

**The Influence of Research on Policy:  
The case of WDM in Tunisia**

June 2004

by  
Tracy Tuplin

---

This paper is based on the background work and compilation of evidence by Sarah Earl of IDRC's Evaluation Unit.

---

**TOMBSTONE DATA**

1. Project Name  
Gestion de la demande de l'eau (Tunisie)
2. Project Number  
060039 / 94-8608
3. Dollar Value  
CAN\$ 263,470 planned
4. Project Start Date  
September 1995
5. Name of Recipient Institution  
Faculté de Sciences Économiques  
et de Gestion de Tunis
6. Project Duration  
3 years extended to 4.5
7. Intent of Policy Influence  
National public policy making
8. Type of Project Recipient  
University
9. Type of beneficiary identified  
Academics, local, national, international policy makers
10. Type of use identified for the research  
Knowledge generation, problem solving
11. Policy area (what area of policy is intended to (or is) influenced)  
National water demand management

## EXECUTIVE SUMMARY

This study reviews how the research developed in the project *Water Demand Management in Tunisia* influenced policy and policy makers. The study is part of a broader initiative of Canada's International Research Development Centre (IDRC) that seeks to gain greater understanding of policy influence generally, and the influence of IDRC-supported research on public policy more specifically.

Access to fresh water is an increasing concern in Tunisia. This project on managing water demand was developed in 1994 amidst a policy climate that focussed on increasing water supply with little, if any, attention to consumption patterns and demand management. Information for this study was collected through personal interviews between IDRC staff and various people involved in the project, as well as from project related documents from IDRC files and relevant publications.

Before reviewing the evidence relating to policy influence detected, the study illustrates the trying research environment and the limited communications between the research and policy communities. Using Evert Lindquist's typology of policy influence, evidence reveals instances of policy influence primarily in terms of "expanding policy capacity" and "broadening policy horizons". However, the "two communities" context distracted considerably from the project's ability to influence policy more directly.

In addition to this context, other external factors were seen to inhibit policy influence, largely explaining the minimal amount of policy influence detected in this case. However, there were also some factors that enhance and provide longer term opportunities for policy influence. These revolve around Dr. Matoussi's continued work as scientist and professor who is a key expert in the issue area and is continual contact with students and decision makers.

## TABLE OF CONTENTS

TOMBSTONE DATA	0
EXECUTIVE SUMMARY	1
TABLE OF CONTENTS	2
INTRODUCTION	3
<i>Part of a Larger Study</i>	3
<i>Methodology</i>	3
<i>WDM in Tunisia as a Case Study</i>	4
PROJECT BACKGROUND AND COUNTRY CONTEXT	5
<i>Water Scarcity</i>	5
<i>Tunisia in Context</i>	6
<i>The Project</i>	7
<i>The Policy and Research Communities</i>	10
TYPES OF POLICY INFLUENCE	11
<i>Expanding Policy Capacities</i>	11
<i>Broadening Policy Horizons</i>	12
<i>Affecting Policy Regimes</i>	13
FACTORS AFFECTING POLICY INFLUENCE	13
<i>Outreach and Communication</i>	14
<i>Project Design</i>	15
<i>Perceived Roles</i>	16
<i>Time horizons</i>	17
<i>Institutional Issues</i>	17
CONCLUSIONS	19
REFERENCES	21
APPENDIX A – MAP OF SELECTED INTERVIEWEES	23
APPENDIX B – PROJECT DESIGN AND OUTPUTS	24

## INTRODUCTION

### *Part of a Larger Study*

In order to better support researchers in bringing quality work to bear on public policy processes, IDRC is trying to unravel what is involved in “policy influence”. The Centre’s Evaluation Unit has undertaken a study to review the role that research plays in the policy making process. More specifically, the purpose of this multi year strategic evaluation is to help IDRC answer the following questions: what constitutes policy influence in IDRC’s experience; to what degree, and in what ways, has IDRC-supported research influenced public policy; and what factors and conditions have facilitated or inhibited the public policy influence potential. By reviewing a series of 22 projects that have received the Centre’s support, patterns and key issues are expected to be highlighted.<sup>1</sup>

In deciding which IDRC financed projects should be reviewed for this study, the regional offices were approached for recommendations. The Middle East Regional Office (MERO) has been pleased with recent local advancements in terms of water demand management (WDM) research – an area of research that has received IDRC funding since the early 1990s. Demand management is a more sustainable option than supplying more water. As such, WDM has been, and continues to be, promoted as a viable approach to water stressed countries in the Middle East and North Africa (MENA).

### *Methodology*

This paper compiles evidence from a number of sources. Project files were reviewed by IDRC staff and a number of relevant materials were passed on to the author. These materials included IDRC internal documents such as correspondence and drafts of the project proposal, trip reviews, project outputs and various other reports written by the responsible program officers (PO).

Sarah Earl and Bryon Gillespie from the Centre’s evaluation office travelled to the region to conduct interviews with a variety of actors close to the project. The project coordinator at the University of Tunis and three of his team members were interviewed as were the two responsible IDRC POs during the length of the project. Two decision makers were also contacted and interviewed as well as other IDRC staff and external consultants knowledgeable in the area. A total of 15 interviews were conducted in Cairo, Tunis, Amman and Ottawa, 9 of which were recorded and available for review. Some interviewees preferred that the interview not be taped. On other occasions, the interview was not taped or only partially taped because of technical difficulties.<sup>2</sup> Interviews were conducted either in English or French and notes were passed on to the author. Where translation from French was required, this was done either by the interviewer directly in the notes, or by the author.

While in the region, Earl and Gillespie also participated in the Water Demand Management Forum in order to immerse themselves in the issue area and gain greater appreciation for

---

<sup>1</sup> The IDRC study contemplates a review of gender aspects that affect policy influence, however no gender dimensions were taken into consideration in this project or were deemed to have influenced policy.

<sup>2</sup> Conversation with Sarah Earl, IDRC.

context and issues bearing on the project. The region-wide Water Demand Management Forum (WDMF) brings policy makers together around WDM issues.<sup>3</sup> While this case does not address the WDMF, several of the interviewees were involved with the forum and were considered likely to provide insight on how research in the Tunisia WDM study may have affected policy influence. In brief, this initiative has been considered IDRC's best effort at reaching decision makers, both at operational and political levels.<sup>4</sup>

The IDRC Evaluation Unit originally intended to conduct this study in-house, but time and competing demands complicated this. Materials were sent to the external consultant for preparation of the written analysis. In preparing the analysis, attempts were made to triangulating sources however this was not always possible (particularly in regards to policy influence) as there were two key sources directly related to the project and it seemed that the perception of one differed significantly from that of the other.<sup>5</sup>

### ***WDM in Tunisia as a Case Study***

One of the first regional projects on the subject, *Water Demand Management in Tunisia* was considered an appropriate selection and is therefore one piece of data that will feed into IDRC's broader analysis of research influence on public policy. The principal objective of the WDM in Tunisia project was to develop an integrated water demand management strategy in Tunisia that would result in more effective use of the limited water resources, prevent rationing in the face of an eventual shortage, and delay heavy infrastructure investments to increase supply. The main innovation of the project was the application of economic theory and methods to the water management problem. It should be stressed that this study is not a project evaluation, rather a study of the influence that this project's research has had on policy making.

