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# Micro–macro linkages in institutional restructuring processes in the water sector: example of the operations management support project (OMS) in Jordan

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**Abstract**

The German Agency for Technical Cooperation (GTZ) has supported the Water Authority of Jordan (WAJ) since 1994 by the provision of assistance aimed at increasing the efficiency of the potable water supply and wastewater disposal services under the Operations Management Support (OMS) project.

Using OMS as an example, this article shows the links of the change processes at the utility and the sector level (micro–macro linkages) for the introduction of institutional changes within the Jordanian water sector. The support of OMS followed co-evolutionary thinking, that is, it supported the dynamics coming from the utility level and affecting the sector level as well as the feedback loops from sector level to utility level. On the utility level, OMS activities and the induced improvements are a technical base for wider reform processes. They facilitated the implementation of private sector participation, PSP, with better quality base data. The information systems which were introduced by the project also indicated the importance of structural changes on the sector level and the urgency of these reforms. And finally, the involvement of OMS staff on the utility level made them credible when offering advice about the sector level. Hence, the parallel support of activities on both levels provided a deeper awareness of the reform issues and contributed to the success of the sector reforms.

*Keywords:* Change; Co-evolution; Jordan; PSP; Sector reform; Water utilities

## 1. Introduction

Jordan is among the countries with the least water resources worldwide, with groundwater consumption by agriculture, industry and households exceeding the renewable available supply by more than 60% in 2004. The volume of water available per person per year, excluding green water, has fallen

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from 3,000 $m^3$ in 1945 to 160 $m^3$ at the present time. Inefficient and uncontrolled use of the scarce water resources still exacerbates the problem.

On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), the German Technical Cooperation (GTZ) has supported the Jordanian Ministry of Water and Irrigation (MWI) since 1994 by the provision of assistance through the Operations Management Support (OMS) Project in partnership with the German Development Bank (KfW) and the provision of water loss reduction programmes. Today OMS assistance continues within the broad German–Jordanian Water Sector Programme, which started in 2006.

The aim of the OMS component is to increase the efficiency of potable water supply and wastewater disposal services through business process re-engineering, decentralisation and commercialisation of utilities and introduction of private sector participation. This article, based on desk research and interviews with key players in the Jordanian water sector and working experience within the OMS project, summarises the role OMS played in the improvements at the utility and sector level in the Jordanian water sector and highlights the importance of micro–macro linkages in sector reform processes.

## 2. Micro–macro linkages in institutional reform processes

Reform processes can be differentiated according to the institutional level they address: reforms on the utility level focus on the improvement of the processes within a water utility and try to increase the performance of the targeted utility. Issues like customer services, human resources management, finance and accounting are often key areas in this regard. Secondly reforms on the sector levels address the institutional framework, that is, the different institutional bodies of a water sector like political bodies (ministries), regulatory authorities and the operators. The main issues here are the allocation of responsibilities and competences between the sector institutions and the way they interact. Decentralisation, commercialisation or the introduction of private sector participation (PSP) are some possibilities for changing the institutional framework.

In reform processes both levels can be addressed separately from each other. However, such a procedure would neglect the clear interdependence between the two levels. Giddens calls this interdependence the "Duality of Structure" (Giddens, 1984), which means that structures are both the medium and the product of actions: The activities on the operational level ("action") are influenced by the overall institutional framework ("structure"), but at the same time the actions themselves influence the structure. This influence changes the structure in a way that future actions are again affected. This has considerable implications for the implementation of a water sector reform. Improved performance on the operational level within a bureaucratic framework is in many cases a first step and an eye opener for actors on the operational level and political decision makers about possible achievements within a much less rigid institutional framework. This often leads first to small reforms in the institutional framework, allowing for more flexibility for the actors on the operational level by widening the scope in order to become further commercially oriented.

So there is a clear link between changes on the micro or operational level and changes on the sector or macro level. This interdependence, in this article called "micro–macro linkage", is indicated in Figure 1 and implies that sector reform efforts should be based on successful change processes on the utility level.

The transition from a low-performing to a high-performing water sector links change processes on the utility and institutional level with mutual dependencies and dynamic feedback loops. Changes on the

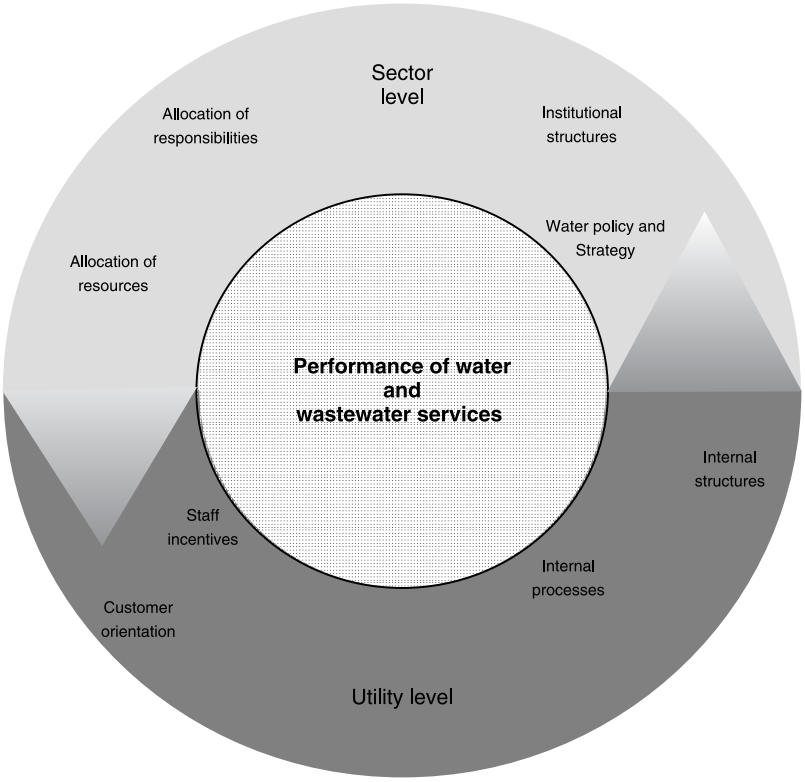



Fig. 1. Micro–macro linkage between utility level and institutional level.

