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Sida Review

Bernt Andersson
Tom Ryan

Evaluation of the Water Network Management Programme in Erbil, Iraqi Kurdistan

Final Report

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October 2011**

**Assignment undertaken by:
Bernt Andersson
Tom Ryan**

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The views and interpretations expressed in this report are the authors' and do not necessarily reflect those of the Swedish International Development Cooperation Agency, Sida.

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Evaluation Report



Evaluation of the Water Network Management Programme in Erbil, Iraqi Kurdistan

October 2011

Assignment performed by
Bernt Andersson
Tom Ryan

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Acronyms

BP	Business Plan
CMMS	Computerized Maintenance Management System
DOE	Department of Education
DOW	Directorate of Water of Erbil
EIA	Environmental Impact Assessment
EU	European Union
GDWS	General Directorate of Water and Sewerage
GIS	Geographic Information System
GPS	Global Positioning System
KRG	Kurdistan Regional Government
MOF	Ministry of Finance
MOH	Ministry of Health
MORA	Ministry of Religious Affairs
NGO	Non-Governmental Organization
LCC	Life Cost Calculation
LFA	Logical Framework Analysis
MOM	Ministry of Municipalities
MOMT	Ministry of Municipalities and Tourism
MSEK	Million Swedish Krona
O&M	Operation and Maintenance
PI	Performance Indicator
PFS	Pre Feasibility study
PM	Preventive Maintenance
PMI	Project Management Institute
SC	Steering committee
Sida	Swedish International Development Cooperation Agency
SWOT	Strengths, Weaknesses, Opportunities and Threats
TOR	Terms of Reference
USAID	United States Agency for International development
USD	United States Dollar
WTP	Water Treatment Plant

Executive Summary

Introduction

The Erbil City Water Network Management Project (hereafter referred to as the 'Project') in Kurdistan, Iraq, was implemented from mid-2008 to mid-2010 through grant financing by the Swedish International Development Cooperation Agency (Sida) of MSEK 25.5 to Qandil. The Implementing Agency was the Directorate of Water (DOW) in Erbil. The Project was aimed at developing sustainable and safe supply of drinking water to the population of Erbil City through the following four components:

1. Develop a Business Plan for the water supply and network;
2. Develop an Operation and Maintenance Strategy;
3. Improve the water network in one confined area; and
4. Improved Public Awareness and Communication.

Qandil was the overall Project Manager. The Swedish consultant SWECO was engaged to support the implementation of Components 1-3 (above) and the Swedish firm Global Reporting was engaged to support the implementation of Component 4.

Activities

All activities in Component 1 have been carried out, although the Financial Model (Activity 6) was not completely developed and the Environmental Plan (Activity 9) was incomplete (although approved by the Steering Committee). The Business Plan (BP) was developed and also approved by the Steering Committee although some parts were missing. All activities in Components 2 and 3 were sufficiently carried out, except the leak detection in Kwestan pilot area (Activity 18), where the low pressure made it difficult to find non-visible leaks. All activities for Component 4 were also carried out except one seminar for government officials (Activity 33), which was cancelled.

Effectiveness

As expected, the Overall Objective of the Project— that the Erbil City water network shall continuously deliver clean water, with adequate pressure head, to all customers — was not achieved within the short Project period. The Overall Objective was not realistic even at the time when it was defined in the Project Document. The ultimate beneficiaries of the Project were the people of Erbil who would get clean water with adequate pressure. However, the project was not designed to reach all the people of Erbil, only the small pilot area in Kwestan Quarter. The primary beneficiaries of the Project were the staff of DOW Erbil, who benefitted from the training and other capacity development activities.

As for the Objectives of the Project Components:

- A BP was developed, although assessed as incomplete in some respects. It did, however, provide a good base for developing an Action Plan for 2010 – 2012 and for the DOW budget proposals. Apart from the BP itself, the process of workshops and seminars covering the elements of the BP have developed the capacity of DOW Erbil. However the expectation behind the BP that it would be possible – within the short project period – to decentralize power to the DOW Erbil, thus allowing them to retain the income from water distribution and change the water tariffs, was unrealistic. Such reforms may possibly be developed if and when there is policy framework, a sector strategy and a sector plan, either for all of Iraq or for the Kurdistan Regional Government (KRG).
- Significant improvements in Operations and Management (O&M) have been observed. The beneficiaries of this component (i.e. DOW Erbil operations staff) have indicated that prior to this

intervention they had only a basic understanding of maintenance. Furthermore that this Project had 'opened their eyes' about concepts such as preventive maintenance, and substantially broadened their understanding of O&M in general.

- DOW Erbil has achieved a good level of competency in Geographical Information Systems (GIS), mapping and hydraulic modelling. Since the end of the Project, DOW Erbil has continued to demonstrate this capacity by extending the mapping and modelling to new areas of the network. The improved skills and knowledge of the network have led to improved planning and monitoring capabilities.
- The awareness about saving water was high before the start of the Project (in the baseline survey in 2009, 80% of the population in Kwestan area said they save water) and there is no evidence that the public awareness campaign achieved a further sustainable increase, or resulted in reduced water consumption. From the DOW Erbil perspective the public awareness campaign was adversely affected by unfavourable timing – to be effective it needed to coincide with the introduction of a new consumption-based water tariff and following the installation of household water meters. The specific objective for the advocacy component was only partially achieved. Knowledge about water and government issues among journalists has increased, but there is no evidence that gender awareness has increased.

Impact and Outcome

There is some evidence that the people in the pilot area experience higher water pressure due to the improvements to the network carried out under the Project. For the organization (DOW), the impact is the improved capacity to manage a modern water network with acquired knowledge of how to use a number of management tools. This includes using performance indicators, developing action plans, using financing models and monitoring.

At individual level, respondents to interviews at DOW said that the Project changed their way of thinking and working. A process of development at individual and organizational level began and work processes were changed. An unexpected effect was that the training offered under the project was an "eye-opener" to many staff and encouraged some of them to continue with other kinds of training, e.g. two employees have enrolled on a Master of Business Administration course.

The improvements in O&M achieved as a result of the Project are having a positive impact on DOW's planning and operations. There is now a much greater focus on data collection and monitoring, and in using the data to proactively manage its assets.

The improved capability and knowledge that the DOW Erbil acquired from the Kwestan Pilot area are now being applied to other parts of the network. The improved O&M practices within DOW Erbil have led to better planning and monitoring, and there is real evidence of cost savings through scheduled preventive maintenance and Life-Cost-Calculation (LCC) analysis being carried out. However, the risk remains that the effectiveness and impact of these gains will be negated by external factors, namely upstream bureaucracy and budget procedures that are less sympathetic to DOW Erbil's needs.

DOW Erbil has also achieved a good level of competency in GIS, mapping and hydraulic modelling and has continued to demonstrate this capacity by extending the mapping and modelling to new areas of the network. The initial competencies established under this Sida-funded Project have been built on through further training provided under other projects and donors currently active in Erbil.

Component 4 targeted civil servants, journalists and the public in a confined area (Kwestan). The pilot project in Kwestan created a model of local engagement and cooperation that could be duplicated in other areas. The pilot model also developed campaign methods that could later be used by DOW on a larger scale. After the handover of the project to KRG, no budget has been allocated to these kinds of activities.

Capacity building on communication issues among senior communication staff in the ministries have increased knowledge about water as well as strategic communication in general. The suggested media department within the Ministry of Municipalities and Tourism (MOMT) was never created and no communication activities have been initiated after the project finished.

Cooperation with media increased the understanding among journalists and editors about water issues and of the different roles that media and civil servants play in a democratic society. After the project period, water issues have not been regularly covered by the media.

Relevance

The main problem for the water supply system is the poor state of the water distribution network and the unsatisfactory and inefficient management system. The Project addressed the technical problems through a series of training and capacity building actions, and practical pilot-scale demonstrations of the range of network improvements required. The Project built DOW Erbil capacity in leak detection and repair, network mapping, and hydraulic modelling. A pilot network area was selected for improvement; however the physical improvements carried out fell short of transforming it into a 'model pilot network'. While the network's technical problems remain today the project has nevertheless demonstrated a range of practical and relevant technical solutions, and provided DOW Erbil with the skills and capacity to resolve many of the network problems in the future.

To tackle the management problems, the project has focused on improving the management system and the capacity of DOW Erbil, primarily through the development of a Business Plan and an O&M Strategy. The key element was to install water meters and to change the tariffs to consumption based tariffs. It was assumed that DOW could be given greater autonomy and be allowed to retain the income from consumers, which did not happen. Most of the problems remain today although the project has contributed to improvements in operations and maintenance, the mapping of the supply network and using leak repairs as a means to record the pipe system. The project activities were relevant also as regards the management problems, but underestimated the difficulties of reforming the tariff system and creating greater autonomy for DOW.

Kurdistan currently lacks a national water policy or an over-arching strategy for urban water supply. No progress has been made on the proposed new institutional structure for DOW Erbil. In the opinion of the evaluators, a revised institutional structure, granting greater autonomy is required if DOW Erbil is to make further progress and realise its potential.

The Project was assessed by Sida to be in line with the Swedish Country Strategy for cooperation with Iraq. The Country Strategy lists infrastructure as a priority area. According to the Sida policy for urban development and poverty, Sida shall support the development of institutional frameworks (such as policies, laws and regulations), capacity development of institutions (such as local governments, NGOs and other drivers of change) and communication among these institutions.

The Project implementation team has worked closely with DOW Erbil throughout to ensure that all activities and components are both technically appropriate and relevant to DOW Erbil's needs and context. As this has been a capacity building project there has been an emphasis on training and 'software'. The training has been carried out in a highly participatory manner, with a good balance of classroom theory and practice. The participatory approach has resulted in a high level of ownership by DOW Erbil staff, and has also ensured that the new approaches and methodologies are relevant to the Erbil city context. The hardware and software systems introduced are appropriate to the water sector and have been sufficiently tried and tested to give confidence in their suitability for the purpose.

The consumers, or customers, of DOW Erbil already have a continuous and reliable water supply. Their main inconvenience relates to low network pressures which requires consumers to invest in booster pumps and header tanks to 'suck' water from the service pipes and store it for later use, particularly during peak demand times when network pressures are lowest. A properly functioning network would operate at sufficient pressures to allow consumers to access water at all times, without the need for booster pumps and storage. Therefore for new connections/customers this cost (i.e. booster pump and storage) could be avoided in a properly functioning network. But given that nearly all existing customers have already invested in booster pump/storage, the benefit to them of an improved network will be a saving in electricity costs through a removed need for pumping.

Sustainability

The improved capacity to manage a modern water network is a sustainable result of the Project. One year after the project, work was in progress to make a new BP for 2011. An Action Plan was also produced for 2011. Data is regularly collected for the Performance Indicators and is used as input in the planning process for setting targets.

