001 aiming to clarify and disseminate the concept of the gender dimension in all the activities of the ministry to optimize the use of men and women in water resources management.

#### ***Seventh: Publications and reports***

- Women in Development, RNDPII.
- Integrated Soil and Water Improvement Project, ISAWIP, Women in Development.
- Workshop on Operationalizing Gender in Water Policies and Projects APP.
- Study on the Role of Women in Irrigation in the Pilot Area of Abu Sir.
- Review of Gender Component, Fayoum Water Management Project.

## 5. Future Vision

### On the local level:

- Deepening the gender dimension in water management;
- Re-building of women's committees that were not successful enough;
- Encouraging women representatives in setting the priorities of the water quantity and quality agenda with the boards at the local level;
- Participation of the women representatives of the residential areas in the awareness campaigns for their communities;
- Awareness campaigns must be need driven and upon a Rights Based Approach RBA;
- Building the capacity of women/men working in relevance with gender issues TOT;
- Men representatives should be involved in all campaigns/workshops/meetings, etc;
- Performance indicators on the field and institutional levels must be gender sensitive.

### On the regional level:

- Formation of a regional association for Arab women to exchange experience through a network for solving gender problems at different levels and to raise fund for collective workshops to discuss merging women's views and findings to influence the polices of the Arab countries positively;
- Creating the "Gender Geographic Profile" (women status, problems faced and services/facilities given) from local to the regional level. Samples representing each region (of countries with similar conditions) as shown for the four regions in the below figure, should be analyzed to assist the decision makers to plan upon.



## WOMEN IN WATER MANAGEMENT: CASE OF LEBANON

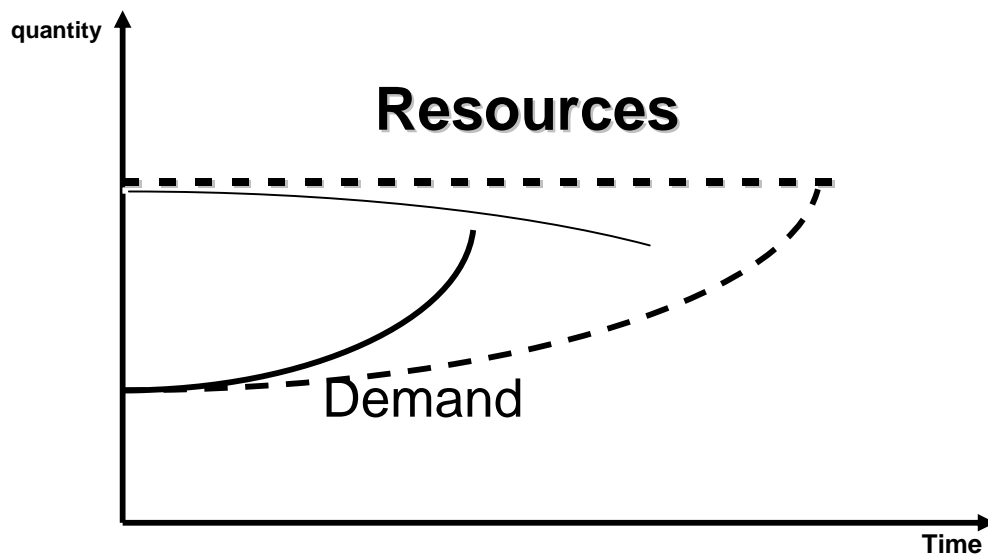
*Eng. Mona Fakh*

*Head of Department of Hydraulic Structures,  
General Directorate of Hydraulic and Electric Resources,  
Ministry of Energy and Water*

### **Introduction:**

With increasing demand for water for domestic, industrial and above all agricultural uses, water in Lebanon has become an issue of towering importance. Since Lebanon's share of fresh water is very limited, and since its dry season extends for over seven months, lack of water has been a key factor in limiting the country's development. Faced with this challenge, the Government of Lebanon is keen to take measures to enhance the sustainability of water resources in the country, including irrigation, which accounts for about 70% of the annual water use.

### **I. Water Resources and Water Demand:**



### **Water Resources in Lebanon**

Lebanese water Resources in Lebanon are renewable and rely principally on precipitations: Rains and Snow

<b>Description</b>	<b>Quantity brought in MMC</b>	<b>Losses Brought out in MMC</b>
Precipitations Annual Average (AA)	8,600	
Losses by evapotranspiration AA		4,500
Losses out of the country (Assy-Kebir-Hasbany-Wazzany)		670
Losses by submarine springs and underground water flowing to Houleh (Palestine) and Syria		850
Theoretical available water quantity	2580	

## **II. Women and their Importance in Water Management**

Several relationship between Women and Water was emphasized when the UN General Assembly reaffirmed resolution 25 adopted by the 1980 World Conference of the UN Decade for Women, this resolution advocates full promotion of women in water supply, planning, implementation and technology. Besides, the Dublin and Earth Summit In 1992 in Rio De Janeiro, then The Hague, Koyoto and Mexico World Water Fora insisted on the fact that water is a finite resource essential to life, and should be managed holistically in all its uses. Development effects must be participatory in the sense that water should be managed at the lowest appropriate level. Much emphasis was put on the fact that women must play a central Role in Water Projects.

