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# JORDAN PRESENTATION: BACKGROUND AND WORKPLAN

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## BACKGROUND

Jordan is an Arab Mediterranean country that is located to the east of the Mediterranean sea. It is bordered by Syria to the North, Iraq to the East, Saudi Arabia to the East and the South, and Palestine and Israel to the West. The Gulf of Aqaba on the Red sea is the only access for Jordan to the open waters. Jordan lies between latitudes 29° 11' and 33° 22' North and longitudes 34° 19' to 39° 18' East. The total land area of Jordan is about 88,778 square kilometers (km<sup>2</sup>) while the area of water bodies is approximately 482 km<sup>2</sup> that include the Jordanian part of the Dead Sea (DS) and the Gulf of Aqaba (Department of Statistics, 2004).

The topographic features of the country are variable with approximately 80% of the total area is steep mountainous or steppe arid land (Badia). Jordan can be divided into three distinct regions from West to East: the Jordan Rift Valley (JRV), the Plateau and the Semi-Desert or the Badia Region. The Jordan Rift Valley is part of the Great Rift Valley where it runs from lake Taberia in the North to the Gulf of Aqaba to the south. Officially the area bounded by elevations of less than 400 m below sea level and 300 m above sea level is called the JRV. JRV contains the Jordan Valley north of the Dead Sea, the Dead Sea area, the southern Ghors south of DS and Wadi Araba which runs from the upper point of the southern Ghors to the Gulf of Aqaba. The Jordan Valley and the southern Ghors are the major irrigated area of about 33,000 ha (Department of Statistics, 2004) with a potential of 43,000 ha.

The plateau is situated immediately to the east of the JRV where its elevation varies from 300 m to above 1200 m. The plateau comprises of a narrow strip running North to South and varying in width from 25 to 40 km. Rainfed agriculture is practiced on the arable lands of the plateau with average annual precipitation of more than 300 mm. Irrigated agriculture can be found in limited areas where irrigation water is supplied from the base flow of the side wadis, springs or local wells. State and private forests can be found on the mountains and steep rocky land but they comprise only about 1% of the total area of the country. The range land area of annual rainfall between 200 mm and 300 mm represents about 5% of the total area of Jordan.

The remaining part of Jordan (about 90% of the country) is low rainfall semi desert area which is called locally "the Badia Region". The word "Badia" is derived from the word "Bedouin" or the nomadic people who depend on livestock grazed in this marginal semi desert area. Rainfall in the Badia region is sparse and erratic ranging from 50 mm to 200 mm and is just sufficient to give a thin and occasional vegetative cover useful for short period of grazing.

In general, only 4% of the total area of Jordan, mainly in the plateau, can be put into cultivation through rainfed agriculture in years of sufficient rainfall. The actual cropped area varies from year to year as shown in Table 1. It was 270,875 ha in 2004 compared to 380,000 ha in 1992. Areas developed for irrigated agriculture amounts to approximately 76,000 ha. Of this total, 33,000 ha are in the Jordan Rift Valley which is primary developed by the Government. The rest of the irrigated area of about 43,000 ha has been developed by the private sector in the plateau and the Badia regions depending mainly on groundwater.

Table 1. The areas (in hectares) of rainfed and irrigated agriculture in Jordan for the years 2000-2004

Year	Rainfed	Irrigated	Total
2000	158,490	77,010	235,500
2001	182,000	73,023	255,023
2002	185,660	74,934	260,594
2003	167,320	71,317	238,637
2004	194,750	76,125	270,875

Source: Department of Statistics, 2004

According to last census of 2004, the population of Jordan has reached 5.35 million people (Department of Statistics, 2004). Comparing this figure with that of the previous census of 4.18 million people in 1994 shows that the rate of population growth during the last ten years has reached 2.5%. Before 1994, the population was growing at 3.4% rate due to three population influxes in 1948, 1967 and 1990. About 80% of the population is located in urban areas concentrated in the governorate of Amman, Zarqa and Irbid, all of which are water deficit areas and depend on water importation from other areas. Although the current population growth rate are relatively low and are expected to decline, due to education, birth spacing and the cost of decent living, the population will continue to place an enormous pressure on water resources. As for sex distribution, the percentage of male and female are 51.5% and 48.5% respectively.