utility level will only be sustainable if the institutional level develops in the same way and *vice versa*. In innovation theory this reciprocally induced evolutionary change is called co-evolution (Volberda & Lewin, 2003).

These effects, based on the co-evolution theory and the "duality of structure" approach, indicate that a system without strong external influence or other barriers develops self-reinforcing change processes through feedback loops from one level to the other. This is the case for example in many market processes, where new technologies lead to a change in user habits which again induces a more thorough dissemination of the new product, makes it cheaper and more readily available to a broader audience. Also, in liberalised utility markets, the new rules induce new entrants into the market and changed behaviour of the market actors, which, in turn, induces changes in the necessary institutional framework (like quality regulation and customer protection).

However, in systems with strong external and political influences, as is often the case in water sectors, the co-evolutionary dynamic needs to be supported. Therefore, coordinated activities on both levels are required, with success on one level leading to even more dynamics on the other level. This coordination can be achieved by various means. One possibility is technical assistance which puts a focus on the utility level first and also gets involved, directly or indirectly, at the institutional level. In Jordan, the OMS project was able to provide such coordinated activities and assistance on both levels. Therefore, the following chapters provide some information about the water sector in Jordan, its reform processes and the role and outcome of OMS within these processes.

## 3. The water sector in Jordan

### 3.1. Institutional structures

The Jordanian Ministry of Water and Irrigation (MWI) was established in 1988 to improve coordination in the water sector. Since 1992 MWI has initiated the development of sector policies and the overall management of the scarce water resources, while the Water Authority of Jordan (WAJ) is the centralised authority responsible for water supply and wastewater disposal services. The WAJ contains 18 directorates under the direction of eight assistant secretary generals as well as five units directly subordinate to the chief executive, the WAJ Secretary General. He is in charge of implementing the policies and reports to the WAJ board of directors headed by the Minister of Water and Irrigation. The regional branches of WAJ in the governorates were fully dependent on headquarters with respect to human resources management, budget disbursement, workshop services, financial management and billing and revenue collection. In 1998, WAJ started the process of decentralisation and until 2006 delegated considerable powers to the operating units in Amman, Aqaba and the four northern governorates (NGWA).

The Programme Management Unit (PMU) is a body within MWI, supported by the European Union. It was created in 1997 to manage the Greater Amman Water Sector Improvement Programme, which was linked to the management contract between WAJ and a consortium of Lyonnaise des Eaux, Montomery Watson and Arabtech (LEMA) to operate the water and wastewater system in Amman. In recent years, PMU has taken over responsibilities for monitoring the performance of the operator within the Amman management contract, the performance of Aqaba Water Company and the introduction of PSP processes in the As Samra wastewater treatment plant, in the northern governorates as well as in Madaba (see below). PMU is now, on behalf of WAJ, involved in all major institutional reform programmes in the Jordanian water supply and wastewater sector. The PMU operates under the supervisory control of an Executive Management Board, which is headed by the minister. The board contains observers from the Delegation of the European Commission in Jordan. It is intended to transform PMU into a so-called Water Sector Audit Unit which reviews the performance of all utility operations in the sector.

### 3.2. Background of water and wastewater services in Jordan

The WAJ has suffered from operating under civil service constraints and lack of financial management autonomy for many years. This, among other important factors, resulted in low cash flow levels, a serious lack of financial resources and hence insufficient funding for upgrading and replacement of the infrastructure. This situation is depicted in the Table 1 below which shows key financial indicators of WAJ in the 1990s.

In addition to financial handicaps, technical benchmarks indicate poor performance. Non-revenue water (NRW) stayed at very high levels with an average of almost 50%, despite substantial investment programmes. Management information systems, for example regarding customer consumption or billing, or regarding the operation and maintenance of the network, were virtually absent (MWI, 2000). Suleiman highlights the fact that centralisation of decision making, for example concerning human resources management or procurement, led to very ineffective and complicated procedures. Besides, staffing was quantitatively and qualitatively inadequate (Suleiman, 2002).

Table 1. WAJ historical financial performance (in million Jordanian dollars).

| | | 1990 | 1992 | 1995 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|---|---|
| A | Profit before depreciation (operating revenues minus operating expenses) | −3.586 | −5.133 | −7.344 | −5.120 | 8.550 | 4.419 |
| B | Net operating profit (A minus annual depreciation) | −18.965 | −27.465 | −36.797 | −41.160 | −27.620 | −19.445 |
| C | Net profit (B minus interest expenses) | −35.944 | −42.373 | −58.780 | −57.420 | −45.360 | −37.185 |
| D | Working ratio (operating expenses/ operating revenues) | 1.17 | 1.19 | 1.19 | 1.10 | 0.87 | 0.91 |
| E | Operating ratio (operating expenses, including depreciation/operating revenues) | 1.89 | 1.99 | 1.93 | 1.83 | 1.42 | 1.25 |

Source: MWI (2000)

### 3.3. Sector reform activities

It is obvious that the introduction of efficient and effective procedures and work flows within the rigid legal framework of a public institution is almost impossible. Procurement according to public law is very inflexible and bureaucratic and an incentive system for staff to improve and link performance to general business objectives is virtually non-existent. Hence, it was perceived that changes within the internal processes of the operational entities are not sufficient, but that changes in the overall framework within which the water services are provided are required. Therefore, two reform processes were introduced: decentralisation and commercialisation/private sector participation (PSP) in operations management.

