



JORDAN
An Evaluation of Bank Assistance for
Water Development and Management
A Country Assistance Evaluation

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Currency Equivalents (annual averages)

Currency Unit: Jordanian Dinar

1999	US\$1 = JD 0. 675
1994	US\$1 = JD 0. 670
1997	US\$1 = JD 0. 708
2001	US\$1 = JD 0. 708

Abbreviations and Acronyms

AAA	Analytical and Advisory Services of the World Bank
AFESD	Arab Fund for Economic and Social Development
AMPCO	Agricultural Marketing Corporation
ASAL	Agricultural Sector Adjustment Loan
ASTUP	Agricultural Sector Technical Support Project
BOO	Build-Own-Operate
BOT	Build-Operate-Transfer
CIDA	Canadian International Development Association
EDI	Economic Development Institute of the World Bank (now World Bank Institute)
FAO	Food and Agricultural Organization (of the UN)
GOJ	Government of Jordan
GTZ	Gesellschaft für Technische Zusammenarbeit GmbH
IBRD	International Bank of Reconstruction and Development
IDB	Islamic Development Bank
JVA	Jordan Valley Authority
KfW	Kreditanstalt für Wiederaufbau
MIGA	Multilateral Investment Guarantee Agency
M&I	Municipal and Industrial (water supply)
MoA	Ministry of Agriculture
MoP	Ministry of Planning
MoWI	Ministry of Water and Irrigation
NCARTT	National Center for Agricultural Research and Technology Transfer
ODA	Overseas Development Administration (of the UK)
OED	Operations Evaluation Department
O&M	Operations and Maintenance
PPAR	Project Performance Assessment Report
PSP	Private Sector Participation
TA	Technical Assistance
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WAJ	Water Authority of Jordan
WSS	Water Supply and Sanitation/Sewerage

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Contents

Preface.....	vii
Executive Summary	ix
1. Introduction.	1
Background.....	1
Bank Involvement Before 1990.....	3
Institutional Setting and Challenges.....	4
Current Status.....	6
New Strategic Directions.....	12
2. Bank Products and Services 1990-2002.....	13
Non-Lending Assistance.....	13
Overall Evaluation on Non-Lending Assistance.....	23
Bank Lending for Water and Water Related Reform 1990-2002.....	25
Agricultural Sector Adjustment Loan.....	25
The Agricultural Technical Support Project.....	27
Follow-on Agricultural Operations.....	28
Community Infrastructure Project.....	29
Amman Water and Sanitation Management Project.....	30
Evaluation of the Bank's Lending Program for Water	30
3. Development Effectiveness.....	35
Achieving Corporate Goals.....	36
Contributors' Performance.....	37
Bank Performance.....	37
Borrower Performance.....	39
Bank's Development Partners Performance Issues.....	40
Lessons.....	40
Annexes	
A. Table A1: Water Supply and Demand 1990-2000.....	43
B. Evaluation of the Agricultural Sector Adjustment (Loan No3817-JO) and Agricultural Sector Technical Support Project (Credit No. 3818-JO).....	44
C. Organizational reform is proceeding slowly.....	55
D. List of measures and policy reforms undertaken by the Government of Jordan and Ministry of Water and Irrigation to enhance the water sector and Assure financial viability, in accordance with the Ministry plans and Donors Requirements.....	57
Attachments	
1. Comments from the Ministry of Water and Irrigation.....	61

Preface

This is one of the background papers prepared to support the Jordan Country Assistance Evaluation (CAE) by the Operations Evaluation Department (OED) of the World Bank. Keith Pitman prepared this report.

The findings in this paper are based on the author's visits to Jordan in March and May 2002. The findings are also based on sector reports, project documents and files, published papers and reports, discussion with ministers and officials of the government of Jordan, its participating ministries and line agencies, and international development partners. Within government, the mission's findings are based on in-depth discussions with officials of the Ministry of Water and Irrigation, the Water Authority of Jordan, the Jordan Valley Authority, Ministry of Agriculture (and its agencies: the National Center for Agricultural Research and Technology Transfer, and the Agricultural Extension Services, the Agricultural Credit Corporation, and the Cooperative Development Corporation). In addition, the mission met with JVA field staff, extension development agents of the MOA, farmers in the Jordan Valley and the Jordanian Union of Farmers. Current and retired Bank staff members were interviewed at headquarters and by telephone and electronic mail. The valuable assistance of all those interviewed is gratefully acknowledged.

Peer reviewers S. Ramachandran (OEDCR), and Ridley Nelson (OEDST) provided helpful and constructive suggestions. The CAE Team Leader Fareed M.A. Hassan reviewed various drafts and Bill Hurlbut provided editorial advice. Soon Wan-Pak and Janice Joshi provided administrative and editorial support.

The Governments comments on an earlier draft have been incorporated, where appropriate, in the main text of the report or in footnotes attributed to the Government. The comments are also reproduced as an attachment to this paper.

The author is grateful for all comments and suggestions received and they have been taken into account in finalizing the report. However, the views expressed in the paper remain entirely those of the author and do not necessarily represent the views of OED or the World Bank.

Executive Summary

1. Jordan is one of the most water-short countries in the world. Despite scarcity, water use efficiency is low, with high levels of unaccounted-for-water and low levels of cost recovery. Urban water suppliers waste as much water as they sell. Agriculture, which contributes about 3 percent to GDP, uses two thirds of water resources with high levels of unaccounted-for-water, low tariff, and poor cost recovery. Water institutions face financial problems. The Water Authority of Jordan (WAJ) has been a loss making entity since inception and it receives annual transfers from the government exceeding 1 percent of GDP. The Jordan Valley Authority (JVA) is similarly running a budget deficit, albeit much smaller.

2. While agriculture is the prime candidate for reform, the Bank's attention to water use in the sector was notably absent during 1961-1990. Subsequently, the Bank's analytical and advisory services formed the basis of a cross-sectoral and strategic framework for water and agriculture that all stakeholders accepted. The Bank's strategy was to promote efficient use of water resources through agriculture, water, and institutional reforms. Agricultural sector reforms focused on removal of subsidies, lifting of price controls, liberalization of the external trade regime, and deregulation of the land market in the Jordan Valley. Water policy components included increasing water charges, enhancing groundwater management, and prioritizing public investments in water. Institutional changes were geared to inducing private sector participation in the water sector and institutional development of agricultural research, and extension. These objectives were relevant and consistent with Jordan's development plans and the Bank's strategy. The Bank supported these objectives through policy dialogue, technical assistance, and adjustment and investment lending. Until 1991, the Bank was the second largest donor; however, the Bank's contribution to the water sector declined in 2002 to 6 percent (about US\$100 million) of total external assistance, with USAID and Germany accounting for a third or about US\$550 million.

3. Substantial progress has been made in achieving these objectives, but some important aspects have not yet been fully implemented. Price controls for food, fruits and vegetables were terminated, producer subsidies for wheat and barely were removed, and the land markets in the Jordan Valley were deregulated. The Bank's technical assistance significantly enhanced capacity for agricultural research, but has not yet resulted in effective technology transfer and extension services. Bank-supported Amman private management contract modestly improved water supply efficiency, reduced costs and significantly increased cost recovery. However, in agriculture while water metering led to better knowledge of groundwater use, it did not improve water conservation or income from water sales.

4. Irrigation water tariffs were partly raised to the Bank's recommended level. The Bank waived the second tranche water tariff, but cofinancier KfW did not and eventually canceled its final tranche. The Bank's decision to disburse to meet balance of payments support undermined water tariff reform and created a rift with KfW. The marked shortfall between agreed increases in irrigation water tariffs and actual changes resulted in modest improvement in water use efficiency. If agricultural water tariffs were raised to the Bank's recommended level and allocation left to the market, and unaccounted-for-water were reduced to internationally accepted norms, it is likely that some large investments to increase supplies (e.g., the proposed US\$600 million Disi-Amman water conveyor) could be significantly delayed or reduced at least in the medium term, thus relieving strain on government resources. ⁽ⁱ⁾ The Bank could have been more persuasive if

⁽ⁱ⁾ The Government disagrees with this statement, noting that, "Even with planned reduction in physical losses, the country is still running with large deficits."

concerns about the effect of increased water tariffs on employment and labor markets (an area neglected by the Bank) had been allayed.

5. The Bank's program did not support a significant restructuring of the water institutions that the analytical work identified as problematic as early as the 1991 Public Expenditure Review. Overstaffing of the water institutions, identified as a problem in 1994, remains. JVA's reduction of its staff by 8 percent has been matched by a 7 percent increase in WAJ staff since 1995. The rise in public sector employment contributed to the decline in labor productivity in utilities such as water and needed infrastructure has been neglected for decade (1994 Country Economic memorandum). The burden of inefficient water institutions on the national budget, particularly WAJ, was reemphasized once again by the 1999 Public Sector Review. Neither WAJ nor Jordan Valley Authority has undergone other than modest restructuring. Overall, the outcome of Bank assistance program is rated moderately satisfactory based on its substantial relevance and modest efficacy. Sustainability of the results achieved is likely. There has been no marked improvement in institutions and their development is rated modest.

6. Future Bank assistance should support more efficient use of water resources through restructuring institutions, raising agricultural water tariffs to cover costs, enhancing cost recovery, improving groundwater management, and upgrading infrastructure to reduce costs and high levels of unaccounted-for-water. The Bank should engage its counterparts more collaboratively to reach a consensus on these reforms.

7. The main lessons from this review are:

- Not everything can be done at once—it is better to have a sequence of more narrowly focused goals prioritized according to the level of borrower ownership. The Bank's program was too ambitious in addressing agriculture, trade, water and institutional reforms: political capital was limited and did not extend to making farmers pay more for water at the same time as they were being squeezed by elimination of subsidies and loss of import protection. While technical assistance designed to support the reform program achieved its physical targets (e. g. , water meter installation), it contributed little towards effective regulation of groundwater use or water conservation. Attention to institutional reform of the agriculture and water sectors was late, partial, and only moderately effective.
- The Bank's credibility is harmed when it proposes unrealistic targets. Increasing water tariffs was a central instrument. However, it became clear at the time the Agriculture Sector Reform Loan was approved that the second increase in water tariffs was politically unrealistic and would be jeopardized by the need for disbursement to meet balance of payments support. Rather than accepting this reality and working with the government and KfW on alternatives to achieve the policy objective, perhaps on a longer schedule, the Bank remained silent. Release of the second tranche came as a surprise to KfW and undermined the partnership with them. It also contradicted the Bank's position that increased agricultural water charges were imperative – as did the Bank's later willingness to unconditionally consider the Disi-Amman conveyer for a MIGA guarantee.
- When the Bank is sensitive to the political economy of reform, its acceptability and timing, it can be successful. The reform of the Amman urban water tariffs and the adoption of a private sector management contract for the utility are good examples.

1. Introduction

1.1 ***Objectives of paper.*** This paper evaluates the relevance and effectiveness of the Bank's program of assistance to Jordan water sector in the 1990s. Following an overview of Jordan's water issues, institutional challenges and the Bank's role in the preceding years, Chapter 2 describes the Bank's products and services in the period 1990-2002 and development outcomes. Chapter 3 evaluates the Bank's development effectiveness while Chapter 4 draws lessons and makes recommendations about the Bank's future role in Jordan's water development.

Background

1.2 Sound water and agricultural management is important to Jordan. Only about 6 percent of land is arable and 65 percent of the population lives in urban areas in 2002. Yet in 1990, national water consumption was 63 percent above sustainable levels—most of it inefficiently used in agriculture. All the overdraft is taken from groundwater which provides about 60 percent of Jordan's water (Annex A).¹ While the situation has improved over the decade, total withdrawal was 50 percent more than sustainable groundwater supplies in 2000, and mining the aquifers increases pumping costs and degrades groundwater quality.² High population growth and rapid urbanization will worsen the situation. Municipal users were growing in excess of 7 percent annually in the early 1990s, and it was projected that demand would double by about 2020. Renewable water is projected to decline from 224 m³/year per capita in 1990 to less than 88 m³/year by 2025, a level that is generally considered insufficient to meet minimum needs for drinking water, sanitation and basic self-supporting economic activity.³

1.3 While agriculture has declined from 8 percent of GDP in 1994 to 3.3 percent in 2000⁴, it uses two-thirds of Jordan's water for irrigation.⁵ Traditionally, heavy agricultural subsidies, import restrictions and low water tariffs provided few incentives for more water-efficient and higher productivity irrigated agriculture. Municipal and industrial water users compete for the same groundwater resources as agriculture, particularly in the highlands east of the Jordan Valley. Urban waste water disposal also pollutes or degrades existing surface waters, thus constraining its use. Like agriculture, sound municipal water management was afflicted with unsustainable subsidies and staffing levels, inadequate water tariffs, and high unaccounted-for-water.

¹ The Government notes that, "total ground water abstraction provides 50 percent of Jordan's water."

² For example the annual decline in aquifer water levels ranged from 0.7 m to 2.0 m in the Amman/Zarqa area over the period 1986-1992, and 4.5 m at Mujib over the period 1987-1991. Maximum salinity increased between 1992 and 1993 from 800 to 1000 parts per million at Yarmouk, 3,000 to 3,500 ppm in Amman/Zarqa, and from 800 to 2,000 at Al Azaraq.

³ In 1990, Jordan's per capita water availability was estimated as 224 m³/year compared with 439 for Syria and 1,113 for Egypt. Jordan's 2025 water availability is estimated at 91 m³/year per capita or 249 liters/capita/day for all water uses. Average consumption in Europe was 165 liters/capita/day in 2001 for domestic users.

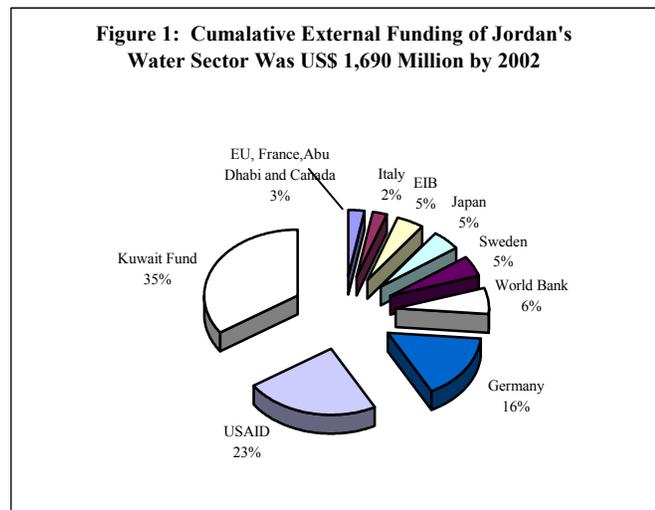
⁴ The Government notes that, "agriculture contributes indirectly to GDP through transport, banking and employment."

⁵ These GDP data for the early 1990s (Central Bank of Jordan Annual Report 2001) differ from those given in the Bank's 1997 Water Sector Review and the government's 1999 Agricultural Policy. The WSR states agriculture directly contributed 8 percent of GDP in 1994, rising to 28 percent when agriculture-dependent activities are included. The 1999 AP states the latter was 22 percent averaged over 1991-95.

1.4 A further difficulty is that Jordan shares both surface and groundwater resources with its neighbors. The biggest resource is the fossil groundwater aquifer that is generally too deep for economic exploitation except in the south of Jordan at Disi. In the north, the shallow Upper Yarmouk groundwater aquifer is over-exploited by both Jordanian and Syrian farmers and municipalities, all of whom compete for the same water. Until the October 1994 Peace Agreement with Israel, political considerations and regional unrest generally precluded optimal usage of the Yarmouk river draining much of Syria and the Jordan river rising in Lebanon and flowing into Israel via Lake Tiberius. Even then, the amount of additional water likely to become available is only about 10 percent of Jordan's 1990 consumption. Thus the biggest challenge is reducing overall demand for water. If this is done, lumpy investment in new supplies could be significantly delayed and/or reduced.⁶

1.5 Much of the high water demand is because there is significant wastage and losses. Almost all surface water is supplied to agriculture in the Jordan Valley⁷, but about half is unaccounted for due to physical losses, low billings, or theft.⁸ Almost three-quarters of groundwater used in the highlands is either free or unaccounted for, and is one-and-a-half times more than the volume overdrawn each year—and this in one of the most water-short countries in the world.⁹ How much of the losses is recycled back to groundwater is unknown and all analyses to date have assumed this to be zero.

1.6 Jordan has been dependent on external assistance to meet much of its water investment and planning needs. Water projects accounted for about a third of all public investment throughout the 1990s, and when subsidies to support water management activities are included, this exceeded three percent of GDP. Recent investment projections to 2011 indicate that an even larger share will be needed, perhaps as large as US\$250 million a year or



Source: Jordanian Ministry of Water and Irrigation.

⁶ The Government disagrees, "it should be noted that even with water saving measures, the country is running with large deficit. Large scale water projects are still need."

⁷ The Government notes that, "only 60 percent of surface water is used in the Jordan Valley for irrigation."

⁸ The Government notes, "losses do not exceed 27.4 percent and are mostly on farm."

⁹ According to MoWI, in 2000 total groundwater withdrawal was 474 million cubic meters (MCM). Of the 186 MCM used for municipal supplies, half (93 MCM) is unaccounted for. Highland irrigation uses the balance, 254 MCM, and while use is monitored, all of this is effectively free. Industry uses only 34 MCM and little of this is lost. Thus total groundwater either free or unaccounted for is 347 MCM, or 73 percent of the total withdrawn. Groundwater overdraft in 2000 was 137 MCM; thus free or unaccounted for water is 2.5 greater than this.

about 3 percent of GDP.¹⁰⁻¹¹ Until 1991, USAID was the largest donor (US\$171 million), followed by the Bank (US\$151 million), Germany (US\$95 million), the Arab and Kuwait Funds, and Japan. More recently, the Bank's contribution to the water sector has declined to about 6 percent of the total (Figure 1). In addition, some of the external assistance—particularly from USAID and Germany—is in the form of grants. In 2002 this amounted to a third or about \$550 million.

Bank Involvement Before 1990

1.7 Despite substantial Bank partnership with government in developing Jordan's water sector over the period 1961-1990, there was little improvement in the operating environment or institutions to ensure sound and sustainable management of rapidly dwindling water resources. Ignoring agricultural distortions that caused water to be misused, the Bank focused primarily on assisting construction of water supply and sanitation infrastructure rather than institutional development. Operations designed before 1990 supported water supply development in Ramallah-El Bira, Jerusalem, Nablus, Azraq, Irbid, Zarqa, and Amman. The Bank provided credits in 1973 and 1978 to support the newly-created Amman Water and Sewerage Authority and additional water supply and sewerage infrastructure, topping up this support for Amman with loans in 1985 and 1986 which also included Jerash and Aqaba. Two other loans in the mid-80s improved facilities at Zarqa and extended water supply, sewerage and sewerage disposal to a further nine cities and towns.¹² A notable feature of most Bank water operations in this period was co-financing of project works by USAID, KfW, IDB and EIB, and significant capacity-building technical assistance, particularly from USAID, UNDP, KfW and ODA.

1.8 Bank sector work in the 1980s, included a 1984 water sector study which gave insufficient attention to issues of water use efficiency, cost recovery and water conservation. The Water Sector Study, for example, stated that there was sufficient water to meet municipal and industrial needs beyond 2000 with a modest increase available for irrigation. Overall, it indirectly signaled that most problems could be readily managed. Indeed, the appraisal report for the 1986 Jordan Water Supply and Sewerage Project affirmed total water resources would be sufficient beyond 2005 (internal Bank document) In 1988, the Bank updated its earlier water sector study and some of its recommendations were taken-up by government in the UNDP and Arab Fund for Economic and Social Development-supported Water Master Plan Project (para 1.13).

1.9 The Bank's own assessment of three water supply and sanitation operations completed in 1989 and 1990 was generally favorable. The Bank concluded that the primary objective of improving both water supply and sewerage services was achieved, although it was acknowledged that actions to address unaccounted-for-water (UFW) needed greater emphasis, as did attention to financial management of water utilities. However, at the time, it was felt that the Jordan Water Supply and Sewerage Project

¹⁰ World Bank 1997. The Hashemite Kingdom of Jordan Water Sector Review. Report No. 17095-JO. October 15, 1997, and World Bank.

¹¹ Ministry of Water and Irrigation. 2002. Water Sector Planning and Associated Investment Program.

¹² Ruseifa, Ramtha, Mafraq, Anjara, Ajloun, Ein Janneh, Kufrinja, Madaba and Ma'an.

(Loan 2694, approved in 1986) would satisfactorily address these issues in the period to 1994 and that no further action was needed.

Institutional Setting And Challenges

1.10 The shortcomings in Jordan's water policy and strategy before 1990 was primarily the result of divided and weak sectoral management, a situation government addressed only at the end of the 1980s. Prior to 1984, Jordan's water was managed by four agencies, the Jordan Valley Authority (JVA), the Water Supply Corporation of Jordan (WSC) for urban areas, the Amman Water and Sewerage Authority, and the water resources branch of the Natural Resources Authority which had overall responsibility for water resources studies and planning throughout Jordan.

1.11 Following Temporary Law No.34 of 1983, the WAJ took over all existing water supply and sewerage operations in Jordan including the municipal water supply department of the JVA and about 300 municipalities and villages, and was assigned the responsibility for water resources management. While WAJ is regarded primarily as an urban water agency, it also acquired from the Natural Resources Authority management and regulatory oversight of 56 percent (33,000 ha) of Jordan's groundwater-based irrigation in upland areas east of the Jordan Valley. Assisted by USAID, JVA underwent a further round of reorganization in 1987 building on capacity developed under earlier bilateral technical assistance and Bank projects.

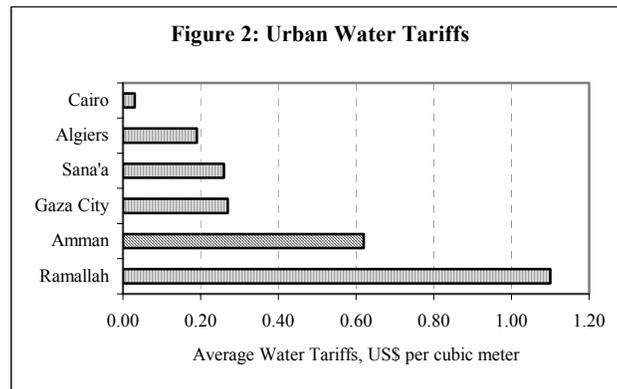
1.12 After the 1984 rationalization, the JVA remained a multipurpose authority responsible for the integrated water and socio-economic development of the Jordan Valley (below 500m elevation). It started as the Jordan Valley Commission in 1973 (along the lines of the Tennessee Valley Authority), and was renamed the JVA in 1977. Its remit covers irrigation, power, land improvement, social development, and planning and development of towns and villages and tourist infrastructure. While it currently retains full managerial and operational control of completed water infrastructure down to the farm level, other civil works, once completed, are handed over to appropriate authorities (for example, municipalities).

1.13 In 1988, government created the Ministry of Water and Irrigation (MoWI) to oversee JVA and WAJ which remained semi-autonomous organizations with financial and administrative independence, retaining their own cadre of employees.¹³ Although all water is state owned, the rights of traditional and private use before 1988 is implicitly recognized and allowed. Recognizing that the new organizational set-up differed significantly from that of 1984, government in cooperation with UNDP and the Arab Fund for Economic and Social Development initiated an update of the National Water Master Plan and measures to strengthen the central water administration, develop guidelines for water policy, establish a computerized water sector data bank and an integrated water sector management model.

¹³ The Government notes, "JVA is not an independent authority."

1.14 While government agreed to further rationalize the organization of the MoWI and its line agencies to improve water management and reduce government expenditures under the 1994 ASAL, restructuring was only introduced in 1999 for “testing purposes” until approved by the Cabinet of Ministers (the current status is pending). The most important changes were greater clarification and demarcation of MoWI’s responsibilities for water resources planning and management and absorption of WAJ’s water resources studies and groundwater monitoring functions.¹⁴ The long delay in implementing reforms was a result of low institutional ownership and frequent changes of minister and senior staff.

1.15 The financial burden of subsidies to WAJ have continued to grow during the 1990s, Table 1.¹⁵ Despite the 1997 restructuring of WAJ to unbundle bulk water and retail activities and water supply and wastewater services, this has not yet improved net revenues even though the average urban water tariff was increased by 40 percent and is now among the highest in the Middle East region, Figure 2. Conversely, levels of unaccounted-for-water, about 50 percent, remain among the highest in the world.