## WATER SUPPLY SITUATION

Jordan is classified among few countries of the world with limited water resources and it is one of the lowest ten countries on a per capita basis. The renewable water resources per capita are falling as a result of population growth and are projected to fall from less than 160 m<sup>3</sup>/capita/year at present (2005) to about 90 m<sup>3</sup>/cap/year by 2025, putting Jordan in the category of absolute water shortage. The scarcity of water in Jordan is the single most important constraint to the country growth and development because water is not only considered a factor for food production but a very crucial factor of health, survival and social and economical development. As a result of scarcity, the demands and uses of water are far exceeding renewable supply. The deficit is made up by the unsustainable use of groundwater through overdrawn of highland aquifers, resulting in lowered water table in many basins and declining water quality in some. In addition to that, the deficit is overcome also by supply rationing to the domestic and the agricultural sectors.

Water resources consist of surface and groundwater, with reclaimed wastewater being used at an increasing scale for irrigation. Water desalination has also become an optional source where 40 Million Cubic Meters (MCM) are presently produced from over 10 desalination plants for domestic supply and about 9 MCM for irrigation. Renewable water resources vary from 785 to 840 MCM per annum, including 280 MCM of groundwater and 505 to 560 MCM of potentially exploitable surface water. An additional amount of 143 MCM is estimated to be available from the non renewable aquifers. The volume of effluent from the different wastewater treatment plants was estimated to range from 75 to 80 MCM in the year 2004.

## WATER DEMAND IN JORDAN

Water uses vary from year to year depending on the available surface water supply which is decreasing due to upstream uses and climatic fluctuations. According to available water supplies, a total of 520 MCM in 2004 were used in agriculture (representing about 63.5 % of the total water use); the domestic sector consumed 270 MCM (32.5 %); industry share was only 36 MCM (4 %).

The municipal water demand is growing faster than the population growth but due to system capacity and limited supply, the actual demand has never been met. The total amount that have been pumped to municipal uses in 2004 reached 270 MCM which indicated that the annual per capita share of water for domestic uses was only 50 m<sup>3</sup>/capita/year. This low amount averages a daily supply of 137 liter/capita/day. To overcome the shortage and gap between supply and demand, water consumption is rationed by rotating supplies and providing intermittent services during most of the dry months (June - August).

Irrigated agriculture in Jordan falls under two categories in term of management and source of water. In the highlands, privately managed individual farms are irrigated by groundwater from private wells. The publicly managed irrigation system in the Jordan Valley uses surface water of Yarmouk River and side wadis as well as reclaimed wastewater.

Expansion of both systems has been rapid in the last 30 years. Highland irrigation expanded from 3,000 ha in 1976 to an estimated 43,000 ha in 2004 which uses mainly groundwater as a source of irrigation including 6,000 ha irrigated by the fossil non-renewable groundwater in Disi and Mudawwara area for the production of cereals, vegetables and fruits.

Irrigation Project in the Jordan Rift Valley have been developed by the Jordan Valley Authority (JVA) which covers 23,000 ha under full irrigation in the Jordan Valley plus 6,000 ha in southern part of Jordan Valley that are restricted by water availability to winter use only. There are about 3,000 ha in the Jordan Valley that are irrigated with groundwater using private wells.

In the Southern Ghors, south the Dead Sea, about 5,000 to 7,000 ha are irrigated using the base flow of southern wadis and release of the southern dams. As such the total irrigated area in the Jordan Valley and Southern Ghors is estimated at 33,000 ha, totaling 76,000 ha as the irrigated area in Jordan including the highlands.