The first development in this regard started in 1997 with the preparation of a management contract for the Greater Amman Area. This contract was funded by the World Bank and awarded in 1999. It indicated a first major shift in the perception of future tasks of the WAJ, going from bureaucratic operation and regulation towards a separation of the roles of a contracted entity as the operator and WAJ as the regulator and bulk water supplier.

Institutional change processes also took place in the other governorates. Considerable decentralisation of responsibilities and powers took place, for example in the Aqaba governorate and in the four northern governorates of Irbid, Jerash, Ajloun and Mafraq. The Aqaba Water Company (AWC) was established in 2004 as an autonomous public water company, under private law, in charge of water supply and sewerage services in the governorate. WAJ holds 85% of the shares of AWC and the Aqaba Special Economic Zone Authority (ASEZA) holds the remaining 15%.

The Northern Governorates Water Administration (NGWA) was established in 2000 as a joint regional entity in charge of all four northern governorates. Although not an autonomous entity, NGWA has been given considerable powers by the central WAJ. In 2006 a managing consultant contract with an international operator was signed to improve the performance of NGWA and prepare the grounds for the establishment of an autonomous water company by 2009.

Finally, in Madaba governorate a new type of PSP (so called “micro-scale PSP”) is being tested. This pilot micro-scale PSP consists of a service contract for the billing and revenue collection processes of WAJ Madaba. The contract was awarded to a Jordanian company as the first local PSP contract in Jordan and shows considerable success in terms of improved services and revenues for WAJ. WAJ is currently in the process of replicating the Micro-PSP approach also in other Governorates.

## 4. Operation management support (OMS)—inputs and activities[1]

### 4.1. Background

As mentioned above, at the beginning of the 1990s the Government of Jordan faced the challenge of how to increase efficiency and improving operations management of all sectors of the economy, including the water sector. The Operations Management Support (OMS) Project was introduced through the German Agency for Technical Cooperation (GTZ) in cooperation with the MWI and WAJ to initiate and cope with the change processes needed. The OMS objective reads as follows (OMS, 2006):

"Increase efficiency of potable water supply and wastewater disposal services to the population of Jordan through commercialisation of business processes in the Water Authority of Jordan (WAJ) and higher private sector participation (PSP) wherever feasible and appropriate."

Even though many activities of OMS took place on the level of utility processes in technical and financial terms, the objective is much wider. OMS supports the preparation and introduction of new institutional arrangements in the sector, like the use of commercial principles in running the sector and the involvement of private companies.

Financed by the German Federal Ministry for Economic Cooperation and Development (BMZ), the German Agency for Technical Cooperation (GTZ) invested Euro €16.7 million in the OMS project between 1994 and 2006. In addition the Jordanian government has contributed approximately US$9–10 million in cash and kind. In 2006 a new German–Jordanian Water Sector Programme started with a planned duration of 9 years, putting a particular focus on the middle governorates (Balqa, Zarqa and Madaba) which have not yet benefited from the utility and sector reforms.

### 4.2. Contents of the OMS project

Basically, as its name implies, the three topics "operations", "management" and "support" are the key contents of the OMS projects, focussing on the support for WAJ as the public party in charge of operations of water systems.

*4.2.1. Operations.* The first focus of OMS was and still is the analysis and—wherever required—the re-engineering of the relevant business processes in all operational activities related to the provision of efficient services for water supply and wastewater disposal. One of the most important and critical performance indicators of a water utility, especially in an extremely water scarce country like Jordan, is the percentage of non-revenue-water (NRW). All workflows related to water production, transmission and distribution, the meter reading, billing and revenue collection have a strong impact on this indicator and hence need to be analysed and re-engineered. This also implies comprehensive data collection and analysis.

To introduce and maintain a high quality standard of workmanship and to enable the introduction of modern technologies, OMS supported WAJ in the establishment of a vocational training centre and

[1] The following information is based mainly on publicly available information about OMS, i.e. brochures, papers, presentations and the OMS internet website.

the development of water sector-related short term training courses. Further human resources development takes place in the form of on-the-job training, coaching and specialised training courses in information technology, geographical information system (GIS), organisational development and financial management.

*4.2.2. Management*. Managerial skills are usually underdeveloped in a public sector utility. This also was the case for WAJ at the beginning of the OMS project, since it had a very technical focus in operation at that time, making engineers the leaders and directors. As a result, the relevance of finance and soft skills was neglected with substantial costs incurred and increasing deficits sustained. Long, inefficient bureaucratic processes and the lack of customer orientation prevailed. Therefore and to create the basic preconditions for the initiation of good performance, output orientation and commercial business principles, OMS supported WAJ in the following:

- Introduction of commercial, accrual accounting systems and financial management to develop information tools and documents required for an efficient and effective technical operation which is also sustainable in financial terms;
- Development and application of decision making support tools using the integrated, GIS based management information systems (MIS);
- Re-organisation and decentralisation of WAJ business units in various areas.