Source: The World Bank. 2000. *Urban Water and Sanitation in the Middle East and North Africa Region: The Way Forward*.

Table 1: WAJ’s Current Account Is An Unresolved Problem¹⁶

	1996	1997	1998	1999	2000
Revenue Less Expenses (JD millions)	-51.3	-55.2	-46.2	-55.0	-32.0
Accumulated Balance (JD millions)	-390.1	-450.2	-483.8	-549.6	-581.4

Source: WAJ 2002. JD 1.0 = US\$1.42.

1.16 The JVA is similarly running a deficit, albeit much smaller. Over the decade the utility lost an average of US\$6.81 million/year, and in 2000 losses were US\$7.93 million.¹⁷

1.17 The Bank-EU funded Project Management Unit for the Amman water contracts is the first step in reforming water the way urban water is managed. Its initial effectiveness

¹⁴ The Government notes that, “the four entities, WAJ, JVA, MWI and MOA have clear and defined borders.”

¹⁵ In 1998, JVA managed the supply 31 percent of Jordan’s water, conversely WAJ municipal water management responsibility covered 26 percent of all water supply. WAJ also had responsibility, until 1999, for monitoring private sector highland groundwater use.

¹⁶ The Government notes that, “the Council of Minister decided in their session of 23/6/1998, to transfer the balance of WAJ’s foreign loan until 31/12/1996 to the national budget in which foreign debts were specified to amount to (JD 365,609,989) inclusive of installments risks and interest on WB loans, to capitalize these loans in WAJ’s budget and no longer to appear in WAJ’s budget any capital or interest payments on these loans, WAJ to bear the foreign loans after 31/12/1996.

¹⁷ The Government notes that, “JVA lost an average of US\$3.76 million/year without revenue from drinking water.”

demonstrates that WAJ has considerable potential for better management. However, this has yet to be replicated throughout the organization. At a much lower intensity, JVA is subject to modernizing pressure through grant TA from USAID, GTZ and France, and the Strategic Plan (2003-08)¹⁸ has been finalized.

1.18 As a consequence of having three organizations running the water sector, there remains significant duplication of responsibility and function which clouds policy implementation and decision-making. A jealous guarding of each agency domain means that essential water management and resource data are not readily shared, and while WAJ and MoWI have official and relatively transparent finance and accounting systems, these are still being developed by JVA assisted by USAID (FORWARD program). There are also territorial problems, most notably JVA's monopoly on the Valley which attenuates essential Ministry of Agriculture (MOA) extension activities to the potentially most productive and export-oriented farmers.¹⁹ WAJ's focus on urban water supplies meant it paid little management attention to upland irrigated agriculture. And, given that most urban water and wastewater facilities are distinct geographic units, there is scope for devolution of WAJ's activities to autonomous local-level management.

Current Status

1.19 *There are a number of notable accomplishments.* The enabling policy environment was improved. In 1997, the MoWI published its Jordan Water Strategy and Utility Water Policy, followed in 1998 by Policies for Groundwater Management, Irrigation Water, and Wastewater Management. A list of measures and policy reforms undertaken by the Jordanian authorities is attached as Annex D. Transforming policy into action has been slow with the exception of reforms to urban water supply and wastewater management which was supported by a later Bank lending operation.²⁰

1.20 Even though there was a 35 percent population increase over the period 1987-92 (mainly Palestinian refugees and repatriated workers returning from the Gulf states), the government has managed to ensure that 98 percent of the current population has access to safe drinking water, albeit intermittently in many urban areas. This was due to new investment in water supply and an increased transfer of water from the Jordan Valley through the Deir Alla pipeline over the period 1996-97 so that its full capacity of 45 million m³/year is now fully utilized. In return for this fresh water, it is estimated that by 2000, about 72 million m³/year of treated wastewater was being recycled via the King Talal reservoir to the Jordan Valley for agriculture. And as noted above (para 1. 15), urban water tariffs have been increased.

¹⁸ This strategic plan will examine options for: (a) improving bulk water supply and management; (b) private sector participation of its retail water delivery functions; (c) restructuring and modernization of the organization; and (d) maximize returns from land development and management in the Jordan Valley. The MoWI expects an action plan to implement the strategy to be agreed by the end-2002.

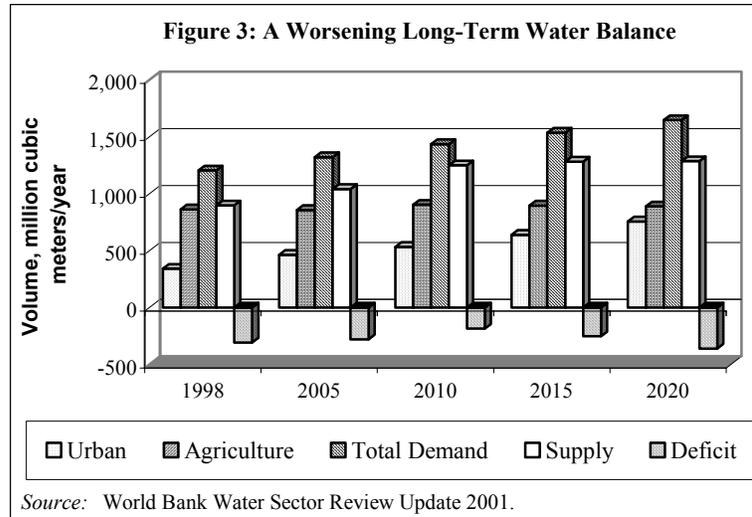
¹⁹ The Government notes that, "there is a clear mandate for MOA on agriculture activities in the JRV according to review of legal status, MOA by-law (44) 2002."

²⁰ The Government disagrees with the statement, pointing out that "a lot has been done in the water sector during the past decade. For example, the MWI finished an action plan 2002-06 that covers a number of issues; institutional and legal reform, agricultural water use, and cost recovery." See Governments comments attached.

1.21 **Future water demand greatly exceeds current capacity.** Urban water demand is projected to almost double by 2020 while agriculture use is expected to remain the same. To meet this challenge, government has launched an ambitious, but significantly under funded, 13-year US\$2.5 billion investment program to increase supplies and service efficiency.²¹ Providing the infrastructure investment is implemented without delay, it is expected that the current water deficit being met from groundwater mining will grow by about a fifth to 360 MCM/year, Figure 3.

1.22 Increasing groundwater withdrawal is contrary to government's stated policy.

Government, noting in 1998 that the overdraft was 159 percent, stated that it intended to reduce it to zero by 2005; this was revised in 2004 to 2020. However this intent is thwarted by an unwillingness to apply regulations for agricultural water use which has led to excessive withdrawal for agriculture.²² Not only is this in direct competition with urban consumers, it also increases pumping costs as the water table falls. Water quality declines also due to influx of brackish and saline groundwater from the bottom of the aquifers and one aquifer has already been lost for this way. The only way to cut the overdraft is to reduce agricultural use and increase water use efficiency. The most effective way to do this is through pricing. As discussed below, the current system of prices is too low.



1.23 **Government is unwilling to raise agricultural water tariffs.** In the highlands, farmers withdrawing groundwater are not billed for water even though water measuring devices have been installed on most wells and there is an official policy to charge for water. The reason given for non-billing is that highland farmers already pay a high cost for well installation and pumping whereas those in the Jordan Valley have water delivered to the farm-gate by the JVA. Even then, the amount paid for water in the Jordan Valley is quite low compared to the urban and industrial water tariffs. Because the government has yielded to pressure from the powerful agricultural lobby, the irrigated area in groundwater-dependent highlands increased from about 31,000 ha to 42,000 ha

²¹ The MoWI released its ambitious US\$5 billion master plan of water sector planning and its associated investment program of 53 projects covering the period to 2011 at a donors' conference in March 2002. This master plan was reduced to US\$2.5 billion in 2004. The investment program includes 5 technical assistance, 10 private sector, 18 water supply and sanitation and 20 wastewater projects and is expected to yield an additional 400 million cubic meters of water a year.

²² The Government disagrees with the statement noting, "evidence shows that, during the past decade ground water use for agriculture has declined in absolute terms from 290MCM to 233MCM in 2001."

between 1996 and 2000 and most of this growth—8,900 ha—came from tree crops which have a higher priority water allocation.²³

1.24 *When alternative uses are considered, water used in agriculture is under priced.*

The average JVA tariff (1995-00) billed was US\$0.008/m³ while the amount collected averaged US\$0.006/ m³.²⁴ Conversely, the average actual 2001 urban water tariff in Jordan was 90 times greater or US\$0.54/m³. Industrial and non-residential water users are charged US\$1.42/m³. Research, supported by Germany, showed that value added by each cubic meter of water used in Jordanian industry was US\$7.95 compared with only US\$0.20 in agriculture.²⁵ Similarly, each thousand cubic meters of water generated 13 times more employment in industry than agriculture. If agricultural water were valued at average urban tariffs the implicit annual agricultural subsidy is of the order US\$200 million or US\$3,200 per irrigated ha.²⁶

1.25 Unlike Jordan, Israel varies the agricultural water tariff on the basis of quantity and quality delivered. Even then, agricultural water is 25 times more expensive than in Jordan. Using a similar increasing block tariff structure, the average price for Israel's irrigation water is US\$0.28/m³ for fresh water and this reduced to US\$0.17/m³ when blended with poorer quality and recycled water; average cost was US\$0.20/m³. In Jordan, all JVA water—including poor quality recycled water—are charged the same. This causes considerable resentment among farmers because of the limited range of crops feasible with recycled water. As a result of Israel's pricing policy, water use efficiency improved and average agricultural use declined more than a third, from 8,700 m³/ha in 1975 to 5,500 m³/ha in 2001. Under almost identical agro-climatic cropping, average present water use in Jordan is 8,400 m³/ha, varying from 8,200 m³/ha in the highland of Mafraq to 9,100 m³/ha in the Jordan Valley.²⁷ There is clearly room for pricing and efficiency improvements in Jordan, particularly as the most profitable agriculture is directed at similar export markets.²⁸

1.26 Experience from the West Bank under identical agro-climatic conditions—but with well-developed export markets—suggests that farmers are willing to pay

²³ The 2002 Groundwater Management Policy: Clause 39: "Priority shall be given to the sustainability of existing irrigated agriculture where high capital investment has been made. In particular, trees irrigated from groundwater shall continue to receive an amount sufficient for their sustainability with the use of advanced irrigation methods."

²⁴ The agricultural rate under JVA's increasing block tariff is US\$0.011/ m³ for the first 1,000 m³/month/farm of 3 ha; US\$0.017/ m³ for the range 1,001 to 2,000 m³/month/farm; US\$0.029/ m³ for 2,001 to 3,000 m³/month/farm; and rises to US\$0.050/ m³ when usage exceeds 3,000 m³/month/farm.

²⁵ Schiffler, M, H Koppen, R. Lohmann, A. Schmidt, A. Wachter and C. Widermann. 1994. *Water Demand Management in an Arid Country—The Case of Jordan with Special Reference to Industry*. German Development Institute. 58 pp.

²⁶ The Government point out that, "calculating average subsidies depending on the municipal water prices is illogical and misleading."

²⁷ Salman, A, K. Raddad, M. Shatanawi and H. Al-Qudah. 2002. *The Economics of Groundwater Use in Agriculture Under Different Water Prices and Supply Regimes in the Upland Area of Jordan*.

Shatanawi, M and A. Salam. 2002. *Impact of Full Cost Recovery of Irrigation Water on the Farming Economics in the Jordan Valley*. Both papers presented at the Water Management and Pricing in the Mediterranean Region—Agadir Conference, 2002.

²⁸ The Government notes that, "comparing between Jordan and Israel is unfair due to differences in per capital income and the presence of well-developed export market."

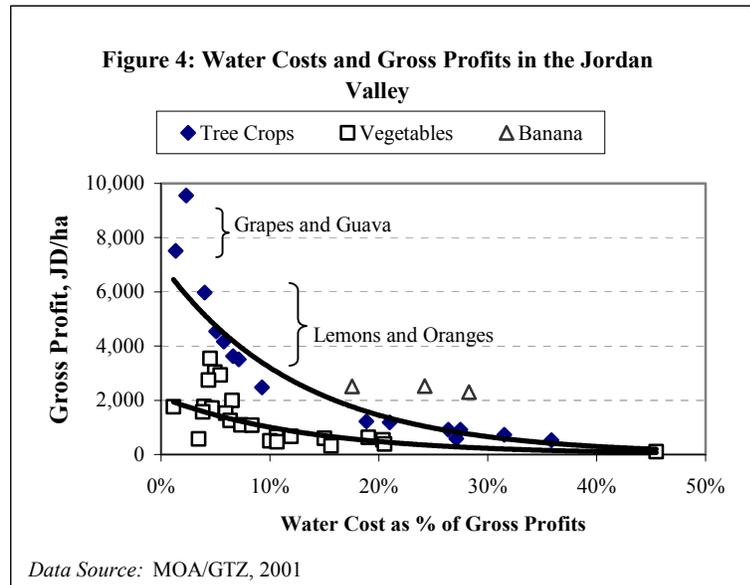
US\$0.20/m³ for almost all crops.²⁹ But when water charges are increased to US\$0.60/m³ only growers of orchards, niche vegetables and flowers are willing to pay for fresh water. At higher water tariffs, many farmers start to reduce irrigated area, revert to field crops and profits fall.

1.27 **Higher water costs would not create hardship.** The cost of water as a production input in 1999 remained relatively small compared with gross profits for the major crops, Figure 4.³⁰ Gross profits are high for most tree crops and some vegetables. In terms of revealed preferences, the continued growth of irrigated banana area in the Jordan Valley despite high water costs (17 to 29 percent of gross profits) indicates that even relatively modest returns (2,000-3,000 JD/ha) are acceptable to Jordanian farmers.³¹ Socially, growers of fruit trees are seen as having a higher social status than farmers of field crops, and because of assured prices and water, tend to be financially more secure.

1.28 Yet government has resisted the Bank's efforts to increase agricultural water tariffs citing social concerns.

In the highland areas, the view is that farmers' access to groundwater is already too costly. And administrative allocation of surface water is believed by most policy-makers to be a more socially-equitable policy than pricing. Indeed, a senior government official stated that the net cost (US\$3.5 million per year) of providing water to the Jordan Valley, which enabled sustainable livelihoods for the 300,000 people engaged in agriculture, was relatively small compared with the social costs that would be incurred if very high water charges caused farmers to abandon the land and migrate to Amman for employment.³²

1.29 **JVA's water allocation gives priority to some farmer.** Water allocation is made by JVA on the basis of water availability and quotas calculated from crop type.³³ The first administrative priority for water allocation is perennial crops: the needs of citrus and fruit



²⁹ Amir, I and F. M. Fisher. 2000. *Response of near-optimal agricultural production to water policies*. Agricultural Systems 64 (2000), 115-130.

³⁰ Gross profits are the same as the gross margin which represents the total income generated through crop production minus variable costs. Gross margins do not include overhead investment costs and fixed costs like land. Data are from MOA. GTZ, 2001.

³¹ The Government notes that, "banana planting declined in the areas irrigated from JVA activities."

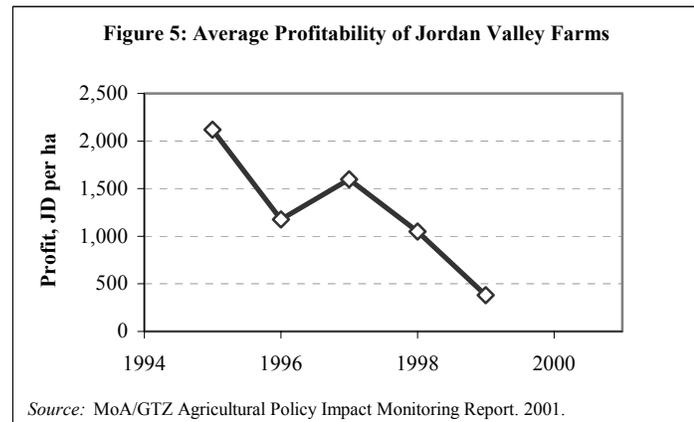
³² Statement to the World Bank evaluation mission, May 21, 2002.

³³ Law No 30 Amended Law of the Jordan Valley Development Law. Article 14 (I) : "the board... define the maximum quantities of water to be delivered in light of water availability and the nature of crops planted in the unit". 16 June 2002.

orchards are satisfied first, followed by bananas. Residual water is then distributed to vegetable farmers until fully spent. Not surprisingly, the area under citrus and bananas has expanded although typically they require two to five times more water than vegetables.³⁴ Though few individual vegetable crops are as profitable as citrus, with good management it is possible to plant 2 or 3 crops a year and make similar profits. Not only is this less risky than reliance on a citrus mono-crop, it also allows seasonal adjustment to water shortages and is more labor-intensive with significant employment and social benefits.

1.30 As a result of JVA's water allocation process, irrigated area rose by 22 percent to 31,980 ha in the Jordan Valley between 1996 and 2000 even though the supply of water did not increase.³⁵ Most of the increase was in tree crops, including bananas which use the most water. Increased irrigation with less water suggests that farmers' water-use efficiency has increased. So far this only seems to have happened with vegetables which are almost all under high-tech irrigation. Conversely, most orchards (90 percent) have failed to successfully adopt drip irrigation and most use basin irrigation.^{36, 37} These differing rates of technology adoption probably reflect water security and relative cost and contribute to the low overall water use efficiency in Jordan (para 1. 25).

1.31 Agricultural monitoring data 1995-2000 from the MoA/GTZ show that water supply cannot keep up with demand.³⁸ In 2001, JVA implemented rationing because higher priority water allocation to citrus farmers and transfers to Amman left 2,500 ha of vegetables with no water. JVA paid these farmers the imputed return of crops forgone (JD 500-1500/farm). As a result of water shortage (which affect quality of produce) and adverse market conditions—some brought about by the ASAL—the profitability of Jordan Valley mixed farmers has fallen, Figure 5. Lack of credit also forced some farmers to sell at low prices to finance inputs for the next crop.



1.32 ***Low returns from export crops and over-production hold back agricultural investment.*** In consequence, upgrading of irrigation technology and efficiency improvements are risky investments. Exports have been historically dependent on the politically vulnerable regional market and, since the Gulf war of 1991, Jordan's markets in the Gulf countries shrunk and export prospects eroded. The country is slowly

³⁴ Bananas need 1,700 to 2,500 mm of water a year; citrus typically requires 1,250 to 1,500 mm; vegetables from 350 mm (lettuce) to about 600 mm (tomatoes, green beans, eggplant).

³⁵ Jordanian Department of Statistics.

³⁶ Al-Zabet, T. G. 2002. Chapter 5: *Integrated agriculture and water management in the Jordan valley*. In *Modern and Traditional Irrigation Technologies in the Eastern Mediterranean*. IDRC. Ottawa.

³⁷ The Government disagrees with the statement noting that, "most orchards, (70 percent) have successfully adopted localized irrigation."

³⁸ Ministry of Agriculture/GTZ. Agricultural Policy Impact Monitoring Report. No. 4. September 2001.

regaining its share of this traditional market. Recently, for example, Jordan signed a free trade agreement with Kuwait, which is expected to double its agricultural exports to Kuwait from its current 94,000 tons (about 18-20 percent of total agricultural exports) valued at JD 16 million (US\$25 million). In addition, Jordan is pursuing an export diversification strategy into the stable, fast growing markets of Europe to reduce vulnerability.

1.33 Presently, Jordan's production capacity far exceeds its export capability. The local market, although growing, is relatively small and cannot absorb surplus production. Even though horticultural production grew by 29 percent in the year 2000, about 25 percent of total produce was wasted (World Bank internal document). For example, while irrigated tomato production increased by 50,700 tons between 1996 and 2000, exports only increased by 22,000 tons depressing local prices. Similarly, while eggplant exports fell by 200 tons production increased by 26,300 tons.³⁹ Clearly production, marketing and intelligence are not very well aligned with export opportunities. The recently approved private-sector oriented Horticultural Exports Promotion And Technology Transfer Project supported by the Bank should lead to measures that boost profitability and give greater returns from the use of scarce water.

1.34 ***The efficacy of water pricing to bring about more efficient use is precluded by political and administrative considerations, lack of incentives for farmers, and risk.*** First, water is too cheap. Second, water rights continue to reside with government even though the role of market forces is acknowledged.⁴⁰ As Amir and Fisher (2000) note, when water quotas are binding, raising water tariffs does not necessarily increase water productivity and efficiency and thus may be merely a tax on the better farmers. The joint use of two policy instruments—quotas and pricing—when only one is necessary may have unintended consequences. Allocating water rights to all farmers and allowing them to be traded may be the most equitable way of sharing the scarce resource and increasing water use efficiency.⁴¹

New Strategic Directions

1.35 The government's water strategy stresses the need to improve water resource management with an emphasis on sustainability. Particular objectives include minimizing pollution, degradation of quality and resource mining, maximizing water use efficiency, and promoting integrated use of multiple sources, including water rights under international treaties. Water and wastewater projects associated with regional peace processes are accorded special attention for construction, operation and maintenance. The 2002 strategy targets full recovery of operation and maintenance costs on profitable

³⁹ Ministry of Agriculture. 2001. *A Pre-feasibility Study of the Jordanian Agricultural Marketing Company*. The report notes that local tomato prices decreased from 0.12 JD/kg in 1998 to 0.07 JD/kg in 1999. Farmers blamed a good and early harvest in the highlands for depressed prices in the Jordan Valley.

⁴⁰ The 2002 Irrigation Water Policy: Clause 44: "Planting of crops with high water requirements will be discouraged. Market forces shall apply to discourage such plantations; and Clause 45: "Planting of perennial crops shall be allowed only with permits until such time as the water balance and the operations system show no signs of water stress in any of the dry months."

⁴¹ The Government notes that, "this argument is not valid, since it will result in the monopoly of big farmer in agriculture."

undertakings in industry, commerce, tourism and agriculture, and indicates it will subsidize these costs in non-profitable sectors according to ability to pay (Box 1). The government is actively pursuing commercialization/privatization of urban water and wastewater services in Amman, Northern Governorates and Aqaba.

Box 1: Jordan's Cost Recovery Policies

Clause 43: Recovery of the cost of utilities and the provision of services shall be targeted. Recovery of operation and management cost shall be a standard practice. Capital cost recovery shall be carefully approached. The role of water tariffs shall be considered as a tool to attract private investment in water projects.

Clause 44: Cost recovery shall be linked to the average per capita share of the GDP and its level. It shall be connected to the cost of living and the family basket of consumption. However, profitable undertakings in industry, tourism, commerce and agriculture shall be made to pay the fair water cost.

Clause 45: Until cost recovery is full, and national savings become at levels capable of domestic financing of development projects, project financing will depend on concessionary loans, private borrowing and/or BOO and BOT arrangements.

Source: Ministry of Water and Irrigation. Jordan's Water Strategy & Policies. 2002.

1.36 In the water supply and sanitation sector the international community and the government are in accord over the need for realistic charging and institutional change, although good governance is an issue, especially for those unwilling to pay for water. But while urban water pricing policy has adopted a realistic approach, the same cannot be said about agriculture.

1.37 The policies for groundwater and irrigation say all the right things on sustainability and the need for conservation but are neutralized by socio-economic safeguards and the strength of the farmers' lobby. For example, the extensive overdraft of groundwater for irrigation is acknowledged, but the rights of existing users are protected. Similarly, high water-using crops will be discouraged, but the rights of farmers to irrigate tree crops will be safeguarded.

1.38 More positively, the JVA's strategic plan (2003–08) aims to make JVA a revenue resource, rather than a drain on the Treasury, through commercialization of many of its activities.⁴² If this is successfully translated into action it could completely change the face of Jordan's agricultural sector. On the Bank's side, preparations for a private sector agribusiness export promotion project are well advanced, addressing one of the ASAL's vital missing links, and perhaps, in the medium term, providing incentives for more efficient agricultural water use.

1.39 The following sections describe the Bank's role in the evolution of Jordan's water sector since 1990. Many of the current challenges emanate from the narrow focus of sector investment and evolution of sector policy, institutions and organizations in the preceding years. Subsequently, the final chapter evaluates the development effectiveness of the Bank's water and water-related operations in Jordan.