The paper is structured into four sections. Following this introductory section, the second part provides a contextual backdrop for understanding the project. It briefly introduces water scarcity issues facing the MENA region as well as the Tunisian context more specifically. The project itself is then introduced as a short story as to how it was designed and what it was intended to achieve.

Closely related to context, the "policy and research communities" of this section provides a general overview of the policy community, the policy processes in play and how it affected the research community. This is an important part of the paper as it illustrates how policy influence may or may not have been possible, and the extent to which factors around the policy community affect the ability of the project to bring about desired changes.

---

<sup>3</sup> In order to avoid confusing policy influence evident in the WDMF with that in the case study at hand, limited information on the forum is provided. The first phase was called the Water Demand Management Research Network bringing together a group of researchers but with few links with policy makers. Brooks' impression is that IDRC has played a significant role in making the water demand management approach a policy issue.

<sup>4</sup> Faruqui, Naser – Trip Report, June 22-July 05, 2002.

<sup>5</sup> Matoussi and Brooks were two key sources. Saade left IDRC just when the work started moving and the other researchers worked primarily on their own research, generally leaving policy influence issues to Matoussi. See following interviews: Slama, Matoussi, Haouari. Matoussi interview was only partially taped and other interviewees had limited information of this particular project.

The third section draws largely from Evert Lindquist's typology of policy influence to define what forms of policy influence were evident in this project.<sup>6</sup> Divided into three categories, *expanding policy capacities*, *broadening policy horizons*, and *affecting policy regimes*, the paper analyses to what extent each of these three types of policy influence have been detected as a result of this project.

The fourth section delineates the various contextual factors that were seen to affect the extent to which the research was able to inform policy. These factors are both internal to IDRC as well as external, and include factors that enhanced policy influence as well as inhibited policy influence.

The conclusions recognize the limited policy influence evident in this project, yet offer insight for IDRC's future efforts to reach decision makers. Based on the experience of other projects in the region and inhibiting factors present in this case, focus is not just needed on the researchers, but more efforts in making the environment receptive to research may also be required.

## PROJECT BACKGROUND AND COUNTRY CONTEXT

### ***Water Scarcity***

Experts from the International Water Management Institute (IWMI) predict that growing water scarcity threatens the food supply of nearly three billion people, almost one-third of the expected world's population, over the next 20 years. By 2025, 1.8 billion people will live in countries or regions with absolute water scarcity.<sup>7</sup> As most countries in the Middle East and North Africa can be classified as having absolute water scarcity today, the water deficit problem is a vital concern. Fresh water availability in the MENA region is declining and consumption in many countries already exceeds their annual renewable supplies. The region is experiencing high population growth rates, rapid economic growth, urbanisation and industrialisation, resulting in over exploitation of renewable fresh water and increasing degradation of water quality.

Given such an alarming scenario, decision-makers face two principle approaches. The first of these is to provide more water, or *supply* alternatives. However, new supplies can be far from population and industrial needs, technically more difficult to exploit, and overly costly to implement large infrastructure investments. The second approach is to reduce the demand on existing water resources, or *water demand* management. Water demand management covers a wide range of practices and measures, but refers essentially to any management options that alleviate pressures on the current water supply. Such options can include economic tools, institutional reforms, and awareness measures. In light of the escalating water scarcity and the high costs associated with supply options, it seems clear that demand management is an apparent necessity, though it isn't always pursued.

IDRC's involvement in water issues in the region dates back to the early 1990's when it began to fund projects in an otherwise neglected area of research. As the over-riding

---

<sup>6</sup> Lindquist, Evert, A. *Discerning Policy Influence: Frameworks for a Strategic Evaluation of IDRC Supported Research*. University of Victoria. September 2001. p. 6.

<sup>7</sup> See the [iwmi.cgiar.org](http://iwmi.cgiar.org) website.

management strategy in the region had been one of increasing supply by finding and exploiting new sources, IDRC anticipated that decision-makers would be looking for alternatives and have greater interest in WDM options.<sup>8</sup>

When the Evaluation Unit approached the Middle East Region Office (MERO) for case studies to be used in the broader analysis on the effects research has on public policy, this project was recommended for review. This is partially because staff in the region are aware of local advancements in water demand policy. Also, the research leader is a very well known expert in the area. Furthermore, Tunisia is considered to be one of the more advanced countries in the region – one that other Arab and African countries can look towards. Before continuing into greater depth of the case study at hand, a broad overview of Tunisia is useful for understanding the context in which the project took place.

### ***Tunisia in Context***

Geographically located on the North-eastern coast of Africa, between Libya and Algeria, Tunisia has done well to fend off the political instability suffered by its neighbours. Independent from France in 1956, its modern history is divided into two principle eras defined by the leadership of its two presidents: Habib Bourguiba (1956 – 1987) and El Abidine Ben Ali (1987 – present).

With a consistent rate of growth, high at about 5%, per capita income increased more than five times in real terms between 1960 and 1997, and the United Nations Development Program (UNDP) says that the percentage of people living below the poverty line fell from 22% in 1975 to 6.2% in 1995. While the International Labour Organization indicates that a significant number of Tunisians are still vulnerable, over ¾ of the population are considered middle class.<sup>9</sup> Since independence, the government has pursued a vigorous social policy resulting in what some consider a close resemblance of a true welfare state.<sup>10</sup>

While the country has made considerable strides, it is not problem free. Through much of the 1980s the economy lurched from crisis to crisis, and some sceptics view government assistance to be poorly distributed and breeding cronyism. Yet, Tunisia is generally considered to have a successful approach for development.<sup>11</sup> The reforms undertaken over the last ten years has raised Tunisia in the ranks of underdeveloped countries to an enviable level of an emergent economy. Evidence of this is that has cooperated with France to develop agriculture and industry, and more importantly, it is the first country of the Southern Mediterranean to reach an association agreement with the European Union.<sup>12</sup>

In terms of water supply, Tunisia currently has 430m<sup>3</sup> of water per person per year, compared to over 1000m<sup>3</sup>/p/year in areas not affected with water shortages.<sup>13</sup> The key issue in Tunisia is not scarcity per se, but use, as agriculture and other forms of

---

<sup>8</sup> Water demand management site at [www.idrc.ca](http://www.idrc.ca).

<sup>9</sup> Boukhari, Sophie., "Twilight in Tunisia," *UNESCO Courier* (1999) Vol.52, Issue 3. p28.

<sup>10</sup> Ibid. p28.

<sup>11</sup> See particularly Borkhari 1999 and Geyer 1998.

<sup>12</sup> Versi, Anver., "Tunisia: 44 Years of Independence," *Middle East* (2000) Issue 299. p25.

