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Gender and Water Demand Management

Diagnostic Study
Executive Summary

24 June 2004

LIST OF ACRONYMS

CIDA	Canadian International Development Agency
GWP	Global Water Partnership
GWA	Gender Water Alliance
IDRC	International Development Research Centre
IRC	International Water and Sanitation Centre
IUCN	The World Conservation Union, Regional Office for Southern Africa
IWRM	Integrated Water Resources Management
MDGs	Millennium Development Goals
MENA	Middle East and North Africa
PIM	Participatory Irrigation Management
PPPs	Public Private Partnerships
PSIRU	Public Services International Research Unit
UNDP	United Nations Development Program
WDM	Water Demand Management
WHO	World Health Organization
WID	Women in Development
WSSD	World Summit in Sustainable Development
WUAs	Water Users' Associations
WWC	World Water Council

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1.1 INTRODUCTION

Women are critically involved in the provision and management of domestic and agricultural water supplies. Women often govern the collection and use of water, making it is a serious oversight to ignore their inputs. A gender perspective is then called for which focuses on the roles of both men and women in access and control of precious water resources. Both women and men are given the opportunity to influence and participate in decisions affecting water management.

There has not been much attention thus far on the role of women and gender equity research in water demand management (WDM). WDM is an alternative paradigm to mitigate the negative effects of water scarcity, while aiming to improve efficiency, equity and sustainability of water resources. WDM offers an approach that positively influences water use and contributes to effective water governance within a specific context. WDM also considers the different technical, institutional, financial and social aspects to provide a multi-sectoral, multi-disciplinary and integrative effort to motivate and support water users to regulate the amount, quality and timeliness in which freshwater is accessed, consumed and disposed.

Water demand management (WDM) may be defined as any measure that aims to: improve the efficiency of water used to achieve a specific task; adjust the nature of the task or the way it is accomplished so that less water or less quality water is used; reduce losses in quantity and/or quality of water flows from source through use to disposal; and/or shift the timing of use from peak to off-peak periods. WDM also includes measures to increase the effectiveness of the water system to serve society during times when water is in short supply (for e.g. drought)[1].

While WDM is not yet fully appreciated in the MENA region, champion efforts by the International Development Research Centre (IDRC) and its partners have supported research and building research capacity within its networks to increase awareness and enhance knowledge among water-users and the policy community, particularly women, the poor, marginalized and vulnerable groups.

The WaDI*mena* project aims to promote effective water governance by enhancing water-use efficiency, equity and sustainability in the countries of the MENA region. The overall project goal is to facilitate the adoption and implementation of water demand management strategies, policies and tools in MENA, with the following objectives:

A critical hypothesis to be tested throughout the implementation of WaDI*mena* is: women are significant water-users, therefore effective, efficient and sustainable water resources is more likely to be achieved when the knowledge and capacity of women is enhanced to adopt WDM tools, strategies and approaches.

- To deepen the knowledge of the benefits, challenges, opportunities, and incentives of WDM from a multi-sectoral and multi-disciplinary perspective.
- To improve capacities of the policy and research communities, institutions, water-users and civil society.
- To provide an inclusive forum to foster dialogue, strengthen partnerships, share experiences and enhance networking.
- To strengthen and complement national, regional and global initiatives.

[1] Brooks, David. "Potential Entry Points for Future Water Demand Management Studies in the Middle East North Africa". Paper submitted to IDRC, October 2003.

A water governance framework encourages an integrated approach to formulating, designing and implementing water resources management policies; characterized by multi-stakeholder participation, representation of different interests and values, representation of different interests and values, transparency of decision-making processes, equity in access to resources, accountability and responsiveness.

WaDI*mena* recognizes that WDM is instrumental in the quest for effective water governance in the MENA region, as it requires an approach that focuses on the interrelationships at all levels for improved management, efficiency and equity. The challenge in all aspects of water governance will be to ensure that all stakeholders, and in particular, vulnerable groups such as women, and the rural poor, are guaranteed support mechanisms for informed decision-making that affects the delivery and management of water resources.

However, up until this point, there has been little attention paid to gender, and broader social equity issues within WDM, especially in the MENA region. A critical hypothesis to be tested throughout the implementation of WaDI*mena* is: women are significant water-users, therefore effective, efficient and sustainable water resources is more likely to be achieved when the knowledge and capacity of women is enhanced to adopt WDM tools, strategies and approaches.

Theoretically, the objectives of water demand management and gender and social equity are integrated. "Water is central to poverty reduction, food security, health, agriculture, industry and gender/social equity. Declining water quality and increasing water scarcity has negative impacts on the potential for equitable and sustainable development, especially for vulnerable groups of the rural poor and women, whose access and control over water constitutes the essence of their livelihoods"[2].

The objective of this Diagnostic Study[3] is to conduct a review of literature pertaining to gender and water demand management issues in the countries of the MENA region and suggest ways in which gender issues may be mainstreamed in the WaDI*mena* project.

It is noted that there is not much research done thus far on the role of women, or gender equity issues, in water demand management. Therefore, the full text of this diagnostic study is to be used as a background document for further explorations in gender equity and water demand management within the countries of the MENA region.