In Lebanon and in most of the MENA region, women are the collectors, users, managers of water in the household, as well as farmers in some areas, so women have intimate knowledge about water resources including quality, reliability of their own uses of, and needs for, improved water supply facilities, all these are key to the success of water resources conservation, development, management, policies and programs. Besides, Women often feel a strong need for improved water supply facilities for themselves and their family, they are known for organizing, lobbying and protesting in order to effect change in water management. Moreover, Women are the caretakers of children, the guardians of the family health, so they seek for best sanitary conditions and best reliability of water supply.

Women in the most of the cases are responsible for their household budget and will take care not to waste their money by wasting water. Women should be empowered to become more active in financial aspects of water supply projects, such as, fundraising, fee collecting, fund keeping, and supervision of local boards.

Women play a role in educating children to water awareness and economy. Women are also generally the maintainers of water facilities, they are generally aware of breakdowns and leakage when they occur and can carry preventive maintenance.

### **III. Women Role in Water management in Lebanon**

In Lebanese institutions in general, women occupy positions in parliament (6 women), and in the Council Of Ministers, there is 1 woman. In Water Domain, in the Ministry of Energy and Water, there is one woman engineers and Head of services. There are three women as Heads of Departments, they are responsible for managing projects of large scales such as dams and water supply networks, Wastewater Networks and Treatment plants. In the Ministry, ten out of forty Engineers are Women, and one woman as Head of Water quality monitoring section as well as ¾ agents.

In the Ministry of Environment, more than five Heads of Departments are Women. And in the Ministry of Agriculture, two women serve as Heads of Technical Services, five serve as Heads of Technical Departments, and three women serve as Heads of Administrative departments.

In Non-Government Organizations, women are the main active members especially in NGO's where water management, sanitation etc. are the major objective.

### **IV. Challenges and Problems:**

The main challenges women face is the male hegemony in Lebanese culture. Women receive lower salaries compared to men. There are some related socio-cultural constraints such as traditional gender roles that assign household activities and children's upbringing to women. Also the number of Specialists in Water Techniques is still limited.

### **V. Recommendations:**

It is important to give gender the importance it deserves by assuring and encouraging women's participation in planning, designing, implementation and management of water resources. It is also important to involve women in decision- making and action with respect to water management. It will help in optimizing social and economic development, and reducing competition and conflicts over water. Training programs targeting women are essential for improving their capacities in Water Management. It is worth mentioning here that the role of men is also important in making these recommendations possible. Men and Women are complementary to avoid any of them be marginalized. Finally, Government, non-governmental and donor organizations involved in water management should address gender issues in their water programs, through their policies, procedures and personnel. To conclude women have the knowledge, the skills, and the motivation to be great help in improving water services management (technical, administration and financial).

## THE ROLE OF WOMEN IN WATER MANAGEMENT: JORDAN CASE STUDY

*Nadia M. Juhari*  
*Sustainable Development Expert*

Women in Jordan constitute 48.54% of its total population. In 2004 the total population reached around 5.1 million and will double in 2025. The population is most heavily distributed towards the capital city region (Amman-Zarqa), where more than 55 percent of the total population lives. Moreover, the population is young, with 43.7 percent of the population under the age of 15 years. The percentage of illiteracy among women reached 13% and men 4.8% in 2005. Women constitute 20% of total labor force. Only 5% of The Ministry of Water and Irrigation employees are women working mainly as administrative and financial staff with quite limited role and involvement of professional women in water policy and management. Women are playing a vital role in water management at household level and in rural areas. However, their role in water management is underestimated.

Water scarcity in Jordan is a constant challenge for development process in Jordan especially in supplying the citizens with the most basic human need where women and children are the most vulnerable groups. Jordan is among ten poorest countries in water. The annual per capita water availability is less than 160 m<sup>3</sup>, which is far below the benchmark level of 1000 m<sup>3</sup>/year often used as an indicator of water scarcity. It is projected to fall to 90 m<sup>3</sup>/capita/year by 2025. The increasing water shortage in Jordan is of top national priority, as it is the foundational aspect of the country's progression in development, health, food security, and livelihood.

Most of Jordan water resources are shared mainly with Saudi Arabia, Syria and Israel. Freshwater resources are already being fully utilized, the demand for freshwater far exceeds its renewable supply, with no more known resources within the country to develop. The options for augmenting water supply are limited; some additional rainwater can be harvested, sea water can be desalinated at high cost, and some brackish water can be pumped from sandstone aquifers.

There is high competition for water between the development sectors: municipal stemmed from population growth, growing industrial and tourism sectors. Agricultural sector alone uses more than 65% of the available freshwater and the treated wastewater. The government developed future strategies and action plans to reduce overexploitation of water resources. The National Water Master Plans shows that the gap between available resources and demand can be reduced by 2020, if demands are managed properly. That includes reducing allocations for agriculture, loss reduction, bringing down groundwater abstractions to safe yield levels and improving water sector management on an institutional and financial level

The government has also announced a large-scale water management project that will supply 100 MCM a year of additional water to Amman with fossil water from the Disi Basin which is a non renewable resource. Starting January 2007, the Zara Maen desalination project will supply Amman with 40 MCM and MCM to Dead Sea Tourism area. Al Wehada Dam will supply Jordan Valley area with 50 MCM. Other water resources development until the year 2010 are expected to contribute 1148 MCM from the following resources: wastewater for direct reuse in irrigation and industry; desalinated sea water Aqaba; desalinated brackish water; peace treaty;



renewable ground water and surface water ( including wastewater discharges into wadis contributing to reservoirs yield.