## **INSTITUTIONAL SET-UP**

In Jordan, water resources management (supply and demand) is the responsibility of the Ministry of Water and irrigation with important roles to the Ministry of Agriculture in the irrigation sector. Ministry of Environment, Ministry of health and the Department of Standards and Specification have major roles in legislation, monitoring and regulation especially with regard to quality issues. The involvement of the private sector and NGOs are expanding in management contract of water distribution, public awareness for water conservation and operation of projects.

## **UNIVERSITY ROLE**

The contribution of the higher education institutes and universities to the issues of water management (demand, supply, quality and resources) is significant. The University of Jordan, as the first higher education institute in the country, has a significant contribution to water, environment and agriculture. There is one programme in land and water at the Faculty of Agriculture leading to B.Sc. degree where about 40 students are graduated every year. In addition, there are other four post graduate programmes at the University leading to master and Ph.D. degrees in Water and Environment (Civil Engineering), Land and Water (Agriculture), Environmental Science and Management (multi disciplinary programme) and management of natural resources (Faculty of Science). However, other universities in Jordan offer some water related programmes but not as comprehensive as those of the university of Jordan. The University of Jordan also sponsors and hosts the Water resources Center and UNESCO Chair Unit in water resources. The UNESCO Chair Unit head by Dr. Shatanawi, is coordinating and liaising projects funded by the European Commission, UNESCO and other national and international agencies. It acts also as a unit for research with 16 researchers; 50% of them are women.

## **GENDER STATUS**

According the constitution of Jordan, all citizens are equal regarding their race, religions, sex or origin. Men and women have equal opportunities for education, health, employment, election to local or national councils. Three decades ago, the role of women in the Jordanian society was limited to house keeping in addition to few jobs such as education and nursing. The illiteracy rate of women was higher than men. However, the well being of the Jordanian women has improved significantly since 1975 as reflected by many indicators such as higher life expectancy rate, increase in participation in labour force, improved educational attainment, and decline in fertility rate. Table 2 shows some selected gender indicators as related to health, education, economic activities, illiteracy and employment. For example, the total illiteracy rate in Jordan is about 11% (5.1 for men and 15.7 for

women); the overall enrollment rate in basic education is 92% for girls and 91% for boys. At the University level, there is no distinction according to gender. On the contrary, the enrollment for girls is higher than boys as shown in table 2. In agriculture, female students form a majority of 56%. Table 3a shows the percentage of male and female students at various departments at the Faculty of Agriculture at the University of Jordan and Table 3b shows the number of B.Sc students accepted at the Faculty of Agriculture for the year 2005/2006. This is an indication of other faculties at various universities in Jordan. Majority of the student at the Department of Land and Water are girls. These students when they will graduate will work mainly in the irrigated agriculture sector as researchers, extension agents, design engineers or sales agents to irrigation companies. At the UNESCO Chair Unit, there are about 16 peoples involved in various activities related to IWRM and irrigation; about 50% of them are women.

Table 2. Selected gender indicators for Jordan

	Year	Women	Men
Total population ('000)	2003	2,585	2,782
Population structure (%)	Year	Women	Men
Total population	2003	47.9	52.1
Population aged -15	2003	48.8	51.2
Population aged 15-24	2003	48.7	51.3
Population aged 25-59	2003	46.6	53.4
Population aged 60+	2003	48.7	51.3
Health	Year	Women	Men
Life expectancy at birth (yrs)	2000/2005	72.5	69.7
% gain in life expectancy at birth (base period: 1995-2000)	2000/2005	2.1	1.8
Illiteracy	Year	Women	Men
Illiteracy rate of population aged 15+	2000	15.7	5.1
Illiteracy rate of population aged 15-24	2000	0.7	0.9
Education	Year	Girls	Boys
Net enrolment ratio in primary education	1999/2000	93.9	93.2
Net enrolment ratio in secondary Education	1999/2000	78.5	73.4
Gross enrolment ratio in tertiary (university) education	1999/2000	30.6	26.8
University field of study (%)	Year	Women	Men
Education	2000/2001	74	26
Arts & humanities	2000/2001	69	31
Business, law, social science	2000/2001	38	62
Science	2000/2001	44	56
Engineering	2000/2001	23	77
Health and welfare	2000/2001	48	52
Agriculture	2000/2001	56	44
Economic activity	Year	Women	Men
Economic activity rate	2000	12.3	66.1
Unemployment rate	2000	21.0	12.3
Employed population (15+) by occupational group (%)	Year	Women	Men
Legislators, senior officials and business managers	2002	5.0	95.0
Professionals	2002	28.2	71.8
Services workers and shop and market workers	2002	8.9	91.1
Skilled agricultural and fishery workers	2002	3.0	97.0
Crafts and related workers/supervisors, food, industrial, chemical industry workers	2002	7.0	93.0