*4.2.3. Support*. Obviously, special tools are required to assist in the achievement of operation and management improvements. For this, OMS activities were based on advanced information technology, like Oracle RDBMS, ESRI ArcGIS products and special expert, open source software. In addition, several tailor-made applications were developed and introduced in the regular business processes.

The integration of the available information is provided by the GIS and a modular application development approach is applied to enable WAJ to target the most pressing issues first. To enable and provide an even higher level of collaboration among the staff, OMS started introducing web based information technology like Internet map servers and MIS navigation tools. This should facilitate a wider use of the already developed applications across all business units, which in the northern governorates alone are geographically spread over more than 50 locations.

*4.2.4. Sector reforms*. Based on the results of the work on operational level, OMS became involved in the restructuring and sector reform process of WAJ. OMS supported these institutional change processes in three different ways which can be categorized as follows:

- Category 1: data availability and data reliability;
- Category 2: communication tools to overcome shortcomings in existing structures;
- Category 3: conceptual documents and direct support for institutional reforms.

*Category 1: data availability and reliability*. Activities under Category 1 can be seen as typical technical-assistance-type measures to improve utility performance, like improving operational processes or introducing accounting and information systems. However, in the case of OMS they were also the base for broader improvement processes at the institutional framework level, partly owing to the eye-

opener function described above and partly owing to the improvement of the base data in such a way that the real deficiencies and problems in the utility operations were shown.

*Category 2: communication tools to overcome shortcomings of existing structures.* Activities in Category 2 fall in between technical assistance and institutional reform assistance. Examples are the development of profit and loss statements, fixed assets registers or business plans. This is also reflected in the multi-level nature of the tools and documents produced with Category 2 type activities. They are derived from technical assistance for the purpose of improving the performance and the target orientation of utilities. However, they also provide information and insights which can be used in communication at the sector level, indicating the improvements achieved but also quantifying existing shortcomings in clear financial figures.

*Category 3: conceptual documents and direct support for institutional reforms.* Although concepts and direct institutional reform support are the most obvious activities when looked at from a pure institutional reform perspective, they are prone to have a very limited impact. Conceptual documents produced by external consultants not familiar or not well connected with the sector or even with a lack of understanding about underlying issues at utility and sector levels often face strong resistance by the decision maker. Reform activities based on theoretical considerations and without convinced partners often get stuck in implementation. Hence, conceptual documents will achieve the highest value once they emerge from the discussion process on the sector level and manage to link sector concerns with practical experience on the utility level.

## 5. Outputs and outcomes of the OMS project

### *5.1. Introduction*

This section summarises the outputs and outcomes of the OMS project. As a starting point, the following definitions are used in this section (based on OECD, 2002 and GTZ, 2004):

*Outputs* are the products, capital goods and services which result from a project;

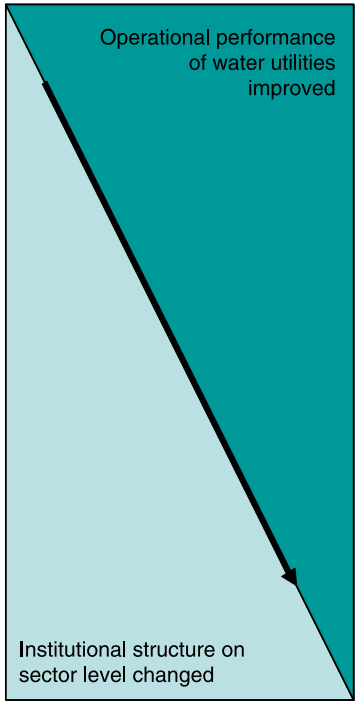
*Outcomes* are the likely or achieved short-term and medium-term effects of a project's outputs.

Obviously, owing to constraints in the available resources not all outputs and outcomes can be analysed. Besides, the precise impact of OMS on the water sector is obviously difficult to determine, since there are also other players active in the sector and their activities influence the sector as well in ways that may support possible impacts of OMS or others that may limit its impacts. Table 2 summarises the outputs, outcomes and (anticipated) impacts of the OMS project and displays a first general picture about results at utility and sector levels.

### *5.2. Outcomes of OMS on the micro level*

OMS has been, as indicated above, very active in direct support for various WAJ utilities in different governorates and regions. The following paragraphs provide an analysis of the outcomes of OMS with a particular focus on financial issues of these utilities.

Table 2. Outputs, outcomes and (expected) impacts of the OMS project.

| Output type | Examples of detailed outputs | Examples of outcome | Impacts |
|---|---|---|---|
| Improved business procedures for the various water and wastewater administrations | Water loss reduction procedures<br>Billing and collection procedures<br>Accounting procedures | Improved financial and technical operation<br>Better staff motivation |  |
| Availability of improved base data | Database on subscribers<br>Database on submersible pumps<br>GIS-based management information system | Improved operational decision making | |
| Improved training possibilities | Vocational training centre<br>Human resources data system | Improved competences of staff<br>Better motivation of staff | |
| Improved documentation about improvement potential and business processes | OMS working papers<br>OMS concept papers | Improved knowledge management<br>Improved base for kick-starting institutional change processes | |
| Availability of financial data information tools | Fixed assets register<br>Profit and loss accounts<br>Balance sheets | Improved operational and strategic decision making<br>Support change of attitude about need for institutional change | |
| Availability of documents for strategic decision making | Business plans<br>Management staff plan | Improved strategic decision making<br>Support change of attitude about need for institutional change | |



Source: Own table.