The participatory nature of the training, with its emphasis on combining classroom-based and practical demonstrations, ensured that learning took place. This approach was consolidated through follow-up Project activities which built on the learning and increased prospects for sustainability. Other factors contributing to the improved O&M capacity, and its sustainability within DOW Erbil included the high calibre of some of the senior staff at DOW Erbil, which resulted in a strong sense of ownership. Other donor-funded projects being implemented by DOW Erbil are also providing training and experience for DOW Erbil staff, e.g. in hydraulic modelling and mapping, etc. The opportunities afforded by these other projects have in fact ensured continuity of learning and development of GIS, mapping and modelling capabilities for DOW Erbil.

The sustainability of the training and the competency skills transferred to DOW Erbil are mostly well secured. In terms of the physical network improvements carried out, sustainability will be undermined by constraints in funding allocations from MOF. As a result of their experience of the Kwestan Pilot area, DOW Erbil has learned useful lessons about planning and implementing network improvement measures — even though this fell short of turning Kwestan into a well-operating 'model network'. After this experience, DOW Erbil has been able to replicate this experience elsewhere in the network, but only to a limited extent due to lack of funds to purchase necessary valves and meters.

The high awareness about sustainable use of water in the Kwestan area that was first documented in the baseline survey in 2009 and in the follow-up survey in 2010 was confirmed by the evaluation through interviews at schools and with men and women in the area. There is, however, no conclusive data that shows that the high awareness has translated into an actual decline in the use of water in the Kwestan area.

Since no Communications Department to take responsibility for campaigns to the public or for media relations was created within DOW or MOMT, and no funds were made available in the budget for such activities, very little is being done in terms of government communication about water one year after the Project was finished. There is still an interest and capacity at DOW, however, to arrange campaigns and to some extent, posters and flyers from the project are still copied and distributed (about 500 per year).

Articles about water issues are seldom reported in the media, possibly because the KRG rarely informs the media about news and events related to water. Journalists will not write about water issues unless there is something new to report or if there is an issue that will catch the public's attention.

Efficiency

Efficiency has been assessed primarily from a technical point of view (technical or internal efficiency).

The administrative costs for Qandil according to the budget are 10% of total Project costs. In addition, administration was also part of the responsibilities of the Qandil office in Erbil, SWECO and Global reporting. It was, however, mixed with technical support, so it is not possible to see how much was made up of administrative and how much was made up of technical support.

For a capacity building project where the beneficiaries are based in Erbil, a reasonable supposition is that consultant time spent in Erbil is more efficient (and more effective) than time spent in Sweden. The aim for SWECO, as negotiated with Qandil, was that time in Erbil should fall below 85% of total consultant time. In reality, SWECO spent 73% of the time in Erbil. Global Reporting spent considerably more time in Sweden than was originally planned. Their financial proposal was based on spending 33 days in Sweden, 124 days in Erbil and 388 days for the locally contracted consultant in Erbil. In reality 98 days were spent in Sweden, 70 days in Erbil and the local consultant spent 273 days in Erbil. According to Global Reporting the increased time in Sweden was required since there was more work with project administration and reporting than anticipated.

Although the evaluators acknowledge that time in Sweden can be efficiently spent, the significant increase in time spent in Sweden for administration and reporting has reduced the productive time available in Erbil for interaction between consultants and beneficiaries. This reallocation of time does not appear to have been adequately justified or approved.

Lessons Learned from the Project are:

1. The current external environment factors are not favourable for DOW Erbil, and are limiting its potential to further improve. Projects aimed at strengthening the performance (i.e. management, financial and operating performance) of water utilities need to address the utility's internal as well as external environments. In the case of this Sida-funded Project, the emphasis has been on the improvements to DOW Erbil's internal operating environment only. This has yielded some positive and encouraging results. However, without a supportive external environment, further sustained performance improvements may be difficult to achieve.
2. As a result of the Project, DOW Erbil's management and operations have shown notable improvement in planning, data collection and operations. All the indications are that it is ready to assume greater responsibility in a new institutional framework under which it is granted greater autonomy and accountability for its future. A suitable institutional structure and framework is described in the Master Plan, which can be used to guide the process of

transformation. This cannot happen without the external environment stakeholders (MOMT and MOF, KRG) being supportive.

3. However, the lack of ownership of the Project by KRG has been demonstrated by its failure to approve tariff reforms and allocate funding for network improvements that would have improved project outcomes. It has proved difficult for the Project to gain access to KRG representatives, and to get them to honour their commitments.
4. The Project provided an effective learning methodology, based on practical training and theory-based seminars and workshops, and using participatory processes. This resulted in sustainable learning and ownership of the results of the training.
5. The Project had a significant and positive impact on the planning, operations and management of DOW Erbil. Component 4 (Awareness and Media) though well delivered, suffered from the absence of necessary parallel actions (tariff reform, establishment of Media Centre, timely installation of household water meters). As a one-off exercise Component 4 had only limited impact.
6. Performance Indicators provide a useful measure of a utility's financial, operational and administrative performance. The PI database initiated under the Project will enable DOW Erbil to measure its performance, set itself targets, identify its areas of weakness and strength, etc. It will also enable DOW Erbil to compare (i.e. benchmark) its performance against other comparable water utilities. In order to take full advantage of these benchmarking possibilities, DOW Erbil should take a broader perspective on its selection of PIs to harmonize them with international 'standard' water utility practice.
7. The purpose of the public awareness campaign was to inform beneficiaries that water meters would be installed, tariffs would be based on consumption and to create an understanding that people need to decrease consumption and use water in a sustainable way. Since few water meters were installed and tariffs were not changed, the campaign lost much of its importance and became disconnected from the other Project components. It might have been better in that situation to cancel the campaign.
8. Public awareness campaigns need to be sustained and repeated during a long period of time in order to be able to change knowledge, attitudes and behaviour of people. One year after the Project ended, people in the pilot area do not seem to have changed their water consumption habits.
9. The objectives of the advocacy sub-component were far too optimistic. It cannot be expected that a relatively limited project can increase openness and transparency as well as improve the planning and coordination of several ministries. It would have been more realistic to focus on communication methods of government organizations.
10. The Project implementing partnership of Qandil, DOW Erbil, SWECO, and Global Reporting has been largely effective, though there has been some blurring of roles at times. Project monitoring and oversight was largely left to the Monitoring Consultant and there is little evidence of the role of Sida. The Project's management and monitoring has been relatively uncritical and at times lacking in thoroughness. There are instances where Terms of Reference (TOR) requirements have not been met, and the monitoring has not picked up on this.

11. The Project design had unrealistic objectives and a weak risk analysis. It was far too optimistic to think that a short-term Project like this, which would obviously confront institutional change issues, would achieve its objectives. The design of the Project would have been more adequate if it was the first phase of a long-term project.

Recommendations

For KRG:

1. DOW Erbil should be given greater autonomy in line with international recommendations for water utilities and as recommended in the BP. Other urban water utilities should follow after they have been given appropriate training and capacity building. The department of education (DOE) Erbil could be the pilot water utility for implementing greater autonomy.
2. A revised consumption-based tariff structure needs to be urgently approved and implemented, along with installation of household water meters. This is essential for reducing water consumption and wastage, and to send appropriate price signals to consumers about the value of water.
3. The O&M Strategy recommended the implementation of a suitable CMMS (Computerized Maintenance Management System) and the establishment of a customer complaints call centre. These should now be implemented in order to improve O&M effectiveness.
4. The range of PIs selected should be reconsidered in the light of regional and international experience, in order to benchmark DOW Erbil's performance against comparable water utilities regionally/internationally.
5. The KRG should prioritize funding for implementation of the DOW Erbil Action Plan.

For Sida

6. Future projects in Kurdistan need to engage more effectively with the KRG and MOF.
7. For future projects, Sida should be better at assessing the risks of the Project. In this case none of the crucial risks that actually occurred were identified in the Assessment memo (i.e. water tariffs not being changed, water meters not being installed, DOW not being able to get control over revenue from water consumers).
8. Sida needs to be stronger in making sure that gender issues are mainstreamed, especially in countries and projects where the partners are less experienced in these issues.
9. Sida should always develop a dialogue strategy for the dialogue issues defined in the Assessment memo.
10. Evaluations should be built into the project design from the beginning, to assure that baseline studies are done and data for the evaluation is collected throughout the project duration.
11. Projects with institutional development components should be more long-term commitments than this two-year Project.

1. Introduction

1.1 Background to and rationale for the evaluation

When a new Country Strategy for Iraq was adopted by Sida in 2004, envisaging a gradual transition from humanitarian aid to more long term development, Qandil and Sida started discussing possibilities for Qandil to assist in this long term development cooperation. In 2006 Qandil submitted a proposal to Sida about improvements to municipal services and infrastructure in Erbil, developed jointly the Kurdistan Regional Government authorities. Sida decided to support Qandil to do a Pre-Feasibility study, based on which Qandil submitted a proposal to Sida for providing technical assistance to the Kurdistan Regional Government to establish a Quality Infrastructure System and to Erbil City to improve its water supply system. After discussions with Sida, the project was revised and the current project for the improvement of the water supply system was approved by Sida in 2008.

The Erbil City Water Network Management Project (hereafter referred to as the 'Project') in Kurdistan, Iraq, was implemented from mid-2008 to mid-2010 through grant financing from Sida of MSEK 25.5 to Qandil. The Implementing Agency was the Directorate of Water (DOW) in Erbil. The Project was aimed at developing sustainable and safe supply of drinking water to the population of Erbil City through the following four components:

1. Develop a Business Plan for the water supply and network;
2. Develop an Operation and Maintenance Strategy;
3. Improve the water network in one confined area; and
4. Improved Public Awareness and Communication.

Qandil was the overall Project Manager. Swedish consultant SWECO was engaged to support the implementation of Components 1-3 (above) and Swedish firm Global Reporting was engaged to support the implementation of Component 4.

The evaluation is an external expert evaluation. Sida will use the results of the evaluation to identify lessons learned that can be applied to future programmes.

1.2 Objectives and purpose of the evaluation¹

The main objective of this end-of-project external expert evaluation is, according to the TOR, to assess and identify the results and experience of the Project in relation to the specific goals and expected results defined in the Agreement, Pre-Feasibility Study (PFS) and Logical Framework Analysis (LFA). The analysis will also include the cross-cutting issues of poverty reduction and gender.

The Project ended in mid-2010. In a comparison with the results at the end of the project, the evaluation will assess the situation at the time of evaluation with regard to lasting effects and potential future sustainability. The evaluation will in part build on the work of the monitoring consultant, who presented an evaluation of the activities of the project in his Final Report of December 2010². The evaluation should not duplicate the detailed monitoring review unless deviations are found during the evaluation which warrant an in-depth analysis of particular activities.