1.2 CONCEPTUAL FRAMEWORK: POVERTY, GENDER AND WATER DEMAND MANAGEMENT

1.2.1 Gender and Poverty in the MENA Region

Indicators of development for the MENA region show that in many areas of women's well-being such areas as female education, fertility, and life expectancy, progress over the last decade have been significant. Where MENA falls considerably short is on indicators of women's economic participation and political empowerment[4].

In MENA, the female labour force participation rate is significantly lower than rates in the rest of the world, and lower than what would be expected on the basis of the regions' fertility rates,

[2] WaDI*mena* project Proposal Document, pp.4 (Executive Summary).
[3] This diagnostic study has been prepared for IDRC (WDM Forum Extension Phase) by Mary Liao (maryeliao@shaw.ca)
[4] Overview Gender and Development in the Middle East and North Africa: Women and the Public Sphere. http://lnweb18.worldbank.org/mna/mena.nsf/Attachments/GenderReport-overview/$File/GENDER-REPORToverview.pdf.

educational levels, and age structure of the female population. The low female labour force participation has a high cost to the economy and a high cost to the family. Simulations show that increasing female labour force could boost average household earnings by as much as 25 percent[5].

According to the World Bank, in the MENA region, gender roles and dynamics within the household are shaped by "traditional" gender paradigms, with four elements:

- The centrality of the family, rather than the individual, as the main unit of society, in which women and men play complementary but not equal roles.
- Recognition of the man as the sole breadwinner of the family.
- A code of modesty that rests family honour and dignity on the reputation of the woman, with restrictions on interactions between men and women.
- An unequal balance of power in the private sphere that is anchored in family laws.

Even though labour market regulations do not explicitly discriminate against women, most of the benefits granted by these laws are weakly enforced and thus unattainable. Additionally, tax and employment-related benefits to families are channelled only through men. A woman can only receive these if she is officially the head of the household (if she is widowed or can prove that her husband is old or incapacitated). Further, a range of gender-based regulations, including restrictions on the type and hours of work and requirements for the husband's permission to work and travel, make women less flexible as workers. Differential treatment of men and women under family law also curtails female labour force participation. A husband's unilateral right of divorce and a wife's legal obligation to obey her husband may create an additional barrier to women's entry in the work force. A wife's disobedience can technically result in loss of support from her husband, divorce and loss of custody of her children, which is normally given to the father. Hence a woman's interactions with the outside world without her husband's consent may involve substantial risks.

These laws were created to protect the family. However, the husband's responsibilities to provide for the family confers rights and authority on him – reinforced through a host of laws, policies, and institutions – that he retains even if he does not or cannot provide for his family. As a result, women become financially, legally, and socially dependent on men.

In summary, the "traditional" paradigm limits the recognition that women need greater flexibility to play multiple roles – as mothers, wives, workers, and citizens – to maximize family welfare.

A variety of measures will need to be undertaken to achieve greater gender equality and women's greater access to opportunity and economic security. There needs to be a greater inclusiveness of women in decision making to create a more egalitarian environment for women's economic and social rights, and a greater accountability of institutions for advancing fairness and equality. Ultimately, gender equality is tied to good governance- respecting everyone's rights and taking everyone's needs into account[6].

The public sphere is the sphere of power, influence and patronage, and as such, has been traditionally reserved fro men. A call for gender equality threatens the established social order and claims to power and control. Yet gender equality is important for improving economic growth, creating productive employment and reducing poverty.

[5] Ibid.
[6] World Bank. July 2002.

In MENA, an estimated 70% of poverty is in rural areas even though rural areas support only 43% of the population. Most of the poor will still be in the rural areas for at least another 20 years[7].

Agriculture remains the most important sector for rural income generation. This sector is of crucial importance to the MENA economies, especially in terms of employment. Agriculture is particularly important for the poor, both on the consumption side - large parts of their budget is allocated to food - and as a source of incomes as most of the poor live in rural areas where agriculture dominates. As arid and semi-arid areas, prone to frequent droughts, account for 85% of the total land areas and contain 60% of the population, the MENA region and its rural poor are particularly vulnerable to climatic variability, making water resources and risk management important determinants of farm-household decisions. Work opportunities outside the agricultural sector in rural areas are limited, which contributes to increasing unemployment and underemployment of men and women alike, and to temporary and permanent migration of men to urban areas. Rural-urban migration is resulting in an increase of female-headed households in rural areas. Studies show that in Sudan, Egypt, Morocco, Lebanon, Tunisia, Turkey and Syria, the percentage of female-headed households is 23.8%, 16%, 16%, 11%, 11.3%, 7.1 % and 6.1% respectively. Data shows that female-headed households are significantly poorer than male-headed households[8].

Women form the backbone of the agricultural labour force in many MENA countries. Studies[9] indicates that women, as paid and unpaid labour, in Turkey, Morocco, Egypt, Lebanon, Sudan, Iraq and Mauritania, constitute 55.3%, 53.2%, 50.7%, 40.7%, 34.7%, 30.7% and 28% of total paid and unpaid agricultural workers respectively.