*5.2.1. Analysis. Amman Governorate Water Administration (AGWA).* The financial performance of AGWA has considerably improved during the OMS implementation phase in Amman and prior to the effectiveness of the management contract. Revenues have increased by more than 15%, while the costs remained almost unchanged (OMS, 1997, 1999). This resulted in an increase in profits before interest and depreciation, compared to 1996, of Jordanian dinars JD1.9 million and JD2.6 million in 1997 and 1998, respectively. In total financial benefits of JD4.5 million were achieved between 1996 and 1998 (OMS, 1997, 1998a, 1999). Since 1999 other factors for improvements came into play: a management contract was awarded and rehabilitation of the networks has been achieved. In 2007, a Public Company was founded. Hence, the performance improvements since 1998 cannot be attributed to the OMS project only; but assuming a sustained performance at the 1998 level, an annual saving of JD2.6 million would have been attributed to OMS activities. By 2006, the cumulative financial benefits, with 1996 as a reference base, would accumulate to more than JD20 million.

*Aqaba Governorate Water Administration.* Aqaba Governorate Water Administration had been the only regional subsidiary of WAJ which made a considerable profit before interest and depreciation even in the 1990s. However, scenarios for future developments in water demand and water production costs revealed the possibility of serious future cost increases. Therefore, performance improvements were seen as a key requirement to face these challenges. OMS contributed to the stabilisation of the profits on a high level. Profits increased by 32% mainly due to increasing revenues through improved customer management and business re-engineering. The total additional financial benefit between 1997 and 2000 accumulated to JD5.7 million (OMS, 1998b, 2001). Compared to 1997, additional benefits of JD1.6 million accrued in 2000 alone.

*Northern Governorate Water Administration (NGWA).* The performance of NGWA has improved better than the other utilities during the OMS implementation activities. Revenues increased by 35% between 2000 and 2004 (OMS, 2005). This resulted in a reduction of losses from JD5.3 million in 2000 to JD4.0 million in 2004 or 25% in four years. Most important, NGWA managed to sustain improvements until 2006 despite the reduction in OMS involvement by the end of 2003. This indicates that the staff and the management of NGWA have internalised the process of change and actively pursued improvements.

A total financial benefit of JD3.9 million accrued in four years. Assuming a sustained performance at the 2004 level, total financial benefits would accumulate by 2006 to almost JD6.5 million since the year 2000.

*Al Koura District (Regional Operation Unit/Irbid Governorate).* Al Koura was the first pilot project for testing the micro-PSP approach. However, unlike Madaba (see below), the support for the billing and collection process was done by OMS, thereby simulating outsourcing to a private operator. Within one year, revenue in those areas improved by almost 30%, accounts receivable were reduced by 22% and the number of non-paying customers went down by almost 60%. Figure 2 shows that the revenue increased by JD110,000 over the two years.

Clear impacts on customer management improvements have also been achieved. Between 2001 and 2005 the number of complaints in Al Koura decreased by 70%, although the number of customers increased by 11% (GTZ, 2006). Remarkably, these improvements were sustained even after OMS support was withdrawn and the performance improved even more in 2004 and 2005. This is a clear signal that the improvement was sustainable and successfully implemented in Al Koura District.

*Madaba Governorate Water Administration.* OMS has been also active in the Madaba Governorate mainly in improving the base data, collecting information and preparing the micro-PSP contract.

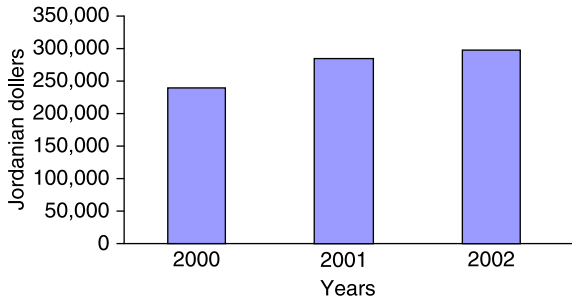



Fig. 2. Revenue improvements in ROU Al Koura (Haddad, 2002).

A consistent support to achieve actual improvements has not been provided. First results indicate that WAJ is hugely benefitting from additional revenue generated and improved customer services. Within two years, additional revenue of more than JD 1 million has been generated – which means a doubling of the financial resources for WAJ Madaba. This is also reflected in an EU report which points out:

"The Madaba service contract is showing good early results, with an increase in the collection ratio from 73 to 83% and a wide range of other improvements to procedures and working conditions" (DHV, 2006).

*5.2.2. Summary.* In total, considerable improvements have been achieved in all governorates and water administrations where OMS was involved. Revenues, in general, rose much more than costs, highlighting the effects of improved billing and collection systems, an improvement strongly linked to the comprehensive subscriber surveys (CSS) which enhanced the capacity to identify customers and their preferences and terminated the long standing monopoly of the tacit knowledge of the collectors and their presumptions. In addition more efficient processes, better customer management and management information systems supported the performance of the utility.

As an indication, Table 3 shows the accrued additional profits during OMS involvement and the additional profits per year in the last year of OMS involvement compared to the last year before OMS involvement. Assuming a sustained performance on the level achieved in the last year with OMS until 2006, an estimate can be made of the total financial outcome of OMS involvement at the utility level for the analysed governorates.

Table 3. Rough estimations of total financial benefits after OMS involvement (in million Jordanian dinars).

| Governorate/ administration | Accrued additional profits until last year of OMS | Additional annual profit ex post OMS compared to ex ante OMS | Estimated total financial profits until 2006 |
|---|---|---|---|
| Amman | 4.50 | 2.60 (1998) | 25.30 |
| Aqaba | 5.70 | 1.6 (2000) | 15.30 |
| NGWA | 3.90 | 1.30 (2004) | 6.50 |
| Al Koura | 0.11 | 0.06 (2002) | 0.41 |
| Total | 14.11 | 5.56 | 47.41 |

Source: Own calculations based on annual profit and loss statements of AGWA, NGWA and Aqaba Governorate Water Administration (OMS, 1997, 1998a, b, 1999, 2001, 2005).