¹Terms of Reference/Draft Final 2011-06-16. Evaluation of the Water Network Management Program in Erbil, Iraqi Kurdistan

²Monitoring of the Erbil City Water Network Management Project in the Kurdish Region of Iraq, Final Report, December 2010

1.3 Evaluation criteria

According to TOR, the evaluation shall assess the effectiveness, impact, sustainability and relevance, gender equality and the environmental impact of the project. The following questions shall also be answered by the evaluation:

- Was the approach with a Sida – Qandil negotiated agreement appropriate to the needs and local circumstances?
- Qandil – a humanitarian organization managing the program with SWECO and Global Partnership being the respective intervention specialist entities. Positive and/or negative consequences. Lessons learned?
- Management and team staff changes in Qandil and SWECO. Consequences to the implementation?
- Was the procurement of services and equipment by Qandil carried out according to Sida guidelines, appropriate and transparent? Did the DOW participate in and contribute to the process?
- Were the modifications to the inputs during the implementation consistent with the requirements and demand of the DOW?
- The Steering Committee was established only towards the end of the programme and with few members. Consequences to the programme and sustainability?
- Political support during and after the program? Ownership by the KRG?
- Is the Business Plan used in the management of the DOW? Is it developed and updated on a yearly basis?
- Have there been any policy changes in financial management and tariffs after completion of the program? Have any concrete decisions been taken?
- Has the implementation of centrally procured household water meters begun? Is it integrated into an implementation strategy that includes public communication?
- Hydraulic modeling, metering and enhancement of services in the Kwestan pilot area. Are the improvements maintained? Has local financing for upgrading of the system been arranged?
- Is the hydraulic modeling competence being maintained and applied in other areas of the water distribution system?
- Is the Operation and Maintenance Manual upgraded and utilized by the DOW as intended?
- Have local funds been allocated to commence design and implementation of the wastewater collection, treatment and disposal system in Erbil?
- Has the programme in Erbil been duplicated or experiences otherwise utilized elsewhere in Kurdistan?
- Does Swedish competence have any comparative advantage in adding value to a programme of this nature?

1.4 The evaluation team, its programme and methodology

The field team was Bernt Andersson and Tom Ryan. The team worked together on all aspects of the evaluation, but with each team member having specific responsibilities for components, according to their area of expertise, as follows:

- Component 1 – Develop a Business Plan (Bernt Andersson)
- Component 2 – Operation and Maintenance Planning (Tom Ryan)
- Component 3 – Water Network Improvement (Tom Ryan)
- Component 4 – Public Awareness and Communication (Bernt Andersson)

The evaluation team members adopted a flexible approach, which required them to work independently at times in order to consult with as wide a range of stakeholders as possible. However, findings were shared and agreed through continuous dialogue between team members, ensuring that conclusions reached are considered, well founded, and arrived at through consensus of opinions.

The programme for the evaluation and the field visit is attached as Annex 2. A list of people that the team has met is attached as Annex 3.

The methodology for the evaluation is described in Annex 4.

One of the key aims of the evaluation for Sida is to identify lessons learned that can be applied to future programmes. What lessons for design, procurement, organization, implementation, monitoring and follow-up, for example, can be learned from the Project? What preconditions might be recommended prior to deciding on the financing of a similar project? The evaluation might bring up lessons regarding whether/how Sida and its partners should invest in such small projects given the nature of aid and development of national and regional institutions in a country like Iraq.

The TOR require that recommendations for an improved future institutional development programme are made within the municipal water utility sector in Erbil as well as other public infrastructure entities, that are based on the evaluation findings. However, it is clear that under its new country strategy for Iraq, Sida will not fund any future infrastructure development programmes in Iraq.

The intended users of the evaluation include:

- Sida, which will want to use the results of the evaluation to learn lessons that can be applied to future programmes and infrastructure programmes, in humanitarian-development transitions in particular
- It is expected that government departments and stakeholders will learn useful lessons from the evaluation about the project cycle, project quality (design, procurement, organization, implementation, monitoring) and impact, Donor requirements, and what preconditions need to be in place prior to any future follow-up support from Donors.
- Other stakeholders (Qandil, SWECO and Global Reporting) are expected to find the evaluation useful for other assignments and projects.

1.5 Limitations

One limitation has been that many of the staff engaged on the Project have since moved on to other organizations/countries, making it difficult for the evaluators to find and interview some key people. Another limitation has been the lack of details and different definitions used for the Project's Logical Framework.

The language barrier meant that the evaluators in some meetings had to rely on interpreters and may have missed some nuances from the interviewees.

1.6 Disclaimer

The field work has been greatly facilitated by the Qandil office in Erbil and the staff of the Erbil Directorate of Water. We would like to express our appreciation for the kind and effective support we have received from all parties involved. The preliminary findings from the field work have been shared and discussed with key stakeholders in a mini-workshop. Nevertheless, this report remains the full

responsibility of the evaluators. The views and recommendations expressed in this report represent the views of the evaluators and are not necessarily shared by Sida.

1.7 Guide for reading the report

Sections 1 and 2 provide a background to the evaluation and the Project to be evaluated. Section 3 contains the findings for project implementation approach and strategy and the main activities of the Project. The main findings and conclusions regarding the evaluation questions on effectiveness, impact, relevance, sustainability and efficiency of the project can be found in Section 4. This Section also includes the evaluation of gender equality and environmental impact as well as the analysis of the complementary questions in the TOR. Lessons learned follow in Section 5 and recommendations in Section 6.

2. The Water Network Management Program in Erbil, Iraqi Kurdistan

2.1 Project background

The percentage coverage of the water distribution network for Erbil city is considered to be close to 100%³. The exceptions are some hotels and private enterprises within the city which have their own well supplies. The majority of the Erbil City water supply system is unmetered, with only the Kwestan pilot area (as a result of this Sida-financed project) and the recently constructed/upgraded water treatment plants having flow meters. The first water distribution network was constructed in 1924. Most of the transmission lines were laid in 1970-1983. A substantial part, 50% of the network, is old and may either be in poor condition or has under-sized (diameter) pipes. The PFS⁴ assessed that the main problems related to the Erbil City water supply system were not the availability and production of water, but rather the poor state of the water distribution network and the lack of a modern and appropriate management system. The problems are similar in all of Iraq and some key sector performance statistics are shown below⁵:

- Estimated % of population served with treated water supply in Iraq (excl. KRG) is around 70%
- In KRG about 68.5% of the population is served through house connection
- Only 17% of wastewater is treated before being discharged into the environment
- Average amount of water (produced) is around 327 litres/capita per day. The average figure for aggregate per capita consumption in EU is about 150 litres per day
- It is estimated that water and sanitation-related diseases are responsible for about 25% of all life losses of children in Iraq
- Water is heavily subsidized in Iraq, with tariff at USD 0.0034/m³. This is about 12 times lower than in Egypt, which is the lowest of all Arab countries

³ It is generally stated in most background reports that the network supplies 'more or less all' the inhabitants of Erbil. The actual percentage coverage is not stated and so far has not been accurately computed.

⁴Pre-Feasibility Study (PFS) – Erbil City – Water Supply System, January 2008 SWECO. The PFS described the baseline conditions for the current project, and identified the problems and urgent needs for its rehabilitation.

⁵Iraq Water and Sanitation Scoping Study. Geopolicy Inc. 2010

The Project was implemented in a sector characterized by low performance, not only for water access and quality issues, but also weak legal and regulatory compliance as evidenced by the massive discharge of untreated wastewater into the various sources (rivers); alongside capacity constraints in meeting water treatment targets for both quantity and quality. Primary causes for this characterization include weak public sector governance in general, a highly centralized delivery system and a massive shortage in required infrastructure.⁶

The overall responsibility for water supply in the Kurdish region lies with the General Directorate of Water and Sewerage (GDWS) which reports directly to the Ministry of Municipalities and Tourism (MOMT) of the KRG (Kurdish Regional Government). The direct responsibility for drinking water issues in Erbil City lies with the Directorate of Water (DOW). The PFS recommended that the management of the water supply system, where the responsibility is with the DOW, needs upgrading and modernization. The PFS further identified the following contributory factors to the current unsatisfactory supply situation: the lack of understanding among staff of the complexity of the water network; a system of top-down management; poor operation and maintenance systems; inadequate budgetary processes; lack of an effective tariff system (tariffs are flat-rate and not based on consumption); tariff collection practices are inefficient, resulting in loss of revenue, etc.

2.2 Objectives of the project

The Erbil City Water Network Management project in Kurdistan, Iraq, was implemented from mid-2008 to mid-2010 through grant financing from Sida of MSEK 25.5 to the Swedish NGO, Qandil. The Overall Objective of the Project was for the water network to continuously deliver clean water, with adequate pressure head, to all customers. The Project had 4 components.

1. Develop a Business Plan for the water supply and network;
2. Develop an Operation and Maintenance Strategy;
3. Improve the water network in one confined area; and
4. Improved Public Awareness and Communication.

The objectives of each of the components were:

1. To have an operating Business Plan fully workable and in use for guiding and improving the management and the activities of the DOW, as regards the water supply and network.
2. To have a workable Operations and Maintenance Strategy in full function for the water supply and network, with staff adequately trained.
3. To have a workable hydraulic model for the water network of the Kwestan area, to have used this for planning network improvement measures in Kwestan, to have started the work of making a hydraulic model of the remaining part of the confined block of the City, and to have performed studies and preparations for making a hydraulic model for the water network for the whole Erbil City.
4. To ensure the success of the Project through three communication components:
a) Public awareness campaigns; b) Advocacy; and c) Media journalism.

In the Inception Report from Global Reporting, Objective 4 was later further elaborated and a number of specific objectives were defined (see Section 4.1.4).

⁶ibid

The Objectives were to be achieved through a number of Activities defined in the Project Document for Components 1 – 3. The Activities for Component 4 were defined by Global Reporting in their Inception Report. Output and Outcomes were not defined in the Project Document, although Sida in its Assessment Memo refers to the Objectives of the Components as Outputs.

During project implementation, the focus has been on implementing the Activities and monitoring their progress. The monitoring consultant has also monitored progress on implementing the activities. In the Final report, Qandil reports on inputs, activities, the Objectives for each Component and the Overall project objective.

In a revised Logical Framework table dated July 2010, the activities have been redefined as outputs. Since this was actually done after the completion of the Project, the evaluators have chosen to maintain and evaluate the Project according to the logical structure as was designed in the Project Document and has prevailed during the implementation of the Project.

The 'Theory of Change', somewhat simplified, is assessed to be:

- a) The part of the overall objective that is about delivering clean water would be achieved by increasing the pressure in the water network, repairing leaks and renewing old water pipes. This is laid out in the O&M Strategy.
- b) The other part of the overall objective is about sustainable use of the water, which entails reversing the trend of decreasing levels of ground water and slowing down the trend of increasing water taken from the river. This would be achieved by reduced consumption of water, which in turn would be achieved by consumption-based tariffs, installation of water meters and awareness campaigns. This is laid out in the Business Plan.

2.3 Implementation organization

The implementing agency in Kurdistan is the DOW in Erbil. The DOW falls under the General Directorate of Water and Sewerage (GDWS) under the Ministry of Municipalities (MOM), later the MOMT.

Qandil, by contract with Sida, engaged SWECO as consultants to support the technical services (Components 1-3 above) and Global Reporting – for Public Awareness and Communication (Component 4 above). In addition to the agreement with Sida, Qandil had one agreement for the services with the Iraqi KRG and one with the MOMT. The services were fully financed by Sida.

Sida engaged Colling Water Management AB as Monitoring Consultant during the implementation of the program.

The beneficiaries of the programme were the population of Erbil, DOW staff and to a certain extent even government officials in other ministries that benefitted from capacity building activities.