<sup>13</sup> Liman, 2002. 1000m<sup>3</sup>/p/year is a World Bank benchmark indicating severe water scarcity. [www.worldbank.org](http://www.worldbank.org) 2002.

development have been encouraged with little regard to efficiency. A 1990 government document on the Tunisian water strategy for the 1991-2000 decade listed government activities and investments that focused on new supply development. Though water conservation was also mentioned, there was no underlying strategy linking new supply development with end-use conservation in a manner to ensure a sustainable balance between supply and demand.<sup>14</sup>

Currently, most available water supplies have been identified and developed, hence most of Tunisia's water needs in the future must be met through better management of existing water supplies.<sup>15</sup> Perhaps not quite aware of how critical the situation is, government strategies have been focused on supply-side approaches. As Tunisian Minister Hamdane reflected at the World Water Forum in 2002, though it has taken time, WDM is now being accepted as an important approach by government administrations in MENA countries, though institutional arrangements, processes, and policies are still being worked out.<sup>16</sup>

Currently, the Tunisian water strategy is articulated on three axes: improve mobilization of both conventional and non conventional water (desalination, semi salted water, and treated water) resources; improve demand management; and protect resources against pollution and over-exploitation.

### ***The Project***

Stemming from a previously successful IDRC project, Professor Mohamed Salah Matoussi from Tunis University was encouraged to submit a proposal for subsequent IDRC support. Though the previous project was not in water management, Matoussi was considered a fine scientist and a rising star that IDRC would do well to support.<sup>17</sup> It was noted in a subsequent proposal review that a previous project led by Matoussi yielded excellent findings that brought the issue at hand to the attention of a number of international experts.<sup>18</sup>

In response to IDRC encouragement, Matoussi submitted a long preliminary proposal in April 1994 that was passed to IDRC Program Officer (PO) Maurice Saade as his previous PO at that time was leaving the Centre. Water demand management was an important topic to IDRC, certainly worthy of funding, and significant time was spent on refining the objectives and reviewing strategies to ensure the work would inform water policy in the region. Considered "in the pipeline" Saade travelled to Tunisia for the purpose of assisting in the project's development. Discussions focussed primarily on the contents of the latest version of the proposal and the necessary modifications, including clearer objectives to show how the project would address the water problem, and more focus on policy implications rather than the development of economic models. Saade insisted that the project needed to "focus on problem solving and policy recommendations based on the empirical application of existing models (whenever possible) rather than the development

---

<sup>14</sup> Marcus Moench refers to the *Strategie pour le Developpement de Ressources en Eau de la Tunisie au cours de la Decienne 1991-2000* published by the *Direction Generale de Ressources en Eau*. See Moench 1997. p2-3.

<sup>15</sup> Moench, Marcus. 1997.

<sup>16</sup> Hamdane, A. 2002. (Tunisian Minister for the Environment)

<sup>17</sup> Brooks, D. 2002.

<sup>18</sup> IDRC project proposal review. December 1994.

of new models”, stressing the need to treat models as tools rather than an end in themselves.<sup>19</sup>

Saade also highlighted in his trip report his concern for a more multidisciplinary approach as the team was comprised essentially of economists, econometricians, statisticians and mathematicians. This suggestion was met with some reluctance as Matoussi favoured working with his existing team who were all used to working under the same rigorous conditions rather than including outsiders. In the end, Saade determined that Matoussi himself would contribute tremendously to the multidisciplinary of the project. Revisions were incorporated into a subsequent version of the proposal in September 1994.

Formally titled *Water Demand Management in Tunisia*, the principal objective of the project was to design a comprehensive strategy for managing the country’s water demands in order to prevent any rationing due to a potential shortage, while delaying the major supply investments under consideration. The intended beneficiaries were water management and distribution planners and decision-makers.<sup>20</sup> After the long development stage this 3 year project was approved to commence in September 1995. Project documentation indicated the following seven objectives.

#### Project Objectives

- (1) Describe the current situation and identify the problems that arise for the management of water resources with emphasis on the sources of stress given the plans for regional and national development.
- (2) Analyze the national demand for water resources by economic sector and define the key variables on which the amount consumed depends.
- (3) Given the demand analysis of objective 2, propose alternative actions which would constitute the framework of a strategy to manage demand and construct appropriate scenarios to meet that demand.
- (4) Incorporate environmental, institutional and social aspects into the scenarios with the goal of creating a strategy for managing water demand that is sustainable, economically efficient and above all socially equitable.
- (5) Propose alternative means for decentralized management in large scale irrigation.
- (6) Develop alternative tariff systems that will be financially sound for water distribution agencies, provide equitable distribution of costs among users, allow low-income social classes to satisfy vital needs and, above all, induce all economic actors to conserve the quantity and quality of water.
- (7) Analyze the impacts of alternative policies for inter-sectoral and inter-regional transfers of water.

The team was made up of a small group of eight principal researchers and three assistant researchers from the Faculty of Economic Sciences and Management of Tunis (FSEGT).<sup>21</sup> The four areas of study were (1) Resource allocation and decentralization, (2) Residential water demand estimation and the design of appropriate pricing structures, (3) Analysis of the irrigated sector, and (4) Integrated management of water and the environment. An

---

<sup>19</sup> Saade, M. Trip Report August 4-12, 1994.

<sup>20</sup> IDRC review of proposal. December 1994. piii.

<sup>21</sup> The original team members included Mohamed Salah Matoussi as project director, Faycal Mansouri, Mohamed Ayadi, Rafik Baccouche, Mohamed Goaid, Adel Dhif, Samir Essid, and Mohamed Liman. From the list of papers and authors, it seems that some changes were made to the group.

illustration of these issue areas and their associated outputs is appended at the end of this document.

Much of the work focused on thorough quantitative analysis of the three most common water allocation procedures: (1) centralized management - the most prevalent since the emergence of irrigated agriculture; (2) decentralized management, which relies on price incentives and at the time was the most efficient alternative for sustainable management of the resource; and (3) participative or local management, which despite some historical successes, has not managed to become a credible alternative.<sup>22</sup> Also, a good step forward was achieved in defining economically optimal allocation schemes by designing pricing structures that both induce and maintain greater efficiency in use.

Approaching the expected completion date in 1998, Saade departed from IDRC to take up a post at the Food and Agriculture Organization (FAO). David Brooks took over as PO in May 1998, but was based in Ottawa rather than in Cairo. Soon after taking over the project, Brooks authorized a one year extension for the project "to allow [Matoussi] and his colleagues to finish writing, improve the English-language versions of their work, and work on the 'valorization' of the research."<sup>23</sup> Following a visit to meet the research team, Brooks' monitoring report that year had a very positive tone and noted comments like "this has been highly successful project that physically succeeded in drawing attention to the demand side of water management." He noted that the project produced a number of publications and a larger number of working papers, and results were being cited in government reports.<sup>24</sup> He also noted that the work on tariff systems was one of the areas being most closely observed by government. Brooks was pleased with the project and the idea of a second phase was promoted. He also approached Matoussi about a new role in the regional Water Demand Management Research Network being developed by IDRC.<sup>25</sup>

After the additional year, a further 6 month no-cost extension was requested in order to organize an international seminar which would allow for scientific evaluation of the work. At this point, communications seemed to indicate that something in the project had changed. Brooks saw prospects for policy implication to be tapering, and focused on the completion of the academic papers as principle outputs. In the Project Completion Report (PCR), he noted "the project seemed to collapse just when it was supposed to yield results." Despite repeated invitations by Matoussi, IDRC did not attend that final seminar and the project was closed in the absence of final reports.