Employed population (15+) by economic sector (%)	Year	Women	Men
Agriculture	2002	7.8	92.2
Industry	2002	8.1	91.9
Services	2002	15.9	84.1
Decision making and public life (%)	Year	Women	Men
Parliamentary seats	1997	1.3	98.7

Table 3a. The number of accepted, enrolment and graduate students in the Faculty of Agriculture at the University of Jordan

Year	Accepted		Graduates		Enrolled	
	Total	Female	Total	Female	Total	Female
1990/1991	294	146	225	104	1229	560
1991/1992	331	172	245	116	1317	611
1992/1993	315	176	260	120	1314	644
1993/1994	256	179	283	130	1250	671
1994/1995	276	170	312	158	1217	692
1995/1996	254	170	233	124	1182	712
1996/1997	270	167	263	175	1171	722
1997/1998	310	223	224	148	1179	747
1998/1999	339	239	259	174	1285	820
1999/2000	250	170	232	145	1230	810
2000/2001	250	162	248	142	1160	760
2001/2002	228	156	315	156	1200	721
2002/2003	275	165	249	158	1071	675

Source: Higher Educational Council, Yearly Statistical Report for Higher Education in Jordan, 2003

Table 3b. Number of B.Sc. student accepted at the Faculty of Agriculture for the year 2005/2006

Department	Male	Female	Total
Department of Horticulture and Crop Science	18	26	44
Department of Animal Production	42	14	56
Department of Land, Water and Environment	20	41	61
Department of Plant Protection	20	27	47
Department of Agricultural Economics and Agribusiness	15	33	48
Department of Nutrition and Food Technology	13	92	105
Total	128	233	361

At the country level, the presence of women in high public posts is still low. They form 8.1% in senator council, 5.5 % in the house of Parliament, 3.85 % in the cabinet of ministers, 8 % as directors in the public sector, 7.4 % in diplomatic corps, 10.86 % in municipal councils, 2.28 % out of the total number of Judges and public attorneys and 14.4 % of the academic staff in Jordanian universities (2001-2002). The presence of women in the membership of association and unions (Table 4) ranges from 11.4 % in Jordanian Engineers Association, to 45 % in the Pharmacists Association. They form the majority 70.3 % in Jordanian Nurses & Midwives Council. Table below shows the total numbers of the registered member in different associations for the years 1997 and 2002.

Table 4. Total numbers of the registered members in the different associations for the year 1997 and 2002

Association	1997			2002		
	Male	Female	Female %	Male	Female	Female %
Engineer	35170	3242	8.4	45059	5775	11.4
Doctor	11089	1636	12.8	9511	1624	14.6
Agricultural Engineer	4409	1596	26.6	6359	2721	30.0
Lawyer	4214	776	15.5	4443	886	16.6
Dentist	2200	1000	31.1	3178	1357	29.9
Nurses	1716	4575	72.7	3045	5192	63.0
Veterinarian	553	57	9.3	821	160	16.3
Pharmacists	2732	2028	45.0	4224	3455	45
Journalist	304	61	16.7	454	89	16.4
Total	62387	14971	19.4	77094	21259	21.6