Water is still seen as the responsibility of the government as the communities have other priorities to work for like securing their families income. The Ministry of Water and Irrigation is responsible for Water sector planning and management in cooperation with Ministries of Agriculture, Industry and Trade, Tourism, more than 30 national and international NGOs, donors and others.

Women are responsible for water management at household level and farms. They are suffering especially in Amman from the water supply rotation, where water is supplied once a week. Considerable investments are underway to increase the water supply another 24 hours per week in Amman. This add additional burden on families as most of them purchase their additional needs from water tanks especially during summer times and bottled drinking water.

Water conservation efforts, therefore, became an important element of all efforts to address this challenge and improve water resource management. Women served as a great resource for encouraging water conservation at the home. Several programs have been developed to conserve water resources, increase efficiency, reducing water losses, training and institutional set up processes to achieve greater efficiency.

Water conservation and awareness are the main area were women mainly at household level and in rural areas received training implemented by different projects like the Water Efficiency and Public Education for Action (WEPIA) program, implemented in 2004 in collaboration with the Ministry of Water and Irrigation. WEPIA was implemented with the aim to increase public knowledge of water issues and create a cadre of professionals that understand the concepts of water conservation. Considerable number of women was trained on basic maintenance techniques in plumbing to repair their water leakages. Based on the success and need of these programs, the Vocational Training Corporation established a women's plumbing program as a formal course.

Several training programs targeted women as sales agents for simple, cheap, easily installed water saving devices (WSDs) which they market to friends, family, neighbors and anyone else they can reach at home. These women were trained to educate other women about the issues facing Jordan and its water scarcity, perform simple home water audits, and offer their audience a chance to reduce their bills and help conserve water. In a similar effort, a group of "waethat" was trained to further help with educating their parishioners about water conservation. WEPIA developed *the Imam's Guide to Water Conservation* to guide the "waethat" in achieving this goal. In the two years these programs have existed they have reached over 50,000 women with in-depth explanations, and sold more than 4000 water saving devices.

In several areas in Jordan, the grey water replaced the freshwater for irrigation purposes and contributed to generate income for several families. Women were trained and educated on grey water related issues, irrigation systems and others. In addition, the experience to use revolved fund to increase the rain water (water harvesting) storage capacity were implemented successfully in southern parts of Jordan.

Despite the success of these projects, however, there was no evaluation for the impact of these projects on women role in water management after completion of these projects, its

sustainability and impact on behavior changing, water consumptions patterns and quantity of saved amounts of water .The studies on role of women in water management are not available, information are scattered and/ or not well documented. The gap between women and technical staff in charge of implementing such projects is finds it difficult to listen to women; cultural traditions and customs can be vastly different from one region to the other that effect health and hygiene; and the need to target illiterate community members with appropriate tools, simplified information.

The studies on role of women in water management need to be well documented, further studies and researches are needed, establish a mechanism to expand the water conservation projects and increase the number of benefited women. The relationship between the Ministry of Water and Irrigation and other ministries and NGOs involved in water management need to be organized and have a holistic approach to be able to evaluate and take measures for the sustainability of different implemented programs. Technologies of water savings devices to be available in reasonable cost and easy to maintain.

## THE ROLE OF WOMEN IN WATER MANAGEMENT: ALGERIA CASE STUDY

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### Introduction:

Algeria is located in the North of Africa and of which the administrative and economic capital is Algiers; Bordered:

- In the North on 1200 km by the Mediterranean Sea.
- In the East by Tunisia and Libya.
- In the Southeast by Niger.
- In the Southwest by Mali, Western Sahara and Mauritania .
- On the West by Morocco.

Algeria is the second country of Africa by its surface area which is of about **2.4 millions of km<sup>2</sup>**, among which four fifth are occupied by Sahara.

In the North, the climate is of Mediterranean type. On the High plains and in the Saharian Atlas, it is of continental type semi dry to dry: the precipitation decrease (400 mm to 200 mm per year); in Sahara, they are lower than 130 mm a year.

The water resources in Algeria, lives the first constraint lived at first by the sector of agriculture as first user and then by the populations subjected to a draconian rationing consecutive to a persevering drought which prevents any consequent contribution at the level of the works of storage and also any refill of groundwater, in the pollution and in the mismanagement.

The potentialities in water are globally estimated at **19 billion m<sup>3</sup> / year** corresponding at present in approximately **600 m<sup>3</sup> / hab / year**; distributed as follows:

- **14 billions m<sup>3</sup> in Northern regions:**
  - 12 billions m<sup>3</sup> (surface water)
  - 02 billions m<sup>3</sup> (groundwater)
- **5.2 billions in the Saharian regions:**
  - 0.2 billions m<sup>3</sup> (surface water)
  - 05 billions m<sup>3</sup> (groundwater)

Therefore, Algeria is situated in the category of the poor countries in water resources towards the threshold of rarity fixed by the World Bank to 1000 m<sup>3</sup> / hab / the year.