---

<sup>22</sup> Final Technical Report, October 1999 p3. Also in IDRIS post-project summary.

<sup>23</sup> Brooks, David. Email to Sahar Kamel. October 15, 1998.

<sup>24</sup> There is no further reference as to what work was cited or exactly where.

<sup>25</sup> See page 4 and corresponding footnote on the WDMN. Matoussi had been involved with the initiative from the beginning. In 1997 he participated in the planning workshop on WDM networking in Africa and the Middle East and was subsequently included in the regional decision-maker and donor survey in 2000.

The project time lines can be seen in the table below.

1994	April	Original proposal received by IDRC
	August	Trip report by PO Maurice Saade on proposal
1995	March	Project approved by IDRC
	August	Saade travels to finalize MCG
	September	Project start date
1998	April	Maurice Saade leaves IDRC
	September	Original project completion date
	September	Project monitoring visit by David Brooks - 1 year extension arranged
1999	October	Further 6-month extension requested and granted
2000	March	International seminar in Tunis
2000	August	Project formally closed

### ***The Policy and Research Communities***

Tunisia is generally characterized as being reasonably well functioning.<sup>26</sup> Saade considered the state to have reasonably developed coordination among institutions, particularly in regards to water re-use, and irrigation. Saade also commented that Deputy Ministers have very good technicians with the required background and experience - experts in water issues - who are also policy makers. His perspective was that by wearing both hats information was quickly and easily transferred back and forth between the two sides. Note however that this is when research is officially tied to the policy domain. In general though, he says there is not enough linkages between universities and practitioners or policy makers.

The use of research by policy makers varies. Key to this is that research done outside the bureaucracy needs to make its way into the policy arena. Early documentation of this project optimistically infers that the research and policy communities were not so distant, and the project shouldn't encounter difficulties in coordinating the work. This was based primarily on Matoussi's contacts and good relations within the Ministry of Agriculture, and his access to the various data bases which IDRC officers expected would ensure good collaboration.<sup>27</sup> Plus, as is often the case in small countries, people know each other informally. Saade felt that Matoussi may even pick and choose from a large pool of potential technical advisors for the project from within the Ministry. However, the project did not play out as such and the actual amount of communication the researchers had with decision makers seemed limited. While project documentation vaguely indicates involvement of policy makers, Brooks comments "there is almost no relationship...[t]hey have two worlds, little back and forth."<sup>28</sup>

In regards to cooperation between the policy arena and research community, the lack of concrete evidence indicating a relationship within this study, lends to a scenario that may be illustrative of a "two communities" hypothesis established by Nathan Caplan. In explaining the under-utilization or non-utilization of research, Caplan's concept addresses differences in behaviour, expectations and perceptions as well as difficulties in achieving satisfactory and constructive relationships resulting in the formation of separate

<sup>26</sup> Boukhari 1999, Geyer 1998, The New African 2001, Versi 2000.

<sup>27</sup> Saade, Maurice. See trip reports August 1994 (p4) and August 1995 (p2).

<sup>28</sup> Brooks, David. 2002.

communities. Basically, social scientists and policymakers are depicted as living in separate worlds.<sup>29</sup>

In interviews, policy makers and researchers voiced critical perceptions of the other when discussing general questions relating to the research/policy relationship. Policy makers criticized researchers, felt they looked down from the ivory tower, and noted generally their critical impression of research. Similarly, researchers had their own perceptions, for example that their job was to do good research and the policy makers would come to them. This was marked by Matoussi himself, but also by his team members.

In regards to bridging the gap between research and policy, Mohamed Jrad from the Ministry of Agriculture recognized the system needs to change and summarized means for the relationship to improve in the future. He notes that as people in administration don't have time to get deep into issues, his opinion is that research should be more applied, and that there should be more interaction at dissemination events. As for the policy makers, they should be more forthcoming by putting the topics and problems before the researchers.

## **TYPES OF POLICY INFLUENCE**

In order to better classify policy influence for use in IDRC's broader study on how research influences policy making, this study makes use of Evert Lindquist's typology of policy influence that outlines three principle categories developed for this study. Each of these, *expanding policy capacities*, *broadening policy horizons*, and *affecting policy regimes* is addressed in turn.

### ***Expanding Policy Capacities***

Improving the knowledge and data of certain actors, supporting recipients to develop innovative ideas, improving capabilities to communicate ideas, and developing new talent for research and analysis are illustrations of what Lindquist qualifies as expanding policy capacities.

For this case, it is useful to consider Lindquist's suggestion to look beyond specific projects and events, and consider how the knowledge gained by individuals and/or organizations may be used in other contexts years later. This project supported Matoussi's work, the innovativeness of it being the application of economic theory and methods to the problem of water management, compared to the technical (non-economic) approach which characterized most other studies on water in Tunisia.<sup>30</sup> In his interview Matoussi commented on the learning process involved. "I saw differences in myself and in my maturity"; "I learned a lot about how to present research to decision-makers". When asked what he would do differently, he comments that he would be less nervous and that "there are some people I'd never try to convince because they won't change – I wouldn't lose so much time."<sup>31</sup>

---

<sup>29</sup> On Nathan Caplan's "Two Communities" theory, see Neilson 2001, p4.

<sup>30</sup> Saade, Maurice. August 1994 trip report, p3.

<sup>31</sup> Matoussi, M.S., 2002.

IDRC funding was also very helpful to the faculty in providing advanced training for a large number of graduate students and post-docs who worked in one aspect or another on the project, and benefited from Matoussi's knowledge and leadership. The team members improved their research and analytical capacities during the course of the work with IDRC reports stating "Gains were most evident in the members of the research team, particularly the junior members."<sup>32</sup> They learned about model building, and about the potential application of economic analysis, though primarily in an academic context. Brooks also thought that "in their minds they were doing something for Tunisia... [they were] learning to apply economics to a physical resource, to a natural resource." Matoussi played a role in encouraging the group and helping them gain confidence – helping them realize the importance of their propositions. Matoussi commented that his greatest effort was to convince the team that research had long term benefits, not short term. In sum, IDRC support to this project helped to create the first group in Tunisia with the capacity to analyze water issues from a quantitative economics perspective. Some team members continue to work in the area, while others have moved on.

### ***Broadening Policy Horizons***

Characteristics of the broadening horizons category include: providing opportunities for networking/learning within the jurisdiction or with colleagues elsewhere; introducing new concepts to frame debates, putting ideas on the agenda, or stimulating public debate; educating researchers and others who take up new positions with a broader understanding of issues; stimulating quiet dialogue among decision-makers.