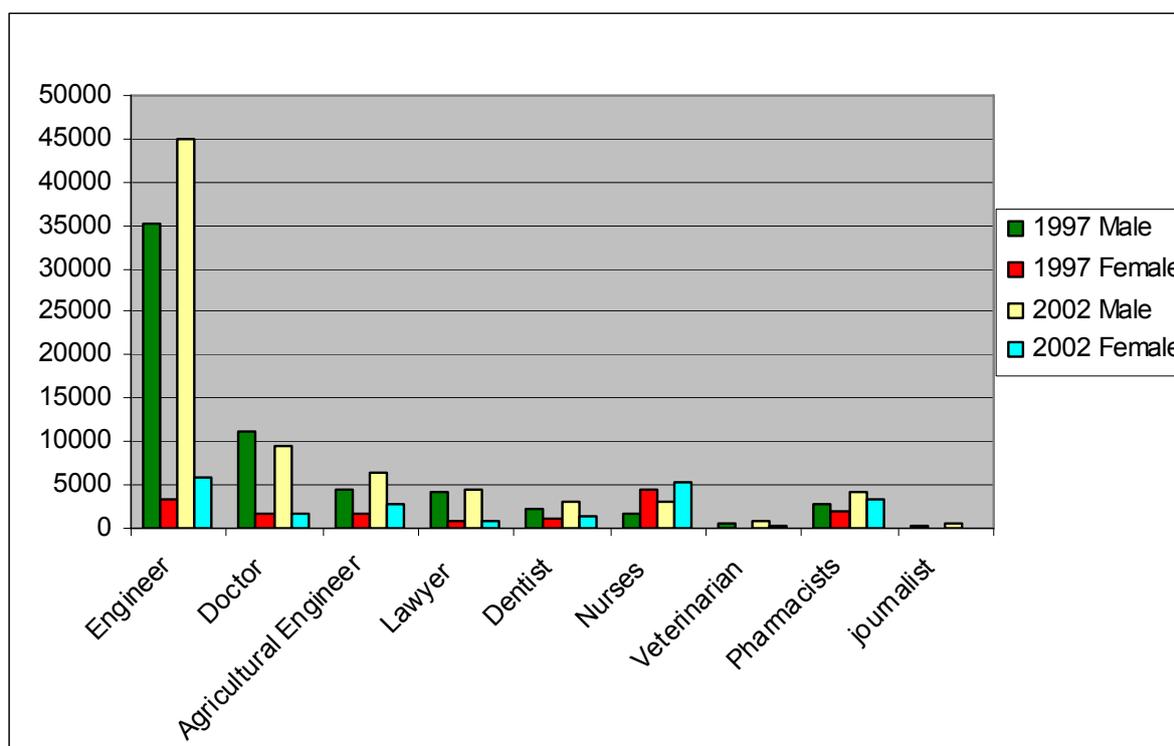


Fig. 1. Total number of the registered members in the different associations for the years 1997 and 2002

Nevertheless, important gaps remain, particularly in women's low participation in the labour force and in political life. Women represented just 16% of the labour force in 2002 and were employed primarily as community personal and social services including activities such as teaching, nursing, and financial activities. About 37% of the working women are employed by the government. In 2002, the unemployment rate among women in Jordan has reached 21.0% (UNIFEM 2003). Low levels of formal economic participation may imply greater participation in the informal sector, although few data are available to substantiate this hypothesis. Still, it is an issue that deserves investigation. Table 5 shows the distribution of hired labour in the agricultural sector which indicates that 31% of the casual labours are women, while they represent very low percent as permanent labours.

Table 5. Distribution of hired labour by kind of labour, sex, nationality and age category in Jordan in 2004

Sex	Age	Permanent labor		Casual labor	
		Jordanian	Non Jord.	Jordanian	Non Jord.
Male	12-16	0	0	0	4
	Above 16	3,971	21,456	19,729	19,870
Female	12-16	0	0	0	0
	Above 16	21	5	8,653	215

As shown in Table 6, the well-being of Jordanian women had improved significantly since 1980. This is reflected in the key indicators such as the drop in the total fertility rate, the increase in women's labour force and the improved life expectancy.