An unusual aspect of the project was the appointment of Qandil, a Swedish NGO experienced in the implementation of humanitarian aid and infrastructure projects, as project leader of what was essentially a technical-biased capacity building development project. However, this proved to be a largely successful strategy as Qandil was well established in Erbil, had good contacts with key government actors, and had the capacity and resources on the ground to manage the project. However,

this project was a new direction for Qandil and as a result, Sida took the precaution of appointing an independent monitoring consultant⁷ to provide additional oversight.

The two year timeframe for the project is also considered relatively short for a capacity building project of this level of ambition. Subsequently the project goal was re-written to reflect a more modest ambition level⁸.

Although DOW Erbil was a major beneficiary, it also contributed significant resources to the Project, namely:

- Contribution of DOW Erbil staff time and expertise, and knowledge of the Erbil network
- Construction of chambers and manholes for valves and meters and extension of Booster Pump Station in the Kwestan Pilot area
- Installation of pipe fittings and appurtenance, electrical connections, etc. necessary to upgrade the Kwestan Pilot area
- Purchase, supply and installation of 608 household water meters for the Kwestan Pilot area

3. Findings and Conclusions Regarding Project Activities

3.1 Project implementation approach and strategy

The project addressed management and operational deficiencies in the water service provision using a series of targeted measures aimed at strengthening business planning, data management, operational and maintenance practices and communication. The project also included, by way of practical demonstration, physical works to improve the network operation in one demonstration 'pilot area'.

The project approach was to use international water sector experts and communication experts to provide training to DOW personnel in a range of critical skills areas. The training was largely carried out in Erbil and used a combination of seminars, workshops, classroom-based and on-the-job training. The advantage of this was that the international consultants⁹ could use the Erbil context and water network as case studies for training demonstration purposes. This made the training highly relevant. In some limited cases, training was carried out in Sweden.

A key rationale/intended outcome of the project was that it should provide a sufficient level of competency to enable the trained personnel to continue using their acquired skills to:

- Continually update the Business Plan and use it for planning, budgeting and measuring DOW Erbil's performance using the Performance Indicators (PIs)
- Improve standards of operation and maintenance (O&M) through continued implementation of the O&M Strategy developed by the Project.

⁷Mr OlleColling of Colling Water Management AB was appointed Monitoring Consultant.

⁸LFA Goal initially was: "Improved management of Erbil City water production and distribution network (with the indicator of continuously deliver clean water with adequate pressure head to all customers of Erbil)", was later amended to: "Improved quality of supply by the DOW to achieve a continuous supply of safe drinking water to all customers to the extent possible during a two-year period".

⁹From SWECO (Project Components 1, 2 & 3)

- Extend the network mapping of the Kwestan Pilot area to include other areas of the network, eventually covering the whole Erbil network.
- Replicate the hydraulic model of the Kwestan Pilot network to include other areas of the network eventually resulting in a hydraulic model covering the whole Erbil network.
- Replicate the physical works carried out to improve the hydraulic conditions within the Kwestan Pilot area, to improve other areas of the network in a similar manner.
- Replicate the awareness campaign developed for Kwestan Pilot area for other areas.

The set-up with Qandil being contracted by Sida and then contracting SWECO and Global Reporting for the technical expertise, was found to have worked well. The procurements have been carried out according to the Sida Procurement Guidelines. Qandil is established in Sweden and Kurdistan and its operational focus is solely Kurdistan. The Qandil office in Erbil had project management and implementation experience, local knowledge and good contacts with and access to the authorities in Kurdistan, which greatly facilitated the implementation of the Project. Qandil's role was rather an unusual one; while they provided the project management for the Project, they also ultimately became a beneficiary of the Project. Qandil's lack of experience in sustainable development and in urban water supply would suggest that they were not the ideal organization to manage such a project. However, Qandil offered significant advantages for Sida and the Project, and were able to 'rise to the occasion'. Qandil proved to be committed to achieving the Project outcomes. While they were beneficiaries of some of the Project training, this was a reasonable measure to strengthen their understanding of the Project and their ability to manage it more effectively.

3.2 Component 1 - Business plan

3.2.1 Activity 2: Identification and evaluation of suitable performance indicators (PIs) for the BP process

The tasks for this Activity include the elaboration of the list of PIs based on the list in the PFS, design of a PI database, data collection and commenced use of the PI database.

The BP introduced PIs as a management tool to measure the performance of the DOW Erbil and to monitor its progress towards achieving higher levels of service. A list of PIs and a database were developed from November 2008 to June 2009 and included two seminars with DOW. 60 indicators for DOW were selected from a set of internationally agreed indicators. However, as many of the selected PIs are not considered standard use in other countries in the region, this limits the prospects for Erbil/Kurdistan to compare their performance with other countries. There are other PIs developed by the Asian Development Bank and the World Bank that are more widely used.

It has been possible so far to collect data for about half of the PIs for most of the three years: 2008, 2009 and 2010¹⁰. The data on the PIs is used for planning and the development of annual Action Plans within DOW Erbil¹¹.

3.2.2 Activity 3: Financial and economic analysis

This Activity includes collection and analysis of financial and economic data of the DOW Erbil as preparation for development of financial modelling in Activity 6.

¹⁰Final Report Erbil City Water Network Management Project, Qandil July 8, 2010

¹¹Meeting with staff of DOW 11 September 2011

Data collection and analysis were carried out during several workshops in March 2009 and May 2009. This included the analysis of the budget, tariff structure for the water and billing and accounting procedures. Based on the current situation, a number of necessary changes to reform DOW Erbil were identified.

Based on the BP, DOW Erbil has prepared budgets for 2010 and 2011, with justifications for money to implement improvements and activities suggested as a result of the Project. For 2011, DOW Erbil needed USD 2.75 million but received only USD 0.5 million, which was a reduction with 25% from 2010.¹²

3.2.3 Activity 4: Result review according to Objectives

The result review was carried out in May 2009 at a workshop in Erbil involving stakeholders. Achievements of activities and objectives were reviewed. Action plans were modified and measures were taken to overcome obstacles. Generally, the result of the review was that the Project progressed according to plan.

3.2.4 Activity 5: Preparation of an Action Plan

A comprehensive Action Plan for the period 2010–2012 is included in the Business Plan for 2010. The plan was developed in an interactive process between the DOW and Qandil-SWECO. The plan is being followed up by the Planning Department and shared with the various departments. Many of the listed activities have been commenced and some finalized in 2009 and 2010 according to the monitoring consultant¹³. A revised Action Plan has been developed for 2011 but most suggested activities cannot be implemented due to lack of funds.¹⁴

3.2.5 Activity 6: Projection of Financial and Economic parameters

This Activity includes the elaboration and implementation of a Financial Model for simulating the financial implications of different costing scenarios for tariffs, investments and other costs.

The Financial Model was supposed to give DOW Erbil control over costs and incomes from the users of the water. However, DOW has no influence over tariffs and the small revenue from tariffs is transferred to the Ministry of Finance (MOF). DOW is financed from an annual budget allocation from MOF.

It was therefore agreed that the model should be developed in two phases and in the first stage a model for the projection of costs should be developed for use in the budget process. The second phase was to develop the model further and also include the revenues, which required improvements in the accounting system and control by DOW of the revenues from consumers. As this was outside the scope of the Project, only the first stage could be achieved.

3.2.6 Activity 7: Training of the DOW staff in Business Planning

The TOR states that all levels of DOW and staff from Dohuk and Sulimanya should be trained in business planning procedures and techniques and the development of financial scenarios for different tariff policies and investments.

¹²Interview with DOW staff 13 September 2011

¹³Monitoring of the Erbil City Water Network Management Project in the Kurdish Region of Iraq, Final Report, December 2010

¹⁴Interview with DOW staff 13 September 2011

The training started in November 2008 and has been carried out at intervals until February 2010. The training provided an introduction to business planning and the main features of a BP, including Mission, Vision, Strengths, Weaknesses, Opportunities and Threats (SWOT), PIs and the annual business planning cycle.

3.2.7 Activity 8: Training of the DOW staff and Qandil staff in Project Management, acc. to standards of the Project Management Institute (PMI)

According to TOR, there should be a four-week training course in Sweden for 4 people and a 3-weeks training course in Erbil also for 4 people.

The actual training was the Project Management Professional training offered by the PMI with two sessions in Sweden, two sessions in Erbil and final examination in Finland. Two MOMT, one DOW and two Qandil staff were trained. Two have passed the PMI examination.¹⁵

3.2.8 Activity 9: Environmental Plan for the water supply and distribution network

The Activity inputs according to TOR were:

- Review of previous environmental impact assessments
- Description of the environmental impacts of present water supply and distribution network
- Environmental impact assessment of necessary rehabilitation works and of the operation of the future water supply and distribution network
- Preparation of an Environmental Plan including mitigation of negative impact and also including a social plan of the low income class, addressing ability and willingness to pay, social/religious constraints and the role of women.

The Environmental Plan is included as Appendix 8 in the Qandil Final Report. The Plan has been approved by the Steering Committee for the project. Environmental issues are covered, with the exception (per TOR requirements) of a social plan for low income households. Ability and willingness to pay is not addressed and the plan does not address social/religious constraints, or the role of women.¹⁶

3.2.9 Activity 10: Business Plan – formulation and presentation

The TOR includes the establishment of a system to monitor implementation of the Business Plan and activity plan activities, the integration of business planning in DOW planning and budget procedures and the development of the Business Plan.

The Draft BP was completed in April 2010 as an outcome of intensive interactions in the working group with the support of SWECO and Qandil. The BP has been approved by the Steering Committee (SC). (The BP is Appendix 9 in the Qandil Final Report.) Translated into Kurdish in June 2010 and distributed to all departments in the DOW. Also several internal meetings have been held to ensure it being used.¹⁷ The BP is not a fully-fledged BP (see Section 4.1.1 for more details).

For 2011, work was initiated to make a new BP for 2011, but it was decided not to produce another paper document but instead create a *PowerPoint* presentation that could be a “living document”, easy

¹⁵ Monitoring of the Erbil City Water Network Management Project in the Kurdish Region of Iraq, Final Report, December 2010

¹⁶ Monitoring of the Erbil City Water Network Management Project in the Kurdish Region of Iraq, Final Report, December 2010

¹⁷ Monitoring of the Erbil City Water Network Management Project in the Kurdish Region of Iraq, Final Report, December 2010

to change, adding or revising slides and used by everyone. Just like the 2010 BP, the new BP is not a complete business plan covering all the elements of business planning, e.g. there is no financial model¹⁸.

3.2.10 Conclusions about Component 1

PIs have been developed and data collected and used for planning and the development of annual Action Plans for DOW. Annual Action Plans and Budgets have been improved and are produced for 2010 and 2011.

A financial model has been developed but it is currently not used as DOW lacks the delegated power to make changes in the parameters of the model.

Training in management and planning has been done. Five people have undergone PMI training in project management and two of them have passed the exam.

An environmental plan has been developed, although with some important components missing.