Rural women spend much time every day on agricultural and domestic work, with little time for rest or recreation. They can spend up to 19 hours a day on essential tasks such as sowing, weeding, harvesting, animal husbandry, cleaning, fetching water and firewood, and child rearing. In spite of the labour and income contributions to the farming household, men appear to have predominant control over decision-making. Women's access to, and control over, productive resources such as land and water, and support services such as credit, extension, training and markets, is limited. The large majority of extension officers are male who deal almost exclusively with male farmers since "tradition" often constrains interactions between women and outsiders.

Research has shown that the failure to recognize gender issues affects agricultural productivity or irrigated crops negatively, and that women's lack of independent access to, and control of, land and water threatens household food security. Interventions such as irrigation habitually fail to take into consideration the existing imbalances between men and women's ownership rights, divisions of labour and incomes[10].

A study of gender equality in Jordan[11] indicates the need to conduct gender relation analyses studies and research. Information on gender issues and impact of different factors i.e. poverty, economic reform, and water shortages are limited. Most studies have not been action oriented but are theoretical and rarely analyse gender relations.

[7] Ibid.
[8] FAO. Synthesis Report of the Near East Regions: Women, agriculture and rural development. www.fao.org.
[9] Ibid
[10] See for example, Zwarteveen, M. 1994; Zwarteveen, M. 1995; Van Koppen, B., 1999a; Van Koppen, B., 1999b.
[11] Ghosheh, H., 2001.

1.2.2 Islam, Gender and Water in the MENA Region

Culture, including religion, clearly influences how people perceive and manage resources such as water, according to the book *Water Management in Islam*[12]. Islam encompasses much more than worship and a code of personal conduct implied by the word "religion". It regulates virtually all aspects of individual and collective human life including buying and selling, contracts, inheritance, marriage, family and intimate relations, and even elemental issues such as eating, personal hygiene and sanitation.

Water is of profound importance in Islam. It is considered a blessing from God that gives and sustains life, and purifies humankind and the earth. Muslims also believe that ensuring social justice, or equity, in society is the cornerstone of Islam. Virtually all of the *hadith*[13] relate to the preservation of equity, and those related to water are no exception. A Muslim is not allowed to hoard water – rather he is obliged to allow others to benefit by it. The Prophet stated that among the three people Allah will ignore on the day of resurrection are "a man (who) possessed superfluous water on a way and withheld it from the travellers"[14]. The recognition of water as a vital resource, of which everyone has the right to a fir share, is emphasized by the following *hadith*, which effectively makes water a community resource to which all, rich or poor, have a right: "Muslims have a common share in three things: grass, water and fire"[15].

With respect to water demand management, the Quran makes two clear statements regarding water that support water demand management. First, the supply of water is fixed, and second, it should not be wasted. The statement that water is fixed implies that at some point, demand for water must be managed because supplies cannot be infinitely increased. The *hadith* demonstrates the logical approach to sustainable water use in arid Arabia where the Prophet lived. The Prophet forbade waste even in conditions of seeming plenty when he said, "Do not waste water even if performing ablution on the bank of a fast-flowing (large) river"[16].

Given the clarity of these teachings, it is suggested that that Islamic teachings on water conservation be incorporated into water demand management strategies in predominantly Muslim countries. In Jordan, for example, the Ministry of Water uses Islamic sources along with secular slogans to promote water conservation.

Wastewater reuse as a WDM strategy has been deemed acceptable (it is not *haraam*, or unlawful according to Islam) in the Muslim context, as long as it does not cause harm. Given that agriculture is the largest user of freshwater in the MENA region[17], and that with growing populations, freshwater will increasingly be taken away from agriculture, expanding water reuse may be one of the most important WDM policy initiatives in the MENA region.

The role of women in water management (and WDM) is also acceptable. A comparison of Islamic water management principles with those enunciated by the Dublin Conference demonstrates that women and water management principles clearly parallel Islamic principles of women's

[12] Water Management in Islam, 2002, p. 2
[12] Ibid.
[13] Documented narrations of what the Prophet Muhammad said and did.
[14] Taken from Water Management in Islam, 2002, p. 2
[15] Ibid, p. 2.
[16] Ibid. p. 5.
[17] According to the World Bank, water for irrigated agriculture consumes up to 90% of freshwater availability in the MENA region. See The World Bank Sector Brief, Water Resources Management in MENA; http://lnweb18.worldbank.org/mna/mena.nsf/Attachments/Water-ENG/$File/WATER-ENG.pdf

equality[18]. The third principle of the Dublin Statement deals specifically with women. "Women play a central part in the provision, management and safeguarding of water". The role of women in Islam as providers and users of water and guardians of the living environment is well documented. The story of Hajar, wife of the Prophet Ibrahim, describes the role of women in water development and demonstrates how women can show leadership and take social responsibility. In Islamic society, both men and women play crucial roles in making the world a liveable place.

As a result, Muslim women can play an important role in conserving water at home and in society. They convey knowledge, attitudes, and practices that promote conservation, pollution prevention, and sustainable consumption. In the local community or at higher policy levels, women can be part of advisory commissions for water planning and management. The involvement of women in water users' associations and other NGOs must also be supported. Instilling values of environmentally sound practices is of crucial significance to the future. Thus because of their primary role in Islam to educate their children, women have a key position in teaching future generations sustainable consumption patterns to ensure effective use of resources.