⁴² The Government points out that, "JVA has recently commenced an Internal Competitiveness Program ICP, aiming at improving the quality of service provided to the farmer, investors, and other customers in the Jordan Valley, raising the efficiency and effectiveness of its operations, reduce unaccounted for water and improve cost recovery."

2. Bank Products And Services 1990-2002

2.1 **Introduction.** This chapter provides an evaluation of the Bank's non-lending (analytical and advisory services or AAA which includes strategic work) and lending assistance for water and water-related development. While there is a significant body of AAA on water by other development partners, this is not specifically reviewed but, where possible, the role of non-Bank inputs is evaluated and acknowledged.

Non-Lending Assistance

2.2 The World Bank strategies were produced in the 1990s and water development was raised as a concern in all of them. Notably, the level of attention and imperative to reform the water sector, particularly for the municipal and industrial subsector, increased throughout the decade, and coverage of water went from general statements to specific remedies by 1999.

2.3 The first two strategies (1993, 1995) noted that the Bank's earlier focus was on industry and energy, infrastructure and human resource development, and stated that the difficult and politically sensitive issues involving the adjustment of irrigation charges had precluded lending to the agricultural sector over the previous eight years. The 1993 strategy highlighted the government's awareness of the severe economic distortions resulting from the under-pricing of water and protection of agriculture but also indicated that there were equally pressing problems in other sectors too. Accordingly, the Bank's policy was to assist Government of Jordan (GOJ) to achieve sustained growth in energy and agriculture, restructure the energy and agricultural sectors, and address critical infrastructure needs in the energy, transport and water sectors. Financial restructuring, cost recovery, commercialization and privatization was seen as a way of reducing the burden on the budget and improving allocation of resources. In agriculture and water the objective was to recover O&M costs and improve resource efficiency by increasing water charges in the medium term. It was also stated that improving water management and conservation would also protect the environment. Since water and energy are socially sensitive, Bank staff recognized that these factors should be taken into account to ensure an appropriate pace of reform.

2.4 The 1995 strategy reemphasized the argument that water scarcity was the main constraint to agriculture but was otherwise fairly silent as many of the issues raised in 1993 were subject to an Agricultural Sector Adjustment Loan (ASAL) that was being finalized. However, the strategy proposed to substantially reduce (30 percent) the overall volume of economic and sector work and move away from major analytical studies—for example, water—and concentrate on smaller, more focused notes directed at policy implementation. As earlier, the Bank's strategy emphasized the criticality of water in Jordan's development and raised the need to fully consider the international dimensions when considering its development and management.

2.5 The 1999 strategy stated that the shortage of water and its sound management is the most critical environmental constraint to development. While noting that water management was not one of government's strategic goals, the Bank planned to assist

government's priority program to upgrade infrastructure with special emphasis on the municipal and industrial water subsector. The base case scenario for Bank assistance included a greater role for the private sector, use of MIGA guarantees (US\$100 million) to leverage foreign investment for the Disi-Amman conveyor,⁴³ a loan for smaller cities water supply (US\$30 million), and support for decentralized management of irrigation at the community level in the Jordan Valley (US\$10 million). Performance targets included reducing unaccounted-for-water to 30 percent and achieving full O&M cost recovery by 2002. The strategy also emphasized intensive supervision, timely provision of AAA and response to technical assistance needs, particularly in partnership with USAID, EU, Japan, Japan International Agency (JICA), CA, Canadian International Development Agency (CIDA), KfW, GTZ and European Investment Bank (EIB).

2.6 OED rates the relevance of the strategy for water in the strategies as modest in 1993, substantial in 1995 and modest 1999. The lack of a coherent strategy for addressing the problems of the water sector accounts for the rating of the 1993 strategy—in a sense, a strategy for agricultural water was in progress as part of the agricultural sector adjustment process. The sector specialists in the municipal and industrial water supply subsector were still focused on provision of infrastructure and showed little interest in the growing evidence that there were serious institutional problems and recommendations for improvement as highlighted in the 1991 World Bank internal document para 2.15 below).

2.7 The 1995 strategy reflected the adoption of a clear agricultural sector strategy for water under the ASAL, and need to catalyze private sector investment for urban infrastructure. The emphasis on sector work to support implementation (rather than more analysis of the issues) was appropriate given the substantial work and draft water strategy completed during appraisal of the ASAL.

2.8 By 1999 strategy gave most attention to municipal and industrial (M&I) issues—the Bank's strategy being to supplement investment support by other development partners with sector dialogue and donor coordination. Given previous experience, planning to reduce unaccounted-for-water by 40 percent over three years was unrealistic. In agriculture, the strategy proposed focused efforts on piloting participatory management in the Jordan Valley and modest infrastructure improvements. The strategy appeared to judge the reforms introduced under the ASAL (which was completed in 1997) as sufficient and complete, and was silent on the failure to achieve ASAL targets for agricultural water tariffs or institutional reform of the responsible national water agencies. It was also silent on the fact that little sector work had been done to support implementation or explore opportunities to restart reform in other than the M&I subsector.

2.9 A series of sector, economic and public expenditure reviews highlighted the growing awareness that Jordan's water sector was in a critical state.

⁴³ The Disi-Amman conveyor project proposes an investment of \$600 million.

2.10 *Agriculture Initiated the Water Reform Agenda.* The Bank's agricultural strategy of 1990 recognized that a series of short- to medium-term, and long-term adjustments were needed to make more efficient use of the most scarce production resource—water—and identified four areas for reform:

- to move agriculture along the path towards maximizing value-added from the scarce water resource;
- to promote profitable agriculture without government subsidies and price support;
- to enable private enterprise development through improved export markets; and agro-industry by eliminating monopolies and developing competitive markets; and
- to protect and enhance the environmentally fragile water resources and rangelands.

2.11 Two challenges were recognized. In the near-term, the challenge was to develop and exploit available water, install more efficient irrigation and produce less water-intensive, higher value and exportable crops. In the longer-term, the challenge was to adjust for a secular decline in the water available for irrigation and address growing urban demand.

2.12 Pricing of irrigation water was chosen as an instrument to slow mining of upland groundwater resources in two ways. Firstly, as a means of limiting demand. Secondly, by releasing water from agriculture in the Valley for upland urban use, thus substituting for upland groundwater.⁴⁴ At the same time, it was imperative to address institutional problems of the water sector and improve the enabling environment towards more productive agriculture, including research, extension, credit, subsidies, marketing and international agricultural trade. There was also a concern to make dry lands environmentally sustainable by relieving overgrazing of rangelands, and reducing incentives for expanding barley-feed production into these areas.

2.13 Government was reluctant to raise water tariffs and collect them effectively by penalizing defaulters. Irrigation water pricing was very sensitive and it was felt that it would take five years to raise prices to cover the O&M costs. Similarly, government felt that feedstuff subsidies—which encouraged the use of scarce groundwater from the Disi aquifer to irrigate barley—were essential to protect traditional rangeland farmers.⁴⁵ Overall, discussion in 1990 showed that each ministry had differing interpretations of how the reforms should be applied and in some cases these were contradictory. The Ministry of Planning (MoP) for example felt water pricing should be on volume only—the present accounting and billing system—whereas the Ministry of Agriculture (MoA) proposed to link water prices to volume used and crop type. Thus, many decisions had to be elevated to Cabinet-level which was time-consuming.

⁴⁴ The water released from the Valley would be raised by over 1,000 meters through the partially unutilized Deir Alla pipeline linking the Valley and highlands. This has a capacity of 67 million cubic meters a year. In 1993, only 40 mcm was available in the Valley after agricultural demand was satisfied.

⁴⁵ The Government notes that, “the author did not mention that the government encouraged the Disi water supply project bidders to lease or buy the water sources from the Disi project to supply these farms.”

2.14 Despite these difficulties, the Bank's 1990 agricultural strategy was the basis of reform that was elaborated in the Ministry of Agriculture's 1993 Agricultural Policy Charter and government's 1994 Water Policy Framework for Jordan. The Water Policy Framework was an important milestone as it recognized the need to separate resource management and service delivery functions, decentralize management and review potential to make further delegation to user groups and the private sector (Annex D).

2.15 The Bank's expenditure review highlighted the operational and inefficiency problems of WAJ as a major policy issue, and identified similar problems for JVA, but at a lower and less critical level. Nationally, the annual operating deficits of WAJ and JVA were slightly behind Jordanian Electricity Authority (JD 50 million compared with JD 52.4 million in 1989) but all three accounted for 84 percent of all public enterprise deficits. The review recommended a doubling of WAJ's tariffs, but recognized the JVA problem was so severe that a long-term phased approach would have to be adopted. It advocated a new policy for restructuring public enterprises.

2.16 The 1994 Country Economic Memorandum (CEM) placed reform of trade regime as the first priority, banking and financial sector second, and public enterprises third.⁴⁶ An increase in efficiency was essential and this could only be achieved by reforms in the microeconomic structure of the country. One of the perverse incentives created by trade barriers was that it was cheaper to grow barley under irrigation (using fossil groundwater at Disi) than import it. In the case of tomatoes, the protected market led to over-production and lack of interest in exports, reducing prices and consequently the economic return from the use of scarce water. Most importantly, it undercut the comparative advantage of the warm Jordan Valley climate to provide niche markets with winter vegetables and fruits. These barriers separated the domestic economy from the world economy, and in some cases agricultural produce was considerably cheaper than international prices.⁴⁷

2.17 The CEM also highlighted the difficulties of modernizing agriculture investments because of lack of financial discipline in sector-lending institutions and excessive government interference. A difficult agricultural investment climate slowed adoption of high-tech and water conserving irrigation equipment. Agricultural land was generally unacceptable as collateral for borrowing, and it was expected that action would need to be taken in the medium term (18-24 months) to improve this. On the credit front, the Agricultural Credit Corporation lent to farmers at 7-7.5 percent (on money borrowed by government at higher rates), debt forgiveness periodically occurred driven by political considerations and, as a result loan recovery, averaged 65 percent. All these factors

⁴⁶ World Bank. Jordan—Consolidating Adjustment and Establishing the Base for Sustainable Growth, August 24, 1994. The main thrust of the CEM was that Jordan's economy had grown on the basis of extensive use of resources. Growth had been factor using rather than efficiency improving and productivity was stagnating. The concern with trade reform was timely since Jordan's agriculture sector—which accounted for three-quarters of all water use—was highly protected and often provided perverse incentives for water conservation. Government, for example, set retail prices for fresh fruit and vegetables, and required 'permission licensing' for 98 agricultural commodities thus creating a *de facto* ban on their import. Thus rationalization of water use required a deep understanding of the incentives permeating all aspects of the Jordanian economy.

⁴⁷ Data from table 4.10 of the above report. Implicit nominal protection for selected commodities; for example, tomatoes, tomato paste, oranges were very much lower in Jordan.

served as disincentives to private sector lending, thus pushing the entire burden of financing agriculture on the Central Bank, which had other things to be concerned about—for example, the large subsidies to WAJ and JVA and other public enterprises.

2.18 ***Synergy from the Bank’s Global Agenda.*** Within the Bank, preparation of a Bank water resources management policy catalyzed attention to comprehensive water resources management, and Jordan, along with India and the Philippines, became one of the pilot countries for application of this policy.⁴⁸ Accordingly, the MENA region of the Bank issued *A Strategy for Managing Water in the Middle East and North Africa, 1994* and the issues raised were expanded by the Bank in *From Scarcity to Security – Averting a Water Crisis in the Middle East and North Africa, 1995*. The key message was that the MENA region had a looming water crisis: “Unless there was a fundamental change in the way in which water resources are managed and used, the region as a whole will experience a worsening crisis of water scarcity and economic decline. A vicious circle will set in whereby harsh water shortages adversely affect economic growth, and slower growth in turn constrains the investment needed to improve water availability. This downward spiral would spell disaster for the region.”

2.19 ***Jordan’s Demonstrated Water Crisis.*** The tone of these two regional water strategy statements was made more strident because Bank sector work in Jordan—a result of collaborative work with government and other development partners⁴⁹—had clearly demonstrated that Jordan was also using water at a faster rate than it was being replenished.⁵⁰

2.20 The major challenge was to develop demand-management instruments to enable efficient water use, transfer to higher-value uses, and reduction of groundwater overdraft. Instruments included pricing, rationing, promotion of local water markets and a nationwide program to measure water use. Agriculture, which used the most water, was the prime candidate for savings. Thus the policy objectives were to increase the efficiency of surface water use in the Jordan Valley and release water for transfer to Amman in exchange for treated effluent recycled to the Jordan Valley. In the highland areas, the objective was to reduce the volume of groundwater withdrawn and halt resource mining. The vehicle chosen to implement these reforms was the 1994 agriculture sector structural adjustment loan (ASAL).

2.21 ***How to Package Lending was Problematic.*** When first mooted in the early 1990s, there was concern that an ASAL may not be the right vehicle to initiate systemic reform of

⁴⁸ World Bank. 1993. Operational Policy 4. 07, Water Resources Management.

⁴⁹ While the Bank was orchestrating the development partners in a coherent reform effort linked to macroeconomic reform and financial realities, many of these reforms relied on technical support provided to the Ministry of Water and Irrigation and its agencies by USAID, GTZ and CIDA. And the CIDA Structural Adjustment and Policy Support Project, which was facilitated by the Bank and started in 1993, gave special attention to institutional issues facing the water sector. In the same period, USAID sponsored the Water Quality and Conservation Project and GTZ the National Water Master Plan which brought 25 major Jordanian stakeholders together to prioritize a list of water policy issues and discuss strategic options. Similarly, FAO assisted government to design the Agricultural Sector Technical Assistance Program in which the Bank’s 1995 Agricultural Sector Technical Support Project was formulated. This \$25 million program provided a synoptic overview of all assistance to the water and agricultural sectors to ensure synergy, avoid overlap and serve as a tool for donor coordination.

⁵⁰ The Government notes that, “a number of crises in the region contributed to this faster rate of water usage.”

the agriculture and water sector. Jordan had not asked for such lending, and it was thought that the alternative, greater engagement through modest free-standing packages and well-intentioned and sound advice rather than money, may be more effective (internal bank document).

2.22 There was also doubt about the efficacy of water pricing to allocate the future scarce water resources without causing substantial political and economic problems, particularly as political influence, money, and ownership of land determine access to water. Thus Bank staff argued price alone would never really solve the allocation issue. Yet marginal pricing of water—predicated on metering—was proposed as a mechanism to achieve both efficiency and equity, and as an instrument for microeconomic adjustments in agriculture. While a phased program for increasing irrigation water prices to cover O&M costs could easily be satisfied by a flat rate increase, there were concerns about its impact on farm incomes (internal Bank document). USAID studies indicated that, if the full marginal water costs were passed to consumers, about a quarter of smallholders involved in traditional vegetable cultivation would see their incomes drop by 28 percent; and even among those using high-tech irrigation there would be an estimated decline of about 7 percent in net revenue.⁵¹ As a result, it was agreed that monitoring of the poverty impact was essential if an ASAL went ahead (internal Bank document).

2.23 Peer review of the issues paper emphasized the need to focus on fewer (2–3) policy objectives: for example, limit public intervention; reallocate resources from subsidies to long-run investment; and rationalize management of water and land. All felt that water and agriculture sector liberalization was the key issue. However, some feared that what is good for agriculture, may not be good for water (internal Bank document). Several reviewers thought that the declining agriculture sector’s comparative advantages would disappear when water prices were raised and government moved to encourage domestic employment in the sector, and reduce cheaper imported labor. Also, some thought that more expensive water would make irrigation less labor-intensive thus defeating the government’s social/employment policies. All felt the linkage to the macroeconomic framework needed strengthening. And as a result of these delays and concerns, the Bank embarked on an ambitious range of technical and analytical studies to fully justify the ASAL.

2.24 ***Technical Studies for ASAL.*** Fourteen working papers covering all aspects of the ASAL were prepared in 1995. Overall quality was very high and they were extensively shared with government and development partners in Jordan. Partners interviewed by the evaluation mission remarked on the collegial process to finalize them, their thoroughness, and their utility. For the first time a consistent set of data and analysis was available to inform policy debate and decision-making. As such it provided a logical basis for the proposed ASAL and clearly showed how it would bring about the necessary conditions for institutional reform. The papers were closely linked to other Bank AAA, for example the expenditure review and CEM, and showed government that the Bank had an integrated and homogenous program for reform.

⁵¹ USAID. 1993. *The Jordan Valley*. Louis Berger International. Page 94.

2.25 ***The 1997 Water Sector Review.*** The wealth of studies and analysis generated in the first half of the 1990s were summarized in the Bank's Water Sector Review. Initially, the Bank was heavily criticized by government on institutional issues because of its unwillingness to factor in the political realities of water in Jordan and accept that government had valid social concerns. The final draft, while highlighting Jordan's water crisis, made it very clear that the water crisis could not be resolved easily, and the Government needed urgently to initiate physical improvements and improve the institutional framework. Four principal concerns were that: (a) sector policy formulation and planning were uncoordinated; (b) institutional framework for water resources management was outdated; (c) the efficiency of water resources management agencies low; and (d) environmental protection was weak. A list of 17 recommendations elaborated these concerns but only one of them included a time-frame for action.

2.26 The Bank's review was shortly followed by government's 1997 Water Strategy Statement which emphasized: (a) sustainability of resources and slowing the mining of renewable aquifers; (b) the potential of reclaimed wastewater and brackish water; (c) the need for increased public awareness of national water scarcity; (d) an expanded role for the private sector, and (e) improved cost recovery throughout the sector. Thus some but not all the Bank's concerns were addressed. In addition, government policies for groundwater management and irrigation water were approved in 1998 (Annex D).⁵²

2.27 ***Water Supply and Sanitation was Targeted Next.*** The complacency of the Bank's water supply and sanitation sector team in the early 1990s was shaken by two reports that were highly critical, and clearly showed that the water crisis was not only confined to the agricultural sector. An internal audit of the Operation Evaluation Department's (OED's) of the Zarqa/Ruseifa, Eight Cities Water Supply, and Greater Amman Water and Sewerage Projects issued in 1993 concluded that the government's sustained commitment and the strong support of the Bank and other donors resulted in high level of sector development and service levels. The rapid and, apparently, "easy" preparation of successive projects (selected from master plans and other studies) resulted in some superficiality requiring major changes in project scopes during implementation. Sector planning and executing agencies and the country's construction industry have developed impressive and efficient executing capacity resulting in cost-effective sector development. The all-out efforts to improve service levels through expansion of facilities led to the neglect of operation and maintenance and to the ignoring (in practice) of the pervasive growth of the levels of unaccounted-for-water.⁵³ The government's consistent support for the sector, and its apparent choice of providing a heavy subsidy to avoid the potential political repercussions of tariff increases, led to poor cost recovery and the virtual bankruptcy of WAJ. Until recently, the Bank closed its eyes to this serious problem.

2.28 The Water Supply and Sewerage Project, that was supposed to address the ills of the sector (para.1.9), was found equally wanting in OED's 1996 internal performance audit.

⁵² The Government notes that, "the concerns raised within this paragraph do not reflect the measures and policies taken by the Ministry as shown in Annex D.

⁵³ The Government notes that, "Jordan has only pursued its commitments on expanding such services following national and international policies of the time."

The project followed on the lines of the three previous projects and thus reflected the benefits and drawbacks of the time-slice approach. Initial disbursements are more rapid than usual since subprojects are selected among those which are ready, but the institution building agenda generally receives less priority than the implementation of an investment program which is by nature a complex affair. After previous failures by the Bank to elicit the needed improvements in the unaccounted-for-water and WAJ's finances, it was a serious oversight not to have defined in detail the institutional strengthening— including but not limited to the tariff reforms—that was required under the project to flesh out the vaguely defined “development” objective. The Bank has been remiss on both the project quality at entry with respect to its “institutional development” objectives and in its supervision of progress towards these objectives. By not enforcing the available financial covenants, it condoned by default a situation where accumulated unpaid bills were equal to 43 percent of WAJ's revenues in 1994, and revenues do not cover salaries and O& M, much less debt service and depreciation. The Bank may have been politically over-sensitive in waiving its remedies and even the threat of them, since this left an agency in dire financial distress and a sector unable to demonstrate its cost recovery potential and sustainability. At the end of 1994, WAJ's long-term debt was JD225 million and the foreign debt amounted to JD127 million (3.25 percent of national debt). Unpaid interest and principal for WAJ amounted to almost 10 percent of public debt interests and repayments, respectively, in the Government's budget. The outlook is even more grim if the debt is calculated to include also capitalized interest payments by Government and the subsidies from the electricity sector which is also a big money loser and another heavy burden on the Treasury.

2.29 While accepting the need for action, the Bank's urban water team found that the Bank's ASAL approach to water issues had stifled new initiatives. Government was upset by the Bank's unwillingness to take account of the political realities of water and the difficulties increased agricultural water tariffs would cause, and this deadlocked discussions about any future water operations. In consequence, Bank urban water management decided that the only way to break this impasse was to re-establish lending for water supply and sanitation where government and WAJ was responsive and anxious to address water supply and water quality issues. The initial outreach activity was a seminar on Private Sector Participation organized by the Bank's EDI in November 1995. In response, government and the Bank held the Aqaba water sector workshop in mid-1996 and agreed that the main issues were:

- Improve management of the water supply and sanitation sector with an emphasis on demand management
- Improve efficiency, quality and expansion of municipal and industrial water supply
- Improve and augment waste water collection, treatment and reuse, and
- Intensify irrigation in the Jordan valley.

Subsequently, a Bank mission agreed that it would consider financing three operations up to US\$250 million in the water supply and sanitation sector and one agricultural operation.

2.30 The urban water team applied lessons learned from the implementation of the ASAL and focused heavily on how to move from the diagnostics provided by the ASAL's analytical work and OED's evaluations to practical and politically acceptable solutions. Most importantly, the team recognized that water tariff reform could not be imposed, and that the financial woes of the sector could be improved if commercial management and accounting procedures were adopted. In a major departure from earlier practice, the Bank made appraisal of a project to assist Amman's water supply and sanitation utility conditional on government's reform of tariffs and acceptance of a private sector management contract. Unlike the ASAL, however, it did not prescribe water tariffs, leaving that to the government to decide. And the management contract emphasized clarity and specificity on the managerial issue that would be tackled, thus addressing OED's criticism (para 2.28).⁵⁴

2.31 The Bank's reengagement in the urban water and sanitation sector moved quickly with the demand-driven approach. Supporting analytical and advisory work was produced as-needed to address problems or provide essential information to enable stakeholders' decision-making. The first preparation mission, for example, prepared 16 short working papers, and followed up with frequent visits to establish partnership. Thus, when government needed clarification on several issues, the task manager was there to produce an extensive question and answer sheet which addressed concerns and helped to build high-level support. Government extensively involved, and the Bank coordinated, international meetings with development partners to agree on the approach to urban water and wastewater reform and investment at Frankfurt and Petra over the period 1996-97.

2.32 As a result of these meetings, external investment of US\$141 million for the restructuring and rehabilitation of the Amman water and sewerage network was mobilized. Italy and the European Investment Bank agreed to co-finance part of the project, the EIB loan being conditioned on the Bank's loan becoming effective, while USAID, EU Germany and Japan would cooperate through their bilateral programs. Partnership with other donors enabled the Bank to focus on umbrella coordination activities and facilitating involvement of the private sector, while others focused on their areas of comparative advantage—USAID on water treatment for example. Importantly, shifting conditionality to non-Bank grant funding (rather than expensive Bank loans) made conditionality more digestible to government.

2.33 Subsequently, government developed, and Cabinet approved, four sub-sector policies. The Water Utility Policy (1997) detailed institutional redevelopment of the sector and indicated that WAJ would begin to separate its bulk water supply and retail delivery functions and move towards private sector and commercial enterprises. The use of management contracts and other private sector participation in water utilities was envisaged and the principle was that municipal water and wastewater tariffs should be set at a minimum which will recover the cost of O&M, but the application of differential pricing according to end-user was put forward, thus supporting the concept of cross-subsidies within the water sector. A major landmark was the Council of Ministers' approval in May 1997 of a 40 percent increase in Amman's water tariffs and the private

⁵⁴ Staffing, efficiency, tariffs, performance targets and incentives, and investment components.

sector management contract. A wastewater management policy followed (1998) and specifically addressed the issues of development, management, collection and treatment, re-use, and standards and regulations (Annex D).