In her work on policy influence, Carol Weiss argues that research is not necessarily directly relevant to policy decisions, but that it could achieve influence in other important ways, namely by altering the language and perceptions of policy-makers and their advisors.<sup>33</sup> In this sense, the project was important in that the emphasis on managing water demand was itself radical. Brooks commented that supply and demand were not viewed or treated equally and that water demand was largely perceived as a fixed factor rather than a variable. Brooks considered the work to be influential, not so much in what exactly was said, but that water demand was questioned at all. While this sort of econometric analysis may not have been needed to tell policy makers water pricing was necessary to control demand, it served as a spring board for further development.

In regards to networking, various opportunities were provided throughout the project. Seminars were held at the university where there is some indication that policy makers attended.<sup>34</sup> The team's work was well received at international events such as the International Seminar on the Economics and Political Economy of Water Resources in Mediterranean Countries held in Marseille France. Nationally, there was contact with the National Society for Water Exploitation and Distribution (SONEDE). Team member Mohammed Ayadi remarked that SONEDE is moving in the direction proposed and though nothing concrete has happened yet, the team is still hoping for changes at some point. He notes that the type of decisions such as tariffs doesn't happen quickly. "This type of

---

<sup>32</sup> IDRC Project completion report.

<sup>33</sup> On Weiss, see Lindquist 2001, p3.

<sup>34</sup> Project reports indicate that policy makers were present, though no specific names were given.

research can provide some information. Even if we influence them and show them a way to go, it is already a lot.”<sup>35</sup>

As indicated previously, Matoussi’s work in the area brought him into IDRC’s broader networking initiatives around WDM. The Water Demand Management Research Network (WDMRN) focused on providing researchers with tools to think about WDM in the region, and on establishing a research resource base. The subsequent Water Demand Management Forum (WDMF) has greater focus on policy makers. While the extent of Matoussi’s involvement in the current policy forum is unclear, the fact that Matoussi remains active in Tunisian research and policy communities working on WDM means opportunities for policy influence continue. Similarly, those team members who continue to work in this area can potentially take their experiences gained around WDM and share them in their new environments.

Though there is not concrete evidence indicating policy makers have picked up on this research, it may have stimulated quiet dialogue among them. This case reflects continued IDRC support to a strong researcher with policy connections and should be viewed as broad WDM support in the region in terms of educating and serving policy makers on the issue. To date, there has been a change in attitude in regards to water valuation with less emphasis on supply development.<sup>36</sup> Encouragingly, the Water Demand Management Forum is gaining momentum and may provide future opportunities to influence debate in the region.

### ***Affecting Policy Regimes***

Lindquist considers influence that results in fundamental redesign or modification of programs as *affecting policy regimes*. Though there is no evidence that this project directly influenced the policy regime, there is at least one important fact to consider: previous water policy approaches have been based on supply issues and the last 10 years or so has seen policy evolve and focus more on demand aspects. The work done in this project may have played a role in shifting the approach from water supply to water demand management.

## **FACTORS AFFECTING POLICY INFLUENCE**

In reviewing this case study, the most prevalent factor that surfaces is weak communications both within the project as well as between researchers and the relevant policy makers. While the separation between the research and policy communities has been outlined to a certain extent in the sections above, this section reviews communication and outreach more broadly, as well as other aspects such as perceived roles of the various actors, time horizons and institutional issues that were seen to affect policy influence. There is also a short review of the Water Demand Management Forum as it may also offer insight as a factor that affects this project’s influence on public policy. In most cases the factors reviewed below were seen to inhibit policy influence, but there are

---

<sup>35</sup> Ayadi, Mohamed. 2002.

<sup>36</sup> Jrad 2002, Hamdane 2002, Matoussi 2002.

some supporting aspects as well. A table is drawn up at the end of the section that delineates both enhancing and inhibiting factors.

### **Outreach and Communication**

Though a dissemination plan was not well-articulated in the project design, the proposal and subsequent project communications indicated that results would be disseminated in the form of papers being published and presented in workshops and seminars. While IDRC encouraged the translation of the highly technical work into documents readable by non-mathematicians, this did not come about. Papers were submitted to academic journals and some were published, but reaching policy makers as a target audience was not a primary role of the research team; rather it was anticipated that Matoussi, as the project leader, would assume leadership on this aspect of the work.<sup>37</sup> In talking generally about the distance between the research and policy communities, Jrad noted that the research is published in international journals that often don't even get to Tunisia.<sup>38</sup>

Matoussi's relationship with Abdelaziz Liman at SONEDE ensured the work was delivered there, however the models were not used.<sup>39</sup> In an interview, Saida Slama indicated the team developed theoretic advice, but the Ministry did not know how to make use of the advice.

In regards to outreach through collaborative efforts and by involving those outside the research team, various seminars and international events took place and were attended, but beyond that, there appears to have been little collaboration with other actors. Mid term reports to IDRC in 1996 spoke of meetings and seminars with decision makers in the different ministries and there was mention of future contact with Moroccan colleagues.<sup>40</sup> A local water management expert and Director of Colorado office of the Natural Heritage Institute, Marcus Moench met with the team on a few occasions and was considered to be very useful to the research. In an email to Brooks in July 1997, Moench suggested that the work would benefit from links to a similar project in South Asia: "To me there would be a clear and relatively major benefit simply from connecting the two sets of work." There was no further correspondence on this and it appears that nothing came of the suggestion.

A few workshops were held primarily with academic audiences. Matoussi and some of the team members were invited to present their papers in an international water management seminar in Marseilles, France, where they presented five papers and received positive feedback. The final international seminar involved international experts for a scientific evaluation of results. It did receive local press coverage with a half page article in the local paper *La Presse*<sup>41</sup> There was reference to inviting experts in the field, however, it is not

---

<sup>37</sup> See "Optimal Cropping Patterns under Water Deficits" in *The European Journal of Operational Research* Vol 130, Issue 1 April 2001. No other listings or citations were found in EBSCO, a large online multi-disciplinary database that provides full text for more than 4,450 scholarly publications. In regards to Matoussi role, see Slama, Matoussi and Ayadi, 2002.

<sup>38</sup> Jrad. 2002.

<sup>39</sup> Slama, Saida. 2002.

<sup>40</sup> No names or further specifics were provided.

<sup>41</sup> *La Presse*. Tunisia. March 12, 2000.

clear that there was significant intent to reach the policy audience.<sup>42</sup> However, Matoussi's principle critique of the project was that dissemination was not allotted for.<sup>43</sup> Though it is generally noted that researchers have to package their work attractively and there are associated costs with doing so, this project finished under budget and cost does not seem to have been an issue. In his interview he commented on the need for more time to disseminate findings.

Finally, using a website was suggested in order to publicise results beyond the regional focus, but political barriers in Tunisia would have needed to be overcome for doing so.<sup>44</sup> Similarly, faxes were suggested as follow-up to email that may be blocked by the government.<sup>45</sup> Illustrative of the region's limited access to information and communication technologies (ICTs) at the time, Matoussi first received an internet connection in October 1997, having requested it four months earlier. Reference to email difficulties appeared in subsequent IDRC records. While this does not directly indicate an obstacle to policy influence, it does indicate that wider communication and dissemination by modern means may have been complicated.