The DOW is working with some elements of the BP, although the political environment is not conducive to a business approach to water supply. The development of financial scenarios in support of tariff policies and investments is beyond the delegated power to the DOW and has not been carried out. To the extent possible, the BP has been duly developed and is being applied and upgraded internally within the DOW.

3.3 Component 2 - Operations and Maintenance strategy

3.3.1 Activity 11: Evaluation of the present O&M system and support

An evaluation of the present O&M system was carried out¹⁹ and is reported in Appendix 10 of the Qandil Final Report²⁰. The evaluation covered a review of the then existing O&M practices of DOW, including service disruptions and problems, and also looked at: data management systems (e.g. GIS), need for water safety, organisation structure and staffing, and incident reporting.

The output from this Activity was a brief 22-page report which addressed some but not all of the TOR requirements. Specifically the evaluation is considered deficient in the following aspects:

- There was no analysis of maintenance costs
- Water Safety Plans were dealt with in a very superficial way, with no key actions recommended to enable DOW to prepare a Water Safety Plan for Erbil City water supply and network.
- Works Orders and Health and Safety issues were not addressed in the evaluation.

Despite these shortcomings, the evaluation report was assessed by the monitoring consultant as satisfactory²¹, and no issues were raised about its completeness.

¹⁸ Meeting with DOW staff 11 September 2011

¹⁹ By a SWECO Engineer, over the period February to April 2009.

²⁰ Erbil City Water Network Management, Final Report, July 2010.

²¹ "An appropriate evaluation of the existing O&M situation was carried out" Ref Monitoring of the Erbil City Water Network Management Project, Final Report, December 2010

The overall findings of the evaluation were that O&M lacked a defining strategy, maintenance was carried out in a reactive manner (only when items broke down were they repaired) with no systematic preventive or scheduled maintenance practices being carried out. Critically the evaluation found that there was no attempt by DOW Erbil to analyse causes, frequency and extent of supply disruptions due to system failures. The findings of the evaluation provided an essential understanding and background for the development of the O&M Strategy (i.e. Activity 12).

3.3.2 Activity 12: Development of an O&M Strategy

The O&M Strategy Plan was developed by the DOW Erbil with the support of SWECO and Qandil. The Strategy was approved by the Steering Committee²² (SC) for the Erbil City Water Network Management Project, and is documented in Appendix 11 of the Qandil Final Report. The Qandil Final Report also includes a *PowerPoint* presentation of the O&M Strategy in Appendix 21. The Strategy was developed in an interactive process with significant contributions from members of the DOW Erbil working group, guided and supported by SWECO and Qandil. The resulting O&M Strategy is a rather brief document of 29 pages (plus one Appendix of 2 pages), containing general strategic guidance on O&M matters. The Strategy includes a section on Performance Indicators (PIs) which appears to duplicate a similar section on PIs contained in the Business Plan²³. The Strategy, while approved by the SC, does not appear to fully address the requirements of its TOR. For instance the TOR states the following:

- i. Define different approaches for the Operative organisation of water supply network
- ii. Define different approaches for the Maintenance organization of the water supply and network
- iii. Draft O&M Program for the next 5-10 years and Action Plan for the implementation
- iv. 1-2 day workshop for discussion and conclusions on future O & M Strategy.
- v. Start the implementation of a modern O & M Strategy

The Strategy does not offer different organisational approaches (TOR part i & ii). The Action Plan (TOR part iii) is a simple bar chart²⁴ without any supporting discussion or explanation of the O&M Program and Action Plan.

3.3.3 Activity 13: Training of Trainers in leak detection and hydraulic modelling

This Activity delivered a series of practical and theoretical training courses as follows:

- Training in leak detection
- Training in repair of water leakages
- Training in design of water network
- Training in hydraulic modelling
- Training on modelling water supply network in Erbil

Activity 13 comprises training of trainers in preparation for the practical fieldwork to be carried out in Activities 14 and 18. The Activity was delivered largely according to the TOR, with some agreed minor modifications. Appendix 12 of the Qandil Final Report provides details of the training provided in hydraulic modelling and in the preparation of the hydraulic model of a section of the water supply network in Erbil (namely the Kwestan pilot area). Appendix 21 of the Qandil Final Report provides

²²Dated 18th February 2010.

²³Refer Component I – Business Plan, and Section 3.2.1 of this report.

²⁴Refer Plan for Implementation, Appendix 1 of Operation and Maintenance Strategy, contained in Appendix 11 of the Qandil Final Report.

details of the *PowerPoint* presentation used in the training carried out in leakage detection and hydraulic modelling.

The report of the monitoring consultant²⁵ found that the hydraulic modelling was “sufficiently well covered” while the training in leak detection and repairs was less well covered. This observation reflects the fact that the leakage detection equipment could not be effectively used in many situations due to the low pressure in the network, and the high ambient noise levels²⁶. The introductory training in hydraulic modelling was carried out in Sweden and used the WaterGEMS software. Follow up training on hydraulic modelling was carried out in Erbil, and the decision was made to switch to the hydraulic model software Epanet. Although Epanet had less functionality than WaterGEMS, it was free domain and so there was no annual license fee required.

3.3.4 Activity 14: Draft hydraulic model of the network

This Activity was an extension of the training in hydraulic modelling provided under Activity 13. At the time of implementation of the activity, the knowledge base and status of mapping of the pipe network was considered less than envisaged in the TOR. Nonetheless the following activity tasks (per TOR) were successfully carried out, resulting in a workable hydraulic model of the Kwestan Quarter:

- Collect maps and information of existing pipe network and distribution of population.
- Develop a draft hydraulic model.
- Make a draft calibration of the model.
- Training according to Activity 13 above.

Furthermore, as a result of this activity, mapping and modelling has been extended to other areas of the Erbil network

3.3.5 Conclusions about Component 2

All Activities were carried out sufficiently well. The O&M Strategy was developed in a highly participatory manner that included:

- Interactive coaching and mentoring of senior DOW staff
- Preparation of O&M Strategy Plan. The process of developing and writing of the O&M Strategy Plan was carried out jointly by DOW and SWEKO/Qandil.
- Preparation of an O&M Strategy *PowerPoint* presentation and learning aid

The resulting O&M Strategy is lacking in the detail required to make it a useful and working document. The monitoring by the monitoring consultant was not effective in assessing the output against the TOR for the O&M Strategy. However, it is acknowledged that the major benefit and learning took place as a result of the process of interaction between the consultants and DOW. This resulted in significant learning and ownership of the Strategy, and was a major achievement for the Project.

In general training was well delivered²⁷. The training provided to DOW in hydraulic modelling has enabled them to model the Kwestan pilot area, initially, and the experience gained has enabled them to

²⁵ Monitoring of the Erbil City Water Network Management Project, Final Report, December 2010

²⁶ This was due to traffic noise, and noise and vibration caused by household booster pumps used to draw water from the service mains under low head conditions. These conditions made it difficult for the sonar leak detection equipment to function accurately.

²⁷ A selection of trainees interviewed expressing satisfaction with the training provided and the calibre of the SWEKO trainers.

extend the hydraulic model to include other parts of the system. The training in leak detection and repairs was well delivered, albeit the practical application of the training could not be fully implemented due to the unsatisfactory state of the pipe network.

3.4 Component 3 - Water Network Improvement

3.4.1 Activity 15: Preparation and Procurement

The proposed input tasks for this Activity (per TOR) were as follows;

- Identify suitable types of water meters for households, and flow meters and pressure gauges for the water network; identify suitable instruments and tools for leakage detection.
- Prepare documents for procurement.
- Purchase water meters, flow meters, pressure gauges and equipment for leakage detection.

The list of procured equipment was subsequently revised as a result of (i) a detailed equipment inventory found that DOW Erbil already had leak detection equipment but no equipment for pipe detection, therefore it was agreed to substitute pipe detection equipment for leak detection equipment; (ii) all bids received were above the budget ceiling for the procurement, but this was resolved when MOMT agreed to take over the supply and installation of the required 1,000 household water meters as part of a major regional program. This item was therefore taken out of the procurement contract.

In addition, there were a number of agreed changes to other procurement items: area flow meters substituted for portable flow meters; additional pipe locators; sectional valves added; valve, meter and pressure gauge chambers added. Details are provided in the Qandil Final Report and complete procurement documentation is contained in Appendix 13 to the Qandil Final Report.

The Activity was successfully carried out (i.e. on time and budget), and the equipment procured was instrumental in the modelling and leakage reduction activities, and in the improvements to the Kwestan pilot area.

With the exception of the leakage detection equipment, the procured items were appropriate to the needs of the DOW Erbil, and to achieve the project objectives. The leak detection equipment procured was subsequently found to be largely unsuitable for the purpose (refer also to discussion on this in 3.3.3), posing the question of whether the prevailing conditions should not have been better understood at the specification and procurement stage, and more suitable equipment procured? Or whether there was not even a need for this equipment given that the vast majority of leaks are visible, and therefore a leakage detection programme prioritising visible leaks (i.e. not requiring sophisticated sounding equipment). However, there is an element of 'chicken and egg' situation in that the procured equipment was required in order to calibrate the hydraulic model, and thereby fully understand that the network conditions were unsuited to standard acoustic leakage detection approaches. The acoustic leakage detection equipment will be useful for sections of the pipe network where pressure conditions are eventually restored to the normal operating range.

3.4.2 Activity 16: Pipe Mapping and Database

The original TOR for this activity related to the installation of household water meters in the Kwestan pilot area. The TOR were revised (refer to previous discussion in Section 3.4.1) after MOMT agreed to take over the purchase and installation of household water meters. The revised TOR related to 'Pipe Mapping and Database' with the following tasks:

- Pipe-mapping in the confined area using GPS, including training of the DOW staff
- Convert collected data to GIS system, training the DOW staff on this issue
- Create a suitable database for information, collect data and enter it into the database.

The training in pipe-mapping included the establishment of permanent Global Positioning System (GPS) Base Stations and field training in pipe location, and data transfer to AutoCAD and ArcGIS data management systems. The above tasks were successfully carried out as a result of the training provided under this Activity.

3.4.3 Activity 17: Installation of Flow meters and Pressure gauges in the water network

The proposed input tasks for this activity (per TOR) were as follows:

- Selection of strategic positions
- Installation
- Planning and performance of a programme for monitoring flows and pressures

The selection of strategic positions for the installation of flow meters, pressure loggers and sectional valves, as well as the construction of manholes, was successfully carried out. This enabled the monitoring of flows and pressures in the Kwestan pilot area to be performed as required. A description of the work carried out, the monitoring results and lessons learned are well documented in Appendix 14 of the Qandil Final Report. All tasks were performed by a joint team comprising SWECO, Qandil and DOW personnel.

The supplier of pressure gauges and flow meters was the company SETEC-ZOZIK. DOW Erbil carried out the construction of the necessary chambers and manholes and the pipe and required electrical connections. In total the following works were carried out:

- New chamber for bulk flow meter No. 1, including bulk flow meter with all pipe appurtenances, data logger and electrical installations
- Extension of booster station No. 2, including bulk flow meter with all pipe appurtenances, data logger and electrical installations
- 19 new manholes which can be used for installation of portable flow meters and pressure gauges
- 7 portable flow meters
- 14 pressure loggers
- New sectioning valves (12 Nos) delivered and installed by DOW Erbil

In addition, the installation of 608 household flow meters in Sector 28 of the Kwestan pilot area was carried out by DOW Erbil during this period to facilitate the flow monitoring.