The mobilization of water resources is an inescapable necessity to meet the needs not yet satisfied (delay to be filled) and ceaselessly croissants in water intended for the AEP, for the irrigation and for the industrial manners

This mobilization is made by the appeal to the various resources which are:

- Water resources subterranean, renewable in the North of the country and those almost fossil in Sahara.
- Superficial waters by means of the big works of mobilization and transfer, the small dams, the hills restraints, the ceds of diversion and dams inféro-stream,

- Not conventional waters such as the re-use of purified polluted waters, demineralization of brackish waters, desalination of the sea water, and possibly the big transfers of waters said about Albien.

### **Constraints of the mobilization and the management of water:**

- Bad space distribution of the resource, resulting in inadequacy resources- needs, requiring great transfers.
- Silting of the dams.
- Recrudescence of pollution phenomena.
- Important costs of the investments necessary to the mobilization and the transfer of these resources?
- Enormous losses due to out datedness of the networks, and the wasting.

### **Role of the woman in water management:**

The women play an important role in water resources management. It is almost always to them that falls the collection, the use and the management of the water being of use to the family as well as the responsibility of the irrigated and rainy cultures. Because of these roles, the women have widened knowledge in water resources, including their quality and their reliability, their limitations and the correct methods of storage, and it is on them finally that depends the big part of success of the policies and programs of irrigation and water development.

In the domestic sphere, everybody agrees to recognize the dominating role of the women in the water management. Dedicating a good part of their time and of their physical efforts to furnish the family with water.

The women play a key role in sensibilisation of children about questions related to water. The attention which they grant is fundamental, because it is them who take in charge of the home cleanings and the children health; the first ones were concerned by the diseases related to the water.

The fact of associating the women with development policies is indispensable to assure a more effective development, a use and a management of water resources. It is evident for a long time as for supply in water for domestic custom. But this necessity is imperative more and more, as regards the management of all the ponds and the particular sectors. However, most of the decision makers have no knowledge, the skills and the necessary means to integrate into their programs an analysis operating a differentiation by sex.

### **«Equality between the sexes and promotion of the women»**

Both the men and women should be associated on an equal footing with the management of the durable use of water resources and with the sharing of profits. It is necessary to strengthen the role of the women in domains relative to the water and to assure a wider participation of these.

So that, the woman can play her role in the water resources management, we have to see again all the principles of the new policies of the water and the tools which were set up joining

perfectly the big outlines of the management of the water such as they are recommended for more than fifteen years by all the international institutions, namely:

- Promotion of the integrated management of water resources:
- Development of information systems.
- Information of the public in particular the woman.
- Transfer of the knowledge between the professionals of the water and between the countries.
- Intensification of the associative movement. We attend more and more the birth of associations chaired by men who, regrettably, suffer problems of organizational order. For that purpose, the strategies of intensification of the organizational capacities of the women will be introduced to allow these associations to be viable and to reach their objectives.
- The improvement of the performances of establishments loaded with the water management.

# WOMEN IN WATER MANAGEMENT AND WATER-RELATED ISSUES IN THE ATLAS MOUNTAINS IN MOROCCO

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## **Abstract**

Water, in traditional Atlas Mountain societies, is understandably respected as a vital resource requiring careful management. Water-related issues are accordingly strictly genderised and regulated: irrigation of terraced fields is the man's precinct; fetching water a daily chore reserved for women. Any attempt to tamper with the existing order of things should be contemplated with great circumspection. In this day and age, however, in some Atlas villages, manpower shortages due to emigration, coupled with recurring drought, has brought matters to a head. Any initiative that can contribute to raising Atlas women out of their daily, water-connected drudgery, would no doubt enable them to play a more useful social role. Implementation of various up- and down-stream strategies (de-polluting springs, construction of water-retaining facilities, allocation of micro-credits, education targeting water issues, etc.), are bound to pay off in the medium term, provided adequate follow-through and back-up are guaranteed.

## **Introduction**

In the Atlas Mountains of Morocco, age-old male-directed irrigation networks and female-dependent safe drinking-water management have survived down to the present day. The following paper, based on field-work conducted by the author (1967-2007), will endeavour to demonstrate what it looks like on the ground; analyse the pros and cons; then formulate suggestions for a modest up-grade of the existing system, without throwing it totally out of gear, as that could prove counter-productive.

## **The *rubini* syndrome**

In traditional Atlas society women usually make thrifty use of water, since they go and fetch it themselves and know that every drop counts. However, at the risk of becoming irrelevant, women's attempts to economize water must be seen as fitting into an overall context. Even if Labha makes sure she uses only a couple of litres of water to do the washing-up, the whole exercise becomes pointless if local big-wig Si Hammou is having his car washed at the petrol station in a nearby village, entailing an expenditure of 20-30 litres (?).

On the other hand, once provided with access to a tap or fountain (*borne-fontaine* in Fr.), notions of thrift go out of the window. Water is seen as being literally "on tap", like a spring bubbling up out of the ground, precluding any need to turn it off. Blithely ignoring the existence of the aquifer, once she has access to *rubini* (< *robinet*, Fr.), the woman at the fountain, tends to make light of phenomena such as drought-imposed water restrictions. So, let's not put the cart

before the horse, shall we? Before concocting strategies – let us first teach women not to leave the tap open any longer than necessary. This, of course, is where education proves useful.

Meanwhile, let us see how traditional water distribution functions in the Atlas regions and where problems are likely to arise.