### ***Project Design***

During the project's development phase, IDRC identified certain weaknesses such as the dominance of economists and econometricians, and the lack of clarity as to how the research would help solve the water problem. Regardless, the proposal was approved without significant changes to rectify them, considering Matoussi capable of directing the project to achieve the desired results. While the proposal did seek policy influence, it lacked details on exactly how the research team was going to do so.

Although policy influence has, in different guises, been an important consideration in the research that IDRC supports, understanding what that meant, and the associated activities required to make that happen has only recently been addressed within the Centre. Today, IDRC may look for "policy entrepreneurs" or people able to advocate change and adept at reading the environment both inside or outside government. Such key individuals seem to sense when policy windows are likely to open, and by good positioning, can take advantage of a confluence of events to secure significant change in policy networks.<sup>46</sup> Matoussi was recognized as a fine theoretician and modeller but had not previously been linked to and previous policy relevant work.

---

<sup>42</sup> Matoussi, M.S., Letter to Dr. Brooks, October 15, 1999

<sup>43</sup> Matoussi, M.S., 2002.

<sup>44</sup> Moench, Marcus email to Brooks July 22, 1997. p2. No further reference to what the political barriers were. In regards to general ICT difficulties in the region, see also the "IDRC in the Middle East and North Africa" Report to the Board of Governors that indicates the region is limited in its use of information and communication technologies (ICTs). Oct. 2002. p6.

<sup>45</sup> Brooks, David., Project monitoring report 1998.

<sup>46</sup> See Lindquist 2001. p22-3.

## **Perceived Roles**

This section reviews the perceived roles of the different actors and particularly the differences between how IDRC expected the project to be carried out and how Matoussi and his team perceived their roles and responsibilities.

The proposal went through various revisions to better illustrate the project's intent to influence water policy in Tunisia. IDRC advocated changes, and Saade recognized the importance of his own role in having the project meet IDRC refined objectives. In discussing the project, he says:

[I]t is up to me as a program officer in the appraisal to highlight these things and to work with the scientists to translate this jargon ... I am not sure if I succeeded, [comparing] the first draft I had and the last I think there were major changes, in fact the last draft is still heavy on methodology and not very clear on how to reach policy makers and how the results would be recommended.<sup>47</sup>

From Canada, Brooks took over the project near the original completion date. Brooks pushed the team for implications of the models and language to take the results to policy makers, but only made one short monitoring visit. In regards to his previous IDRC project, Matoussi commented on the *camaraderie* developed with the PO, who visited yearly and kept them motivated.<sup>48</sup> In this project, the team considered that IDRC was to give them their opinion on the project and be the intermediaries with the decision makers.<sup>49</sup> In regards to the relationship with policy makers, Matoussi considered the team's role as to answer the questions the decision-makers were asking in a sufficiently convincing way, noting "It's the research that will convince them."<sup>50</sup>

These perceptions on whose role it was to do what, likely led to less policy influence than IDRC (Brooks) might have hoped for. On these misperceptions, Elly Baroudy viewed it presumptuous to assume researchers would want to reach policy makers. "Why should they" she asks, indicating that often researcher's goals are not the same as decision makers, and they just want to work on their topics that they find interesting.<sup>51</sup> The validity of this comment is reflected in what the team considered their incentives for working in the project, namely working in their subject area, publication, preparing professor dossiers, and getting promoted within the system.<sup>52</sup>

Other factors related to roles and IDRC also affected the outcome of this project. IDRC restructuring and staff turnover detracted from potential influence. The original PO left IDRC just when the project started gaining momentum, and the PO that took over the project did not share the same enthusiasm for econometrics and modeling.<sup>53</sup> Furthermore, site visits were limited because of budget restraints and piggy-backing project discussions

---

<sup>47</sup> Saade, Maurice. 2002.

<sup>48</sup> Matoussi, Mohamed Salah. 2002. Also Ayadi, M. 2002.

<sup>49</sup> Ayadi, Mohamed. 2002.

<sup>50</sup> Matoussi, Mohamed Salah. 2002.

<sup>51</sup> Baroudy, Elly. 2002.

<sup>52</sup> See interviews with Slama, Ayadi and Matoussi et al.

<sup>53</sup> Email from Brooks to Saade Sept 17, 1994. See also Summary Trip Report Oct 6, 1998.

around other regional meetings.<sup>54</sup> When Brooks took over a monitoring visit was planned as the project had not been monitored since the proposal was finalized in 1995. Though Saade met up with Matoussi at events in the region attended by both, the project did not receive the same attention or develop the same relationship with IDRC as in Matoussi's previous project. As a result, the research team felt abandoned and the principle critique is in regards to a lack of monitoring.<sup>55</sup>

### ***Time horizons***

The amount of time dedicated to a project can affect its achievements. Though time is not considered to have been a major factor for this case study, the time that the researchers and particularly the project leader had to contribute to the project was limited. As project funds could not be paid to the researcher (see institutional aspects below) the funds were directed to the university and were used to cover the cost of some of his teaching time<sup>56</sup>. Although Matoussi had one less class, his daily teaching load continued to make heavy demands on his time. When interviewed Matoussi noted the need for a supportive research environment indicating his five and a half hour teaching schedule. The lack of time that could be dedicated to the project was inferred as a factor that limited project results as teaching demands precluded him from giving the project adequate supervision and caused general project delay.<sup>57</sup>

### ***Institutional Issues***

The case also revealed that there were some institutional factors that may have hindered communications. First, Matoussi and his group were not at an agricultural university, they were at the University of Tunisia in the economics department, therefore they couldn't count on the support and tradition of a relationship with the Ministry of Agriculture. In contrast, the National Institute for Agricultural Research is expected to serve and interact in this arena. Furthermore, Matoussi noted that their efforts in highlighting demand management aspects were weakened as the Minister had a very rich information source at his disposal on purely technical plans on water supply. In comparison, the work on water use patterns was practically embryonic.<sup>58</sup> Not only was the team trying to raise a minority view, it was doing it from a disadvantaged position within the system.

Second, the administrative design of the University hampered the project's work from the beginning. As an institute of higher learning, contractual activities beyond the teaching and research within the department, were not permitted. Without institutional support or office space, the team met after hours in Matoussi's garage equipped with a few

---

<sup>54</sup> David email to MSM Nov 2, 1999 indicating budgetary limitations. Also, Maurice noted MSMs request for monitoring but couldn't because of IDRC restructuring.

<sup>55</sup> Matoussi, M.S. 2002., Ayadi, M. 2002.

<sup>56</sup> Referring to paying the University for the cost of him teaching a class.

<sup>57</sup> Brooks, David., PCR p1. June 19, 2001. Final reviewer Eglal Rachad concurred with comments.

<sup>58</sup> Mid term report to IDRC 1996. p1.

computers.<sup>59</sup> The lack of an organizational home probably hindered communications often associated with policy influence.

If professors had been allowed to chose between full-time and part-time teaching, and the university had supported such research teams, this may have been a more fruitful endeavour. This was probably also a factor in the limited scope of the project as the multidisciplinary approach would have required getting others from another faculty or institution involved, complicating the issue further. As it was, the team received the salary for their teaching and a small honorarium from IDRC. This also limited any financial incentive that may have been associated with improving the project or making extra efforts to deliver results to the policy community.<sup>60</sup> As it was, rewards were publication and promotion with the system.