3.4.4 Activity 18: Leak detection and water balance in the confined zone

The proposed input tasks for this activity (per TOR) were as follows:

- Recruit teams, provide them with training
- Active leak detection
- Prepare a water balance for the confined zone

Details of the work carried out, results (including photographs and pressure gauge readings) and lessons learned are well documented in the Activity 18 Report which constitutes Appendix 15 of the Qandil Final Report. Training in leak detection and in the use of the equipment was limited by the low pressure in the distribution system, which made conditions unsuitable for the use of sonar leakage detection equipment.

The activity provided training and practical guidance in leak detection and estimation of leakages (using a water balance audit). It also demonstrated the type of network improvements that are necessary to gather the performance information on leakage and household consumption required for effective network management. Ultimately however, much more needed to be done in physical improvements to the network in the Kwestan pilot area, and to improve operating pressures.

The water balance exercises gave inconclusive results: estimates of per capita consumption varied from 730 to 400 to 140 litres/person/day. The differences are considered to be due to insufficient calibrations between metering points, short durations and possibly vacuum conditions in the pipe system. Further calibration and trials are required before this methodology can be considered to be of any practical use.

3.4.5 Conclusions about Component 3

Activities 15, 16 and 17 were successfully implemented. This resulted in an improved knowledge-base of the Kwestan network (i.e. detailed mapping and GIS), together with physical improvements (valves and metering). As a result, flow and pressure measurements could be undertaken and the hydraulic model calibrated. In turn, this has led to a much improved understanding of the Kwestan network, and the need for further improvements in order to develop the area as a 'model network'. To achieve this, DOW has submitted a proposal²⁸ through the MOMT to the MOF for upgrading the pumps and making other network improvements.

Activity 18 was only partly successful. Detection of non-metallic pipes and leak detection could only be carried out where the pressure was at least 1 bar and little surrounding noise. These conditions could be attained only in limited areas²⁹. Although a workable model has been achieved, leak detection and water balance studies (Activity 18) do not appear to have progressed much since Project completion. The DOW's leakage reduction strategy of is essentially reactive, i.e. to respond to reports of visible leaks and to send out maintenance crews to repair them. Since repairs of visible leaks takes up all of their time and resources, the use of leak detection equipment (to locate invisible leaks) is a much lower priority.

3.5 Component 4 - Awareness and Communication

This component was added to the project after the feasibility study³⁰ was completed. Global Reporting was contracted by Qandil to develop a Public Awareness Plan, an Advocacy Plan and a Media Relations Plan³¹. The plans describe the objectives and activities for the three sub-components. Component 4 has three sub-components: Public awareness with 5 activities; Advocacy and training with 9 activities; and Media Relations with 4 activities.

Public awareness sub-component

²⁸ The estimated cost of this is USD 250,000 for the Kwestan Pilot Area. The proposal is still awaiting approval.

²⁹ P52, Qandil Final Report

³⁰ Pre-Feasibility Study Erbil City – Water Supply System, SWECO and Qandil 7 January 2008

³¹ Erbil City Water Network Management in Erbil Governorate, Iraqi Kurdistan Region, Communication Component, Public Awareness Plan, Advocacy Plan, Media relations Plan, Global Reporting 2009

3.5.1 Activity 20: Baseline study done and 1,000 flyers distributed in Kwestan

The baseline study was carried out in April 2009³². Flyers with information about the pilot project in Kwestan were developed and distributed in the pilot area. The results of the baseline study and the follow-up study are analysed under outcome 3.5.5 below.

3.5.2 Activity 21: Major events and formal inauguration of the work in Kwestan quarter

Folders were produced. Guidance on the correct cleaning of household water tanks was provided and 34 water tanks were cleaned in all schools in Erbil. The website was developed in Kurdish and English and kept updated during the Project. All documentation of the website was handed over to the DOW. The website has not been updated since the end of the project. (www.hawlerwater-krq.com)³³.

The project arranged meetings with mothers in all Kwestan schools to inform them about the importance of clean water and the necessity to reduce water consumption^{7,34}.

At the formal inauguration the campaign, the Minister of MOMT came to present awards at a football tournament, and presided over the handover of the project to the KRG in June 2010³⁵.

3.5.3 Activity 22: School project conducted

The project was assisted by the Kurdistan Water Association to train teachers and pupils in Kwestan schools to create awareness of the need to reduce water consumption as well as in health aspects related to water. More than 5,000 teachers and students were reached.

Through cooperation with the MOE, three different posters were produced in 18,000 copies and distributed to schools all over Kurdistan. The printing was financed by the private mobile operator Asia Cell. General knowledge of water has been included in the curriculum for primary and secondary schools.

Primary and secondary schools provided with material and seminars with the GD and the DOW. Drawings competition was conducted in primary schools. Higher level students had an essay competition. There was good response to the drawings, but less response to essays.

3.5.4 Activity 23: Prize awards in conjunction with football and volleyball tournament

The tournaments were most appreciated and well attended. Both girls' and boys' teams (70 players in total), were all wearing T-shirts "Water is Life". This was the first time in Kurdistan that girls played football in public. Awards were given to the winners in the games. The Minister of Education and the Minister of Municipalities and Tourism participated³⁶.

3.5.5 Activity 24: Study of change in knowledge, behaviours and attitudes

A report analyzing and comparing the results of the baseline survey in April 2009 with the follow-up survey in May 2010 was submitted by Global Reporting³⁷. The content of the report is further analysed in Section 4.1.4.

³²Appendix 18 to Final Report Erbil City Water Network Management Project, Qandil July 8, 2010

³³Final Report Erbil City Water Network Management Project, Qandil July 8, 2010

³⁴Interviews with women and men, teachers and students in Kwestan

³⁵Interview with the Minister of MOMT

³⁶Interview with Minister of MOE

³⁷Kwestan surveys, Results and conclusions from surveys performed for the Public awareness component of the Erbil City Water Management Project, 1 March 2009 - 30 June 2010 dated 28 May 2010

Advocacy and training sub-component

3.5.6 Activity 25: Presenting the project in introductory meetings with involved ministries and main stakeholders

Meetings were held March–June 2009 with the ministers of Municipalities, Health, Education, Culture, and Religious Affairs to introduce the Project. The meetings were held both in a group and with individual ministries. The meetings opened up a dialogue between ministries on water as well as other issues^{38,39,40}.

3.5.7 Activity 26: Workshop on customer relations and communication theory for the MOMT, DOW and Qandil

Meetings were held May–June 2009. All the DOW directors in Kurdistan and the GDOW attended. The MOMT was reportedly very responsive. However, despite the interest no communication unit was established within the GDOW due to the low priority of this issue when it comes to allocation of available funds.^{12,13,14}

3.5.8 Activity 27: Coaching in basic information practices and theory for MOMT, GDOW and DOW

This Activity was combined with the above output 26.

3.5.9 Activity 29: Education for heads of information at involved ministries, workshop about basics of government communication

Separate workshops for each ministry were followed by one common workshop for all ministries. The workshops started in September–October 2009 and were completed in February 2010⁴¹.

3.5.10 Activity 30: Workshop on water and government communication with directors of MOMT, MOH, MOE, MOF, MORA and directors of the Council of Ministers

The workshops were conducted in September 2009 to January 2010, with the above-mentioned directors, except at the Council of Ministers, where there is no such directorate. A roadmap was produced on how communication could be spread to the entire KRG¹⁵. The roadmap has not been implemented.

3.5.11 Activity 31: Coaching of MOMT, GDOWS and DOW

Final coaching for Head of Communication was conducted during the week of the final seminar in May 2010¹⁵.

3.5.12 Activity 32: Education for heads of information at involved ministries, workshop for customer relations

Lectures were carried out although delayed for one month¹⁵.

³⁸Final Report Erbil City Water Network Management Project, Qandil July 8, 2010

³⁹Final Report Erbil City Water Network Management Project, Public Awareness, Advocacy and Media Relations, Stockholm 2 July 2010

⁴⁰Interview with journalist QassimKhidir, Kurdishglobe

⁴¹Final Report Erbil City Water Network Management Project, Qandil July 8, 2010, Final Report Erbil City Water Network Management Project, Public Awareness, Advocacy and Media Relations, Stockholm 2 July 2010 and Interview with journalist QassimKhidir, Kurdishglobe

3.5.13 Activity 33: Seminar for government officials, editors and journalists about the roles of media and government in a democracy

The seminar was cancelled because it was not possible to get the people together.

3.5.14 Activity 34: Wrap-up seminar and evaluation with DOW, MOMT and all major stakeholders

The seminar took place in May 2010, together with the final seminars for all components¹⁵.

Media relations sub-component

3.5.15 Activity 35: Media training prepared and conducted

In September 2009, subjects for the training, teachers as well as 45 journalists to be invited were identified. Three training workshops took place during one day in November 2009 with 45 journalists attending⁴².

3.5.16 Activity 36: Media awards

A competition was launched in May 2010. 25 articles were received, the jury evaluated the articles and the prize was awarded to a reporter from Kurdsat TV who won a study visit to Sweden. (Global Reporting has a copy of the visit report).¹⁶

3.5.17 Conclusions about Component 4

All Activities in Component 4, except one seminar for the advocacy sub-component (Activity 33 was cancelled) were carried out. This sub-component was deemed by Global Reporting to be the most difficult one, as the elections in the middle of the Project period made it difficult to attract attention to the water issue. There is also no evidence of real interest in improving government communication and it is not seen as a strategic issue, as demonstrated by the lack of resources for communication departments⁴³.

3.6 Overall conclusions about the activities of the project

All activities in Component 1 have been carried out, although the Financial Model (Activity 6) was not completely developed, and the Environmental Plan (Activity 9) was incomplete (although approved by the Steering Committee). The BP was developed and also approved by the Steering Committee although some parts were missing.

All activities in Components 2 and 3 were sufficiently carried out, except the leak detection in Kwestan pilot area (Activity 18), where the low pressure made it difficult to find non-visible leaks.

All activities in Component 4 were also carried out except one seminar for government officials (Activity 33), which was cancelled.

⁴²Final Report Erbil City Water Network Management Project, Qandil July 8, 2010, Final Report Erbil City Water Network Management Project, Public Awareness, Advocacy and Media Relations, Stockholm 2 July 2010 and Interview with journalist QassimKhidir, Kurdishglobe

⁴³Final Report, Erbil City Water Network Management Project, Public Awareness, Advocacy and Media Relations, Global reporting, Stockholm 2 July 2010

4. Main findings and conclusions regarding the evaluation criteria

4.1 The effectiveness of the project

4.1.1 Component 1(Business Planning)

The objective of Component 1 is, *by June 2010, to have an operating business plan, at least in draft form, but fully workable and in use for guiding and improving the management and the activities of DOW, as regards the water supply and network.*

It was not possible to develop a complete BP. Several elements of the Plan were developed, e.g. formulation of the mission, vision and objectives of DOW Erbil, an analysis of the market, major technical strategies, a HR strategy and an IT strategy. The main problem with the water network was identified as the low pressure in the water system and occasionally no pressure at all in large parts of Erbil City. To come to terms with these shortcomings, it was suggested in the BP that focus should be on customer-related activities and preventive maintenance. A commendable job was done identifying objectives for improvement of the water production and distribution systems and the administration, including measurable indicators. An action plan for 2010 – 2012 is included in the BP.