### **Traditional water management in the Atlas Mountains**

While fetching water from the spring remains a woman's duty, in Atlas locations where extensive irrigation complexes are sited, especially in Tashelhit-speaking areas, (Targa, Tassawt valley; Imlil n-Ayt Mizane; Agersilli, Upper Seksawa, etc.) such systems have traditionally been man's exclusive precinct. Apart from specific cases where she had to water her small vegetable-patch, or kitchen-garden, the present writer cannot recall during his Atlas travels, having ever seen a woman wielding a mattock (*agelzim*). To unleash the water-flow in an irrigation-ditch (*targa*, pl. *tirgiwin*), or side-channel, is a man's job. To accomplish this task, the husband will get up well before dawn and water his fields, (people will say, *isessew igran* = 'he is watering his fields'), in a daily act perceived as having almost sexual connotations. The actual time and duration will be determined according to his place in the water-queue, itself laid down by a traditional water-distribution official known as *amghar n-waman* ('sheikh of the waters').

In the present circumstances, it is difficult to contemplate a woman taking over the job. Unless she act by proxy, as it were, in single-parent situations where prolonged husband absence implies that she take over the man's role. A situation that could conceivably prevail, in extreme cases, in villages badly hit by emigration; i.e. the Anti-Atlas where, currently, one finds whole villages peopled by women, girls, a few boys, elders and cripples; or, to a lesser extent in the Dadès valley, whence most of the able-bodied men will have been lured to Europe by Mora (an apocryphal figure, oft-mentioned in local song), or some such-like recruiting agent.

The suggestion is not that the woman is too weak; merely that, so long as traditional social hang-ups prevail, it is difficult to see her taking over control of water management. A major decision such as this would entail a social upheaval of some magnitude. Bringing about what would be tantamount to a revolution surely implies outside intervention. Also bearing in mind that an issue of this importance, similar for instance to that of birth control, could well be anathema to the husband in a male-dominated society. For which reason one should tread warily in any approach to the problem.

Ultimately, it will all depend on the extent to which men are prepared to devolve power to women, which in itself depends on the on-going husband-wife relationship. This relationship may run the full gamut from friendly, trustworthy delegation of authority to suspicious, brow-beating intimidation. An example of the former: a house-wife in Ayt Bougemmaz (Central High Atlas, summer 1987) with the store-room key hanging from a piece of string around her neck – a pleasant, practical solution which met with full approval from her spouse. An instance of the latter: the pathetic case of a grocer's wife in the Zat valley (Marrakech High Atlas, spring 2000)) not daring to open up her store and serve passing travelers, because, to quote her exact

words: “If my husband finds out that I’ve done this, he will beat me up on his return from market!”

### **Relationship towards water**

- Tikajwin n-Ayt Hnini (Tounfit area, Melwiya sources) >December 1992. Watering parties by women and girls running regular shuttle service between village and so-called *taddart n-waman* (lit. ‘house-of-water’), a well-equipped, highly respected and protected spring some 400 yards distant. Reflects the respect granted to notional *ixf n-waman*, or *ras alma*. Quite common to see one teenage girl filling half a dozen or so small plastic drums – that act as capacity multipliers – then humping her load homewards.
- This practice reflects respect usually accorded elsewhere to the local spring(s):- similar case of Selloult pastures, on borders of Ayt Sokhman and Ayt Hadiddou, with a resident *amghar n-igudlan* (‘Sheikh of the pastures’) whose duty it is to monitor access to pastures and surrounding springs by visiting herdsmen.
- Further cases of women carefully husbanding use of scarce water, both in the Ayt Sokhman region:- a) above 2.200m on limestone pavement of Kousser (*jbel qusr*), where Taghbalout n-Tirifit (‘Spring of the little thirst’) provides barely enough water to meet everyday needs, obliging women to make long trips into Aqqa n-Tiflut if they wish fully to supply their requirements; b) well of Tanout n-Bou Wourgh, the only water-hole in a day’s march between Ayt Boulman (near Tigleft) and Tasraft n-Ayt ‘Abdi.
- Ighboula n-Oussacha, gushing spring-cluster of Vaucluse type, sited half a mile upstream from Assaka village, (Tounfit region, Khenifra province). This feeds an irrigation complex with intricate, locally-managed set of rules regarding water-distribution, depending on two main irrigation channels, the right-bank channel, for instance, being shut off in summer for longer periods in the event of water scarcity. Women authorized to have exclusive access to spring on certain fixed date in July (phenomenon observed in 1968) for the purpose of performing fertility rites > stripping down to the waist and washing in spring > eating flesh of cockerel that has been sacrificed specially for the occasion.
- Management of guest-houses in Tassawt valley (Central High Atlas, 2000-2005) has revealed tourism-related abuse of water resources: wife and daughter(s) of guest-house owner, having to fetch large quantities of water from river – entailing considerable physical exertion – so that pampered trekkers may take their evening shower, irrespective of water shortage or abundance.

### **Various remedial strategies that require implementing**

1/ *Considerable effort is indeed required upstream, especially with regard to springs.* So long as springs are polluted by dead, poisoned animals and plastic, as at Oukaimedden, (spring 1998). Instances of rubbish tips around Zaouit-ech-Cheikh sited too close to springs (March



2007); or of permanent, drinking-water spring at Lake Zerruqa (Ifrane region, Middle Atlas), which is regularly visited by women from neighbouring hamlets, but sited dangerously close to waters clogged with assorted debris (cans, bottles, etc.) dumped there by Sunday trippers and picnickers. Obviously, so long as this kind of situation prevails, it is a waste of time discussing the issue any further.