However, these impacts can not be associated with the OMS project alone. The positive change was also influenced by other actions and projects. Methodological constraints do not enable the determination of OMS impacts as separate from the impacts of other measures and projects undertaken by WAJ and MWI severally or jointly with other donors. Still if the framework of external conditions is factored in, for example delays or cancellation of PSP contracts, the general negative impacts on the country from wars in Iraq and Palestine and other impacts, the overall picture in the water sector seems to indicate significant improvements through OMS measures.

### *5.3. Detailed outcomes of OMS in the institutional change processes*

*5.3.1. Introduction.* OMS succeeded in achieving considerable improvements at the utility level which led to substantial improvements in financial indicators and technical processes. These successes paved the way for OMS also to support, directly or indirectly, the processes of institutional change in the Jordanian water sector. Since the outcomes at the sector level are more difficult to measure directly, analysis of these outcomes is structured according to the three categories as defined in Section 4.2.4.

*5.3.2. Analysis. Category 1: data availability and reliability.* In general, the success of a reform process at the institutional level and particularly the success of PSP processes is often handicapped by the very poor information base available at the beginning of the process. This hinders the definition of clear-cut and indisputable targets and creates lengthy discussions and expensive renegotiations and delays (see e.g. Rothenberger, 2005).

However, since OMS started supporting the Amman Governorate Water Administration in 1994, the data made available for the later design of the Amman management contract was not only more comprehensive, but also much more reliable than in many other PSP processes, albeit far from being 100% correct. Also in Aqaba, in the northern governorates and in Madaba, the data generated by OMS activities proved indispensable for the introduction of PSP respectively for the establishment of an independent public water company. The relevant activities of OMS to improve the data availability and quality were:

- enhancing financial management/accounting procedures;
- introducing computerised commercial accounting systems;
- carrying out comprehensive subscriber surveys (CSS);
- setting-up an integrated, GIS-based information management system.

The importance of these activities for the institutional change processes, especially the facilitation of PSP processes, was highlighted by various interviewees:

"OMS was great in generating data. They changed working procedures, implemented information systems which provided the data. By this, the transaction becomes less in cost and is more reliable, this reduces risk for private sector" (interview statement).

"Their role included the creation of a base upon which the private sector builds, this shortens the time to prepare reliable TORs" (interview statement).

*Category 2: communication tools for shortcomings of existing structures.* OMS facilitated the development of a new attitude of decision makers about how the water service delivery in Jordan should be organised. This new attitude included a position that supports decentralised administration and the

commercial running of utilities which have to focus on revenue and cost management as well as on customer services. OMS facilitated and supported this new attitude by developing respective documents and formats which enabled the decision makers to perceive and communicate the key shortcomings and ways of overcoming them. Examples are:

- producing fixed assets registers;
- developing profit and loss statements and balance sheets based on improved accounting systems, highlighting financial improvements over the years, but also determining major cost problems;
- developing cost-centre based management accounting;
- producing business plans and financial projections, comparing base cases without institutional reforms and alternative cases with institutional reforms;

Like Category 1 type activities above, various actors in the Jordanian water sector stressed the importance of activities under Category 2 for the processes of institutional change. They viewed the emergence of fact based arguments to be of great benefit, showing current improvements in the project areas and their future potential if more flexibility and commercial thinking were allowed:

"OMS introduced commercial thinking in the sector: profit and loss statements were never issued for the government. With OMS you had them and you had fixed assets registers. These documents tell you: you are making this sort of revenue, this is the net loss you are making, your main costs are the following items, so focus on these items. This made clear what commercial thinking for the government and WAJ headquarters is about and how it is beneficial. Before, our big problem was that we delivered services regardless the costs. With OMS you can show the political decision makers the commercial impact of decisions like increasing flexibility or decentralisation" (interview statement).

"Before, the financial reality was not clear. With the better information and things like the profit and loss statement, the entities striving for more independence like Aqaba or in the north were given a tool to argue with the central bureaucracy about which direction to go. And, you could show the potential for improvements" (interview statement).

*Category 3: conceptual documents and direct support for institutional reforms.* OMS developed conceptual documents at the sector level based on its experience, results and findings from the work at the utility level in close cooperation with all concerned decision makers up to ministerial level. This enabled OMS to produce documents which took into account the political and operational realities on one hand and benefited from the OMS reputation gained on the ground if controversial solutions were proposed. In addition, OMS did not stop at conceptual recommendations but ventured into detailed recommendations on how to implement the changes and, at times, even financially supporting the implementation.

"OMS did a lot of value added activities, mapping, measuring, etc. Without that you do not know where you are and then a PSP is not possible. But also on sector level they had an impact, since they developed the concepts, but founded on the databases they developed" (interview statement).

*The following paragraphs summarise the major Category 3 type outcomes.*

Amman Governorate Water Administration: OMS developed in 1996 proposals for the reorganisation and commercialisation of the water services in Amman. Working Paper 50 of OMS, dated November 1996, contains an analysis of the then organisational structure of AGWA and proposed new structures for an autonomous entity, which was seen as the starting point for any operational improvement and later

for the involvement of the private sector. Based on this, MWI decentralised some powers and delegated them to the Amman Governorate Water Administration.