Unfortunately, Al-Jayyousi argues, the example of the Prophet in consulting with his wives and other women, as well as the rights accorded to women by Islam, is not followed by present day decision-makers, almost entirely all male.

Community-based water management is also considered as a strategy for achieving WDM goals. It is increasingly recognized that water management, delegated to the lowest appropriate level allows local communities to help plan, pay for, and implement water systems. This in turn facilitates sustainability. Under Islam, the input of the community on any matter that concerns it, including water management, is mandatory. This consultation must also include women.

1.2.3 Gender, Water and Poverty

In *Development and Freedom*[19], Amartya Sen argues that poverty can be best understood as a deprivation of basic capabilities and not merely as low income. Many of the deficiencies that people experience are intrinsically important, unlike a lack of income, which is instrumentally important. Poverty also refers to the limited opportunity of individuals to participate in the political sphere, and to gain access to decision-making bodies that reflect their own value systems. Fundamental to poverty alleviation is not only the improvements in quality of life, but also to secure opportunities for individuals to live the kind of life they want to live.

There is a strong link between water, poverty and gender. Globally, increasing competition among water users for an increasingly limited supply of freshwater is threatening sustainable livelihoods, health and food security. The poor, particularly women, are the hardest hit.

It is women who primarily bear the daily burden of providing water to meet the domestic needs of their families and households. Women are also, more so than men, excluded from many income-generating opportunities, and generally have less capability of living the kind of life they want to live. They have less access to and control over resources and assets. Their health care and nutritional needs often go unmet and their participation in decision-making in the home and community is much less than men's. Thus women are not able to have input in the decisions that

[18] See Al-Jayyousi, Odeh., 2003, p. 33-39, which argues that Islam projected a woman as being parallel to a man and embodied the philosophy of being both equal and different.

[19] Sen, A., 1999.

affect their daily lives, and that can improve their situation. These gender inequalities contribute to and perpetuate the phenomenon known as the "feminization of poverty".

Lack of water contributes to the feminization of poverty and to the entrenchment of poverty in general. Whilst gender equality initiatives can address the root causes and structural factors of poverty and the feminization of poverty, mechanisms for improved water governance can enhance efforts to reduce poverty.

Worldwide, ninety-eight percent of rural women classified as "economically productive" are in the agricultural sector. Endowing poor women with irrigation assets and water for their own farm businesses is an effective way to alleviate poverty. Especially women who are *de facto* heads of households and women who manage their own farm businesses alongside their male kin need direct access to irrigation water. However, typically irrigation agencies tend to exclude women categorically from access to water.

Dr. Barbara van Koppen, who leads the IWMI Gender, Poverty and Water Project, believes that water and irrigated land are important assets that can be used to help eradicate poverty. According to van Koppen, empowering people, and women in particular, through water access can directly improve the standard of living of rural poor communities.

1.2.4 Gender and Water Demand Management

Potential WDM strategies can have significant gender equality and social equity implications. What needs to be understood is whether or not gender equality and social equity goals are integrated in water demand management goals.

Sarah Loza[20] observes that water users faced with water shortages, intermittent water supply, low water pressure, poor water quality, and lack of facilities for the disposal of used water, engage in a number of coping strategies that add cost, increase labour, reduce water efficiency, increase water waste, and affect water quality, as well as decrease food safety. Most of these strategies create greater concerns for women than for men, and this needs to be recognized and addressed by water management agencies.

Manundu[21] observes that in Kenya, women are not equal partners when communities create property rights over any resource. Women also do not participate equally in decision-making over family expenditures. She recommends that decentralization of the control of the WDM function is needed so that control is invested in the community rather than government officers. However, there is a need to also sensitize community as to the need to mainstream women's participation in water supply design and demand management activities. Women should be encouraged to attend meetings and make decisions as well as vie for leadership. The water management committee, or water users associations, could also gain control over policing to ensure that an equitable share of water.

Water conservation messages may influence women, already water stressed, to limit their personal water intake/supply. Women typically reduce their own access and personal use of water while allocating more to other members of the household and other domestic tasks, thus compromising their own health. Research findings on the relative health importance of providing safe drinking water supplies, sanitation and hygiene education indicate that improved hygiene (hand washing) and sanitation (latrines) have a greater impact on health outcomes than drinking water quality. Furthermore, an increase in the *quantity* of water has a greater health impact that improved water *quality*, because an adequate water supply makes it possible (or at least feasible)

[20] Loza, S., 1997.
[21] Manundu.M., 1997.

for people to adopt safe hygiene behaviours. Since a primary cause of contamination of water is inadequate or improper disposal of human and animal excreta, better water quality only improves health when improved sanitation and the quantity of water is sufficient. The quantity of water used is dependent on accessibility, which is a function primarily of distance and time, but also reliability and cost.

Although water conservation is a key objective for the MENA region, gender and social equity objectives are also of immense importance. Basic health for people living in poverty may be compromised by water demand management policies. This potential finding is of key interest to WDM strategies. It is important that in implementing WDM, all possible gender impacts of WDM measures, both negative and positive, are thoroughly investigated.