**Figure 1: Factors Affecting Policy Influence**

	Factors enhancing policy influence	Factors inhibiting policy influence
Outreach & Communication	Seminars and international events led to networking and dissemination, particularly among academics.	Lack of well-articulated dissemination plan hindered findings reaching policy audiences.  Political and technical barriers may have complicated use of the internet as modern communication mechanism.
Project Design		IDRC support for promising researcher seemingly prioritized over concrete strategies for ensuring policy influence in original design.

<sup>59</sup> Saida Slama commented that the team members mostly worked alone with Matoussi – no one else reviewed her work, reflecting that there are not many researchers working in her area.

<sup>60</sup> Matoussi, M.S., 2002.

Roles	Matoussi's role as scientist and teacher holds potential for expanding policy capacities and broadening policy horizons as was well liked and respected by students and colleagues.	<p>IDRC restructuring, PO budgetary limitations and staff turnover may have hindered IDRC's expected role.</p> <p>Technical nature of team inhibited translation of theoretic results for use by policy makers as hoped for by IDRC.</p> <p>Project lacked key policy person for positioning and advocacy – researchers considered the research would speak for itself.</p> <p>Rewards for filling expected roles unsatisfactory or not enticing.</p>
Timing	Matoussi stayed in Tunisia - capacity maintained for future research. Any influence of this project likely as a result of Matoussi staying.	Crushing teaching schedule distracted from project leader meeting project needs.
Institutional Issues		<p>Environment generally not conducive to communications between research and policy communities.</p> <p>Rich information sources on technical and supply research compared to newly initiated work on demand management research.</p> <p>University administration and regulations did not facilitate research.</p>

## CONCLUSIONS

The current situation in the Middle East and North Africa is critical in terms of water supply and water quality, and decision makers face serious challenges in providing water to citizens in the years to come. The greatest weakness of the supply focused approach followed over previous decades is that it focused on only one aspect of the management picture, leaving growing demand and socially acceptable usage unchecked. The era of resource development has now mostly come to an end as most water supplies have been identified and developed. Tunisia's need for water supplies in the future will depend on managing existing resources. As such, IDRC supported WDM projects in the region have aimed to inform decision makers of alternatives and complements to supply development. The *Water Demand Management in Tunisia* was one of these projects.

This study focuses on policy influence. While the project performed satisfactorily in the project completion report, a review of its influence on policy has revealed minimal impact. This is largely explained by the context in which the research was done. The research and policy communities had few if any formal links. This is evident in Eglal Rachad's report to

IDRC's Board of Governors in October 2002 where she states that one of the key challenges in the inhospitable climate for research in the MENA region is "improving the connectivity of scientist within the region at the national and regional levels and linking researchers with policy makers." Communications were less than expected, particularly with policy makers. The problematic context is also explained by institutional aspects that hindered communications, such as the Ministry's focus on purely technical approaches and the University's administration and rigidity to research projects.

However there were also aspects of the research that complicated reaching decision makers. Though a breadth of conclusions might have been derived from the analysis, such results and implications for policy were not drawn out or made useful for policy making. Concrete plans for policy influence were not constructed leaving actors with misperceptions as to how expected changes were to come about. IDRC support, which can be a key factor in moving project findings into policy arenas, was complicated by internal restructuring, budgetary restraints and staff turnover.

Having highlighted complications, the project's advances in terms of policy influence must also be noted. Tunisia has seen a shift towards WDM. Even though evidence directly linking this outcome to the project is thin, it is generally assumed that IDRC support to research in this area has contributed to the emphasis on demand management rather than on supply policies. Causality is not easily traced as influence can occur in subtle ways through personal dialogue and networking. Improved capacity of the younger researchers was noted, and the networking opportunities presented through project contacts may contribute to a broad change in perspectives of various actors. In sum, potential for continued/future policy influence of this research still exists.

As evidenced by some of the data presented in this case study, research alone, however good, is not enough to draw policy-makers' attention to important and relevant issues. Also illustrated, contextual factors such as outreach, project design, perceived roles, time, and institutional issues affected the intent to influence policy. Often the factors served to solidify the separation between the communities rather than helping to improve it. In terms of lessons then, more attention should be given to communicating findings to the audiences whose actions ultimately determine resource use and conditions.

Baroudy's reflection on the intent of the researchers is valid indeed, and a different approach or capacity building may be required of IDRC in bridging the gap between researchers and policy-makers. Particularly in areas where the distance between the two communities is so marked, IDRC's work with the researchers in bridging the gap is just as important as its role in working to make the environment receptive to research. If in fact projects are designed to influence decision makers, the *who where what* and *how* should be just as clearly defined as the *why*.

## REFERENCES

- Resources include various internal and public IDRC documents on WDM in the Middle East and North Africa. The public documents are available at [www.idrc.ca](http://www.idrc.ca).
- Ayadi. Mohammed., Research team member. 2002. Interview with Sarah Earl in Tunis. November 29.
- Baroudy, Ellysar., Coordinator for the Water Demand Management Forum. 2002 Taped interview with Bryon Gillespie in Amman Jordan, October 17.
- Beranger, Alain., 2002. Taped interview with Sarah Earl in Ottawa, October 3.
- Boukhari, Sophie., "Twilight in Tunisia," *UNESCO Courier*. 1999. Vol.52, Issue 3.
- Brooks, David., Former IDRC Project Officer in IDRC. 2002 Taped interview with Sarah Earl and Bryon Gillespie in Ottawa, September 25.
- Direction générale des ressources en eau, Ministère de l'agriculture. 1991. Commission de réflexion sur le développement des ressources en eau de surface.
- Direction générale du génie rural, Ministère de l'agriculture. 1994. La gestion de l'eau en Tunisie.
- El Fattal, Lamia., IDRC PO in Cairo. 2002. Interview with Sarah Earl in Cairo. October 9.
- Faruqui, Naser., IDRC PO in Amman. 2002. Interview with Sarah Earl in Amman. October 14.
- Geyer, Georgie Anne., "Tunisia: A Country that Works" *Washington Quarterly*, 1998. Vol.21, Issue 4.
- Hamdane, A. Les reformes institutionnelles : Conditions indispensables a une gestion intégrée et efficace de l'eau 3e forum mondial de l'eau Journée régionale Moyen-Orient et méditerranée 20 mars 2003.
- Hamdane, Abdelkader., *As de la Tunisie : Valeur Économique des Eux Agricole*. 2002. Directeur Général du Génie Rural et de l'Exploitation des Eaux, Beyrouth, Liban, Juin.
- Haouari, Mohamed., Author and project member. 2002 Taped interview with Sarah Earl and Mohamed Salah Matoussi in Tunis, November 30.
- Jrad, Mohamed Kamel Belhaj., Directeur de l'Irrigation et de l'Exploitation des Eaux Agricole, Ministère de L'Agriculture, de L'environnement de Ressources Hydraulique. 2002. Interview with Sarah Earl in Tunis, November 30.
- Liman, Abdelaziz., Director of Planning and General Studies, SONEDE. 2002 Taped interview with Sarah Earl in Tunis. November 28.