2.34 Acting on these positive signals, the Bank mobilized trust funds for advisors to assist government in the preparation of draft terms of reference, and for advice on contractual and design issues related to a management contract. The veracity of the Bank's new approach and the high degree of local ownership enabled appraisal to proceed even through changes of three governments and six ministers. The Bank's partnership with WAJ, aided by careful advanced planning, avoided roadblocks and enabled resolution of all outstanding issues and formal appraisal/negotiations in March 1998. Even so, procedural disputes about the award of the management contract delayed Board approval by a year.

2.35 The political sensitivity of water was remphasized by the resignation of the Minister of Water and Irrigation in the fall of 1998 because of problems with Amman's water supply. During the hot season, surface water pumped from the Jordan Vally became polluted with toxic algae and nematodes causing public health problems in the city. While government, assisted by USAID, eventually rectified the problem—a defective water treatment plant—and cancelled water bills for three months, the public outcry was such that the government resigned.

2.36 The burden of inefficient water institutions on the national budget, particularly WAJ, was reemphasized by the timely Bank's review of the public sector which affirmed the relevance of the proposed Amman Water and Sanitation Management Project (Annex C). The review indicated that water, along with education, health, and social development remained priority areas for reform and that many of their problems reflected systemic civil service issues. It reiterated the problems of WAJ but noted that the issue was not inappropriate public expenditures, given the public good nature of M&I, but rather one of incentives to be efficient. Putting WAJ on a sound financial footing was critical for reducing fiscal deficit and for improving water conservation. The main recommendations were to plug the leaks, stop water theft and improve revenue collection by facilitating private sector participation. Specifically, WAJ needed to be run on commercial principles, new investment made to better manage water distribution and demand, and to develop any remaining economically viable exploitable water resources for M&I. Water tariffs needed to be raised to cover costs, and a one-time debt restructuring was recommended if ongoing institutional reforms increased managerial efficiency. Overstaffing of the water sector organizations, identified as a problem in 1994, remains (Annex C). JVA's reduction of its staff by 8 percent since 1996 has been matched by a 7 percent increase in WAJ staff since 1995. In both organizations, the growth of unskilled staff has outmatched the reduction of professional cadres through natural attrition and a ban on recruitment. And a lack of suitably qualified staff and incentives continues to undermine organizational effectiveness.

2.37 At government's request, the Bank produced a **Water Sector Review Update (2001)**. While noting considerable progress on policy, the update raised concern that implementation of the most critical issues for action was both partial and slow. No alternative approaches were suggested. This update produced six discussion papers but,

unlike the 1997 review, circulation of these papers was limited to government and the Bank.⁵⁵ This provoked adverse comments among the Bank's development partners who felt marginalized, particularly in agriculture and irrigation where they had continued investment and technical assistance.

Overall Evaluation of Non-Lending Assistance

2.38 The overall evaluation is satisfactory as summarized in Table 2.1. In terms of substance, the AAA of the 1990s contains issues, concerns and recommendations that are repeated again and again. Clearly the main messages were not getting through. The issues of trade and liberalization reform in agriculture disappear after 1995 because they were successfully implemented. Those on reforming water institutions and increasing agricultural water tariffs do not, and this indicates the focus of non-lending work on water strategy is becoming increasingly irrelevant. It is clear that implementation of policy is the issue, particularly for agriculture and for sector-wide institutional reorganization.

2.39 The Bank needed to refocus its efforts to understand why there has been no progress. When it did so on agricultural trade and the Amman water utility, it was able to build coalitions. In agriculture and for sector management and organization, there needs to be greater, not less, partnership with Jordanian water policy-makers, agricultural water users and development partners, to build a consensus and timetable for reform based on comparative advantage. The Bank should have used its considerable experience to explore alternative strategies which satisfy both water management and social concerns. The Bank could have been more persuasive if concerns about the effect of increased irrigation water tariff on employment and labor market (an area neglected by the Bank) had been allayed. In consequence, the update of the water sector review is less effective as it only reiterates the earlier diagnosis, not new approaches. And even then, the restricted circulation of the discussion papers undermined the impact of the update.

⁵⁵ (1) Water Balance and Investment program; (2) Groundwater management; (3) Water Quality; (4) Jordan valley Authority; (5) Urban W&S Utility Sector–A Financial Perspective; and (6) Considerations for Regulatory Reforms in the Urban W&S Sector.

Table 2. 1 Summary Evaluation of Non-Lending Activities on Water Concerns, 1990-2000

Activity	<i>Evaluation Criteria</i>				
	<i>Relevance</i>	<i>Internal Quality</i>	<i>Presentation and Readability</i>	<i>Impact</i>	<i>Overall Evaluation</i>
<i>Agricultural Sector Strategy Report (1990)</i>	Highly Satisfactory	Highly Satisfactory	Satisfactory	Highly Satisfactory	Highly Satisfactory
<i>Public Expenditure Review (1991)</i>	Moderately Satisfactory	Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Satisfactory
<i>Country Economic Memorandum (1994)</i>	Highly Satisfactory	Highly Satisfactory	Satisfactory	Moderately Satisfactory	Satisfactory
<i>ASAL Working Papers (1995)</i>	Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Satisfactory	Satisfactory
<i>EDI Seminar on Private Sector Participation (1995)</i>	Highly Satisfactory	Not Rated	Not Rated	Highly Satisfactory	Highly Satisfactory
<i>Aqaba, Petra and Frankfurt Conferences (1996-97)</i>	Highly Satisfactory	Not Rated	Not Rated	Highly Satisfactory	Highly Satisfactory
<i>Water Sector Review (1997)</i>	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory	Satisfactory	Highly Satisfactory
<i>Working Papers Amman WSS Management Project (1998)</i>	Highly Satisfactory	Highly Satisfactory	Satisfactory	Highly Satisfactory	Highly Satisfactory
<i>Public Expenditure Review (1999)</i>	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory	Moderately Satisfactory	Satisfactory
<i>Water Sector Review Update (2001)</i>	Satisfactory	Satisfactory	Moderately Unsatisfactory	Moderately Unsatisfactory	Moderately Satisfactory
<i>Overall Evaluation</i>	<i>Highly Satisfactory</i>	<i>Highly Satisfactory</i>	<i>Satisfactory</i>	<i>Satisfactory</i>	<i>Satisfactory</i>

Note: Rating scale: Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Bank Lending for Water and Water-Related Reform 1990-2002

Agricultural Sector Adjustment Loan

2.40 Agreement on the reform of agricultural tariffs, trade, subsidies and marketing ran into problems at appraisal.⁵⁶ Turkey had moved into former Jordanian export markets after the 1991 Gulf crisis, and exports to Saudi Arabia and the Gulf states were curtailed. Unless there were outlets for improved production, there was resistance to removing support. Trade issues were difficult unless there was reciprocity with others in the region. After considerable discussion—aided by the thorough analysis of the 1994 CEM and linkage to the macroeconomic agenda—government and the Bank agreed on the components of the agricultural trade and tariff reform package. However, there was disagreement about the inclusion of initiatives to facilitate development of horticultural markets. The Bank had endorsed an innovative proposal, developed by over 70 Jordanian farmers and exporters, for an open-membership, non-profit Export Promotion Agency to eastern and western Europe. While government was very keen on exports, it was not prepared to accept a loan to aid the private sector promoters as they were neither legally constituted nor had an acceptable development program. In consequence this component was dropped.⁵⁷ The Ministry of Water and Irrigation (MoWI) opposed a large price increase for water, arguing that administrative allocation plus efficiency improvement were the way to save water.⁵⁸ This was conditioned by fears of social and political reaction and hopes that the supply-side might be augmented as a result of the peace talks. Under pressure from the Bank, government agreed to raise the water tariff from 6 fils/m³ to 15 by late 1995 and a second increase to 25 in late 1996 or, failing that, ensure full recovery of O&M costs. The Minister of Planning stated that a faster increase would be out of the question as this was a very sensitive issue. Compared with pre-appraisal plans, this stance delayed the water tariff price rise by a year. Bank staff thought a three-tranche operation would be more acceptable, but the Bank management indicated that it is clear that the water charges issue is a potentially explosive one and a concerted position appears to have been adopted by government, so the Bank did not negotiate the issue further.

2.41 In an internal memorandum, Bank management thought there would be no slippage on conditionality except for the last water tariff increase. Of more concern was that to delay ASAL disbursement would cause a balance of payments financing gap in 1994, a position which the Bank, as chair of the Country Consultative Group, could not accept - and this was the first hint of the dilemma the Bank would face: would macroeconomic concerns outweigh the push for sector reform?

⁵⁶ Pre-appraisal took place in December 1993 after elections, appraisal in the spring of 1994. There was a donors' meeting (USAID, Bank, CIDA, GTZ, KfW, ODA and EC) hosted by USAID/Amman Mission to keep all informed of developments and outcome of the mission.

⁵⁷ Ten years later, the Bank is at the pre-appraisal stage of a similar proposal for a Jordan Agricultural Marketing Company to market Jordanian horticultural products internationally.

⁵⁸ It was emphasized that water charge increases were a fundamental pillar of the ASAL and that the Bank and KfW would be looking for significant action to meet the proposed increase from 6 fils/m³ to 25 fils/m³.

2.42 Finally, five ASAL objectives were agreed:

- Maintain a supportive macroeconomic framework and external financing;
- Support transition to an optimal use of water and land resource;
- Improve the incentive structure through liberalization and so promote the development of markets, including internal and external markets in agricultural produce, and land markets and transport;
- Define the strategic role of government in the agricultural sector and ensure that the private and public services to the sector are delivered efficiently; and
- Implement a complementary Agricultural Technical Support Project to assist the agricultural policy adjustments and to build public and private service capacity to farmers and livestock producers.

2.43 Five criteria were agreed with government before negotiations to formalize the loan conditions: a draft Letter of Sector Policy covering the overall adjustment program in water and agriculture; a draft National Water Policy; criteria for the Public Expenditure Program for water and agriculture for 1994-96; a matrix of conditionality; and agreement on implementation, coordination, monitoring and disbursement arrangements. The ASAL included loans of US\$ 100 million, including US\$20 million co-financed by Germany. The Bank's loan was to be disbursed in two tranches, the first for US\$50 million, the second for US\$30 million. The first tranche was to be available on effectiveness, the second on compliance with the release conditions. KfW's two tranche disbursement was linked to the same conditions, but subject to independent verification by them.

2.44 **Implementation.** Final ASAL negotiations were cordial but difficult, particularly over the issue of water regulations and charges, some of the proposed price controls, and import controls for rice, wheat and sugar. This was made more difficult, only a week before negotiations, because the government's revised letter of sector policy diluted several key policy targets.⁵⁹ Although most were eventually agreed, a number of conditions were moved from conditions of Board presentation to conditions of effectiveness. It was also agreed that an increase of 25 fil/m³ would be implemented by April 1996.

2.45 Approved by the Bank's Board in December 1995, the ASAL first tranche of US\$50 million was delayed by six months, a measure of difficulty within government on meeting the conditions for loan effectiveness, and the Bank's second tranche release was a year later than expected. Compliance with macroeconomic and trade liberalization conditionality was judged satisfactory in the summer of 1996. However, it was clear that "there was an adamant refusal to make a second round of increases [of water tariffs] as

⁵⁹ For example while price support for tomatoes was to be repealed, the announcement of the repeal was deleted. Similarly, tariffs on agricultural produce would be set at "appropriate levels," rather than "not exceeding 30% production weighted average." Dates for adoption of research and extension strategies were deleted, as were references to the Water Policy Framework and all specific adjustment measures in the water sector. In the water area, deletions were private agricultural well were not to be charged the same as private industrial wells (100 fil/m³); phasing out special licenses for high water using crops was deleted in favor of "recognizing the rights of existing users through a systematic rationing system." The proposal to centralize water resources data collection and processing was deleted. The government deleted reference to the "polluter pays principle" and instead put "adopt a tariff system compatible with the costs of wastewater treatment" thus spreading pollution costs inequitably across all consumers.

long as market conditions for agricultural produce did not improve and as long as issues of management of treated wastewater have not been addressed. The Minister did confirm government's intention in future is to move ahead with higher tariffs, particularly for high water users and for good quality water, but only once the export marketing problem is resolved and markets improve." In December 1996, the Bank agreed on a three month extension of the government's request for a year. Subsequently, government affirmed that it would adopt an alternative policy of promoting efficient use of the country's scarce water resources, including eliminating public subsidy on irrigation water, addressing promotion of higher value agriculture and its export, and gradually transferring management and financing of Jordan Valley irrigation schemes to user groups.

2.46 There was slow progress on other issues too. Privatization of the core business of tomato canning was delayed.⁶⁰ Institutional reform of the three agencies dealing with water (MoWI, WAJ, JVA) met opposition from them. Rather than proposing a central apex authority, MoWI proposed to keep the existing parallel organizations JVA and WAJ and add a new one—a Water Planning Authority—funded by an additional US\$0.7 million in technical assistance. On restructuring, the Minister reported that there was a divergence of opinion among the agencies, "a divergence not necessarily along current institutional 'seams'." A National Water Council was proposed and an implementation plan for reform agreed.

2.47 In April 1997, the Bank agreed that 8 of 9 conditions for the release of the second tranche had been met. Internally and on a pragmatic note, staff also argued that the Deir Alla pipeline capacity was fully utilized and that higher water tariffs could not improve reallocation from agriculture to urban use without new infrastructure. Accordingly, the Bank asked the Board to waive the proposed increase of water charges to 25 fils/m³ due to widespread political opposition and farmer unrest in the Jordan Valley as a result of substantial price adjustments in the economy.⁶¹ On approval, the Bank released the second tranche of \$30 million. Germany objected, and withheld release of its share until such time as the agreed water tariff was implemented. As this did not happen, KfW eventually cancelled its second tranche in the spring of 2002.

The Agricultural Sector Technical Support Project

2.48 The components of the Agricultural Sector Technical Support Project (ASTUP) were originally envisaged as part of a hybrid operation under the umbrella of the ASAL. However, in the interests of reducing complexity, it was separated from the ASAL in 1993 as a parallel operation although it was bundled with the ASAL for Board approval.

2.49 **Objectives.** Initially, the ASTUP project objective was to provide tactical support for the promotion of high-value export produce and increased foreign exchange earnings

⁶⁰ Conversely, full divestiture of AMPRO was delayed because government retained the core business of tomato canning at the Al Arda factory. Instead, the Bank accepted assurances that once profits built up it will be sold off and all other facilities would be either closed down or leased to the private sector. AMPRO is still a fully government-owned operation.

⁶¹ At its height, opposition to higher water tariffs included occupation of the Parliament floor, a situation defused only the intervention of His Majesty the King.

and employment, thus helping producers respond to the incentives brought about by structural adjustment. Government's priorities were broader and included support for withdrawal from non-essential services while simultaneously reinforcing essential services—like extension—which have public-good characteristics. Initially seven areas were identified—agricultural extension; irrigation development (improving efficiency); market development for export; farmers' cooperatives institutions and groups; institutional support for MOA; and investments to be identified. Later these were refocused taking into account other development partners' comparative advantage, and reduced to five: water measurement and management in the JVA, groundwater management and management, agricultural research, agricultural extension and M&E of ASAL impacts. The ASTUB package of technical support, studies and consultancies, were co financed by the government, World Bank, KfW and GTZ.

2.50 *Implementation.* The ASTUP had initial start-up problems because the project was not included in JVA's investment program and this caused delayed release of counterpart funds. Subsequently, procurement was a time-consuming problem for both borrower and Bank. As a result, project closing was extended twice for a total time of 18 months. All the physical targets (water meter installation, well recorders) were either achieved or exceeded and the NCARTT technical support and training program went according to plan. Extension staff were trained in Turkey. Under the research component, technology transfer demonstration packages for optimizing water and fertilizer use, improved agricultural by-product utilization, herd feeding systems on marginal land, and irrigation management systems in the Jordan Valley were piloted—but on too small a scale to create demand. As a result, unutilized research funds were used to undertake feasibility studies for irrigation rehabilitation in the Jordan valley. Even so, at completion, US\$0.7 million was cancelled.

Follow-on Agricultural Operations

2.51 During the implementation of the ASAL the Bank supported studies for a follow-on Jordan Rift Valley Improvement Project which has proved to be controversial. Bank leadership appeared to be notably absent and the development of project objectives floundered due to a lack of Bank managerial direction. Engagement of consultants by government was prolonged and only occurred six months before the end of the project, thus precluding a satisfactory proposal. The view in the donor community is that the Bank over-sold the JRVIP and this effectively froze other donor interest. When JRVIP failed to deliver, there was considerable donor anger with the Bank for the time wasted and lack of progress. Some even said the Bank derailed progress in agriculture. These outcomes appear to have soured relationships between the Bank and the JVA, as well as among the development partners, particularly USAID who were looking for the Bank to provide a comprehensive perspective and strategic oversight for the agriculture sector as it did in the period 1990-1996. Instead, ten years after it was first discussed, government and the Bank launched a small private-sector orientated horticultural export development project in 2002. In the meantime, GTZ and government signed an agreement in 2001 for technical assistance to improve utilization of water resources in irrigated agriculture and facilitating participatory irrigation management – one of the Bank's original components.

Community Infrastructure Project

2.52 **Objectives.** Approved in 1997 and scheduled for completion in 2001, the project was designed as the pilot phase of a long-term program of small-scale infrastructure for poor communities. It was co-financed by KfW, the Arab Fund and IDB. Its primary development objective is to improve the living conditions of the poor by providing essential physical and social infrastructure services to 14 squatter settlements and 13 refugee camps. Overall, it expects to improve living conditions for 270,000 people in poor urban settlements, and 1.3 million people in 300 municipalities and villages. A secondary objective is to improve the capacity of selected institutions to deliver infrastructure services to the poor in an effective, efficient, and targeted way. Improved water supply, sanitation and sewage treatment are important parts of the project. About a quarter of the total of US\$140 million is for four sewage treatment plants and water supply, improved drainage and sanitation.⁶²

2.53 Ten percent of project costs are directed towards institutional capacity building targeting central institutions (the Ministry of Planning, the Housing and Urban Development Corporation (HUDCO) and the Cities and Villages Development Bank (CVDB), surveys and public awareness creation, and five income-generating projects in economically distressed areas. The project's main institutional focus is to strengthen program delivery by existing government institutions included under government's Social Productivity Program. Communities prioritize investment requests to be financed by HUDCO and CVDB, and HUDCO was expected to work closely with WAJ that will advise on investment design and implementation and take over responsibility for O&M of the facilities constructed. Project design made an implicit assumption that WAJ's institutional and financial capacity is able to take on these additional works and seemed to be unaware of the WAJ's operational and financial problems.

2.54 **Implementation.** The infrastructure rehabilitation and upgrading has progressed well and most major contracts have been awarded. As contracted work cost less than estimated at appraisal, an additional squatter settlement at Aqaba is being included in the project which is now extended to 2004. Overall performance is rated by the Bank's supervision team as satisfactory, primarily because of highly satisfactory Jordanian project management. As works are completed they are handed over for routine operation and maintenance by the local communities and municipalities and WAJ has not become involved. Beneficiaries have been surveyed for their views on investment and infrastructure but it is not known what impact this has had on sub-project inclusion or design. Five NGOs are engaged in implementing pilot income-generating activities.

⁶² The five components comprising the project are: 1) upgrading on-site water supply and drainage, school, community, and health center infrastructure in squatter settlements; 2) upgrading on-site water supply and sewage treatment, and transport infrastructure in refugee camps; 3) upgrading off-site sewage treatment and disposal infrastructure in refugee camps and adjacent area—all in the Central Region; 4) upgrading low-income municipal and village physical and social infrastructure, including drainage and access roads, solid waste equipment, primary health centers, and community and youth centers; and 5) project management, consultancy services, training, and pilot programs; and funding poverty and unemployment surveys and public awareness programs.

Amman Water and Sanitation Management Project

2.55 Approved in 1999 and scheduled for completion in 2004, the project is the first private-sector participation project and a first step towards more complex schemes such as leases and concessions. The project supports the policies proposed in government's 1997 water reform particularly the transfer of management of infrastructure and services from the public to the private sector; achieving the highest practical efficiency in the conveyance, distribution, application and use of water; adopting demand and supply management; the setting of water and wastewater charges that would initially cover O&M costs and subsequently recover the capital costs of water infrastructure; and giving precedence to meeting rising municipal and industrial demands.

2.56 In addition to the management contract, the project components included an operation and investment fund to support essential short-term expenditures to improve O&M in the service area, technical assistance to support institutional restructuring and improving managerial capacities of WAJ, monitoring and evaluation to audit the operators' performance and studies related to the project and other water-sector projects throughout Jordan. The bulk of the project cost was for capital investment co-financed by EIB and Italy to improve the water distribution and wastewater collection system and these would complement parallel investment programs by other donors, primarily KfW and USAID.

Evaluation of the Bank's Lending Program for Water

2.57 Three lending operations were completed during the decade, including one water supply and sanitation operation designed in the 1980s. In addition there are two ongoing lending operations. The following section presents OED's evaluation of these projects which are summarized in Table 2.

2.58 ***The Jordan Water Supply and Sewerage Project.*** Completed in 1994, the project helped to expand the urban coverage of water and sewerage infrastructure with 11 water and 6 sewerage schemes, and two sewage treatment plant extensions. All works were completed within budget and on time. Although not directly targeted, low-income urban dwellers benefited from these additional improvements. Despite these achievements, the level of unaccounted water increased by a fifth to 60 percent and only showed slight improvement (to 53 percent) in the last two years of the project in stark contrast to the target of 25 percent.

2.59 The focus on physical implementation limited attention to institution building. It was a major oversight that, by appraisal, the Bank had neither defined nor obtained local ownership of institutional strengthening measures such a meeting the agreed increase in irrigation water tariffs. Apart from water tariffs and cost-recovery issues, government also provided large electricity subsidies for pumping water, much of it inefficiently used because of leaking pipes and administrative losses. Subsequently, the Bank may have been politically sensitive in waiving its remedies and even the threat of them, but this left WAJ in dire financial distress – and a sector unable to demonstrate its cost recovery potential. Accumulated deficits and unpaid debts were equal to 11.5 years of revenues by

the end of 1994. And it was rather paradoxical to recommend privatization as the solution to WAJ's problems when elementary prerequisites of sound public enterprise management had not been met despite eight previous Bank operations.

2.60 OED rated project outcome as unsatisfactory even though physical targets had been achieved because WAJ's financial viability, a key project objective, deteriorated. Sustainability was rated uncertain at best for two reasons. First, the available renewable water resources per capita was declining and the levels of consumption could not be maintained until measures were taken for water conservation, especially in agriculture. Second, WAJ's insolvency imposed a fast increasing burden on the Treasury. Institutional development was rated negligible because WAJ's problems had not been addressed. Bank performance was judged unsatisfactory because it was remiss on project quality at entry and attention to institutional development concerns.

2.61 Most of the improvements that did occur during the project period were sponsored by various bilateral aid agencies. The main lesson was that institutional development was more important than infrastructure expansion.⁶³ Thus the OED audit recommended that the Bank should reassess its role and instruments, specifically its comparative strengths and advantages because there would need to be better aid coordination if sweeping changes were to be made. It was noted that bilateral agencies may have an edge, not only in technical expertise, but also in the mix of grants and loans which would be very attractive given WAJ's limited debt-serving capability.

2.62 *The Agricultural Sector Adjustment Loan.* The outcome of the ASAL is rated as moderately satisfactory and a detailed evaluation of the ASAL and ASTUP is given in Annex B. Both operations were substantially relevant and remain so, although the short disbursement cycle of the ASAL was ill-matched to the time needed to reform water sector institutions. While most of the reforms promoted were necessary to improve water and agricultural management, and eliminate barriers to agricultural trade, they were not sufficient to ensure that farmers reaped the benefits of adjustment.

2.63 In particular, increases in agricultural water tariffs were only partial and uneven. The Bank waived the second tranche water tariff increase, but KfW did not, and its second tranche release is cancelled. Although the partial tariff increase satisfied an immediate objective of maximizing transfer of water to the highlands,⁶⁴ a market-driven transfer of water to higher-value export horticultural crops" was not achieved, and water charges are only applied to the Jordan Valley farmers responsible for half of Jordan's irrigated area. Agricultural market reform was achieved through eliminating subsidies, lifting price controls, liberalizing external trade, and divestiture of most government monopolies, but Jordanian farmers have yet to benefit. Several severe droughts over the period 1998–2001 are partly to blame, and have made agriculture more risk-prone. But on top of this, lower market prices, overproduction of key crops, and higher water costs

⁶³ The Government disagrees with this lesson, noting that, "institutional development and infrastructure expansion are given equal importance by MWI."