The integration of gender and social equity issues into WDM policies and tools will undoubtedly be an uphill battle. However, the documentation of empirical experience, with best practices highlighted, benefits to water conservation and reduction of government budgets demonstrated, and the development of frameworks and guidelines to mainstream gender issues in WDM, will go a long way in supporting decision-makers and practitioners to integrate gender and social equity issues.

1.3 KEY ENTRY POINTS AND INDICATORS

Based on the review of literature provided by this Gender and WDM Diagnostic Study, and the list of WDM issues identified in the WaDI*mena* Project Proposal Document, suggestions as to key entry points in which gender can be mainstreamed in the WaDI*mena* Project are provided. No ranking is implied by the order in which entry points are listed. The potential key entry points are classified (as per the WaDI*mena* Proposal Document) as institutional, socio-economic, and technical.

1.3.1 Water pricing and social tariffs *(socio-economic)*

Despite ongoing controversy regarding the treatment of water as an economic good, numerous water management institutions have initiated the process of instituting water pricing measures in an effort to recover the costs associated with the provision of water service. Brooks notes that the case for water valuation has been won, and that there is broad recognition in the MENA region that both low prices and many existing tariff structures work against WDM, and more broadly, sustainable water management.

However, there is documentation of the potential differential impacts of water pricing schemes on women and men. Because of the pivotal relationship between women and water, and the disadvantaged position of the vast majority of women in society, women are inexorably more affected by inappropriate and gender insensitive water resources management than men. The treatment of water as an economic good can have enormous implications for women's accessibility to water supplies, both for basic human survival and economic livelihood. Thus women's and pro-poor organizations, environmental activists, NGOs, citizen's coalitions and political parties, have organized around the principle of water as a basic human right.

Proponents of water as an economic good have attempted to allay these fears by insisting that even where water is treated as an economic good, water as a social good must always remain a priority. Thus, consumption of a minimum quantity must be ensured by a tariff system that discriminates between different categories of users and levels of service. Cross-subsidizing or life-band-respecting tariffs should be integrated into pricing structures, thus ensuring access to affordable water to the poor.

Research should be undertaken within the WaDI*mena* project to investigate appropriate water tariff structures, for both freshwater and wastewater-re-use, that achieve both water demand management and pro-poor and gender equity objectives. Experiences from case studies at the local and national levels can be highlighted to disseminate best practices. This should be considered a priority entry point for gender and water demand management.

1.3.2 Health effects of water demand management measures *(socio-economic)*

It was noted that water demand management strategies might have a negative impact on women's health. Water conservation messages may influence women, already water stressed, to limit their own intake/supply in order to ensure their families receive an adequate supply. Studies have shown that the quantity of water has a greater impact on health than the quality of water. The same studies have shown that the quantity of water used increases when accessibility to water supply is improved. The health objective for water supply is thus to provide piped water to individual households. However, this would have huge implications in terms of increasing water demand.

Research should be conducted to investigate the appropriate balance between health and water demand management objectives. Within this objective, gender differences between men and women's practices in regards to water conservation, and the potential impacts on women's, men's, and children's health should be investigated.

1.3.3 Health effects of wastewater re-use *(socio-economic)*

Wastewater re-use has been identified as a priority WDM issue. The Technical Report indicates that a key gap in knowledge and practice is the protection of the health of farmers and consumers, and that this gap is not so much related to technical aspects as to what kind of institutional structure would best ensure balance between the maximum use of wastewater, protection of soil quality and protection of health. Since a large proportion of agricultural labourers are women, the use of wastewater for agriculture is a significant gender issue.

There are a number of mitigation measures available. Investigation should be conducted as to the most appropriate based on cultural, climatic and socio-economic factors. Necessary policy and legislative measures also need to be investigated to ensure protection of workers. Such investigation needs to be gender sensitive.

1.3.4 Benefits of wastewater re-use *(socio-economic)*

The use of wastewater for agriculture can have immense benefits to women farmers and to poor farmers in general. In areas where freshwater is scarce, wastewater allows low-income farmers to grow crops they would not otherwise be able to grow. Wastewater supply can be continuous, reliable, and available to farmers on demand. It can ensure crops all year round, and provide much needed nutrients without farmers having to buy fertilizers.

Women may be a key source of support to advocate the re-use of wastewater where it is not so far supported. This implies gender–sensitive extension services to communicate the benefits of wastewater re-use to women farmers. Gender sensitive strategies are also needed to ensure that women benefit equally from wastewater re-use. This implies effective participation in irrigation management structures.

1.3.5 Effective participation in water users' associations *(institutional)*

Pro-poor and gender equality objectives need to be integrated into decentralization and participatory irrigation management schemes. There are a number of challenges that hinder the improvement of an irrigation system management, which may result in low water use efficiency and loss of precious water, as well as increasing conflict between water users. More user participation in planning and management of irrigation systems is needed. The sense of responsibility farmers develop because of this "ownership" can result in more efficient operation of the system, equity in water allocation, and minimalization of operation and maintenance costs. Unfortunately, there has been little integration of the impact on women and gender equity issues in studies so far conducted on decentralization and PIM in the MENA region.