Table 6: Jordan key Indicator, 1980, 1995, 2002\*

Indicator	1980	1995	2002
Total fertility rate	6.8	4.8	3.7
Labour force participation (%)	20	25	27
Female percent of labour force	10	12	16
Primary school GER (%)	102	95	96
Maternal mortality (per 100.000 live births)	n/a	32	27
Infant mortality (per 100.000 live births)	82	36	22.1
Illiteracy (%)	n/a	21	11
Life expectancy (average years)	58	70	71

\* Department of Statistics (2003)

## SUCCESSFUL PROJECTS

Below is a list of some successful projects that deals with the involvement of women in water management in agriculture, food security and food safety:

1. Public Awareness Program for Water Conservation by Jordan Environment Society.
2. Water Harvesting Project by Jordan Aqua Conservation Society.
3. Public Awareness Project for Agro-Biodiversity by Jordan Environmental Society.
4. Irrigation and Rehabilitation of Old Mines by Arab Women Society.
5. Integrated Management of Water and Land by the Women Committee in Damia.
6. Awareness Campaign for Improved Natural Resources Management by Khshaibeh Women Cooperation.
7. Water Harvesting for Productive Home Gardens in Deir Yusuf by the Rural Women Development Society.
8. Rehabilitation of Qastal Cisterns by Qastel Conservation and Development Society.
9. Community Watershed Management by Rakin Women Charitable Association.
10. Production of Cash Crops and Medicinal Plants by Jordan River Foundation.
11. Local Communities Participation in Rural Development by the Hashemite Jordan Fund for Human Development.
12. House Gardening Project by the Ministry of Agriculture and FAO.

## RECOMMENDATIONS

1. Improve women's skill in water resources management.
2. Realize and value the women role in poverty elimination.
3. Modify legislation and institutional set-up to allow for effective participation of women in water resources management.
4. Involve women in participating in policies and decision making process.
5. Review extension services to increase women role in extension and training.
6. Increase opportunities to women in water resources management by assigning more female engineers in water management projects.

## **INVOLVEMENT IN GEWAMED**

The UNESCO Chair Unit through Dr. Shatanawi and Ms. Naber will act as a national central focal point of the project in Jordan. This will link the national coordinator to other public and private institutions that are in the process of identification. In this regard, a list of all registered cooperatives at the Department of cooperation organization and registered NGOs at the Ministry of Interior and Ministry of Social Affairs are in the process of identification. Also, gender units or gender coordinators at following ministries have been identified; they are: the Gender Unit at the Ministry of Agriculture, Gender Coordinators at the National Center of Agricultural Research and Technology Transfer, Ministry of Water and irrigation, Ministry of Environment, Ministry of Health, Ministry of Rural Affairs, Jordan Farmers Associations and the Jordanian Hashemite Fund for Development. Additional bodies will be identified at later stage.

## **FIRST YEAR PLAN OF WORK**

1. Establish a National Gender Water Team (NGWT) that consists of 8-10 members representing 4 public agencies, 2 private, 2 NGOs and 2 from the academic institutions.
2. Establish a National Communication Network. This network is expected to have about 20-25 member representing various agencies and geographic distribution in the country.
3. Determine Focal Points from selected institutions. Some of these focal points will be represented in the NGWT.
4. Establish an internet web site (on-line). This site will be within the UNESCO Chair web page which is within the University of Jordan web site. It will be hyperlinked to the regional web-site. All National Focal Points will have access to this site.
5. Organize several meetings for coordination and exchange of information and dissemination of knowledge for the National Gender Water Team.
6. Organize a sort of National kick-off Meeting for all potential participants and stakeholders (25 persons) to get them familiar and cooperative with the project. In this meeting, the knowledge base will be reviewed and coordinated.
7. Prepare a national report containing a set of water related gender indicators.
8. Disseminate knowledge and exchange of information through the contribution to the regional internet web site.
9. Organize one-day seminar for agricultural cooperatives and representative public institution and NGOs to discuss the indicators.
10. Prepare a report on the plan raising public awareness on the role of women in water management for food security and food safety.