⁶⁴ The Government notes that, "the objective of transferring water from the valley to the high lands is to satisfy and help close the gap between demand and supply of drinking water, especially in greater Amman area."

have squeezed profitability, and a supply response to improved export horticultural potential has languished because of inadequate attention to export market intelligence and export promotion. And because of these factors, deregulation of the land market in the Jordan Valley has had little impact. Attention to institutional reform of the agriculture and water sectors was late, partial, and ineffective. While most agricultural subsidies and protections were eliminated, the water sector is being subsidized as much now as in the early 1990s.

2.64 The complexity of the ASAL precludes a rating for efficiency. Overall, however, the price of the ASAL was small in comparison to the incremental savings brought about by the elimination of farm subsidies, import/export restrictions, and the poverty impact of cheaper food, which may outweigh the negative impact on farmers' incomes. A major benefit from cheaper food imports is that they also effectively import water (described as 'virtual' water) from the regions where the crops are grown—representing the volume of water needed to grow the crops. Initially, the MoWI stated that virtual water imports are of the order of 6 billion cubic meters a year, seven times Jordan's annual water budget and 10 times its renewable supply. Subsequently, the National Water Master Plan of 2003 re-estimated virtual water importation through crop and livestock at 2.1 billion cubic meters. Whatever the total volume, the incremental amount of virtual water due to ASAL is unknown.

2.65 Institutional development under the ASAL, notwithstanding the problems over agricultural water tariffs, was substantial. Policy dialogue during appraisal and lending conditionality brought about substantial reform of agricultural and water sector policies and paved the way for the government's attempts to reorient water sector institutions. The analytical and advisory services for water resources—which drove new water sector policies—generated a significant body of knowledge (Annex D). Sustainability of the reforms is rated as likely because of high borrower and development partner ownership. Bank performance is rated as satisfactory on balance because the substantial agricultural sector and trade reforms, and valuable AAA, outweighed the failings on agricultural water tariffs.

2.66 ***Agricultural Technical Support Project.*** Overall, the ASTUP was relevant to ASAL reforms. It would have been more relevant to have increased the size and scope of the ASTUP to address issues arising from policy implementation—such as support for reforming the main water agencies or exploring alternative ways to reduce water use—and this could all have been done for the same overall loan size by reallocation from the ASAL to ASTUP. This, combined with failure of central and line water agencies to substantially improve efficiency (as discussed below) leads to a moderately satisfactory outcome rating even though ASTUP achieved all its physical targets.

2.67 The project contributed little towards effective regulation of groundwater use or water conservation. Water metering led to better knowledge of water use, but did not lead to increased cost recovery or higher water use efficiency. In the highlands, despite the establishment of the groundwater basin, monitoring and regulation component, the irrigated area has actually increased, rather than decreased, and water charges are not levied because of opposition from a strong agricultural lobby. Although water

infrastructure in the Jordan Valley was significantly improved, and has led to more efficient water distribution in the primary irrigation network, this has not yet led to better water conservation or increased income—preliminary data for year 2000, for example, indicate that only 58 percent of available irrigation water is accounted for and yielded revenues of JD 1.13 million.⁶⁵ In comparison, overall staffing costs were JD3.02 million and O&M costs about JD 2.7 million.

Table 2.2: Evaluation of the Bank’s Water Lending 1990-2002

<i>Rating Criterion</i> ^{a/}	<i>Jordan WSS Project (1986-1994)</i>	<i>Agricultural Sector Adjustment Loan (1994-97)</i>	<i>ASAL Technical Support Project (1994-00)</i>	<i>Community Infrastructure Project (1997-2004)</i>	<i>Amman WSS Management Project (1999-2004)</i>	<i>Average of Closed Projects</i>
Outcome	Unsatisfactory	Moderately Satisfactory	Moderately Satisfactory	Not available	Not available	Moderately Satisfactory
Relevance	Modest	Substantial	substantial	High	High	Substantial
Efficacy	Modest	Modest	Modest	Substantial	Substantial	Modest
Efficiency	Negligible	Not rated	Negligible	Not available	Not available	Negligible
Sustainability	Uncertain	Likely	Likely	Not available	Not available	Likely
Institutional Development	Negligible	Substantial	Modest	Not Available	Not Available	Modest
Bank Performance	Unsatisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory

^{a/} **Relevance of Objectives:** The extent to which the project’s objectives are consistent with the country’s current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Bank Strategies, Sector Strategy Papers, Operational Policies). *Possible ratings:* High, Substantial, Modest, Negligible.

Efficacy: The extent to which the project’s objectives were achieved, or expected to be achieved, taking into account their relative importance. *Possible ratings:* High, Substantial, Modest, Negligible.

Efficiency: The extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. *Possible ratings:* High, Substantial, Modest, Negligible. This rating is not generally applied to adjustment operations.

Sustainability: The resilience to risk of net benefits flows over time. *Possible ratings:* Highly Likely, Likely, Unlikely, Highly Unlikely, Not Evaluable.

Institutional Development Impact: The extent to which a project improves the ability of a country or region to make more efficient, equitable and sustainable use of its human, financial, and natural resources through: (a) better definition, stability, transparency, enforceability, and predictability of institutional arrangements and/or (b) better alignment of the mission and capacity of an organization with its mandate, which derives from these institutional arrangements. Institutional Development Impact includes both intended and unintended effects of a project. *Possible ratings:* High, Substantial, Modest, Negligible.

Outcome: The extent to which the project’s major relevant objectives were achieved, or are expected to be achieved, efficiently. *Possible ratings:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Bank Performance: The extent to which services provided by the Bank ensured quality at entry and supported implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of the project). *Possible ratings:* Highly Satisfactory, Satisfactory, Unsatisfactory, Highly Unsatisfactory.

2.68 Support to monitor the impact of ASAL on farmers produced useful data but was only partially effective in building MOA’s capacity.⁶⁶ ASTUP also significantly enhanced national capacity for agricultural research and training, much of it in water conserving and reuse technology. Indeed, the research capacity created greatly exceeds Jordan’s needs and NCARTT is trying to market its skills regionally. Perhaps the

⁶⁵ In 1995, 70 percent of irrigation water was sold and 76 percent of bills were collected.

⁶⁶ The MoA established an M&E unit to assess the impacts of the ASAL. Most of the work was done by GTZ-financed consultants and little capacity was built within MoA. As a result, little use is made of the M&E data for policy formulation and design of poverty alleviation programs to help the worst affected. Annual surveys of most forms of farming affected by the ASAL initially showed declining incomes due mainly to a fall in market prices. Later surveys showed a continuing decline in farm incomes, not only as a result of the ASAL, but because of reduced production due to the prolonged drought that affected the late 1990s.

attention lavished on NCARTT by the Bank would have been more effective if used to reform water sector institutions. The project had a negligible impact on the MOA's extension services which remain ineffective and demoralized. This, allied with reduced farming profits precludes investment in high-technology irrigation and the efficiency of on-farm water use is little changed.

2.69 It would be possible to undertake a cost-benefit analysis of the investments made under ASTUB but lack of data precluded calculation. As the ASTUP has yet to yield results in terms of water conservation through better system and on-farm management, its efficiency is rated negligible. For the various reasons given above, institutional development is rated as modest. Sustainability of the monitoring networks installed and agricultural research is rated as likely because of high client ownership and Jordan's strong partnership with the development community and their continued external soft loan/grant financing. While the Bank should have done more to press for firmer regulation and cost-recovery, this was not part of the ASTUP conditionality, and thus based on design objectives, Bank performance is rated as satisfactory.

2.70 ***Community Infrastructure Project.*** The relevance of the project is high, more recently so as its development objectives align with the Millennium Development Goals (MDGs), three of which relate to provision of safe water supplies and creation of healthy environments for people. Efficacy is judged to be at least substantial but it is premature to rate efficiency, institutional development and sustainability or draw lessons. Bank performance is satisfactory.

2.71 ***Amman Water and Sanitation Management Project.*** The project is highly relevant. Although the project is still under implementation, the indications are that the management contract is yielding significant benefits and its efficacy is rated as substantial. The contractor has managed to reduce expenditures on O&M through efficiency savings, significantly improve billing and collections such that income now exceeds operating expenses. The Project Management Unit within WAJ has set new standards of efficiency and is a clear indication of the latent potential released when progressive policies and modern management procedures are adopted.

2.72 Problems are emerging however, and are quite serious given the very short period of the operator's four-year contract. It appears that the baseline used for the operator's performance criteria was developed too quickly on the basis of inadequate information. In hindsight, the baseline was too optimistic thus making achievement difficult. Additionally, the Bank's intention that the parallel infrastructure upgrading contracts would be managed by the operator to ensure timely implementation and sequencing - a vital element in the timetable for reducing unaccounted for water - was not approved by government, this authority being retained by WAJ, as was payment of suppliers. Enforcing legal action for illegal water use and delinquent payment of bills appears to be difficult and points to the need for better governance on these issues. As a result of these problems, levels of unaccounted-for water have only marginally declined to just under 50 percent, and the operator is failing to meet performance targets. Given this evolving experience, it is premature to rate efficiency, institutional development and sustainability.

2.73 One preliminary lesson for the Amman management contact is that pressure to deliver on policy reforms may mitigate against careful and thorough preparation which leads to efficiency. Considerable care should be taken in developing baselines for performance and enough time allowed for this to be done correctly. In this case, the poor baseline has increased the private operator's risk and will make subsequent contracts more expensive—there is also a small risk that the private operator's "poor" performance against baseline could dilute support for PSP in water supply. It appears nothing was learnt from the electricity sector where the rushed preparation caused the new electricity law to be amended three times. And there is a strong view among some senior policy-makers and Jordanian businessmen that the Bank's emphasis on selling state assets to foreigners (for example telecoms) has a chilling effect on acceptability of more PSP in the water sector.

3. Development Effectiveness

3.1 Development effectiveness is evaluated from two perspectives. First what might have happened in Jordan's water sector if the Bank had not been involved? Second, did the Bank's water and water-related activities meet the the Bank's corporate goals and policies?

3.2 Bank investment in Jordan's water sector has declined in the last decade and is small compared with all other external assistance agencies (Figure 1). The majority of external assistance, like the Bank's investments in the 1980s, has financed infrastructure development with a focus on water supply and sanitation, water treatment, water storage structures and, to a much smaller extent, irrigation infrastructure. Even then, US\$80 million, or 40 percent of the Bank's lending, was for balance of payment support under the ASAL and did not contribute directly to water sector activities. In the PSP area where the Bank claims a comparative advantage, work is ongoing to develop PSP in the Northern Governorates, Amman and Aqaba supported by KfW, USAID and EIB. Therefore the absence of Bank lending would not have made much difference to Jordan's stock of water infrastructure that was developed in the 1990s. Indeed, fungibility arguments could be made that the ASAL lending relieved some of the pressure to reform inefficient and loss-making public enterprises such as WAJ and was a negative influence. It could be argued that non-Bank loans and grants lacked the policy-based conditionality attached to Bank loans and were therefore less effective instruments in helping Jordan raise service delivery efficiency and undertake institutional reform of the line agencies. The evidence and feedback does not support this argument, in fact, rather the contrary.

3.3 Until the late 1990s, Bank management continued to disburse (in part driven by macroeconomic and balance of payments concerns) even when covenants were not met. As a result, the institutional development impact of all completed Bank projects has been modest at best and the Bank appears to have had no comparative advantage when it comes to lending. Moreover, the Bank's loans were expensive compared with other development partners' assistance which was in the form of grants and soft loans. Jordanian policy-makers were clearly impressed with the relevance of MIGA guarantees for the proposed Disi-Amman Water Conveyer but were dismayed that appraisal for the guarantee was just as onerous and time consuming as a project loan, a problem they do

not have with other external assistance. An important consideration is that Disi groundwater resource is shared between Saudi Arabia and Jordan and Bank investment would require non-objection by Saudi Arabia under the Bank's safeguard policy.

3.4 External support for institutional development and capacity-building was significant during the 1990s and most of this was supplied by other development partners. CIDA, USAID and KfW financed many of the studies that supported the proposals for institutional reform of the water sector, and have continued to provide long-term capacity building technical assistance to the various water sub sectors. Not only that, but they have developed good working relationships within Jordan, helped by a strong local presence, and their opinions are trusted and frequently acted upon. Thus in designing the Amman water management contract, responsibility and conditionality for reform was shared among the group of cooperating development partners including the Bank (para. 2.32).

Achieving Corporate Goals

3.5 The main features of the Bank's Corporate Goals are a long-term approach to development, client ownership, partnership, and results-based accountability.⁶⁷ Additionally, the Bank has its Water Resources Management Policy against which to measure specific sector activities.

3.6 ***A long-term approach exists but needs to be implemented.*** The Bank has a long-term strategy outlining the needed institutional reform and development needs of Jordan's water sector. But this strategy lacks an implementation plan because of partial and subsectorially uneven client ownership and a plethora of development partners willing to take on bits of it. The strategy does not spell out how progress will be made, nor does it have clearly defined monitorable goals. Clearly, the Bank has not convinced government of the importance of the demand-management components of the water strategy which is essential for sustainability of Jordan's rapidly dwindling water resources. Similarly, the message on implementing needed efficiency improvements of public sector water organization and public water sector enterprises is only selectively getting through. In the agriculture sector, the Bank is again addressing export promotion to mitigate the adverse effects of the ASAL. The Bank has been weak at understanding political-social concerns and the effect these have had on acceptability of adjustment policies and water pricing. There is demand for the Bank's strategic insights and know-how but maybe not on the terms the Bank is prepared to accept. The Bank needs to reevaluate its comparative advantages and reposition itself to be more effective.

3.7 ***The Bank's water policy was applied but getting results was a problem.*** In terms of applying the policy's principles, Jordan probably represents a best case. But getting from advocacy to action has proved difficult because water remains heavily politicized, sector institutions are weak, and there are unresolved fears about the effect of policies promoted by the Bank. The ASAL did not make things better for farmers, and this

⁶⁷ World Bank. The Annual Review of Development Effectiveness: Towards a Comprehensive Development Strategy. Report No. 19905. November 19, 1999. Operations Evaluation Department.

heightens Jordanian policy-makers' fears that the risks of changing the way water is managed are higher than the rewards.

3.8 ***Client-ownership needs attention.*** The divergence of Jordanian views about the Bank's role, agenda and effectiveness is large and this needs attention. At present the Bank is perceived as backing out of engagement on agriculture and water in Jordan, the exception being PSP in urban water, sanitation and wastewater management. Even then its agenda is viewed with suspicion. If the Bank wishes to stay engaged, particularly in helping Jordan to significantly reduce agricultural water use, then it has to work towards developing consensual, rather than confrontational, solutions. More time should be given to broadening the base of Jordanian ownership.

3.9 ***Partnerships need Nurturing.*** Development partners in Jordan felt they were not consulted on many important issues and that the Bank appeared to operate in isolation. High-level contact at headquarters level appears to be effective, but at the country-level there is a disconnect. This was particularly irksome for those partners who had continued with significant capacity-building and infrastructure investment programs in particular water sub-sectors as they had specialist insight and knowledge which they believed was vital to sound policy evolution and project design, but which they felt was ignored. Clearly this is an issue for Bank management.

3.10 ***Results-based accountability is weak.*** Too little attention has been devoted to strengthening the capacity of the sector agencies responsible for implementing policy reforms. Despite years of Bank engagement, there have been few efforts to build the necessary Jordanian skills to translate policy decisions into action: policy formulation, resource and financial management skills, and monitoring and evaluation systems. A big issue is the gap in water sector management skills which fall between the macro focus which is insufficient for results, and the project perspective which is too narrow. Fortunately, USAID and KfW are working in these areas, and it is to be hoped that the PMU for Amman water will provide the basis for systemic reform of WAJ. The poor accountability framework in the water sector agencies reflects the need for systemic reform to the organization and incentive structure of the civil service, an issue highlighted by the 1999 Public Sector Review.

Contributors' Performance

Bank Performance

3.11 Most of the Bank's economic and sector work leveraged legislation and government policies to improve water management in Jordan. This is evident from the number of policies enacted in the 1990s (Annex D). Certainly government appears to be giving greater attention to issues of cost-recovery and financial sustainability. So far this has only started to take root in the water supply and sanitation sector and even then the results to date are modest and opposition remains significant. In the agricultural sector, which uses the most water and has the greatest potential to save water, the Bank's policy to introduce realistic water tariffs has been unsuccessful. Government water policies promote conservation yet exempt most existing agricultural water users. The laws and

regulations are in place to regulate groundwater over-abstraction but government agencies do not place high importance on implementing them and political pressure not to do so remains acute.

3.12 On a more positive note, the agricultural, trade and tariff reforms introduced under the ASAL have completely changed the face of agriculture. However, the reform has only been partial. While it opened markets and reduced protection for Jordanian agriculture thus making farmers internationally competitive within WTO rules, it also made them more vulnerable to cheaper imports. Significantly, it failed to provide support to enable farmers to become more profitable and competitive on the international markets. Thus the agricultural reform agenda remains incomplete and failure to fix it jeopardizes the acceptability of water reforms.

3.13 Analytical and advisory services were key to creating awareness and partnership for the successful reform agenda. Development partners all acknowledge the value the Bank had provided to Jordan as a facilitator that brings global knowledge to bear on local problems. They are notably more enthusiastic about the Bank's ability to link sector and sub-sector projects to the broader economy through the CAS, while sector agencies within Jordan were, understandably, less so partly because they felt it enabled donors to form a coherent and comprehensive program, the sequencing of which did not always meet government approval. In this context, both government and donors enthusiastically endorsed Bank performance on the ASAL over the period 1990–96. Similarly, within the urban water supply and sanitation sector the new program initiated from 1997 was well received.

3.14 Project preparation and appraisal were of high quality and both government and development partners have praised the ASAL team's work for its inclusiveness and willingness to share information during supervision. While the Bank's stand on agricultural water tariffs created problems toward the end of the ASAL and a roadblock to dialogue about the future, this was eventually resolved with the Bank's acceptance of the political realities of Jordan. Thus, water sector policy quickly evolved thereafter according to Jordanian priorities—most successfully with the Bank's assistance for the Amman urban water management operation, but with slower progress in the agricultural sector. Follow-up on the agricultural sector has been relatively ineffective due to a low level of input by the Bank.

3.15 The Bank relied on significant work by other development partners to deliver the ASAL and was in the vanguard of raising agricultural water tariffs. Yet when the final tranche of the ASAL was on the line, the Bank abandoned its stand on tariffs and alliance with KfW in favor of disbursement. This was a pragmatic decision given that government was intransigent on agricultural water tariffs and the inflexibility of the ASAL conditionality. As this problem was well known in 1994 the Bank would have been a better partner to KfW and government if it had used its AAA to examine alternatives which in the longer term may have achieved its water management and conservation objectives. As it was, the release of the second tranche of the ASAL severely undermined the trust between the Bank and KfW, and the subsequent partnership in the agricultural sector has been damaged.

3.16 When discussing water policy and agricultural water issues, a number of respondents stated they thought the Bank's infrequent country visits during the recent period of rapid change (1998-2002) put the Bank at significant disadvantage in terms of the relevance of its knowledge and advice, and this reduced the potential synergy from engagement with the Bank. Many respondents complained that the Bank did not respond in a timely way or at all, while expecting others to do so, and it was felt there was a one-way stream of information. Senior government policy-makers stated that the Bank's Policy and Human Resources Development Fund (PHRD) grants were too onerous and insufficiently flexible, a problem exacerbated by the lack of Bank presence within Jordan. Additionally, they stated that while the other development partners coordinate well with government, the Bank holds itself aloof and reserves its opinions on water issues. Overall, the conclusion is that, compared with the larger program of external assistance, the marginal impact of the Bank's lending and its support for institutional development—with the exception of the recent Amman management contract—has been small. One possible reason for the low level of Bank effectiveness is that there is probably too much external assistance for Jordan. This weakens the Bank's case for conditionality because competition will ensure the less onerous loans/grants are accepted and provides a continuous bail-out for Jordan's unsound sector management. Better external aid coordination both on volume and conditionality could bring about long-needed reform.

3.17 What then is the comparative advantage of the Bank in Jordan? The conclusions from the review of completed Bank activities and a large majority of respondents interviewed are very positive about four aspects of the Bank: (a) the quality of its AAA; (b) its access to global knowledge and ability to bring it to local attention; (c) its ability to bridge macro and micro economic, policy and technical concerns and take a comprehensive view; and (d) its convening power within the international development community. The ASAL, EDI's PSP workshop, and the Amman management contract were notable examples where all four aspects were successfully applied. Development partners were notably more enthusiastic about the Bank's ability to link sector and sub-sector projects to the broader economy through the CAS, while sector agencies within Jordan were, understandably, less so partly because they felt it enabled donors to form a coherent and comprehensive program, the sequencing of which did not always meet government approval. Overall, the Bank's performance is rated as moderately satisfactory.

Borrower Performance

3.18 Borrower complied with the ASAL trade and subsidy reforms and the first agricultural water tariff increase. Despite the high political risks surrounding these reforms, almost all were achieved within the ASAL timetable. The limited progress on water resources management and efficiency gains is balanced against the significantly positive achievements in the late 1990s on policy, urban water and wastewater management, and agricultural trade reform. Even so, good governance is an issue particularly for those unwilling to pay for urban water.

3.19 There was, however, limited enthusiasm on the part of the borrower for raising irrigation fees further and curbing public expenditures. There is considerable debate

among high-level policymakers in Jordan about the relevance of water pricing to ensure efficient use. Many high-level officials believe that administrative allocation is a more socially equitable policy than pricing. Indeed, a senior government official stated that the subsidy was relatively small compared with the costs that would be incurred if very high water charges caused farmers to abandon the land and migrate to Amman for employment. This social-welfare dimension of water was the largest divergence of views between the Bank and government over the agricultural sector.

Bank's Development Partners Performance Issues

3.20 Other donors have had extensive collaboration with the Bank on analyzing the state of water resources and institutional development needs in preparation for the ASAL and for the Amman management project. While other donors concentrated on particular aspects of water and institutional development, the Bank coordinated inputs from them into coherent development plans aligned with sector policies thus relieving strain on government resources. The Bank could not have done it alone and the Bank's ability to build a national program reflects how successful these symbiotic partnerships have been. More recently, the Bank failed to establish a coordinated partnership to oversee implementation of the various infrastructure packages contributing to rehabilitation of Amman's water supply. This appears to be the result of a concern by donors to preserve the integrity of their country programs and of WAJ to retain its autonomy. Many of the Bank's development partners regretted that, apparently coincidentally, the Bank has withdrawn from its proactive coordinating role and now favors its independence.

Lessons

3.21 *Not everything can be done at once.* It is better to have a sequence of more narrowly focused goals prioritized according to the level of borrower ownership. The Bank's program was too ambitious in addressing agriculture, trade, water and institutional reforms: political capital was limited and did not extend to making farmers pay more for water at the same time as they were being squeezed by elimination of subsidies and loss of import protection. The technical assistance was designed to support the reform program, and while achieving its physical targets (for example water meter installation), it contributed little towards effective regulation of groundwater use or water conservation. Attention to institutional reform of the agriculture and water sectors was late, partial, and only moderately effective.

3.22 *The Bank's credibility is harmed when it proposes unrealistic targets.* High-quality analytical and advisory services allied with partnership-building have a large payoff in the long term. The Bank's AAA services formed the basis of a cross-sectoral and strategic framework for water and agriculture which all stakeholders accepted – and increased water tariffs was a central policy instrument. However, it became clear at the time the Agriculture Sector Reform Loan was approved that the second increase in water tariffs was politically unrealistic and would be jeopardized by the need for disbursement to meet balance of payment support. Rather than accepting this reality and working with the government and KfW on alternatives to achieve the policy objective, perhaps on a longer schedule, the Bank remained silent. Release of the second tranche came as a

surprise to KfW and undermined the partnership with them. It also contradicted the Bank's position that increased agricultural water charges were imperative – as did the Bank's later willingness to unconditionally consider the Disi-Amman conveyor for a MIGA guarantee.