Evidence from around the world indicates that women's participation in water users' associations tends to be minimal due to a number of formal and informal constraints. Further, their participation in these institutions may not be effective due to low representation and "traditional" cultural norms, which influence women's ability to voice concerns or interests. However, this lack of formal participation in water users' association should also not be interpreted to imply that women do not have any influence on irrigation management. Studies document a number of ways women can have influence in informal ways. Thus, it is important to investigate (1) whether it is appropriate for women to participate in water users' associations; (2) what constraints hinder their participation in such institutions; (3) what strategies can be used to increase women's participation; (4) what indirect ways do women utilize to influence irrigation management; (5) whether these indirect means may be more appropriate and just as effective as formal participation in water users' associations; and (6) how women's participation, either direct or indirect, be used to advance water demand management strategies.

1.3.6 Effective means of extension services to women farmers *(institutional)*

It is documented that in the MENA region, cultural "traditions" constrain male extension officers from being in contact with female farmers. Women do not receive much needed information and education encompassed by extension services. Extension service is a primary means of disseminating water demand management objectives and strategies. Women are significant force within the agricultural sector and must be encompassed by extension services. Investigation should be conducted to explore ways and means as to how best to ensure extension services are extended to women farmers.

1.3.7 PIM, poverty reduction, gender equity and water savings *(socio-economic)*

What is the effect of PIM on poverty reduction, gender and social equity, and water savings? Studies indicate that PIM may facilitate more efficient use of irrigation water and thus allow tail end users to access water on a regular basis, thus achieving social equity goals. However, Brooks indicates that water savings may not happen because with more participatory mechanisms in place to allocate water, there may be more beneficiaries incorporated into the irrigation system. It would be interesting to know, however, at what point, when all beneficiaries are incorporated in the system, and when equity issues are ironed out, if and at what stage, water conservation strategies can be employed within the PIM system to achieve water demand management goals. It is given that this research should be gender sensitive.

1.3.8 Identifying potential WDM tools *(technical)*

It is well documented that women practice water conservation measures all the time, in order to minimize effort needed to fetch water for domestic use. Women also hold knowledge as to water saving techniques in crop production and in drought management. Yet when water resources project planners plan interventions, including water conservation measures, they frequently overlook women's knowledge and experience. The WDM Forums are a case in point. The Forums would have provided an excellent opportunity to bring together experts on gender equality issues and water resources management professionals to not only case study and highlight possible linkages between gender and water demand management, but also to expose gender insensitive professionals and organizations to gender equality and social equity issues.

Research should be conducted to investigate women's knowledge and experience with indigenous water demand management strategies so that these measures may be incorporated into the body of knowledge and practice steadily building in water demand management. Such research could be facilitated through participatory workshops or forums so that widespread participation of gender equality specialists and women throughout the MENA region is generated.

1.3.9 Women's knowledge of adaptive management *(technical)*

Brooks notes that adaptive management is a strategy with twin goals, sustainable livelihoods and ecosystem integrity by adapting to hydrological variability and ongoing socio-economic change. It identifies points of leverage for reducing human and ecological vulnerability by working with variability and change rather than trying to control or limit them. Many of the most important leverage points are likely to be found not in the water system itself, but in the institutions people build for their livelihoods. It is not know what role adaptive management could have in WDM. Brooks suggests that approaches such as supplemental irrigation or adoption of common property management would be starting points for further research. The goal is to develop shorter and longer-term measures for reducing water use, or for sharing shortages, in ways that would improve the likelihood that livelihoods will be sustainable. A coping study would be an ideal way to initiate the process. Women are clearly the primary members of the family and household who delineate and practice coping strategies in times of water shortage. Thus, it would be critical to investigate and document women's adaptive management strategies.

1.3.10 Islam, Gender and Water (cultural/socio-economic)

A potential water demand management tool is the use of Islamic principles to convey messages of water conservation and the objectives related to water demand management policies to the public. Regulation of water demand will ultimately depend on grassroots, widespread adoption of water conservation measures by the public. As it is noted in *Water Management in Islam*, culture, including religion, clearly influences how people perceive and manage water resources. IDRC has already acknowledged the potential failure of development projects that ignore local values.

Islamic principles support both water demand management and the role of women in water resources management. In Jordan, for example, the Ministry of Water is using Islamic sources to promote water conservation. There may be some potential for countries in the MENA region to expand this tool, merging Islamic support for women's role in water resources management, with that for water demand management in public awareness campaigns.

Investigation can be conducted to find the right Islamic sources and develop appropriate visual and audio material to convey those messages.

1.3.11 'Good' Governance *(institutional)*

Effective governance is a prerequisite for the successful implementation of an integrated water resources management approach, including water demand management. Given the complexities of water use within society, and the different values various groups place on it and its use, managing it effectively and equitably entails making sure that the disparate voices are heard and engaged in decision over common waters.

Governments play an important role for ensuring equitable and sustainable water resources management. They set the overall policies and laws for development, management and use of water resources. However, they cannot work in isolation. For successful implementation, governments need to involve all users of water in the process of developing appropriate policies and regulations for water resources management and use.