During the preparation of the management contract for Amman Water and Wastewater Services and during the first years of its operation, OMS assisted WAJ as part of the official Government Counterpart Team with the World Bank missions and later with the contractor.

In line with the trend to involve the private sector participation as was the case with the management contract in Amman, MWI requested OMS to participate in the development of a countrywide concept (Concept Paper No. 10) for Commercialisation and Private Sector Participation in the Jordanian Water Sector. This concept foresaw the creation of autonomous WAJ operating units in three regions (northern, middle and southern region), introduction of PSP through management contracts or Build-Operate-Contracts (BOT) models. This concept is currently being implemented in the northern region (NGWA).

Aqaba Governorate Water Administration: During its operational activities in Aqaba Governorate, OMS initiated the idea of establishing a water company for Aqaba. A first concept for this Aqaba Water and Sewerage Company (AqaWaSCo) was developed in 1999. This concept was, after the regional move of OMS to the northern governorates, further elaborated on by WAJ and PMU (with the financial support of USAID) and implemented in 2004 when the Aqaba Water Company (AWC) was launched.

Northern Governorate Water Administration (NGWA): One outstanding example for the success of OMS-supported institutional changes is the formation of the Northern Governorates Water Administration (NGWA) and the introduction of performance and output oriented commercial business principles in NGWA. With support from PMU and OMS, NGWA managed to have considerable powers delegated to them from central WAJ, for example for human resources development, expenditure, procurement within donor-funded projects, financial management and budgeting. This helped to introduce more commercial thinking at NGWA. The reduction of the operating deficit of more than 30% (see above) is a striking result of those changes. In addition, OMS supported NGWA handing over tasks to a private managing consultant who will support the management over the next three years in preparing for the establishment of an autonomous public water company. This so-called managing consultant contract is partially financed by the German Development Bank KfW, on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). In addition, KfW is financing a comprehensive programme for the reduction of water losses and the construction of wastewater treatment plants in the northern governorates. In this process considerable synergies were reaped in the complementary works between the two German development agencies, GTZ and KfW.

Madaba Governorate Water Administration: Finally OMS developed a complementary concept to the conventional PSP approaches of management or concession contracts. This alternative approach, termed "micro PSP", intends to involve local companies and to bridge the time gap between project identification and implementation of conventional, donor-funded PSP contracts. The micro-PSP concept is based on service contracts for particular business processes of WAJ, for example meter reading, billing and revenue collection or leakage repair services. Based on this concept, OMS prepared the terms of reference for micro-level PSP in billing and revenue collection for Madaba Governorate (16,000 customers). During implementation, OMS is acting as a back stopper for the Jordanian private company which won the contract and as an advisor to the local utility management. The technical assistance (Category 1 activities) can be seen as a necessary requirement for the implementation of the concept and therefore as a direct support for the institutional reform. Here again OMS showed the advantage of providing the micro–macro linkage, since conventional strategic consultants would not have been able to provide implementation support.

"On the institutional side OMS has paved the way with data collection and showing the legitimacy of PSP involvement or of change processes in AWC, NGWA and Madaba. It has defined the structure of NGWA or of the micro-PSP in Madaba and it has even supported the change of laws, especially on the wastewater side" (interview statement).

"...we were able to proceed [with the micro PSP approach] because we have a coaching component by OMS to introduce the local company to the concept which was developed by OMS and also on the operational levels to the business processes and the systems being used and being there just to advise" (interview statement).

Introduction of PPP projects: Linked to the general idea of the micro-PSP approach of a stepwise introduction of private expertise in the sector, OMS also introduced private companies to support regional and central WAJ units in clear-cut activities via public–private partnerships. Jointly financed by GTZ (on behalf of BMZ), WAJ and the private companies themselves, private sector expertise has been introduced in operation and management areas. The activities of the private companies exceed normal consultancy work since they also directly support operation and maintenance processes. Examples are the repair and maintenance of submersible pumps at the central WAJ workshop or the water and wastewater network maintenance and operation in Ain Al Basha District, Balqa Governorate.

The PPP concerning the submersible pumps was launched at the beginning of 2006 and successfully accomplished at the end of June 2007. Within this pilot PPP comprehensive actions to increase the average service life of the pumps, to improve pump quality, to define specifications and detailed repair cost calculations and to enhance protection and control of well operations were undertaken.

The second PPP mentioned above started also in 2006 and includes the collection, assessment and analysis of network flow and network damage data and an estimation of technical and administrative water losses. The goal is to introduce a cost effective and needs oriented strategic planning for maintenance, replacement and extension of water and wastewater networks and an enhancement of the data management system for damage data for the pipe systems.

The micro–macro linkage is also clearly perceivable for the PPP projects. The benefits on the utility level are in improving the investment planning, operation and maintenance of the networks or the submersible pumps, respectively, which helps to reduce costs and increase reliability. On the sector level, parts of WAJ which are unlikely to attract a comprehensive PSP in the near future are exposed to new commercial thinking. This helps realise the broad spectrum of private involvement and also supports the trust-building process between private and public partners. If a more comprehensive form of PSP is desired in the future, for example a micro-PSP, a service or a management contract, the first experience within the PPP projects helps to overcome fears and facilitates cooperation between public and private partners.

*5.3.3. Summary*. The support of the OMS project with regard to institutional change processes at the sector level are obvious: first, the output like improved base data was used to support the PSP implementation and commercialisation as a base for the production of tender documents or the setting of targets. Normally, technical and financial information on these processes contains considerable uncertainties causing much longer tender preparation, contract negotiation and quite often renegotiations. With the output of the OMS project these problems have been reduced.