3.23 *Reform cannot be imposed, and those that are, sometimes create roadblocks.* Yet, when the conditions are right for the particular issue, reform can go quickly, as the Amman urban water tariffs and private sector management indicated. Therefore, the Bank has to become more sensitive to the political economy of reform, its acceptability, and its timing.

ANNEX A

Table A1: Water Supply and Demand 1990–2000

	<i>Water Use and Demand m³/year</i>				<i>Water Supply m³/year</i>				
	<i>ASAL^a</i>	<i>Water Sector Review^b</i>		<i>Actual MoWI^c</i>	<i>ASAL^a</i>	<i>Water Sector Review^b</i>		<i>Actual MoWI^c</i>	
	<i>1990</i>	<i>1995</i>	<i>2000*</i>	<i>2000*</i>	<i>1990</i>	<i>1995</i>	<i>2000*</i>	<i>2000*</i>	
Municipal	179	243	388	239	Sustainable Groundwater	232	248	254	275
Industrial	43	34	78	37	Rivers	242	323	375	272
Agriculture	652	605	791	541	Waste water	36	58	87	72
Total Use	874	882	1,257	817	Fossil water		71	61	61
					Peace Treaty			30	
Total Demand	874	882	1,257	817	Total Sustainable Supply	510	700	807	680
					Groundwater Overdraft	321	182	450	137
					Total Supply	874	882	1,257	817

* The projections made in 1997 for 2000 were based on an assumption that there would be significant efficiency savings and an increase in per capita water demand. For example, physical losses are predicted to decrease to 35 percent of water production in 2000 and 15 percent by 2015. Per capita consumption was also projected to rise in response to better standards of living from 64 liters/capita/day in 1994 to 135 liters/capita/day in 2000.

Sources:

a/ World Bank data 1994.

b/ World Bank 1997. *The Hashemite Kingdom of Jordan Water Sector Review. Table 18. Year 2000 was a projection.*

c/ MoWI. 2002. *Water Sector Planning & Associated Investment Program 2002-2011. Table 1.*

It should be noted that the projections of water use in 2002 include a substantial increase in projected municipal and agricultural demand. According to the MOWI (2002), actual demand fell significantly below projections in 2000 such that the estimated groundwater overdraft fell from 182 to 137 million cubic meters a year.

ANNEX B

Evaluation of the Agricultural Sector Adjustment (Loan No. 3817-Jo) and Agricultural Sector Technical Support Project (Credit No. 3818-Jo)

Outcome

The outcome criteria take into account the extent to which the project's major relevant objectives were achieved, or are expected to be achieved, efficiently.

1. ***The assessment rates the outcome of the ASAL as moderately satisfactory. Achievement of ASTUP's more limited objectives is rated as moderately satisfactory.*** Both operations were substantially relevant at appraisal and remain so, but overall efficacy was modest. While most of the reforms promoted by the ASAL were necessary to improve water and agricultural management, and eliminate barriers to agricultural trade, they were not sufficient to ensure that farmers reaped the benefits of adjustment. Many small farmers and herders were marginalized by reduced profitability and its impact on rural poverty was generally negative.⁶⁸ Overall achievement by objective and component is summarized in Table B1. And weighted by the first objective—to support transition to an optimal use of water and land resource—overall efficacy is modest.
2. The macroeconomic framework was supported by the ASAL and complemented by a series of three broad-based Economic Reform and Development Loans (1995–99). Agricultural market reform was achieved through elimination of subsidies, lifting of price controls, liberalization of external trade and divestiture of most government monopolies, but Jordanian farmers have yet to benefit. Several severe droughts over the period 1997–2001 are partly to blame, and have made agriculture risk-prone. But on top of this, lower market prices, overproduction of key crops, and higher water costs have squeezed profitability, yet a supply response to improved export horticultural potential has languished because of inadequate attention to export market intelligence and trade promotion. And because of these factors, deregulation of the land market in the Jordan Valley has had little impact to date.
3. Increases in agricultural water tariffs were only partial and uneven, and while meeting an immediate objective of maximizing transfer of water to the highlands, a market-driven transfer of water to higher-value export horticultural crops was not achieved. Water metering led to better knowledge of water use, but this did not lead to increased cost recovery, higher water use efficiency or water conservation. Agricultural research was substantially enhanced, but has not yet resulted in effective technology transfer and extension services. Attention to institutional reform of the agriculture and water sectors was late, partial, and only moderately effective, and the WAJ is still losing as much money now as in the early 1990s.

⁶⁸ It is unknown how much of the savings generated through elimination of agricultural subsidies and tariff reform were transferred to the government's social safety net activities.

Relevance

Were the project objectives right? Relevance is the extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals.

4. **Rating: Substantial.** The objectives of both operations were substantially relevant to the needs of the Jordanian economy and the Bank's strategy, but not all stakeholders were convinced of its relevance. Relevance could have been improved by including support and policy advice for higher technology agriculture, market intelligence, and export promotion of horticultural production. As noted by a senior Jordanian civil servant, the Bank failed to ensure that all the policy reforms and support were linked in a continuous chain. In consequence a supply-response from farmers was negligible as most incentives created by ASAL were negative for producers because of cheap imports.
5. The ASAL was consonant with the IMF and government's program to redress macroeconomic imbalances, reduce sector distortions, and restore economic growth. The 1994 Country Economic Memorandum argued that economic growth required structural reforms in addition to monetary and fiscal stability. Subsequently, while the Bank's 1995 Bank strategy questioned the efficacy of multiple tranche adjustment operations, it reaffirmed the stabilization agenda, and the need to continue with removal of trade distortions and privatization of state-owned firms. Thus the ASAL was enhanced with a series of three broad-based Economic Reform and Development Loans (1995–99) which addressed the constraints on Jordan's long-term growth imposed by its small domestic markets. Efficiency of the public sector was also a concern. Raised by the Public Expenditure Review of 1991, and elaborated in the 1999 Public Sector Review, the Bank noted that government spends more than 40 percent of GDP and provides 40 percent of employment in sectors that are notoriously inefficient, and that the poor performance of the Jordan Water Authority was a prime candidate for reform.
6. The 1990 joint Government/Bank Agriculture Sector Strategy Paper was the basis for reform which was elaborated in MOA's Agricultural Policy Charter of 1993. And this was the basis of the Agriculture Sector Technical Assistance Program which linked policy adjustment and technical assistance supported by a consortium of external development partners. Government published its Agricultural Policy in 1999. This emphasized, *inter alia*, enhanced interaction between public and private sectors, increased stakeholder participation in policy formulation and implementation, and pricing water to reflect its importance and scarcity in Jordan.
7. Bank economic and sector work reemphasized the relevance of water sector reform and adjustment under the ASAL in the 1997 Water Sector Review and its 2001 update.⁶⁹ And this built on the 1993–96 CIDA-supported Structural Adjustment and Policy Support Project which assisted government to examine the structural and institutional issues facing the water sector.
8. Overall, the ASTUP was relevant to ASAL reforms. The provision of tools for the volumetric measurement of agriculture water to potentially enable better knowledge for management and regulation, and support for research and extension—for example monitoring the economic status of farmers, the use of brackish and recycled water, and training of extension workers—was and is highly relevant. However, while it was recognized in project design that

⁶⁹ World Bank. The Hashemite Kingdom of Jordan Water Sector Review. Report No. 17095-JO, October 15, 1997 in two volumes and The Hashemite Kingdom of Jordan Water Sector Review Update. Report No. 21946-JO, February 15, 2001.

support to farmers was necessary to enable them to develop and market high-value crops for export, this was dropped when proposals did not receive government support. It would have been more relevant to have increased the size and scope of the ASTUP, and this could all have been done for the same overall loan size by reallocation from the ASAL to ASTUP.

Efficacy

Did the project achieve its stated objectives? Efficacy is a measure of the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance.

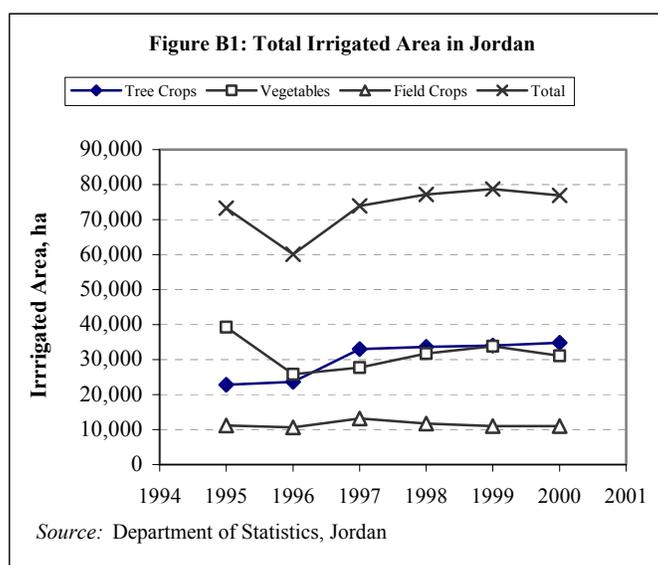
9. **Overall Rating: Modest.** The achievement of the ASAL by component is summarized in Table B1. Considered independently, the efficacy of the ASTUP is also rated modest. None of the various inputs (policy advice, water use and poverty monitoring, training) led to significantly improved management and sustainability of Jordan's water resources, or reorientation of the agricultural sector to export-led production. The rationale for these ratings is elaborated below under each objective.

Support transition to an optimal use of water and land resource.

10. **Rating: Modest. Efficient use of water and control of groundwater remains elusive.**

Despite the ASAL and ASTUP, the national area under irrigation has expanded in the period 1995-2000 by 5 percent (Figure B1). At the same time, total agricultural water use declined by almost 11 percent. Even so, total groundwater use, including recycling and fossil water, remained about the same at around 550 m³/year. Most of the reduced agricultural water use was the result of drought and scarce surface water (Table A1).⁷⁰ Whether such a secular change will be sustained is unknown. Thus it is not certain that the ASAL objective of reducing agricultural water use

and encouraging a transfer of scarce water for higher value municipal and industrial use has been sustainably achieved. There is also some question about the basic agricultural statistics.⁷¹ Despite these issue, the enabling policy environment was improved. In 1997, the MoWI published its Jordan Water Strategy and Utility Water Policy, followed in 1998 by Policies for Groundwater Management, Irrigation Water, and Wastewater Management. Transforming policy into action



⁷⁰ The Government notes that the overall groundwater abstraction between 1995 has declined at an average of 3.2 percent. See attached comments.

⁷¹ The area for irrigated vegetables in 1995 (39,241 ha) is high compared to 1994 (31,324 ha) and 1996 (25,852 ha), suggesting that some of the underlying statistics may be in error for 1995.

has been slow with the exception of reforms to urban water supply and wastewater management which was supported by a later Bank lending operation.⁷²

Table B1: The Extent to Which the ASAL and ASTUP Development Objectives Were Achieved

<i>Objective</i>	<i>Components</i>	<i>Relative Importance</i>	<i>Achievement</i>	
			<i>Component</i>	<i>Overall</i>
Support transition to an optimal use of water and land resource	Water Institutions	High	Modest	Modest
	Supply -demand management	High	Modest	
Improve the incentive structure through liberalization and so promote the development of markets, including internal and external markets in agricultural produce, and land markets and transport	Subsidies	High	Modest	Substantial
	Price controls	High	High	
	Trade regime	High	High	
	Land market reform	Substantial	Substantial	
Define the strategic role of government in the agricultural sector and ensure that the private and public services to the sector are delivered efficiently Implement a complementary Agricultural Technical Support Project to assist the agricultural policy adjustments and to build public and private service capacity to farmers and livestock producers.	National Agricultural Policy	High	Modest	Modest
	Water measurement and management and support to the JVA	High	Modest	
	Groundwater basin monitoring and control and support to the WAJ	High	Modest	
	Agricultural research	Substantial	High	
	Agricultural extension	High	Negligible	
	M&E of the effects of ASAL on farmers	Substantial	Substantial	
Maintain a supportive macroeconomic framework and external financing	Macroeconomic framework	Modest	Modest	Modest

11. ***Increasing agricultural water charges had negligible impact on efficiency and reallocation.*** According to the MoA (2001) the less-than-predicted use of water for agriculture in 2000 (see Table A1) is the result of supply limitations resulting from severe drought since 1997, rather than a full response to price signals. As indicated earlier (para 2.5), only the first water tariff rise to an average of 15 fils/m³ was achieved by 1995, when the second ASAL tranche was released, and there has been no further increase since then. Even so, the sub-objective to maximize the transfer of water from the Jordan Valley through the Deir Alla pipeline was achieved and its full capacity of 67 million m³/year was fully utilized. However, the instrument used was administrative reallocation by the JVA rather than a reduction in demand brought about by agricultural water pricing. In return, it is estimated that by 2000, about 72 million m³/year of treated wastewater was being recycled via the King Talal reservoir to the Jordan Valley. Overall, while attempts to reduce agricultural use appear to be modestly successful, reuse of treated effluent for agriculture is highly successful.⁷³

⁷². Amman Water and Sanitation Management Project. 1999.

⁷³. The Government notes that, "reuse in Jordan is in the order of 90 percent of all treated effluent, mostly for agriculture"

12. ***Average water tariffs in the Jordan Valley remain far below ASAL targets.*** The JVA increased the water tariff 2½ times and adopted an increasing block tariff structure in 1995 designed to yield an average tariff of 15 fils/m³.⁷⁴ Over the period 1995–2000, the average tariff based on billings was 11.1 fils/m³ and only 8.5 fils/m³ based on collections. But since 1997, the effective tariff declined by 10 percent as JVA mitigated the adverse impacts of water shortages on farm incomes by forgiving or delaying collection as a form of social relief. Even then, the rate of meter tampering to reduce liability or obtain free water is quite high—levels of 20 percent were observed in part of the Northern Directorate of the JVA in the fall of 2000.⁷⁵

13. It was anticipated that increased water tariffs would reduce agricultural water use. This did not happen. Water allocation is made by JVA on the basis of water availability and quotas calculated from crop type.⁷⁶ The first administrative priority for water allocation is perennial crops: the needs of citrus and fruit orchards are satisfied first, followed by bananas. Residual water is then distributed to vegetable farmers until fully spent. Citrus and bananas are the most profitable crops although typically they require two to five times more water than vegetables.⁷⁷ In consequence of the assured water allocation, the area under tree crops in the Jordan Valley has systematically increased over the period 1995–2000 by 713 ha/year and vegetables by 257 ha/year, while irrigated field crops tobacco, lentils, garlic and clover – have steadily declined by 70 ha/year. And the highest water using crop—bananas—has increased in area from 1,598 ha in 1994 to 2,060 ha in 2000. The area under irrigation in the groundwater-dependent highlands also increased contrary to ASAL objectives. Between 1996 and 2000, it rose from about 31,000 ha to 42,000 ha and most of this growth—8,900 ha—came from tree crops.

14. Agricultural monitoring data from the MoA/GTZ clearly shows that when water is a limiting production constraint, farmers with a fixed area of perennial crops reduce the water application rate and suffer yield and quality reductions. As a result, profits fall, exacerbated by the loss of protected markets under ASAL, Figure 5. Indeed, in 2001, JVA could not supply water to 3,500 hectares of vegetable farms because of higher priority water allocation to citrus farmers and transfers to Amman. Instead, following a 1991 precedent, JVA paid farmers the imputed return of crops forgone (JD 500/farm). In consequence, the efficacy of water pricing to bring about more efficient use is precluded by political and administrative considerations, lack of incentives for farmers, and risk. The evidence shows that farmers maximize profits and water allocation from JVA by planting tree crops because trees carry an explicit water right and water is a small part of overall production costs. As a result of this policy the area under tree crops is expanding and this captures water that would otherwise be distributed to vegetable farmers. And though few individual vegetable crops are as profitable as citrus, with good management it is possible to plant 2 or 3 crops a year and make similar profits. Not only is this a less risky strategy than reliance on a citrus mono-crop, it is also allows seasonal adjustment to water shortages, and is more labor-intensive with significant employment and social benefits. And during the 1998/99 drought farm incomes for citrus in the Jordan Valley fell by 25 to 47 percent compared with the previous wet year (MoA/GTZ, 2001).

⁷⁴ The tariff was levied on the number of cubic meters of water per farm of 3 ha per month. The first 1,000 cubic meters was 8 fils/m³; up to 2,000 was 12 fils/m³; to 3000 was 20 fils/m³ and above 3,000 was 35 fils/m³.

⁷⁵ Stephan, S. 2001. The illegal uses of irrigation water in the Jordan Valley and their penalties. Irrigation News. French Embassy Regional Mission for Water & Agriculture. October, 2001. p 4–18.

⁷⁶ Law No 30 Amended Law of the Jordan Valley Development Law. Article 14 (I): “the board...define the maximum quantities of water to be delivered in light of water availability and the nature of crops planted in the unit”. 16 June 2002.

⁷⁷ Bananas need 1,700 to 2,500 mm of water a year; citrus typically requires 1,250 to 1,500 mm; vegetables from 350 mm (lettuce) to about 600 mm (tomatoes, green beans, eggplant).

15. A case could be made that a free market for water under increased water costs would be more equitable in terms of overall employment and incomes in the Jordan Valley. Higher water costs would reduce the profitability of citrus and bananas, probably reverse the expansion of tree crops, and force a drive for more water efficient and profitable crops. At present, this is unlikely to happen. First, water is too cheap. Second, water rights continue to reside with government and the idea of private water rights is anathema to those in authority. The idea of the private trading of water in agriculture, when raised by the assessment mission, was hotly deprecated.

Improve the incentive structure through liberalization and so promote development of markets, including internal and external markets in agricultural produce, and markets in land and transport.

16. ***Rating: Substantial.*** This liberalization program was almost fully achieved; the exception being that the government has not yet divested AMPCO and retains its tomato processing plant. Procurement subsidies on domestically-produced cereals and feedstock prices were eliminated in 1995. Official procurement prices for tomatoes and controls on major fresh and processed agricultural commodities were all abolished by April 1997. Public barley and wheat imports were eliminated in May 1997. Royal Jordanian airlines control of air freight and air freight handling has been opened to competition. A new law for the JVA has allowed extension of leases, permits buying and selling of land, and has increased the land tenure ceiling from 5 to 25 hectares. Despite the liberalization program, however, markets have not substantially improved.

Define the strategic role of government in the agriculture sector and ensure that private and public services to the sector are delivered efficiently.

17. ***Rating: Modest.*** An Agricultural Policy Charter was published in November 1996 and the Ministry of Agriculture was restructured in 1999 assisted by USAID and GTZ. However, the private sector still has a modest role and public sector service delivery—particularly extension—is weak.

Implement a complementary Agricultural Technical Support Project to assist the agricultural policy adjustments and to build public and private service capacity to farmers and livestock producers.

18. ***Rating: Modest.*** Water measurement and management support for the JVA did not improve performance. In the Jordan Valley, only about half the inflow is sold, and there was negligible improvement in accountability over the period 1995–2000. This is despite the installation of 2,150 on-farm water meters and regulators and 1,727 additional flow-limiting devices under the ASTAP project covering 7,500 hectares—or almost a quarter—of JVA’s active irrigated area.⁷⁸ And while the proportion of billings paid rose slightly to peak in 1997, it has since fallen to 73 percent partly induced by lower collections as a result of drought over the past three years. Again, while physical improvements to the King Abdullah canal under ASTUP may have increased operational efficiency, system efficiency has improved only marginally. After taking into account administrative allocation, which is about a quarter of the inflow, the amount of unaccounted-for water has fallen only slightly, from 47 percent in 1995, to 42 percent in 2000.

19. ***WAJ’s groundwater management is ineffective.*** In the highlands, despite the establishment of the groundwater basin and monitoring component under ASTAP, water charges

⁷⁸ The number of meters and regulators installed exceeded appraisal estimates by 287 percent.

are not levied because of opposition from a strong agricultural lobby. The irrigated area has actually increased, rather than decreased. The government approved a well-licensing program and gave notice in 1997 that it would close down illegal wells. It also passed regulations imposing a surcharge of JD 0.50 per cubic meter of water abstracted beyond the licensed amount. To manage groundwater, GTZ assisted WAJ to install 2,300 flow meters on wells and provide a range of water level and quality monitoring devices, and WAJ has licensed 500 government and 1,950 private wells. But the many shallow wells drilled overnight are difficult to find and almost impossible to license.

20. Although the means to regulate upland groundwater are in place, it is difficult to do—a task made more onerous by the lack of political will to tax agriculture. The argument put forward is that, unlike those in the Jordan Valley, upland farmers have to sink wells and pay the high pumping costs without subsidy; and to cause them to pay more than Jordan Valley farmers would be unfair. Even so, a large number of upland private wells are pumped to provide water for tanker sales in Amman. Not only is this in competition with WAJ for the same resource, it also undercuts the price of water paid by industry even when WAJ levies a tax on tankers.⁷⁹ Additionally, the Amman water tariff includes the cost of wastewater treatment and only registered water buyers pay for wastewater treatment. Thus tanker water purchase allows users a free ride on wastewater disposal and undermines the financial viability of the water utility and its conservation efforts. There was more success, however, in reducing the use of groundwater by 28 percent (against the 25 percent ASAL target) in the Disi Mudawara area east of Aqaba where it is used to irrigate 5,000 hectares of cereals for animal feed – although this appears to have been subverted by increased upland irrigation elsewhere.

21. ***Agricultural research flourishes, extension languishes.*** The National Center for Agricultural Technology and Transfer (NCATT) was substantially strengthened and its research program is highly relevant to the development needs identified by the ASAL, is fully-funded, active and productive. However, its outreach activities are limited primarily to pilot projects/farmers and its participation in the formal agricultural extension system is weak. Agricultural extension, in contrast, is demoralized, seriously understaffed, and under-equipped. In part this was due to withdrawal of GTZ support because of lack of progress on water tariff issues. Extension effectiveness is not helped by the JVA's territorial control of the Jordan Valley, which tempers the MOA's willingness to gear up its efforts. Indeed, the JVA—given the low level of MOA extension input—fields a small irrigation advisory service, but even this cannot meet the demand from farmers. While the MOA is active in promoting a greater role for private sector service delivery, this is still nascent.

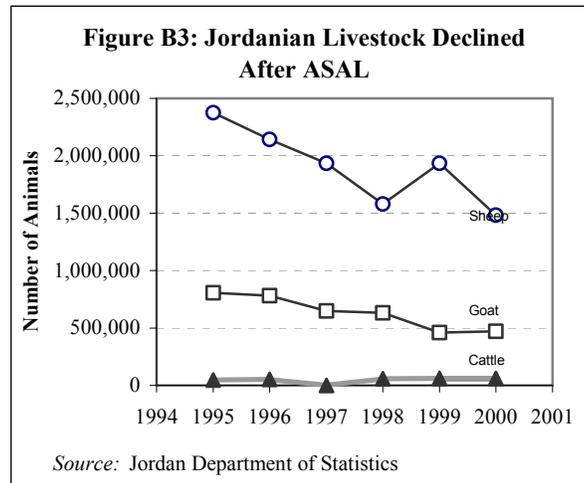
22. ***The impact of the ASAL on farmers was successfully monitored and evaluated.*** Under this component, GTZ helped the MOA establish an M&E unit and supported it over the period 1996–2002. Its late start occasioned by the design phase meant that the pre-ASAL status of farm incomes was not monitored. Subsequently, however, annual surveys of most forms of farming affected by the ASAL were conducted and these initially showed declining incomes due mainly to a fall in market prices. Later surveys showed a continuing decline in farm incomes, not only as a result of the ASAL, but because of reduced production due to the prolonged drought that affected the late 1990s. The effect of the ASAL on vulnerable households could not be determined as planned case studies were not undertaken.

23. The monitoring data indicate that the ASAL marginalized small farmers and herders on rangelands who were dependent on livestock production. In the early 1990s about 25,600

⁷⁹ Tankers pay a fee of JD 0.8 per m³ while the industrial tariff of JVA is JD 1.5 per m³.

households supporting about 184,000 people were substantially dependent on livestock production for their livelihoods.⁸⁰ Prior to the ASAL, there were about 3.5 million ruminants, of which two-thirds were sheep. Subsidized imported grains provided half their feed, local production—some of it under irrigation (for example at Disi)—provided a quarter, the balance was from the rangelands.