The main feature of a BP is the business element in the plan which analyses the current situation and elaborates on alternative ways of generating income and how to spend the money. DOW does not have the delegated authority to do that, so it is questionable whether the BP can be used as a business plan at all. Some assumptions, such as the proposed change in water tariffs from flat rate to consumption based tariffs and the proposal that revenue should accrue to DOW instead of the MOF, were not workable. Another disappointment for DOW was that funds for implementing the BP through the Action Plan were not made available.

The expectation behind the BP – that it would be possible within the short project period to decentralize power to the DOW Erbil, allowing them to retain the income from water distribution and that water tariffs could be changed – was unrealistic. There is no National Water and Sanitation Policy. The legal and regulatory frameworks for the water sector in all of Iraq and in KRG are outdated and incomplete. There is a 5-Year Strategic Plan for Iraq (15 governorates) and Baghdad (but excluding KRG), and this Plan includes no move to reform or modernize the sector or to create public water utilities to support effective delivery, cost recovery or to shape water usage. To reform the sector a market-based water-pricing policy is required, enforcement capacities need to be improved, and an overarching national policy is required to guarantee that all three spheres of governance – the Region of Kurdistan, Baghdad Municipality and the rest of Iraq – utilise a standard set of measures to monitor delivery and compliance, both public and private.⁴⁴

For 2011, work was initiated to make a new BP for 2011, but the decision was taken not to produce another paper document but instead create a *PowerPoint* presentation that could be a “living document” – easy to change, add or revise slides and be used by everyone. Similar to the 2010 BP, the new BP is assessed as incomplete, being more a work plan than a business plan.

For an assessment of the PIs, please see Section 4.1.2 below.

⁴⁴Iraq Water and Sanitation Scoping Study.Geopolicy Inc. 2010

Conclusion about effectiveness of Component 1

The process of workshops and seminars covering the elements of the BP developed the capacity of DOW. This is described in Section 4.4.4 below. The BP was approved by the SC on 18 February 2010. It is assessed by the evaluators as being incomplete in some fundamental respects. It did, however, provide a good basis for developing an Action plan for 2010 – 2012, and for the DOW budget proposal for 2010. Funds for implementing the BP were not made available.

The BP is not fully workable and its use is limited since the assumptions of delegated power to DOW Erbil, retainment of user fees and change of tariffs were not workable.

The development of a BP, as far as it was possible within the current organization and delegated authority of DOW, can be fully attributed to the project.

4.1.2 Component 2 (Operations and Maintenance Strategy)

The objective of Component 2 was *to have a workable Operations and Maintenance Strategy in full function for the water supply and network, with adequately trained staff.*

a) Development of the Strategy

Prior to project implementation, O&M (by DOW Erbil) was rudimentary; repairs were only carried out when assets broke down. There was a lack of planning, monitoring and analysis of repairs/faults. The new O&M strategy has introduced DOW to industry-standard approaches to maintenance, based on preventive maintenance procedures that optimally manage resources based on assessed risks.

The evaluation finds the O&M strategy to be appropriate in terms of its focus on preventive maintenance but very superficial in its treatment and lacking in essential details and the necessary procedures to make the strategy workable. An example of this is Section 8.4.2.1 of the O&M strategy which deals with preventive maintenance, and states:

“In order to reduce urgent repairs to a minimum, DOW shall implement a preventive maintenance (PM) system. The need for PM for all technical equipment and systems shall be identified.”

No further details are provided. Given that preventive maintenance is the essential paradigm shift proposed in the strategy, much more by way of detail was expected. A further example of the lack of detail is evident in the implementation plan for the strategy, which is merely an illustrative bar chart lacking detailed explanation and budget.

Nonetheless, the process of developing the O&M strategy, which involved SWECO and DOW personnel, resulted in a new realisation of the benefits of preventive maintenance. The mind-set of preventive maintenance is now well established within DOW and is being enthusiastically practised at all levels. This has been a significant achievement that can be attributed to the Project⁴⁵.

The GIS asset record has developed significantly over the last 4 years. The O&M Strategy recommended: *“There is also a need for a customer complaints records and for planning of preventive, routine and emergency maintenance and repairs. For this work, the GIS need to be complemented by a suitable CMMS (Computerized Maintenance Management System)”*. The CMMS, together with a customer

⁴⁵Senior DOW Erbil staff informed the evaluators that while there have been many projects implemented by a range of donors, “it is only the Sida Project that has worked with us as a team” and also “they (i.e. SWECO consultants) really opened our eyes about preventive maintenance”. Such comments were common and repeatedly made by senior DOW Erbil staff.

complaints call centre, were important elements in the O&M Strategy but the DOW Erbil failed to secure MOF funding for them.

Performance Indicators

The BP and O&M Strategy introduced PIs as a management tool to measure DOW Erbil's performance and to monitor its progress in achieving defined targets in improved service levels. PIs are mentioned briefly in the BP and are discussed in more detail in the O&M Strategy Plan⁴⁶. Data on PIs continues to be collected and recorded⁴⁷ albeit with data gaps due to the difficulties of data measurement (e.g. absence of flow metering, etc.). DOW Erbil has made a good start on collecting PI data and this needs to continue. PI data is most useful and effective when there is sufficient longitudinal data to (i) indicate trends in DOW Erbil's performance, and the setting of realistic indicator targets (ii) allow for benchmarking of DOW Erbil performance against other comparable utilities (e.g. in Kurdistan/Iraq and internationally). This will require DOW Erbil to harmonise its PIs more closely with regional and international practice⁴⁸.

b) The implementation of the strategy

The O&M Strategy's Implementation Plan charts an ambitious programme of action covering the period 2010 to 2015. Since there is no specific budget allocation for the plan, it is being implemented in a rather piecemeal manner, according to the priorities of individual managers and available budget. The lack of funds could have been predicted since the requested budget for implementing the plan was 5-6 times higher than the previous year's budget and a more realistic budget plan with the most prioritized items should have been developed.

Under the DOW Erbil, there are separate O&M divisions for the pipe network, and water production and treatment. They are discussed separately below.

Pipe Network

From observation, pipe repairs are carried out in the traditional way. Problems with leak detection equipment have limited the effectiveness of the 'leakage detection' training provided. A proactive leakage detection/reduction strategy is not being practised. Leaks are reported and the maintenance crews are sent out to repair them in the traditional reactive manner. However, crucially, data on leakage repairs is now being recorded in the GIS⁴⁹ and this information is being used by the DOW Planning Department to assess which parts of the network incur the highest incidence of leaks/repairs and to prioritise them for pipe replacement (refer to Figure 1). However, the limited budget for maintenance restricts the extent to which this more planned maintenance approach can be implemented.

⁴⁶ Appendix 11 of the Qandil Final Report.

⁴⁷ PI data is available for 2009, 2010 and 2011.

⁴⁸ Relevant sources of information on performance benchmarking include: original work on water utility benchmarking was published in "Asian Development Bank's Second water Utilities Databook, Asian and Pacific Region, ADB October 1997". The World Bank WSP South Asia has also carried out significant work on water utility benchmarking and produced a 'World Bank Benchmarking Kit' and CD. The IWA was a partner in this work.

⁴⁹ And is being monitored as one of the key performance indicators.

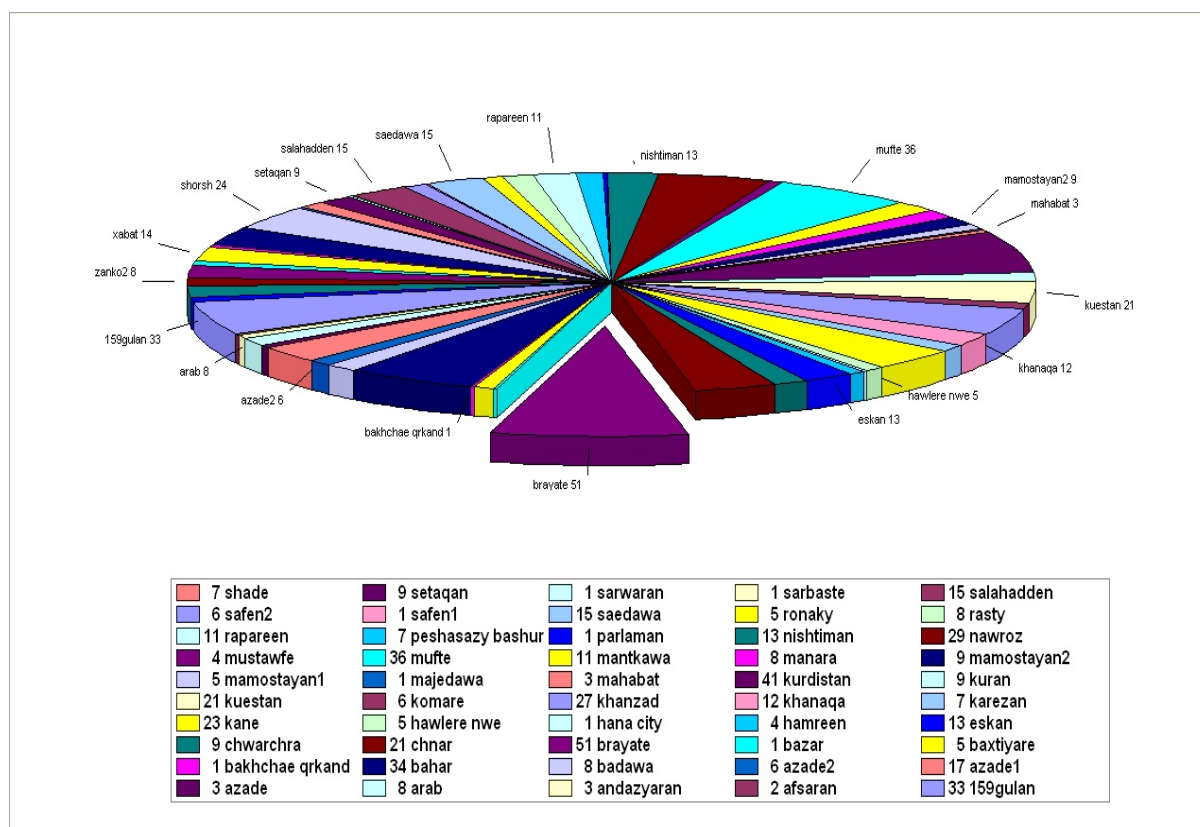


Figure 1 – Example of Planning Department Data on Pipe Repairs, by Location

Water production and treatment

At the WTPs (and intake pump stations) scheduled preventive maintenance is taking place and lifecycle costing is being used to analyse and optimise asset replacement (e.g. for replacement of bearings in motors). The introduction of preventive maintenance and continuous monitoring has resulted in a significant reduction in maintenance costs from DI 11,500,000 to DI 3,300,000 at Ifraz 2 WTP (see text box). This is an excellent outcome and illustrates the effectiveness of the component.