However, experience has shown that having a people-centred approach does not guarantee a gender perspective is taken into account. Although the central role of women in domestic water supplies has long been recognized, analyses of women's responsibilities in water resources management has tended to be overlooked, particularly where water allocation is based on legal water rights associated with land rights.

There is an urgent need to increase women's participation in the governance of the water sector. Investigation should be conducted to explore the ways and mean by which gender equality interests can be strengthened within governance processes.

The water policy frameworks in MENA countries should also be analyzed for gender equality content and changes lobbied for so that water sector policies reflect women's needs, priorities and representation-rights in relation to all possible water-use options. A gender strategy with clear goals, objectives and targets, aimed at access for all should be incorporated into water policy frameworks.

1.3.12 Institutional arrangements at the national level *(institutional)*

The pivotal role of women as providers and users of water has seldom been reflected in institutional arrangements for the development and management of water resources. In most countries, while positive steps have been made to establish ministries responsible for gender, there are no clear institutional arrangements to ensure coordination and linkages between these organizations and those responsible for the implementation of water resources management.

Women's relative lack of access to and participation in decision-making bodies and processes has hindered the representation of women's differential needs and priorities in water sector programming.

A stakeholder analysis of institutions involved in water resources management and water demand management specifically, should be undertaken in MENA countries to assess the level of integration of gender in those institutions. This should not only encompass how many women are employed (and their roles/responsibilities), but more importantly, is there an agency mandated to integrate gender issues within water resources management? If so, does it have a well defined mandate? Does it have a sufficient budget? Does it have sufficient human resources? Are those human resources well trained in gender equality and water resources management? What kind of power does it have vis-à-vis the main decision-making institutions/divisions? If there is no delineated agency/division to integrate gender, which institution is the most likely to take it on, or what other strategies can be used to ensure the integration of gender issues in water resources management in general and water demand management specifically?

Preliminary analysis shows that there are very few Women in Development units in government ministries, autonomous units and organizations in MENA countries. Egypt, Sudan, Tunisia and Turkey are exceptions and have well established and well funded units with clear-cut objectives regarding their role in advancing the status of rural women. The remaining countries have only a few WID units with vague or limited mandates and suffer from poor funding and limited access to appropriate human and technical resources.

A case study on professional women and water management in Morocco, for example, shows that very few women are employed in water resources management institutions, and are generally employed at "lower" professional levels than their male counterparts[22]. The paper reveals that it appears to be a matter of education, time, training, personal choice, and time before more women will work professionally in the water-related institutions in Morocco, and obtain higher positions at higher levels of decision-making. Most critically, it is important to encourage girls to study science related subjects in school so that well there will be a greater number of trained female professionals. This more long-term strategy was preferred over the use of quotas to increase the numbers of women in water related institutions. Both women and men said it was critical that any professional be well trained and not be hired simply because they were women. Quotas however could be used to ensure more girls receive water-related education.

Experience has shown that grassroots activities are more sustainable if these are supported by institutional arrangements, which both lead and reinforce such activities. Further institutions mandated to integrate gender issues could interface with policy level initiatives to ensure that a gender sensitive framework is established.

In keeping with the approach Brook's suggests, the key focus of institutional analysis should be to determine what is critical to success (or conducive to failure) at both policy and operational levels for specific areas of water demand. Institutions should be studies to assess how well they work, why they work that way, and how they could be designed to work better.

1.3.13 Capacity development *(institutional)*

El Awar's paper on capacity development[23] defines capacity building as " a process by which individuals, groups, institutions, organization and societies enhance their abilities to identify and meet development challenges in a sustainable manner". It is comprised of three elements: creation of an enabling environment through policy frameworks, institutional development, and human resource development. It is a continuous process that involves developing the society as a whole to enhance the local ownership of the process and the sustainable use of the developed capacity. Capacity development tools for WDM can be classified into human resources training tools, institutional development tools, and societal capacity development tools. The first tools are among the most significant knowledge acquisition and sharing tools at the individual level. At the institutional level, specific needs of WDM concepts might require the development of certain specialized institutions. The capacity of society must also be built through decentralization and empowerment of local communities.

El Awar identifies a number major barriers to capacity development for WDM in MENA, including, a deficiency in public awareness towards WDM benefits, a negative attitude among the public for the public sector, flaunting of supply augmentation achievements, and a lack of gender sensitivity, institutional capacity deficits, and training programs based strictly on technical

[22] Tortajada, 2003.
[23] El Awar, Faraj., 2004. Submitted to IDRC December 2003.

approaches, which has led to a fixation on technology transfer and a general neglect of other components of capacity development.

Capacity building strategies must encompass: (1) effective knowledge networking so that the benefits of WDM can be disseminated; (2) public sector training, which requires a needs assessment of current capacity and capacity needs, as well as the development of a comprehensive training strategy; (3) decentralization which helps legitimize the application of WDM measures particularly those which have significant socio-economic implications such as water valuation and allocation; and (4) institutional capacity development which includes the appointment and capacity building of a national key institution to coordinate among the various stakeholders, and a framework for assessment, monitoring and control.