24. **Safety-net provisions were very limited.** Elimination of subsidies over the period 1995-97 proved to be very effective in reducing herd sizes (Figure B3), rangeland degradation due to overgrazing and thus further desertification of the low rainfall areas. From 1997, all direct subsidies to owners of small livestock herds were removed.⁸¹ Loss of subsidy on imported feed reduced profitability and the resultant slaughtering of herds increased the market supply of red meat, further depressing returns. Milk production was significantly reduced. Loss of income curtailed adequate nutrition and veterinary care, reduced lambing and the quality of livestock declined. While some of these problems are being addressed through NCARTT research and trials, the severe impact of the ASAL on herders was made worse by the droughts of 1999/2001. So much so, that the government supplied subsidized fodder in 2000 to support sheep farms as a safety net measure.



25. The MoA/GTZ evaluation found that individual herd sizes were reduced by 25 to 50 percent depending on region. The poorest group—nomadic pastoralists—in the driest areas have fared worst as they do not have the income to buy even subsidized concentrates. All farmers monitored, with the exception of the medium-sized agro-pastoral farmers in the wettest areas in 1997/98, had negative profits since 1996.

Maintain a Supportive Macroeconomic Framework and External Financing

26. **Rating: Modest.** This was achieved primarily through complementary Bank investment and macroeconomic support and the ASAL made only a very modest contribution. A parallel and in-depth OED evaluation of Jordan's economic development in the 1990s rates the outcome of the Bank's adjustment loans as moderately satisfactory.⁸²

Efficiency

Was the project cost effective? Efficiency is a measure of the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared with alternatives.

⁸⁰ Ministry of Agriculture. National Rangeland Strategy for Jordan. October 2001. This work was financed by CIDA.

⁸¹ The subsidy was limited to herds of less than 100 animals.

⁸² World Bank. Jordan Country Assistance Evaluation: Economic Developments in the 1990s and World Bank Assistance. Operations Evaluation Department Working Paper.

27. ***The complex nature of the ASAL precludes a robust test of efficiency and it is not rated.*** Overall, however, the price of the ASAL was small in comparison to the incremental savings brought about by the elimination of farm subsidies, import/export restrictions, and the poverty impact of cheaper food, which may outweigh the negative impact on farmers' incomes. A major benefit from cheaper food imports is that they also effectively import water (described as 'virtual' water) from the regions where the crops are grown—representing the volume of water needed to grow the crops. In its latest planning document, the MoWI states that virtual water imports are on the order of 6 billion cubic meters a year, seven times Jordan's annual water budget and 10 times its renewable supply. However, the incremental amount of virtual water due to ASAL is unknown.

28. ***ASTUP Rating: Negligible.*** It would be possible to undertake a cost-benefit analysis of the investments made under ASTUB but lack of data precluded calculation. As the ASTUP has yet to yield results in terms of water conservation through better system and on-farm management, its efficiency is rated negligible.

Institutional Development

Has the project led to better management of human and financial resources? This is a measure of the extent to which a project improves the ability of a country or a region to make more efficient, equitable, and sustainable use of its human, financial, and natural resources through better definition, stability, transparency, enforceability, and predictability of institutional arrangements.

29. ***ASAL Rating: Substantial.*** This rating trades off generally excellent performance on the trade and subsidy reforms against the overall modest performance of the water sector institutions. And the modest rating for water sector institutions balances the substantial advances on policy against the slow progress on institutional reform and reorganization within the water sector agencies. The ASAL policy dialogue during appraisal and conditionality leveraged substantial institutional reform of agricultural and water sector policies and paved the way for the government's attempts to reorient water sector institutions. The analytical and advisory services for water resources—which drove new water sector policies—generated a significant body of knowledge. Even though the government did not increase agricultural water tariffs to the Bank-mandated levels because of political concerns, they were significantly raised. Conversely, the government subsequently raised urban water tariffs to acceptable levels partly as a result of the debate initiated under the ASAL.

30. However, there remains significant duplication of responsibility and function as a consequence of having three organizations running the water sector. A jealous guarding of each agency domain means that essential water management and resource data are not readily shared, and while WAJ and MoWI have relatively transparent finance and accounting systems, these are also implemented by JVA assisted by USAID (FORWARD program). There are also territorial problems, most notably JVA's monopoly on the Valley, which attenuates essential Ministry of Agriculture extension activities to the potentially most productive and export-oriented farmers. And WAJ's focus on urban water supplies means it pays little management attention to upland irrigated agriculture.

31. Chronic overstaffing of the water sector organizations, identified as a problem in 1994, remains (Annex C). JVA's reduction of its staff by 8 percent since 1996 has been matched by a 7 percent increase in WAJ staff since 1995. In both organizations, the growth of unskilled staff has outmatched the reduction of professional cadres through natural attrition and a ban on

recruitment. And a lack of suitably qualified staff and incentives continues to undermine organizational effectiveness.

32. The water sector is still a chronic drain on the economy. Systematic annual accounts have not been made available by JVA, but preliminary data for year 2000, for example, indicate that only 58 percent of irrigation water available is accounted for and yielded revenues of JD 1.13 million.⁸³ In comparison, overall staffing costs were JD3.02 million and O&M costs about JD 2.7 million. The situation for the WAJ is clearer. Its finances are in a trouble: its annual deficit, for example, was more than 1 percent of GDP in 1995 and have not improved since then. Government effectively condoned WAJ's poor performance by assuming its loans and writing them off on two occasions in the past five years.

33. **ASTUP rating: Modest.** Its substantial impact on NCARTT was balanced by negligible achievements on agricultural extension. Although water infrastructure in the Jordan Valley was significantly improved, and has led to more efficient water distribution in the primary irrigation network, this has not yet lead to better water conservation or increased income for JVA. Similarly, WAJ's installation of water meters on upland wells and enabling regulations for licensing and fee collection remains ineffective because of political concerns.

34. Support for the MoA's M&E unit was only partially effective in building institutional capacity. While the MoA was responsible for the work, most of this was done by GTZ-financed consultants and little capacity was built within MoA. As a result, little use is made of the M&E data for policy formulation and design of poverty alleviation programs to help the worst affected.

Sustainability

Are the results likely to last? Sustainability is evaluated by assessing the resilience to risk of net benefits flows over time.

35. Sustainability is likely because high client ownership would make it virtually impossible to reverse the trade and market reforms that have been enacted. The policy environment for water is progressive, as the Amman management contract demonstrates. Jordan's strong partnership with the development community, allied with the need for external financing, has firmly rooted and expanded the reform agenda for agriculture and water.

Bank Performance

This is a measure of the extent to which services provided by the Bank ensured quality at entry and supported implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of the project).

36. **ASAL and ASTUP Rating: Satisfactory.** Project preparation and appraisal were of high quality and both government and development partners have praised the ASAL team's work for its inclusiveness and willingness to share information during supervision. While the Bank's stand on agricultural water tariffs created problems toward the end of the ASAL and a roadblock to dialogue about the future, this was eventually resolved with the Bank's acceptance of the political realities of Jordan. Thus, water sector policy quickly evolved thereafter according to Jordanian priorities—most successfully with the Bank's assistance for the Amman urban water management

⁸³ In 1995, 70 percent of irrigation water was sold and 76 percent of bills were collected.

operation, but with slower progress in the agricultural sector. Follow-up on the agricultural sector has been relatively ineffective due to a low level of input by the Bank.

37. Analytical and advisory services were key to creating awareness and partnership for the successful reform agenda. The Bank's 1990 Agricultural Sector Strategy Paper was its basis, and this was elaborated in the Ministry of Agriculture's 1993 Agricultural Policy Charter. Development partners all acknowledge the value the Bank had provided to Jordan as a facilitator that brings global knowledge to bear on local problems. They are notably more enthusiastic about the Bank's ability to link sector and sub-sector projects to the broader economy through the CAS, while sector agencies within Jordan were, understandably, less so partly because they felt it enabled donors to form a coherent and comprehensive program, the sequencing of which did not always meet government approval. In this context, both government and donors enthusiastically endorsed Bank performance on the ASAL over the period 1990–96. Similarly, within the urban water supply and sanitation sector the new program initiated from 1997 was well received.

38. The Bank relied on significant work by other development partners to deliver the ASAL and was in the vanguard of raising agricultural water tariffs. Yet when the final tranche of the ASAL was on the line, the Bank abandoned its stand on tariffs and alliance with KfW in favor of disbursement. This was a pragmatic decision given that government was intransigent on agricultural water tariffs and the inflexibility of the ASAL conditionality. As this problem was well known in 1994 and even identified—the export marketing problem be resolved and local markets improved—the Bank would have been a better partner to KfW and government if it had used its AAA to examine alternatives which in the longer term may have achieved its water management and conservation objectives. As it was, the release of the second tranche of the ASAL severely undermined the trust between the Bank and KfW, and the subsequent partnership in the agricultural sector has been damaged.

Borrower Performance

Borrower performance is rated by the extent to which borrower assumed ownership and responsibility to ensure quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development objectives and sustainability

39. Borrower performance was satisfactory on the ASAL. Despite the high political risks surrounding the ASAL reforms, almost all were achieved within the ASAL timetable, the notable exceptions being the second increase in agricultural water tariffs and the divestiture of AMPCO. Borrower performance on the ASTUP is also satisfactory, but only marginally so. This is primarily because of JVA and WAJ's unwillingness to fully use facilities installed to improve revenue generation and water conservation.

ANNEX C

Organizational Reform is Proceeding Slowly

1. GOJ agreed in 1994 to consider rationalizing the organization of the Ministry and its line agencies to improve water management and reduce government expenditures. And in January 1999, the Minister introduced a restructured organization for “testing purposes” until approved by the Cabinet of Ministers (the current status is pending.) Some of the impetus for this reorganization followed the recommendations of a CIDA study and the increased attention to MoWI as a result of the Amman Water and Sanitation Management Project which introduced a foreign management contractor. The most important change within MoWI was greater clarification and demarcation of its responsibilities for water resources planning and management and absorption of WAJ’s water resources studies and groundwater monitoring functions in 1999. The MoWI released an ambitious US\$2.5 billion master plan of water sector planning and its associated investment program of 53 projects covering the period to 2011 at a donors’ conference in March 2002.

2. While WAJ is undergoing reorganization, JVA—the biggest water user—has yet to start.⁸⁴ In 1997, WAJ unbundled bulk water and retail activities and water supply and wastewater services. The Bank-funded Project Management Unit for the Amman water contracts (audited by USAID TA) is the first step of this unbundling process, and its initial effectiveness demonstrates that WAJ has considerable potential for better management. However, this has yet to be replicated throughout the organization. At a much lower intensity, JVA is subject to modernization pressure through grant TA from USAID, GTZ, and France. Currently, JVA with USAID assistance, is in process of finalizing a Strategic Plan (2002–07) that will examine options for: (a) improving bulk water supply and management; (b) private sector participation of its retail water delivery functions; (c) restructuring and modernization of the organization; and (d) maximize returns from land development and management in the Jordan Valley. The MoWI expects an action plan to implement the strategy to be agreed by the end-2002.

⁸⁴In 1998, JVA managed the supply 31 percent of Jordan’s water, conversely WAJ municipal water management responsibility covered 26 percent of all water supply. WAJ also had responsibility, until 1999, for monitoring private sector highland groundwater use.

Table C1: WAJ's Current Account (JD millions) Is An Unresolved Problem

	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
Net Revenue	-51.3	-55.2	-46.2	-55.0	-32.0
Accumulated Balance	-390.1	-450.2	-483.8	-549.6	-581.4

Source: WAJ 2002. JD1.0 = \$1.42

Table C2: Water Sector Public Sector Employment is Large

	<i>MoWI</i>	<i>WAJ</i>	<i>JVA</i>	<i>Total</i>
Secretary General	1	1	1	1
Deputy Secretary General			1	1
Assistant Secretary General	4	5	6	15
Directorates	8	16	15	39
Divisions	33	77	61	101
Estimated total staff in 2002	400	7,789	2,074	10,500

Annex D

List of Measures and Policy Reforms Undertaken by the Government of Jordan and Ministry of Water and Irrigation to Enhance the Water Sector and Assure Financial Viability, in Accordance with the Ministry Plans and Donors Requirements.

Resource Management Aspects

- The Ministry has recently prepared an Action Plan which represents a valuable initiative. It also effectively identifies the major structural and policy reforms required for a sustainable development of the water sector nationwide. This document provides an excellent basis for common understanding between the Jordanian Government and the various donor agencies on key issues.
- Development of appropriate institutional capacity building and legislative framework for water management.
- A strategic Plan for the Jordan Valley Authority is being developed with the assistance of the USAID, followed by support for investment and institutional reforms which would support sustainable growth and improved efficiency.
- Significant improvements in equipping private wells with water meters have been achieved. To date 93 percent of all wells within the kingdom have been metered. During the day-to-day fieldwork of the staff the level of acceptance to get the abstraction from the private wells metered improved. In his decision No. 85/12/1/7788, dated September 06, 1997 the Prime Minister authorized the Ministry of Water and Irrigation to enforce regulations or to close unlicensed wells according to a plan, which differentiates procedures according to the location of the wells. In addition there is the mechanism where owners have to revert back to WAJ for licensing to clean the well, for example, and such authorization will be tied, among other conditions, to settlement of account. In addition of the continuing installment of water meters on the private wells, WAJ also put signs on each well. 2054 signs were installed on all water basins.
- Groundwater allocations for all purposes in the uplands shall be based on groundwater sustainability principles. The GOJ has made recent policy decisions to stop the abuse of critical water resources and promote better management of those resources. A recent GOJ policy calls for massive reduction in ground water abstractions to prevent the loss of some highland aquifers. .
- Stopping the pumpage of groundwater for urban supply from Azraq wellfeild during last winter season.
- The irrigated areas in the highlands are limited to 600,000 Dunums, whereas in Jordan Valley are limited to 420,000 Dunums.
- The planting of all summer crops has been banned for the summer of 2002 in order to preserve scarce water resources for urban water supply.
- A reduction of irrigation water of up to 40 percent has been implemented for the summer 2002 for the Jordan Valley through a water rationing program.
- The government has agreed to rent lands from farmers in order to prevent them from planting any crops.
- In agriculture, greater use is to be made of treated wastewater and brackish water as a substitute for fresh water.
- A study financed by KfW on wastewater reuse will be launched in November of 2002. This study will formulate an action plan for reuse of treated water in agriculture purposes.
- Using modern irrigation techniques in the Jordan Valley to raise efficiency is being undertaken through pilot projects with support from US AID, GTZ and France.

- Implementation of the new regulations related to industrial and commercial wastewater effluent to the public network. Any excess of the certain parameters will be paid for according to a formula.
- MWI has been implementing a public awareness program. _ A public awareness campaign through the USAID project / WEPIA is being implemented through media, lectures, interviews, etc.

Financial Management Aspect

- An investment program for all sector related investments was prepared in 1997 and has recently undergone an update in 2002. This program will be reviewed and updated every five years to ensure that the program reflects current realities on an ongoing basis.
- Further enhancement of efficient financial management, accounting and controlling tools in the utilities.
- Introduction of socially acceptable cost recovery tariffs for all types of water use.
- Several measures have been introduced to mobilize PSP in the management of water and wastewater facilities and in urban operations and promotion of users management in irrigation.
- A new tariff for groundwater abstraction for agricultural use has been implemented. This will generate an annual revenues of JD 4.0 million.
- Implementation of additional surcharge on all water bills issued by WAJ of 0.5 JOD for consumption <20 cum and 1.5 JOD for consumption >20 cum for all bills issued inside Greater Amman area. 1.00 JOD for bills issued outside the capital. This will generate an annual revenues of JD 2.723 million.
- Groundwater tariffs for water (private wells) transported by tankers have been increased to 250 fils per cubic meter for municipal and industrial consumption, and 100 fils per cubic meter for all other non-potable water. This will generate an annual revenues of JD 1.0 million.
- New tariff for public wells (governmental departments, Force army municipalities, 25 fils/m³ for agriculture and 100 fils/m³ for other purposes. This will generate an annual revenues of JD 0.6 million.
- A water tariff of 250 fills/ m³ has been levied on petroleum refinery for its use of groundwater. This will generate an annual revenue of JD 0. 60 million.
- The price of water sold by private tankers has been increased to JD 1.75 per cubic meter for water sold outside the capital and JD2 for water sold within the Greater Amman area.
- The price of water sold by WAJ tankers to the consumers has been increased to JD 1. 50 per cubic meter. This will generate an annual revenues of JD 0. 4 million.
- Treated wastewater of the As Samra wastewater treatment plant will be sold at 100 fils per cubic meter to a new plant for electricity generation to be established by the private sector. The new plant is expected to purchase up to 7 MCM per year. This will generate an annual revenues of JD 0.7 million.
- Raw water tariff for industrial usage by the Arab Potash Company in the Mujib and Southern Ghors regions has been increased to 530 fils per cubic meter. The groundwater tariff for water abstracted for the same company have also been increased to 250 fils per cubic meter. This will generate an annual revenues of JD 2.0 million.
- Agreement with Phosphate Company to substitute freshwater with treated wastewater from newly wastewater treatment plant to be constructed in Aqaba.
- Agreement with farmers and other users to use treated wastewater, the tariff set 10 fils/m³

Institutional Aspects

- A study of the Assessment of Options for Water Sector Regulatory Reform is currently being undertaken with the assistance of the World Bank.
- New laws and bylaws and consequent organization charts for MWI, WAJ, and NA will be prepared on the basis of the Regulatory Framework Study findings.
- Ministry personnel have been reduced by 350, where few qualified technical and financial employees have been employed.
- Implementation of a new commercially based Financial Accounting System for JVA, and the introduction of similar systems into MWI and WAJ.
- Autonomous commercialized entities have been established at the governorate level for Irbid and Aqaba.
- Implementation of a new Customer Information System for the entire Kingdom is currently under way.
- Implementation of a new Archiving System for technical & administrative data related to well permits, drilling data and deposits.
- Implementation of a centralized GIS to have complete data related to water and wastewater projects.
- Intensified donor coordination.
- Fostering of regional cooperation.

Legislative Amendments

- WAJ law has been amended to enhance Private Sector Participation and allow for the establishment and ownership by the government completely or partially of private companies.
- Amendments to the same WAS law have recently been adopted to enhance enforcement measures with regard to removing any violations and contraventions of the laws pertaining to illegal use of water resources through the establishment of a Judicial Police.
- A new by-law for Groundwater well usage has been approved and published in the official gazette to reduce and control over drafting and illegal wells and provide for substantive penalties for illegal use. This bylaw sets a new tariff for all agricultural groundwater wells.
- By-laws pertaining to wastewater regulations have been amended in order to allow for the smooth implementation of wastewater networks through private lands and plots.
- Wastewater connection fees are now to be determined and set by WAJ based upon criteria from the Council of Ministers in order to enhance financial viability and cash flows and increase connections rate.
- Enforcement measures with regard to illegal drilling have also been strengthened by the recent legal amendments. To date, 28 illegal drilling rigs have been detained and 77 illegal wells have been closed.
- The JVA law has also been amended to reflect and promote greater Private Sector Participation in the Jordan Valley.
- The same law has been modified to allow for the operations under commercial means for all projects in the Jordan Valley except for those related to irrigation and water resources development.
- The laws pertaining to the sale of land in the valley have been restructured to allow for the sale of property in order to allow agriculture farm units to be consolidated up to 250 dunums in order to assure enhanced economic viability.

COMMENTS FROM THE GOVERNMENT

**THE HASHEMITE KINGDOM
OF JORDAN**

**Ministry of Planning and
International Cooperation**

AMMAN

Ref. No. 5/9/1/346

Date 13/1/2004



المملكة الأردنية الهاشمية

وزارة التخطيط والتعاون الدولي

عمان

..... الرقم

..... التاريخ

..... الموافق

Mr. R. Kyle Peters
Senior Manager
Country Evaluation and Regional Relations
Operations Evaluation Department
The World Bank
Washington, D.C. 20433
U.S.A.

Fax: 020-477-6391

**Subject: An Evaluation of Bank Assistance for
Water Development and Management**

Dear Mr. Peters,

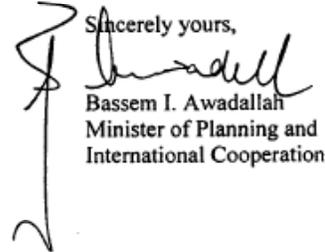
In reference to your letter dated December 4, 2003 regarding the Hashemite Kingdom of Jordan: Country Assistance Evaluation Sectoral Background Papers.

Please find attached the Ministry of Water and Irrigation comments on the above mentioned subject.

I would appreciate it if you thoroughly look over these comments and adjust the report so as to reflect the true reality of our country.

Please accept my high esteem and consideration

Sincerely yours,



Bassem I. Awadallah
Minister of Planning and
International Cooperation

General Remarks:

With all due respect to the author, only the negative picture of the water sector in Jordan was illustrated, whilst significant positive achievements of MWI/WAJ/JVA, have been ignored/overlooked:

As shown in Annex D the positive outcome of the measures taken by the ministry were not given their due consideration in the main report. These include the measures taken in enhancing the water sector to ensure financial viability.

MWI finished an action plan 2002-06 approved by the cabinet and distributed to all donors (see <http://www.mwi.gov.jo/main%20topics/action%20plan/Action%20Plan.htm>). This action plan covers a number of issues. Institutional and legal reform, agricultural water use (include the usage of marginal water), cost recovery (investment and increase efficiency) PSP and compatibility of data information system. 95% of the 2002 action plan targets were reached by MWI/WAJ/JVA. This action plan was also not given its due consideration.

MWI issued and gained approval by the cabinet for a new Groundwater Monitoring and Control By-law (85) 2002 that contains charges on groundwater abstraction from private and public wells in order to reduce the unsustainable abstraction from groundwater aquifers and help encourage industries and farmers to use the best available technologies and techniques to ultimately raise efficiency. See <http://www.mwi.gov.jo/main%20topics/Legislations/mwi-law85-master.htm>

On the cost recovery issue the importance of financial viability was clear where the O&M cost recovery of WAJ increased from 115% in 2000 to 125% in 2002. This is due to the measures taken by the ministry as mentioned above.

The author should clearly distinguish between unaccounted-for-water (UFW) and physical losses. UFW includes Administrative losses and physical losses. Admin losses are not considered wasted since they are used anyway. They just reduce the amounts of billed water and hence revenues.

The Kingdom of Saudi Arabia did not object to the Disi-Mudawwara to Amman Water Conveyance System as a shared aquifer contrary to what is mentioned in the report.

Specific Remarks:**Page iii: Executive Summary****Paragraph 1, line 2**

"...Water use efficiency is low, with high levels of unaccounted-for-water and low levels of cost recovery..."

The author should clearly distinguish between unaccounted-for-water (UFW) and physical losses. UFW includes Administrative losses and physical losses. Admin losses are not considered wasted since they are used anyway. They just reduce the amounts of billed water and hence revenues.

Paragraph 3, line 6

".....Modestly improved water use efficiency..."

Replace "use" with "supply"

Paragraph 4, line 7

"..And unaccounted for water were reduced to internationally accepted norms"
the author did not clearly distinguish between unaccounted-for-water (UFW) and physical losses.

Paragraph 4, line 7

"It is likely that some large investments to increase suppliesCould be significantly delayed or reduced at least in the medium term..."

Even with planned reduction in physical losses, the country is still running with large deficits. **See Table 2: Projected Demands, Resources & Deficits 2005-2020 (MCM)**

Page 1**Paragraph 1.2, line 2**

".... Arable and 79 percent of the population lives in urban areas in 2000.... "

Replace 79 with 65 percent

Replace 2000 with 2002)

Paragraph 1.2, line 5

"Provides about 60 percent of Jordan's water....."

Dividing the total GW abstraction of 412 MCM over the total water uses of 817 MCM for the year 2000, the percentage will be 50 percent instead of 60 percent.

Paragraph 1.2, line 8

"...Rapid urbanization and further expansion of agriculture....."

There is no planned expansion in irrigation areas in the uplands. Reduction of groundwater abstractions for irrigation purposes is foreseen by implementing the new

groundwater by-law and equipping private wells with water meters to strengthen this endeavour. Irrigation areas in the JRV have been capped at 420 dunnums.

Paragraph 1.2, line 9

"...Municipal **demand** was growing in excess of 7..."
 Replace "**demand**" with "**uses**"

Paragraph 1.2, line 10

"...Demand would double by about **2013**..."
 Replace **2013** with **2020**. Since Demand Management are considered in projections.