2/ *Collecting tussocks/faggots for fuel can have negative knock-on effects.* For example, systematic collection by Ayt Hadiddou women of upper Asif Melloul, of small prickly tussock plants, *ulfud*, or *tifsi*, that grow on surrounding hills, has led, over the years, to massive, often irreversible, topsoil erosion that will have negative repercussions on the water-table in terms of moisture retention and seepage. A similar situation obtains in many valleys of the High Atlas, the most wisely-used implement being a short hand-axe, also suitable for lopping branches off trees (*tagzimt*, or *tashaqqurt*, in Tamazight). Hence, these ladies should be prevailed upon to collect fewer faggots and/or prickly plants in places where this speeds up erosion.

3/ During periods of drought, imposing and respecting application of restrictions on water use (e.g. car-wash).

4/ Together with a rationalized form of access to pure drinking water, building a substantial extra number of dams (*uggug*) for water retention, so as to guarantee irrigation during critically dry periods. This will become a major priority.

5/ Pending a medium-term perspective that will provide more comprehensive schooling for girls, undertake distribution of water-related educational leaflets.

6/ Broad-based introduction of *Tifawin a Tamazight* class text-book (especially vol. 1, pp. 88-89, which lay emphasis on water pollution) into school programmes in Amazigh-speaking areas.

## **Conclusion**

Given the present climate change, to which Morocco has paid toll in recent years, it is a truism to state that water is destined to become an increasingly precious resource. Traditional societies such as those of the Atlas region adversely affected by drought, manpower shortage and health-related problems, must implement meaningful water governance strategies. Can this not be encapsulated within an exclusive women's water management scheme and made to work, as dictated by local circumstances? Or under the aegis of a partnership – the terms of which (including allocation of micro-credits) – need to be worked out carefully with whichever men-folk remain in the village?

Either way, things should ultimately work out smoothly, given the necessary horizontal and vertical exchange of ideas and information that the situation requires. It really all hinges on micro-credits for women usually being a better investment than for men. The latter are more likely to squander (no offence intended!), whereas women generally know how to make a few pennies go a long way; are often gifted with shrewder minds; and, faced with dire necessity,

know when to take drastic initiatives, especially in connection with income-generating activities.

A word of warning, however, is called for. The “gender approach” herewith involved is one of those concepts like “sustainable development”, or “green tourism”, that should not be concocted solely by office-bound boffins and then applied will-nilly to whichever situation they are supposed to target. Otherwise, once implemented in the field, they may be visualized as inadequate and/or irrelevant, simply because the survey(s) they were based on failed to take into account certain important local criteria, especially properly functioning networks already in place. This could also apply (which God forbid!) to “women in water management”, should well-meaning, apparently sound strategies devised in solemn conclave be based on inaccurate field-work; or if there is insufficient follow-up to recommendations spelled out at end of conference – as sometimes happens.

## **WOMEN IN WATER MANAGEMENT: CASE OF MOROCCO**

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Morocco is a semi-arid country with limited water resources. The average annual share per inhabitant of renewable water resources is decreasing and is expected to be just over 500m<sup>3</sup>/cap/year by 2025. The harnessed water resources amount to 13Billion m<sup>3</sup> annually from which 10Billion are surface water and 3Billion are underground water. Agriculture uses 90% of the harnessed water whereas 10% are used for domestic and industrial water supply.

The total annual volume of potable water produced is 1Billion m<sup>3</sup> and the population's access ratio to potable water is 100% in urban areas and 77% in rural areas (ratio at the end of 2006). Concerning sanitation, considerable efforts are still needed: in urban areas the ratio of connection to the network is around 70% and no more than 7% of the total volume of wastewater is treated. In rural areas, sanitation is mainly autonomous.

Among the main actors of the water sector in Morocco there is the National Office for Potable Water (ONEP), a public organization in charge of the planning of potable water at the national level. ONEP is also involved in the production (80% of the total volume produced) and distribution (over 1Million subscribers) as well as sanitation.

ONEP's strategy is based on 3 main axes:

- To secure and strengthen urban water supply
- To generalize access to drinking water in rural areas following the principle of “Right to Water for all”. The objective being to reach a population's access ratio of 90% by the end of 2007
- To actively participate in liquid sanitation, a major component in the approach of integrated water resource management. The objective is to cover 400 centers in 2015 (90 in 2007)

ONEP is also involved in capacity building mainly through its International Water Training Center.

The improvement of the services of potable water and sanitation has important social impacts that directly affect women. Potable water availability positively impacts rural women's living conditions and facilitates women's engagement in local socio-economic development projects. Another positive consequence is the enhancement of children's schooling specifically young girls.

Currently in Morocco there are several efforts directed towards women's empowerment. An example is the implementation of the New Family Code in 2004. However, limitations still exist that include:

- High levels of illiteracy (49,3% at the national level and 75% in rural areas)
- Disparities between urban and rural areas

- Social exclusion and discrimination tangible at 2 levels
  1. Access to jobs: women are more affected by unemployment 25.8% against 17.4% for men (statistics in urban areas in 2003)
  2. Socio professional status: women are found in non-formal sectors and as seasonal workers.