- Liman, Abdelaziz., *La Valeur Économique de l'eau cas de la Tunisie. Valeur économique de l'eau potable.* 2002. SONEDE Beyrouth, Liban, Juin.
- Lindquist, Evert, A. *Discerning Policy Influence: Frameworks for a Strategic Evaluation of IDRC Supported Research.* University of Victoria. September 2001. p. 6.
- Matoussi, Mohamed Salah., Research Leader and Professor at the Faculty of Economics, University of Tunisia. 2002 Taped interview with Sarah Earl in Tunis, November 29.
- Moench, Marcus., 1997. *Groundwater Management Priorities in Tunisia: Reflections from a Short Mission.* July 15.
- Navarro, Luis. 2002. Interview with Bryon Gillespie. October 17.
- Neilson, Stephanie., 2001. *IDRC Research and its Influence on Public Policy. Knowledge Utilization and Public Policy Processes: A Literature Review.* IDRC Evaluation Unit. Ottawa, Canada.
- ONAS, Ministère de l'Environnement et de l'Aménagement du Territoire 2002. Rabat, Maroc. Mars.
- Pelletier, Jocelyne. Agir Inc Consultant. Water Demand Management Regional Decision Maker and Donor Survey Participant. Middle East and North Africa. 2002. Taped interview with Bryon Gillespie. October 16.
- Saade, Maurice., Former IDRC Project Officer in MERO. 2002 Taped interview with Sarah Earl and Bryon Gillespie in Cairo Egypt, October 9.
- Salama, Elias., Professor, Faculty of Science at the University of Jordan. 2002 Taped interview with Sarah Earl in Amman, October 14.
- Slama, Saida., Mathematician and project member. 2002 Taped interview with Sarah Earl in Tunis, November 29.
- Versi, Anver., "Tunisia: 44 Years of Independence," *Middle East.* 2000. Issue 299. p25.

## APPENDIX A – MAP OF SELECTED INTERVIEWEES

Project Team Members	IDRC Project Officers	Regional Policy Actors	Other IDRC Staff	Other Consultants
Mohamed Salah Matoussi Project Coordinator University of Tunis Interview recorded (partial)	David Brooks Former IDRC Project Officer (1998 – close) Interview recorded	Abdelkader Hamdane Directeur Général du Génie Rural et de l'Exploitation des Eaux	Lamia El Fattal IDRC PO in Cairo	Ellysar Baroudy Coordinator for the WDMF Interview recorded
Mohammed Ayadi Research team member	Maurice Saade Former IDRC Project Officer (1994 – 1998) Interview recorded	Mohamed Kamel Jrad Director of Irrigation and Agricultural Waters - Ministry of Agriculture Environment and Water Interview recorded	Nasser Faruqi IDRC PO in Amman Interview recorded	Alain Beranger Interview recorded
Mohamed Haouari Research team member Interview recorded		Abdelaziz Liman Director of Planning and General Studies - SONEDE Interview recorded		Jocelyne Pelletier WDM Consultant Interview recorded
Saida Slama Research team member Interview recorded				Elias Salama Professor & IDRC researcher University of Jordan Interview recorded
				Luis Navarro

## APPENDIX B – PROJECT DESIGN AND OUTPUTS

### Research Areas

### Project Outputs

1.

Resource Allocation  
and Decentralization

This line of research resulted in five papers:

1. "Water Markets: Economic Efficiency and Resource Preservation," which focuses on the theoretical modeling of water markets by users with different productivity;
2. "Dynamic Water Market," looks at the effect of water management on efficient and inefficient farmers;
3. "Modeling a Centralized Water Resources Allocation" proposes a model of arbitration based on historical water rights, resource constraint and the probable valorization of economic agents;
4. "Sustainable Water Demand Management: The only way to tackle the water crisis challenges" tentatively defines an institutional framework for sustainable, participative water management; and
5. "A Competitive Model of Water Allocation: Water auction experiments," to the author's best knowledge, the first piece of theoretical work providing a competitive model of water allocation using an auction process and the first application of auction theory to water resources management.

2.

Residential Water  
Demand Estimation  
and Appropriate  
Water Pricing Design

1. "Residential Water Demand Estimation in Tunisia" provides a quantitative picture of the structure and evolution of residential water demand by region using an econometric model.
2. "Estimation of Residential Pricing Restructuring Impacts on Water Demand: An approach by the contingent valuation method (CVM)" was based on a survey of 296 households in the city of Sousse.
3. "Scarcity Rent and Optimal Pricing: The water resources case" reviews the literature on natural resources management and applies the lessons learned to water resources.
4. "Tarification des ressources en eau: les aspects multiples des coûts et l'importance cruciale du coût marginal" (Tarification of Water Resources: The multiple aspects of cost and the crucial importance of marginal cost) looks at the effect of inadequate quantity or poor quality water resources on cost.

3.

Specific Irrigation  
Problems

This line of research resulted in a mathematical model for determining optimal cropping patterns under water deficits in dry areas.

4.

Integrated Water-  
Environment  
Management

This modeling exercise involved a survey of people's willingness to pay (WTP) to protect the Oued Kheirate aquifer. The model was used to estimate aquifer preservation value and thereby enable water managers to draw up an appropriate strategy for its conservation. Its most important output was: "Valorisation of an Environment Good: Theoretical foundations and application to the determination of the value of the preservation of the quality of underground waters: The case of the Oued Kheirate underground."

**Papers**

Title	Author(s)
La gestion durable de la demande en eau en Tunisie: Les défis à relever (November 1996)	Mohamed Salah Matoussi
Residential Water Demand in Tunisia (May 1999)	Mohamed Ayadi, Jaya Krishnakumar and Mohamed Salah Matoussi
Gestion durable de la demande en eau : La seule alternative capable de relever les défis menaçants (October 1999)	Mohamed Salah Matoussi
Common Pool Resources : Taxation-Monitoring- Sanctioning towards Resource Conservation (November 1999)	Rim Lahmandi-Ayed
Régulation et Tarification d'un Monopole Public (December 1999)	Mohamed Adel Dhif
Modeling a centralized water resources allocation : In a world of water scarcity and incomplete information (January 2000)	Mohamed Salah Matoussi and Saida Slama
Gestion durable d'une nappe souterraine renouvelable – « Well Purchasing » (February 2000)	Mohamed Salah Matoussi and Jim Stevens
Valorisation d'un bien d'environnement: Détermination de la valeur e préservation de la qualité de la nappe d'oued Kheirate (February 2000)	Belloumi Mounir and Mohamed Salah Matoussi
A Competitive Model of Water Allocation: Water Auction Experiments	Mohamed Jeddy, Faysal Mansouri and Mohamed Salah Matoussi
Water Markets: Economic Efficiency and Resource Conservation	Rim Lahmandi-Ayed and Mohamed Salah Matoussi
Dynamic Water Markets	Rim Lahmandi-Ayed and Mohamed Salah Matoussi