Paragraph 1.2, line 10

"...Renewable water is projected to decline from 224m³/year per capita in 1990 to less than 100 m³/year by 2025....."

Renewable water is 780 MCM (of which 505MCM SW & 275 MCM GW). Projected population is 8.9 Million Capita in 2025. Hence renewable water per capita is projected to be 97 m³/cap/year by the year 2020 and 88 m³/year by 2025.

If however we consider the planned development of resources expected by the year 2020, the per capita share of developed resources would be in the range of 160 m³/cap/year per capita

	Development Resources 2020 (MCM)	Population; NWMP Report ('000 capita)	m ³ /year per capita
Royal committee Report	1305	8.05	162
NWMP Preliminary Findings	1276	8.05	159

Paragraph 1.3, line 1

"...GDP in 1994 to **3.3** percent..."

Discuss also effect of agriculture dependent activities. Should therefore include indirect contribution to GDP (transport, banking, employment)

Paragraph 1.5, line 2

"...almost all surface water is supplied to agriculture in JV..."

Only 60% of Surface Water is used in JRV for irrigation. About 45 MCM is pumped to Amman from JRV (supplied from KAC water) at Deir Alla via Zai Treatment Plant to Amman for municipal purposes, 2 MCM are used to supply Potash industries from surface wadis in the southern Ghors and some 13 MCM is used to recharge Groundwater in Wadi Wala to supply Amman with water in the year 2002/2003.

Paragraph 1.5, line 2

"....but about **half** is unaccounted for due to physical losses, low billings, or theft....."

Most of the losses are on farm. They do not exceed 27.4%. Please see detailed efficiency figures for the JRV in table 3 below.

Table 1: Breakdown of Irrigation Efficiency in the JRV and Uplands (1998)

Region	Application Efficiency	Distribution Efficiency	Conveyance Efficiency
JRV	72.6%	90%	90-96.8% (Jordan Valley) 82% Southern Ghors
Uplands	78.5%	95.7%	-

Paragraph 1.5, line 3

"...Almost **three-quarters** of groundwater used in the highlands is either free or unaccounted for".

See table 3 above. Losses are mostly on farm.

Page 2

Paragraph 1.4, line 4

"In the north, the **shallow** Yamouk groundwater aquifer is over-exploited

Replace "shallow" with "Upper"

Paragraph 1.4, line 11

"...lumpy investment in new supplies could be significantly **delayed and/or reduced**"

The following table presents the Demand and Resources with the expected deficit in the projected years, please be noted that the water savings is part of the Demand.

Table 2: Projected Demands, Resources & Deficits 2005-2020 (MCM)

	2005	2010	2015	2020
Demand	1407	1477	1562	1594
Supply	1061	1321	1265	1276
Deficit	-346.4	-156.4	-297.0	-318.2

Note: Water savings is included in the Demand. See Table below

Table 3: Savings Considered in Projected Demands 2005-2020 (MCM)

Savings (MCM)	2005	2010	2015	2020
Municipal	10.1	54.2	63.2	102.3
Irrigation (Uplands)	11.3	19.3	28.3	41.7
Irrigation (JRV)	16.8	23.9	25.6	30.7

So it should be noted that even with the above-mentioned savings, the country is running with large deficit. Large scale water projects are still needed.

Paragraph 1.5:

".. Significant wastage and losses ..."

This is misleading and does not reflect the status quo, where significant investment is made towards rehabilitation of infrastructure to reduce losses, and where reuse of treated effluent in irrigation has become part of the national water balance in order to minimize wastage.

Paragraph 1.5, line 2

"...almost all surface water is supplied to agriculture in JV..."

Only 60% of Surface Water is used in JRV for irrigation. About 45 MCM is pumped to Amman from JRV (supplied from KAC water) at Deir Alla via Zai Treatment Plant to Amman for municipal purposes, 2 MCM are used to supply Potash industries from surface wadis in the southern Ghors and some 3 MCM is used to recharge Groundwater in Wadi Wala to supply Amman with water.

Paragraph 1.5, line 2

".....but about **half** is unaccounted for due to physical losses, low billings, or theft....."

Most of the losses are on farm. They do not exceed 73%. Please see detailed efficiency figures for the JRV in table 3 below.

Table 4: Breakdown of Irrigation Efficiency in the JRV and Uplands (1998)

Region	Application Efficiency	Distribution Efficiency	Conveyance Efficiency
JRV	72.6%	90%	90-96.8% (Jordan Valley) 82% Southern Ghors
Uplands	78.5%	95.7%	-

Paragraph 1.5, line 3

"...Almost **three-quarters** of groundwater used in the highlands is either free or unaccounted for".

See table 3 above. Losses are mostly on farm. Several measures have been taken to help reduce water abstractions in the uplands. These include:

- Prohibition of wells drilling in 1992.
- Development of a new by-law (No. 85 for 2002) for groundwater well usage to control over drafting, illegal wells drilling, and provide for substantive penalties for illegal use of Groundwater. See <http://www.mwi.gov.jo/main%20topics/Legislations/mwi-law85-master.htm> and its amendment in Annex 1 of this document.
- A new tariff has been established for all agriculture groundwater wells.
- Illegal well drilling enforcement measures have also been strengthened by recent legal amendments.
- Enhancement of groundwater monitoring network on quantity and quality levels.
- Significant improvements in equipping private wells with water meters have been achieved. About 95% of all wells are equipped with flow meters.
- Planting of all summer crops has been banned for the summer starting in the year 2000.
- Use of marginal water (brackish, treated wastewater) in agriculture.

Paragraph 1.5, line 4

".. and is two and a half times more than the volume overdrawn each year..."

This is not true. Between 1993 and 2001 this figure ranged between 1.47 and 1.55 (with an average of 1.51). The least figure corresponds to most recent years.

Paragraph 1.5, line before last

.....How much of the "losses" instead of **unaccounted for water**" is recycled

Paragraph 1.6, line 14

"....US\$ million a year or about **4 percent** of GDP..." is not correct, if taking the year 2002 as an example 4% of GDP would stand at Approximately US\$ 375 million.

Page 2 – figure 1:

The number \$ 1,690 million funding for 2002 is not correct. Please refer to table 5 below.

Table 5: External Funding of Jordan's Water Sector for the Year 2002

#	Donor	Value
1.	USAID (Grant and Local Currency)	\$ 60.998 million
2.	KfW and GTZ	€ 33 million is equi = \$ 41.2
3.	Norway	\$ 0.344 million
4.	JICA	\$ 14.6 million
	Total	\$ 117.142

Page 4**Institutional setting and challenges****Paragraph 1.10, lines 4, 5**

".. The Jordan Valley Authority (JVA) for agriculture, .."

Delete "for agriculture"

".. the Water Authority of Jordan (WAJ) for urban areas"

Rewrite: "the Water Supply Corporation (WSC)

And Delete: "for urban areas"

Add "municipalities" after "Amman Water and Sewerage Authority".

Paragraph 1.11, line 2

Insert "Municipal" after "including the"

Paragraph 1.13, Line 2

JVA is not an independent authority.

Page 5**Paragraph 1.14, Lines 3-4**

This statement does not reflect the status quo and the leading and strong position MWI has taken in the Water Sector in the area of planning, policies development and enforcement. The four entities WAJ, JVA, MWI and MOA have clear and defined borders.

Paragraph 1.15 and Table 1:

The Council of Ministers decided in their session of 23/6/1998, to transfer the balance of WAJ's foreign loans until 31/12/1996 to the national budget in which foreign debts were specified to amount to (JD 365609989) inclusive of instalments risks and interest on WB loans, to capitalize these loans in WAJ's budget and no longer to appear in WAJ's budget any capital or interest payments on these loans, WAJ to bear the foreign loans after 31/12/1996.

Paragraph 1.16, line 2

JVA lost an average of US\$3.76 million/year. Without revenue from drinking water.

Paragraph 1.17, line 1

Please note that the EU funded the Project Management Unit for the Amman water contracts.

Paragraph 1.17, last line

The Strategic plan for the years 2003-08 (not 2002-07) has been finalized (not in process)

Page 6**Paragraph 1.18:**

"Significant duplication of responsibility" and "monopoly" is not true.
There is clear mandate for MoA on agriculture activities in the JRV.
Review of legal status. Ministry of Agriculture, by-law (44) 2002

Paragraph 1.19, lines 4, 5

"A list of measures and policy reforms undertaken by the Jordanian authorities is attached as Annex D.....
A lot has been done in the Water Sector during the past decade that should be mentioned in the main text. See general comments and previous discussions.

Paragraph 1.20, Line 6

The full capacity is 45 million (not 67 million)

Page 7**Paragraph 1.21, line 4**

"..13-year US\$ 5 billion..."

Replace "5" with "2.5"

Review the figure in the footnote

Paragraph 1.22, line 8

".. reduce it to zero by "2005"

Plans are to reduce it to 0 by 2020.

Paragraph 1.22, line 8

"...by an unwillingness to apply regulations for agricultural water use...."

This is not true, see GW By law 2002 which under this link <http://www.mwi.gov.jo/main%20topics/Legislations/mwi-law85-master.htm> and its amendment in Annex 1.

Paragraph 1.22, line 9

"...led to excessive withdrawal for agriculture...."

Evidence shows that during the past decade GW use for agriculture has declined in absolute terms from 290 MCM in 1996 to 233 MCM in 2001.

Table 6: Irrigation Uses (MCM)

		MCM					
Region	Water Resource	1996	1997	1998	1999	2000	2001
JRV	Surface water	182	195	146	127	121	94
	Groundwater	60	51	52	51	54	47
	Treated Wastewater	52	53	60	59	61	60
	Total JRV	294	298	258	237	236	201
Uplds	Surfacewater	67	70	79	73	89	87
	Groundwater	230	216	208	205	199	186
	Direct Treated Wastewater	7	8	11	11	11	13
	Total Uplds	304	294	299	289	298	286
Total		598	592	557	526	534	488

Paragraph 1.22, last 2 lines

"...is too low and poorly structured"

Delete "and poorly structured"

Page 8**Paragraph 1.24, Lines 2 & 3**

Irrigation Water Tariff on monthly consumption basis for normal farm units of 3.5 hectares area is on average 15 fils per m³.

Paragraph 1.24, line 4

Replace "Amman" with "Jordan"

".. was 64 times greater or US\$ "0.54" instead of "0.381"

Paragraph 1.24, lines 4, 5

Insert "& non-residential" after "industrial"

Paragraph 1.24, line 5

".. non-residential water users are charged US\$ "1.42" instead of US\$ "1.00"

Paragraph 1.24, last 3 lines

"...If agriculture water were valued at average urban tariffs the implicit annual agricultural subsidy is of the order US\$200 million or us\$3,200 per irrigated ha"

Calculating average subsidies depending on the municipal water prices is illogical and misleading.

Paragraph 1.25

Comparing between Jordan and Israel is unfair due to differences in per capita income and the presence of well-developed export market.

Page 9**Paragraph 1.27**

Banana planting declined in the areas irrigated from JVA Activities.

Paragraph 1.29:

JVA policy is not to marginalize but rather to prioritize. Water supply to "licensed" trees is given priority due to the investment made already by farmers.

However historical trends show that banana plantations have been reduced in the areas irrigated from JVA projects.

Page 10**Paragraph 1.30**

The following statement is not true "conversely, most orchards (90 percent) have failed to successfully adopt drip irrigation and most use basin irrigation" please note that most orchards (70%) have successfully adopted localized irrigation."

Paragraph 1.31

The number of rented farm units by JVA due to shortage of water was (285) in the year 2001 and (338) in 2002, with an approximate area of (2500) hectares.

Paragraph 1.31, line 11

"...forgone JD 500/farm". Use JD 500-1500/farm.

Page 11**Paragraph 1.34, lines 8-10**

"Allocating water rights.....of sharing the scarce resources and increasing water use efficiency."

This argument is not valid, since it will result in the monopoly of big farmers in agriculture

Page 12**Paragraph 1.35, line 1**

"The government's "1997 water" strategy stresses...."

Paragraph 1.38, line 1

"More positively, the JVA's strategic plan "2003-08 instead of 2002-07"

JVA has recently commenced an Internal Competitiveness Program ICP, aiming at improving the quality of services provided to the farmers, investors and other customers in the Jordan Valley, raising the efficiency and effectiveness of its operations, reduce unaccounted for water and improve cost recovery.

Page 14**Paragraph 2.5, line 6:**

MIGA guarantees (US\$ 100 million) not (US\$ 125 Million), and were the Disi project Construction cost is around US\$ 600 and not US\$ 800.

Paragraph 2.6, line 4

"was work in progress"

Delete "work"

Page 15**Paragraph 2.13, lines 3-5:**

The author did not mention that the government encouraged the Disi water supply project bidders to lease or buy the water sources from the Disi project to supply these farms.

Page 17**Paragraph 2.19**

Please clarify or add to the paragraph that a number of crises in the region contributed to this faster rate of water usage.

Paragraph 2.20, line 4

"..... Agriculture, which used **three-quarters of all available water**, was the prime....."
 Current percentage is 65% (Agriculture use/ total use)

Page 19**Paragraph 2.25 and 2.26 last five lines**

The concerns raised within this paragraph do not reflect the measures and policies taken by the Ministry as shown in Annex D.

Page 20**Paragraph 2.27 Cont'd:**

The government of Jordan has only pursued its commitments on expanding such services following national and international policies at the time (water decade etc.).

Page 22**Paragraph 2.35**

The government of Jordan did not resign due to the polluted water at the time; it was only the minister the minister of Water and Irrigation.

It was blue algae not red that polluted the water.

Page 30**Paragraph 2.56**

Please provide further details regarding the monitoring and elevations (what is meant by this?) of auditing and auditing the operators O&M performance.

Page 31**Paragraph 2.61**

Please note that institutional development and infrastructure expansion are given equal importance by MWI.

Paragraph 2.63

The objective of transferring water from the valley to the highlands is to satisfy and help close the gap between demand and supply of drinking water, especially in greater Amman area.

Page 32**Paragraph 2.64**

Virtual Water Importation to Jordan through Crop and Livestock Net-Imports is estimated at 2.1 Billion Meter Cubes. (Source National Water Master Plan 2003)

Page 34

Paragraph 2.71_line 5

Please note that this was not the first time that income exceeded operation expenses.

Page 35**Paragraph 3.73**

Classifying the baseline performance as poor is not true. The management contract for Amman has achieved a number of its targets. MWI is still proceeding with PSP involvement such as Aqaba and northern governorates.

Page 43**Table A1:**

Table is confusing. Distinguish clearly between actual uses and demand projections.

Page 46**Paragraph 10:**

Rating: Modest. Efficient use of water control of groundwater remains elusive, Lines 11-14

Table 5 below clearly shows that whereas irrigation areas have been progressively expanding since 1996 (as shown in Figure B1 of annex b), groundwater abstractions for irrigation have been on the decline. This cannot be without concomitant increase in water use efficiency.

Table 8: Renewable Ground Water Abstractions by Sector (MCM)

Sector	1993	1994	1995	1996	1997	1998	1999	2000	2001
Municipal	150	162	169	170	169	173	173	176	183
Industrial	26	19	26	29	32	32	31	30	27
Irrigation	289	265	233	238	213	215	212	206	193
Total	465	446	428	437	414	420	416	412	403

Furthermore the above table shows that the overall groundwater abstraction between 1995 and 2000 has also declined from 428 MCM to 412 MCM, respectively at an average of 3.2%. It is therefore not clear how the author concluded a 9 % increase in groundwater withdrawals.

Page 47**Paragraph 11:**

The tariff raised was in 1995 not 1997.

Paragraph 11, last three lines:

This contradicts with the fact that 72 MCM of treated effluent is reused (mentioned earlier in the same paragraph of the report). Reuse in Jordan is in the order of 90% of all treated effluent, mostly for agriculture.

Page 52:

Paragraph 30:

The way details are presented in this paragraph is misleading. JVA has implemented "FORWARD" as well as the financial accounting system.

Annex 1

**THE GAZETTE
THE HASHEMITE KINGDOM OF JORDAN**

**Amman: Tuesday First of July 13.08.2003
Issue no. 4608
Issued by the Cabinet – Official Gazette Directorate**

We, Abdullah II Ibn Al-Hussein Sovereign of the Hashemite Kingdom of Jordan, by virtue of Article (31) of the constitution, and based on the resolution passed by the council of ministers on 12//6/2003, decree for the setting of the following regulation :

Regulation No. (76) For 2003

A Regulation in Amendment of the Groundwater

Control Regulator

Article 1-

This Regulation shall be called (Regulation for the Amendment of Groundwater control for 2003) and shall be read together with Regulation No. (85) for 2002, hereinafter referred to as the original Regulation, as one Regulation, and shall be applicable of the date of its publication in the official Gazette.

Article 2

Article (25) of the original Regulation shall be amended by considering its contents as paragraph (A) and by adding the following paragraph (B) thereto:

B- The wells belonging to the Ministry or Authority, as well as the wells whose situations are settled under, the rules of this Regulation, shall be exempted from the distance clause provided for in paragraph (A) of this Article.

Article 3

Paragraph (B) of Article (29) of the original Regulation shall be amended by adding the phrase (AS regards to the other uses, they shall be estimated according to principle to be ratified by the council) to its end.

Article 4

Article (37) of the original Regulation shall be amended by adding the following fees (charges) to its end:-

- Renewing the license for drilling.
a well to replace another well (200) two hundred Dinar
- Renewing the license for training
Repairing, or deepening a well (100) one hundred Dinar

Article 5

The text of Article (38) of the original Regulation shall be cancelled and shall be substituted by the following text:-

Article 38-

With due observance to the conditions set forth in the license or permit for extracting the water, and to the quantities specified therein which are allowed to be extracted, the prices of water extracted annually charged by the Authority, shall be as follows :

1st-Agricultural wells which have been granted on extraction license, or extraction permit :

<u>No.</u>	<u>Quantity of Water</u>	<u>Water prices</u>
1-	(Zero – 150) thousand m ³	Free of charge
2-	Over (150) thousand m ³ to (200) thousand m ³	(25) Fils per cubic meter
3-	More than (200) thousand m ³	(60) Fils per cubic meter

2- Agricultural wells in Al-Azraq region:-

The wells which have been granted an extraction permit in Al-Azraq region on the basis of specified quantities. The said quantities shall be free of charge, and the price of the quantities exceeding it up to (100,000 m³) shall be fixed at (20) Fils per cubic meter. However, a tariff of (60) Fils per cubic meter shall be applied to any quantity which goes beyond the said limit.

3- Prices of water extracted from agricultural wells without a valid extraction license or permit:

<u>No.</u>	<u>Quantity of Water</u>	<u>Water prices</u>
1-	(Zero – 100) thousand m ³	25 Fils per cubic meter
2-	Over (100) thousand m ³ to (150) thousand m ³	(30) Fils per cubic meter
3-	Over (150) thousand m ³ to (200) thousand m ³	(35) Fils per cubic meter
4-	More than (200) thousand m ³	(70) Fils per cubic meter

2nd- Wells belonging to governmental departments, public official institutions, public organizations and municipalities:

1- Twenty five Fils per cubic meter from the wells used for agriculture.

2- One hundred Fils per cubic meter from the wells used for drinking or any other purpose.

3- One hundred Fils per cubic meter, if the well water is allocated for drinking and a part of its water is used for any other purposes.

3rd- Two hundred and fifty Fils per cubic meter from well designated for industry, production, tourism, or universities, and from wells belonging to water companies which are fully or partially owned by water Authority.

4th- Two hundred and fifty Fils per cubic meter is the selling prices of water extracted from drinking water wells.

5th- One hundred Fils per cubic meter is the selling prices of water extracted from water wells which are unfit for drinking.

6th- Salty water wells exploited for agricultural purposes only :

<u>No.</u>	<u>Quantity of Water</u>	<u>Saltiness Ratio</u>	<u>Water Prices</u>
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		(part Per million)	
1-	From (Zero – 150) thousand meter		Free of charge
2-	Over (150) thousand m ³	(Part per million)	
		from 135 to 1500	15 Fils per m ³
		Over 1500 to 2000	10 Fils per m ³
		More than 2000	5 Fils per m ³

Article (6)

Article (40) of the original Regulation shall be amended by adding the phrase (with the exception of extraction licenses and extraction permit) to its end.

Article (7)

The text of Article (41) of the original Regulation shall be cancelled and shall be replaced by the following text :

Article (41) –

1st- Owners of operating wells licensed prior to the effectiveness date of the provisions of this Regulation must conform their situations to its provisions within a period not to exceed one year from the date of its effectiveness, under the penalty of statutory liability by taking the necessary procedures against them, including the filling up of such wells (with earth) through administrative ways.

2nd- 1- Owners operating wells which were not licensed prior to the effectiveness of this Regulation must discontinue the extraction of water from the said wells, and must fill them up (with earth) under the supervision of the Authority within a period not to exceed one year from the date of its effectiveness. However, in case there are economic or social reasons justifying the continuity of extracting water from the said wells, the council may, on the basis of principles ratified by the council of Ministers, approve and allow the extractions of water from the said wells for a specified period and according to the conditions determined by it. This shall be made against the payment of an amount of money according to the schedule indicated below for each linear meter of the depth of the well, provided that no harm will be entailed to the interests of the neighboring owners of licensed wells, and provided that the well owner will, in such case, bear any claim for compensation against any damage inflicted upon third parties.

<u>No.</u>	<u>Well Depth By Meter</u>	<u>Amount Per Linear Meter</u>
1-	Less than (50) m	30 Dinars
2-	Over (50) m to (100) m	40 Dinars
3-	Over (100) m to (150) m	50 Dinars
4-	Over (150) m	100 Dinars
5-	Over (200) m	150 Dinars

2- By a resolution from the council, after the laps of minimum period of three years, the extraction permit may be amended to an extraction license, in case there is no objection thereto according to the provisions of this Regulation.

C- It is allowed by a resolution issued by the cabinet to extend the year period mentioned in par (A) and (B) of this article for similar period.

12.6.2003

Abdullah the Second

<i>The Prime Minister and Minister of Defence</i> <i>Eng. Ali Abul Ragheb.</i>	<i>Acting Prime Minister and Minister of Justice</i> <i>Fares Al Nabulsi</i>	<i>State Minister For Cabinet Affairs</i> <i>Mustafa Al-Qaisi</i>
<i>Minister of Higher Education and Scientific Research</i> <i>Dr. Moh'd Hamdan</i>	<i>Minister of Municipal, Rural and Environment Affairs</i> <i>Dr. Abdul Razzaq Tebaishat</i>	<i>Minister of State For Political Affairs and Minister of Information</i> <i>Dr. Moh'd Affash Al-Odwan</i>
<i>Minister of Administration Development and Environment</i> <i>Dr. Mohammad Thneibat</i>	<i>Minister of Finance</i> <i>Dr. Michel Marto</i>	<i>Minister of Public Works and Housing</i> <i>Eng. Hassan Abu Gheida</i>
<i>Minister of Communication and Information Technology</i> <i>Dr. Fawaz Hatem Al-Zubi</i>	<i>Minister of Islamic Endowments, Affairs and Holy Shrines</i> <i>Dr. Ahmad Helail</i>	<i>Minister Energy and Mineral Resources</i> <i>Eng. Moh'd Ali Al-Bataineh</i>
<i>Minister of Water and Irrigation</i> <i>Eng. Hazem Naser</i>	<i>Minister of Transport And Tourism</i> <i>Nader Al-Dahabi</i>	<i>Minister of Interior</i> <i>Quftan Al-Majali</i>
<i>Minister of Labor</i> <i>Eng. Muzahem Al-Muhaisen</i>	<i>Minister of Culture</i> <i>Haider Mahmoud</i>	<i>Minister of Planning</i> <i>Dr. Basim Awadallah</i>
<i>Minister of Industry and Trade</i> <i>Dr. Salah Eddin Al-Bashir</i>	<i>Acting Minister of Foreign Affairs</i> <i>Shaher Bak</i>	<i>Minister of Health</i> <i>Dr. Waleed Al-Ma'ani</i>
<i>Minister of Agriculture Trade</i> <i>Al-Fayez</i>	<i>Minister of National Economy and State Minister</i> <i>Moh'd Samer Al-Taweel</i>	<i>Minister of Social Development</i> <i>Dr. Rowaida Al-Maita</i>