Concerning the role of women in water management, the most recognized contributions are far too often limited to the role of women at the domestic and community levels. The role of women at the professional level in water management deserves more attention and therefore capacity building measures should also target this group of stakeholders. A research study carried for InWEnt in 2001 and published by the International Water Resources Association in 2003 has shed some light on the involvement of professional women in water-related institutions in Morocco. The study showed that the ratio of senior female personnel does not exceed 20% in most of the institutions.

The projects currently undertaken by the UNESCO Chair “Water, Women and Decision Power” in Morocco have the objective of strengthening women’s capacities in water sectors so they can acquire the necessary skills to contribute in decision-making at all levels. Activities include research projects, training, awareness and communication campaigns as well as integrated development of rural villages with special emphasis on women’s contribution.

## **DETERMINATION OF CROP WATER REQUIREMENTS IN THE SEMI ARID AREA OF THE TENSIFT AL HAOUZ: MEASUREMENTS AND MODELLING**

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In arid and semi-arid regions, water availability is a serious limitation for crop production due to poor and irregular rainfall, high evaporative demand and inadequate management. Morocco which is classified as part of these regions suffers from limited water supply and water resources.

In Morocco, agriculture uses up to 80% of the total available water where cereals and orchards are the dominating crops types. The traditional irrigation (Flood irrigation) is widely practiced by the majority of the farmers. Part of the water supplied to the crop by rainfall and irrigation is effectively consumed by the crop, whereas the remaining is stored in the soil in the root zone, percolate to deeper soil, or lost through soil evaporation. Therefore, to manage this scarce resource under those conditions, the farmer should know at least two aspects: when do they have to irrigate and how much water do they have to apply on the ground? Accurate crop evapotranspiration (ET) estimate is crucial in this context. Experimental (e.g. Eddy covariance, scintillation method, SAP flow), and modelling (FAO-56 model, SVAT, STICS...) methods are used to determine this parameter. The results obtained revealed that the flooding irrigation was not appropriate. A large quantity (about 30% of the amount of irrigation) is lost due to inadequate management. The choice of efficient irrigation like drip is advisable. The use of models, based on weather forecast and observation of the physical conditions of plant and/or soil, improves irrigation management and estimates the crop yields.

## **PROMOTION OF WOMEN ROLE IN WATER MANAGEMENT IN THE MAGHREB.**

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Water is a common good that all the people and institutions must protect. Although the water management decisions (on national and international scales) are generally made without women consultation, they engage everyday life of million of women.

Indeed, mothers/women are the first concerned by a bad water management, including conflicts about a no-equitable water partition. The Maghreb area has an important rural population and in these areas, women are responsible of water supervision from transport to its use. Moreover, they are affected by all water problems, such as shortage and contamination. Women, besides spending daily 4 hours and walk up to 8 kilometres to bring water, have to support their children affected by dangerous and lethal diseases induced from bad water quality.

Consequently, any national policy regarding water, any development project, any decision taken on the scale of the rural agglomeration is related directly to woman conditions.

In order to defend women needs and interests, to promote and reinforce their capacities and to involve them in the decision-makings relating to water, the UNESCO Office in Rabat is producing video clips, pamphlets, and organizing workshops to sensitize rural population.

This idea emerged after developing a video clip project on the Maghrebian scientific women. This video clip aims to reinforce the human and institutional capacities in various scientific disciplines and to reduce the gender disparities in the Maghreb region. The UNESCO Office wanted to encourage young girls, who are about to reach higher education, to choose scientific careers, and to sensitize the families and the teachers to encourage these girls to pick scientific professions.

For instance, in water fields, this kind of project would allow women to better understand the water management issues and involve them in the decision-makings.

In general, very few women follow higher education and even less in science and technology area. Often women are warned, by their entourage, to avoid carrying out long and extensive education degree in sciences. Indeed, science is a very technical field, where progress and updates of knowledge are happening very quickly. So, after a work interruption of few months, it is expected that the scientific can be completely surpassed. Thus, some people think that women could not follow the conventional path of a scientific career, because it comes a time when they want to have children. Then, they must often start again from zero after each pregnancy, because meanwhile someone else takes their place.

The women should not turn back on sciences because scientific knowledge is useful every day. Indeed, nowadays we are living in a very technological society: computer, cellular, pharmaceutical products, food complements of all kinds and water management. The scientific culture becomes important to make good choices and to take part in the society movements. It is obvious that the society does not yet accept perfectly the presence of the women in sciences, but more and more of scientific women have learned how to take responsibilities and to make their place in this society. The women can make career in sciences and become directors or

presidents of companies. All the women do not have the capacities to conduct a scientific career, but it is necessary to help and encourage those who want and have the intellectuals to make that choice.

For these reasons, the UNESCO office is developing a video clip resuming diverse Maghrebian scientific women/mothers life, selected as model in order to encourage young girls to go through a scientific career.

Once produced, the video clip will be distributed at national and international televisions and to the primary and secondary schools in order to reach a maximum of target people.

The UNESCO Office in Rabat is expecting through this project to increase scientific young women participation in education and research in sciences activities. The UNESCO office plans to finish this project before December 2007.

The UNESCO Office in Rabat in cooperation with the UNESCO Chair “Water, women and Decision Power” of Al Akhawayn University is planning to use the same kind of information and communication technologies (ICT) to sensitize women, increase their participation in water management issues and involve them in the decision-makings. The UNESCO office plans to finish this project before December 2008.