Gender equality and social equity issues are encompassed within all of these components of capacity building on two fronts. First, women's participation in capacity building programs should be encouraged to ensure equity of opportunities. Second, gender equality issues and approaches need to be integrated within the knowledge being disseminated through capacity building strategies. Investigation is thus needed to document:

1. (Potential) participation rate of women in capacity building programs,
2. most appropriate and effective means to disseminate gender equality (separate courses, or integrated within other courses),
3. constraints and/or incentives to encourage women's and men's participation in (gender) capacity building programs,
4. existing skills, experience and training needs at local and national levels pertaining to gender equality capacity (needs assessment),
5. appropriate gender training curriculum.

1.4 NEXT STEPS: AN APPROACH TO ADDRESS PRIORITIES FOR GENDER AND WDM

In order to further the advance of gender and water demand management in the MENA region, it is suggested that a three step process be taken:

Step One: Identify institutions and key individuals to advance gender and WDM within the MENA region through a country consultation process or other approach. (see Annex 4.2)

Step Two: Organize and invite key institutions and individuals to a Gender and Water Demand Forum which seeks to bring together the diversity of experiences, expertise and issues in gender and water demand management in the MENA region. The Forum can present the potential key entry points identified in this Gender Diagnostic Study as suggested theoretical and methodological research gaps in gender and water demand management. The Forum can serve to stimulate reactions to the Study, to test its validity against empirical knowledge and experience and to situate theoretical knowledge within the reality of MENA cultural, socio-economic and political contexts. Participants can be asked to provide further theoretical information and/or case studies related to these entry points, and/or provide theoretical and case study knowledge on additional potential key entry points.

Step Three: During the Gender and Water Demand Management Forum, develop a Gender Equality Strategy for the WaDI*mena* project which includes:

- A brief overview of the rationale for gender and water demand management.

- A situational analysis of gender and water resources management, and specifically water demand management in each country and in the MENA region as a whole.
- A compiled list of theoretical and methodological research gaps to advance gender and water demand management, specific to each country and to the MENA region as a whole.
- A list of priority key entry points for each country.
- A Gender and Water Demand Action Plan to facilitate implementation of these key entry points. Next steps for follow-up and feedback, including mechanisms for communication and dissemination of research, policy and development support.

1.5 SUMMARY OF CONCLUSIONS

A number of main conclusions can be drawn from this Study.

1. It is clear that little information currently exists on the relationship between gender and social equity issues and water demand management. Theoretical constructs indicate that the two objectives of water demand management and gender and social equity should be integrated. However, there is so far no empirical evidence to back this up both within the MENA region, and worldwide.
2. Islamic principles clearly support the role that women can play in water demand management. In a region where religion forms an integral part of people's daily lives this is of great significance and any endeavours to rationalize women's roles in water demand management should be cognizant of this support.
3. Water demand management can make an impact on poverty reduction. Even if water savings are not the ultimate result of water demand management measures, greater efficiency of water use has direct impacts on social equity. However, this does not guarantee that women, typically among the poorest of the poor, benefit as equally as (poor) men. Therefore a gender analysis is crucial to ensure that the benefits of water demand management measures accrue as equally to women as to men.
4. If a distinctive characteristic of water demand management is that implementation is decentralized to the lowest possible level (subsidiarity), it will therefore involve literally every household or activity that uses water, requiring as much attention to behaviour as to technology. Women are at the forefront.
5. For a gender perspective to be integrated and mainstreamed within water demand management policies and measures, women must be allowed effective participation in water resources governance institutions at community and national levels. Currently, even at the lowest level, women face many constraints to their effective participation.
6. Water valuation, as well as private sector participation, can clearly impact upon women and poor people negatively. As David Brooks indicates, the case for water valuation has clearly been won. There does not seem to be much dissent in the MENA region that water tariffs are a necessary water resources management policy.
7. It is apparent that there are a number of potential entry points to advance gender and water demand management objectives. The entry points suggested in the Study are based largely on a literature review of global experiences, not from the MENA region. Theoretical constructs indicate that the role of women in water resources management in the MENA region does not differ from worldwide experiences. However, steps should be taken to ensure that the entry

points suggested in this Study are relevant to the MENA region. Simultaneously, the indicators suggested for monitoring and evaluation purposes should be validated to ensure that they are comprehensive and contextually appropriate.

8. The integration of gender issues in WDM should be conducted within a participatory approach that fosters stakeholder ownership. A number of suggested approaches are offered in this Study, including a Gender and Water Demand Forum to bring together the diversity of experiences, expertise and issues in gender and water demand management in the MENA region, where a Gender Equality Strategy, inclusive of an Action Plan to ensure the Strategy's implementation, monitoring and evaluation, can be developed.

9. It is clear that mainstreaming gender issues within water demand management will be an uphill battle. A useful approach in terms of gender issues will be to demonstrate how an integrated gender approach can add to more cost-effective water resources management. Empirical evidence should highlight this experience so that the policy community can clearly see the benefits of a gender approach.

WaDI*mena* will continue to explore gender equity and WDM as a priority issue during the course of the project's implementation. Based on global evidence of the critical role that women play in water resources management, the complex relationships between the productive and domestic uses of water by women and men, and the complex gender dynamics inherent in diverse socio-economic, cultural and political contexts, a comprehensive gender analyses will be integrated into the WaDI*mena* methodology and activities.