Second, some of the tools produced by OMS were much more than just providing technical or financial information. They were also, perhaps for the first time in the Jordanian water sector, summarising the basic problems in a few key figures and hence could be used as an effective communication tool to convince decision makers of the necessity for structural changes.

Thirdly, OMS delivered background papers and detailed concepts of what these structural changes would look like and OMS also developed implementation guidance. Based on this, change, as the concept of a publicly owned water company was implemented in Aqaba, NGWA became more independent and a micro-PSP was introduced as an alternative first step for conventional PSP approaches. OMS was involved in many of these processes, structuring and facilitating the implementation of the concepts to which also OMS contributed considerably.

## 6. Conclusion

Within the last 10 years of OMS support for the water sector in Jordan, major institutional changes have been achieved. Today the central Water Authority relies to a large extent on decentralised and commercially run local water entities which serve around 80% of the population. With the support of OMS a strong foundation of transparent and reliable information and success stories in transforming the utilities was achieved. Moreover, successes on the utility level indicated the advantages of a commercial-style operation and highlighted the shortcomings of the existing institutional structures in the public sector.

The OMS project used the co-evolution-based approach by sequencing activities at both levels of the water sector in Jordan. OMS started in 1994 following a typical technical assistance approach, that is, trying to improve operations and increase efficiency of WAJ within the existing institutional framework. Therefore, OMS is often perceived as a mere support of performance improvements on the utility level. In fact, OMS was much more than this. As predicted in the "duality of structure" approach, actions on operational levels within the existing frameworks also started to influence the structures at the institutional level. Facilitated by the analysis undertaken in the OMS project, the institutional bottlenecks to thorough and sustainable improvements on operational level became obvious: long and bureaucratic procedures, for example for procurement, the lack of performance incentives for staff and management, the centralised technical and financial planning, the lack of customer orientation and long response times could not be changed just within the utility operations. Instead, awareness started to rise at the decision making level that changes in the overall framework were required. And, in addition, OMS provided the tools which helped to facilitate change and even was involved in the change processes at the institutional levels. Also, OMS staff often acted as an *ad hoc* team to work on several other assignments, not necessarily related to OMS, in support of the MWI trends of improvements.

Figure 3, derived from Figure 1, highlights the links between the OMS support activities conducted in Jordan. Of particular importance, especially in a highly sensitive and political issue like institutional reforms at the sector level, is the prevalence of trust between the consultants proposing the possible change processes and the government authorities in charge of the implementation. The co-evolution-based approach of OMS benefited from the successes at the utility level relatively early in the project (see Section 5.2). This enabled the development of a positive perception of the chances and benefits of increasing the flexibility of the existing rigid sector framework. In addition, the successes were also taken as signals of the competence of the OMS project, which paved the way for creating trust between OMS, MWI and WAJ. This was also highlighted during the interviews:

"OMS is the project that has left its fingerprints on the water sector in Jordan. Wherever you look in the Governorates, you see its footprints. OMS has been involved for so many years the people in the regions see that the solutions are reliable and this creates trust—trust which you need if you want to bring

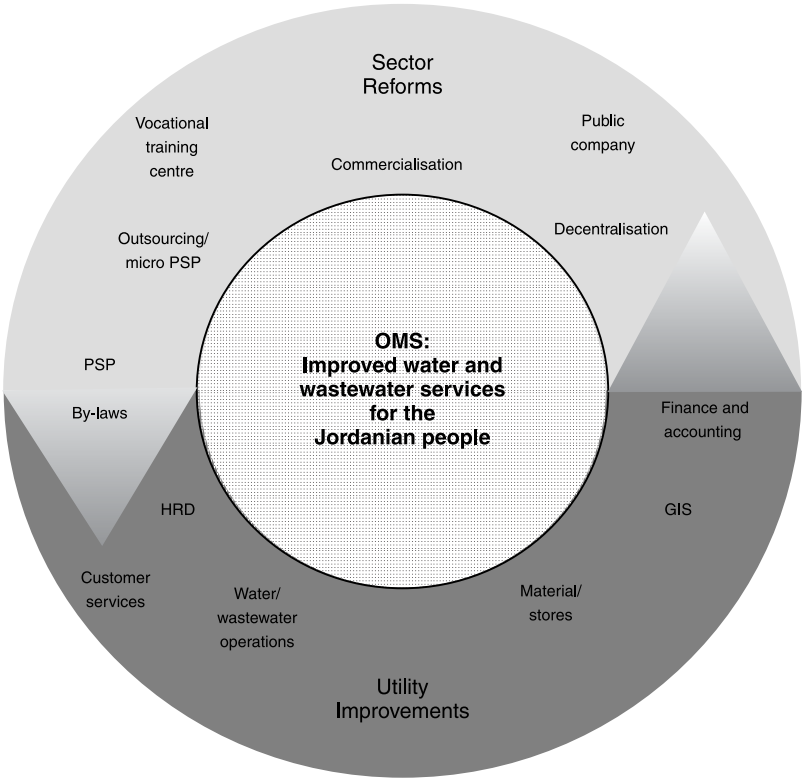



Fig. 3. Micro–macro linkage in OMS activities.

change on a higher level. The approach was a bottom-up approach in order to influence the top-down process" (interview statement).

Hence, in Jordan the co-evolutionary approach which was used to introduce change, that is, the mutual support of activities at the utility and institutional level for overall change in the way the sector is run, proved successful and could be an interesting example for other developing countries.

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