**ANNEX II**

**GUIDELINES FOR THE COMMON RESEARCH  
PROPOSAL**

***STRENGTHENING WOMEN'S CAPACITY  
IN INTEGRATED WATER MANAGEMENT  
VIA SCIENCE AND TECHNOLOGY***



## **GENERAL GUIDELINES FOR THE COMMON RESEARCC PROJECT**

- Title: “Strengthening women's capacity in integrated water management via science and technology”
- Focus activity: Training of trainers
- Keywords: water management, women capacity; science and technology; rural areas; poverty reduction; training; research; environment protection; sanitation
- Partners: participants and their institutions, InWEnt, UNESCO, World Bank, FAO, UNDP, Arab Water Council
- Each participant will act as a focal point in his/her country/institution and will submit a proposal according to the guidelines bellow (also see the UNDP document)
- Effective and much focused proposals (three pages maximum)

The major elements in the proposals should include, but are not limited to, the following:

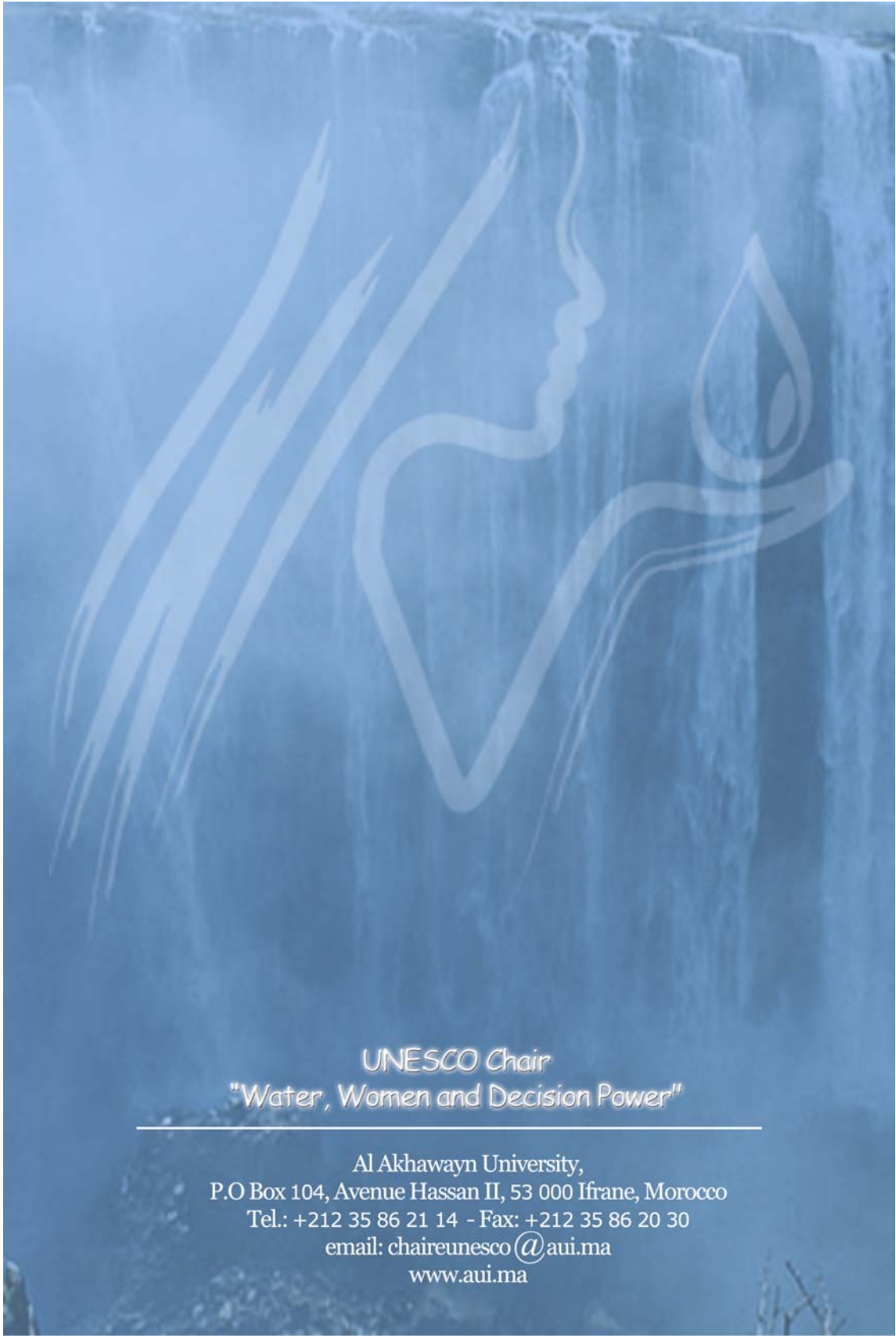
- Identification of priorities in integrated water management
- Clear objectives regarding the strengthening of women capacities
- Target groups: rural population; rural women, adults and teenagers, and men
- Profile of trainers: Type of organization; level in scientific education
- Local partners
- Budget
- Timeline
- Expected outcomes: number of trained trainers;

**ANNEX III**

**CONTACTS OF THE PARTICIPANTS**

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UNESCO Chair  
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