Ifraz2 Water Treatment Plant Maintenance COSTS.

July 2008 = 11,500,000 ID
 July 2009 = 4,200,000 ID
 July 2010 = 4,000,000 ID
 July 2011 = 3,300,000 ID

A further objective of Component 2 was to have staff adequately trained in hydraulic modelling, and to have developed a workable hydraulic model for the water network of the Kwestan area. This objective was achieved and can be directly attributed to the Project since DOW Erbil had no capacity in hydraulic modelling prior to the project.

Conclusion about effectiveness for Component 2

This has been one of the Project's major achievements. Significant improvements in O&M have and the results of this are now being realised. There has been a change in the culture and mind-set within DOW Erbil, and this is driven by the senior level staff within the organisation, who have benefitted from the training provided under the Project. There is now a much greater focus on data collection and monitoring, and in using the data to proactively manage the asset stock. The installation of a CMMS would further enhance the effectiveness of the O&M data collection, and its use for planning purposes, and should be procured. In addition, a customer complaints call centre should be introduced as a priority to improve handling of customer complaints and feedback.

The beneficiaries of this component (i.e. DOW Erbil operations staff) have indicated that prior to this intervention they had only a basic understanding of maintenance. Further, that this Project had 'opened their eyes' about concepts such as preventive maintenance, and substantially broadened their understanding of O&M in general. It can therefore be concluded that these outcomes are directly attributed to this Project.

Unfortunately this mind-set stops at the DOW Erbil, and is not yet entrenched in the MOMT and beyond. Therefore budget and bureaucratic delays will continue to impact on DOW Erbil's performance, limiting the impact and effectiveness of what DOW could potentially achieve if it were given greater autonomy.

The plan for implementing the Strategy seems to have been overly optimistic in believing that funds would be available to the extent suggested.

4.1.3 Component 3

The objective of Component 3 was to have a workable hydraulic model for the water network of the Kwestan area, to have used this for planning network improvement measures in Kwestan, to have started up the work of making a hydraulic model for the remaining part of the confined block of the City, and to have performed studies and preparations for making a hydraulic model for the water network for the whole Erbil City.

The outcomes and objectives of this Component have been successfully achieved. The training has provided competency in network mapping and hydraulic modelling. A workable hydraulic model was developed for Kwestan area, and since the end of the Project work has continued on mapping and modelling other parts of the Erbil network:

- Azadi Quarter – this is an old quarter of the city, pipes were consequently old and known to be in poor condition; in addition, there were no accurate maps of the network in this quarter. DOW Erbil is using its own budget to improve the network in this Quarter. Although the budget is insufficient to install flow meters and valves (as per Kwestan improvement) DOW has mapped and modelled the network, and is planning⁵⁰ to replace old (Asbestos Cement and PVC) pipes with new polyethylene and Ductile Iron pipes. Water balance studies have also been carried out, using the portable flow meters provided under the Project.
- Roshanbery Quarter – this quarter is being upgraded in a similar manner to the Azadi Quarter, using DOW resources and some German Aid assistance (from KFW). DOW is carrying out mapping and modelling of the network in the quarter.
- Design and upgrading of old pipelines within the '60 metre Road'. The design work is being carried out by Lebanese Consultants⁵¹. This project will result in a major upgrade of the old pipe network in the central area of Erbil city. Due to the mapping and modelling skills acquired under the Sida Project, DOW Erbil staff is now able to play a significant partnering role in this project. The Lebanese consultants Khatib and Alami have drawn extensively on DOW Erbil's GIS, mapping and modelling skills. Under this project, Khatib and Alami will introduce a new water industry-specific hydraulic modelling program, called 'Water Info' to replace the freeware programme Epanet. Training of DOW Erbil staff will also be provided under this project.

⁵⁰Under the Action Plan for 2011/2012

⁵¹Khatib and Alami, Water Supply Improvement Project in Kurdistan Region, July 2010??

Conclusion about effectiveness of Component 3

DOW Erbil has achieved a good level of competency in GIS, mapping and hydraulic modelling. Since the end of the Project, DOW Erbil has continued to demonstrate this capacity by extending the mapping and modelling to new areas of the network. This has given DOW greater confidence. It is now seen as an equal partner when dealing with foreign consultants and is more in control of its future direction and strategy. The improved skills and knowledge of the network have led to improved planning and monitoring capabilities. This is largely due to the achievements and resulting effectiveness of Components 2 and 3 combined. As previously stated (in Component 2 above) this has been a significant achievement of the Project, but there is a risk that the achievements and effectiveness may in the future be limited by the available budget for DOW Erbil, which is not within its control, and by the existing bureaucracy and slow pace of decision-making by DOW's senior Ministries (MOMT and MOF).

4.1.4 Component 4

The objective of Component 4 was: *to ensure success of the Project through three communication components: a) public awareness campaigns, b) advocacy, and c) media journalism.* In their Inception report, Global Reporting added a number of specific objectives in relation to all target groups, to the government/ministries, specifically for the citizens of Kwestan and for the media.

a) The specific objectives of the public awareness campaigns directed at Kwestan area were *to create awareness about sustainable use of water and the relation between good water hygiene and health, to reduce overconsumption of water* and to increase knowledge about the methods used and results achieved in the Kwestan quarter⁵².

The objective about increased understanding about water and health was dropped since the baseline survey showed very high knowledge and USAID was running a campaign with this theme⁵³. According to the report from Global Reporting, the results from the campaigns were:

- The public awareness campaign reached its target
- People say they save more water now.
- There is an improved perception of DOW.
- There is a strong awareness of the general overconsumption.
- People are positive to household water meters.
- People are not negative to increasing the price of water.

The evaluators are not in complete agreement with these results. The specific objective of the awareness campaign was not only to create awareness but also to reduce water consumption and there is no evidence that this has been achieved. The baseline survey shows that even before the campaign, 80% of the people interviewed in Kwestan area said they saved water. In the baseline 2009, 68% said they have a positive view of DOW⁵⁴ while a year later this was reduced to 64%⁵⁵. In 2009 only 13% claimed they had a negative view of DOW, one year later this had increased to 27%, so the improved perception of DOW does not seem to be there. The strong awareness of general overconsumption seems to have existed even before the Project as shown by the baseline study in 2009. The evaluators

⁵² Inception Report: Public Awareness and Communication Expert for Erbil City Water Network Management in Iraqi Kurdistan Region, Global Reporting (undated)

⁵³ Kwestan surveys, Results and conclusions from surveys performed for the Public awareness component of the Erbil City Water Management Project, 1 March 2009 - 30 June 2010 dated 28 May 2010

⁵⁴ Baseline Study Kwestan quarter 2009, PowerPoint presentation

⁵⁵ Baseline *study in Kwestan quarter May 2010, Appendix 18 to Final Report, Qandil 2010

find it hard to draw any conclusions from the surveys about the attitude to household meters or the willingness to pay more for the water.

This sub-component was linked to other activities of the project and was intended to facilitate the public acceptance of water meters together with a new tariff structure based on actual consumption of water, instead of the current flat-rate tariff structure. However as the water meters were delayed and a new tariff structure was not implemented, Component 4 lost some of its importance and effectiveness.

Although many campaign activities directed at Kwestan were carried out, there is no conclusive evidence that the campaign part of the project resulted in increased awareness of saving water or reduction of the over-consumption of water.

The models and materials for the campaign activities were handed over to KRG to be used in other areas.

b) Specific objectives for the sub-component of advocacy and training directed at government officials were *to increase openness and transparency and improve coordination and planning within ministries that have a key role in water issues, increase awareness of the importance of clean water and sustainable water management, improve knowledge of government communication standards and techniques and to increase knowledge of gender aspects related to water and governance.*

This sub-component has, according to Global Reporting, been the most difficult sub-component to carry out, due both to the elections that delayed the implementation and the low priority for information within the ministries. The evaluators found no signs and received no information when interviewing concerned ministries of any improvements in openness and transparency or coordination and planning of the ministries. This specific objective could not reasonably be achieved through such a short-term Project as this.

Ministries of Religious Affairs, Education and Municipalities and Tourism showed in the interviews that they were aware of the importance of water and water management and referred in positive terms to the Project, so the Project seems to have contributed to that awareness. The Ministry of Education referred to the curriculum for primary and secondary schools that contained material about the importance of water, health and water and hygiene. The Ministry of Religious Affairs informed us that they continue to tell the Mullahs to provide advice about water issues and saving of water.

Respondents from the above-mentioned ministries confirmed that knowledge about communication techniques had increased through the training and participation in the Project, but since the organization for communication within the ministries had not been strengthened, not much of the communication work was related to water issues.

The conclusion of the evaluators is that the objective was only partially achieved. The relatively limited efforts of the Project could not reasonably be expected to achieve the optimistic objectives.

c) For the media component, the specific objectives were *to increase knowledge among journalists on water issues and government issues and to increase knowledge of gender aspects related to water and governance.*

Knowledge has increased among journalists as demonstrated by the fact that more than 50 journalists have covered water issues and 27 journalists participated in the competition by submitting contributions for the “Water is Life” award.⁵⁶ There is no evidence that gender awareness has increased. There is no other plausible explanation to the change other than the project activities.

Conclusions about effectiveness for Component 4

The achievement of the overall objective for Component 4, *to ensure success of the Project through three communication components: a) public awareness campaigns, b) advocacy, and c) media journalism*, cannot be evaluated the way it is formulated since the success of the project depends on the achievement of all the components.

There is no conclusive evidence that the public awareness campaign part of the project resulted in increased awareness about saving water or reduction of the over-consumption of water. It is well understood by DOW Erbil staff that water pricing is the main factor affecting consumption. Since in Erbil, water is considered by most to be (almost) free, they have no incentive to conserve it. Some respondents also informed the evaluators that they considered education level to be a factor, with those with a higher education level being more receptive and understanding about the need for water conservation. Among some DOW Erbil staff there was clearly a level of frustration that the new water tariff proposal had not yet been approved by MOF. They do, however, understand that their bureaucracy moves slowly and are resigned to the wait. From the DOW Erbil perspective, the media campaign was adversely affected by unfavourable timing – to be effective it needed to coincide with other incentives, namely the introduction of a new consumption-based water tariff and the installation of household water meters.

The specific objective of the advocacy component was only partially achieved, due to the limited scope of the Project and the low priority within the ministries for this issue and the delays related to the election.

Knowledge of water and government issues has increased among journalists, but there is no evidence that gender awareness has increased.

4.1.5 Overall effectiveness of the project

As expected, the Overall Objective of the Project – that the Erbil City water network shall continuously deliver clean water, with adequate pressure head, to all customers – has not been reached within the short Project period. The Overall objective was not realistic even at the time when it was defined in the Project Document.

The ultimate beneficiaries of the Project were the people of Erbil who would get clean water with adequate pressure. However, the project was not designed to reach all the people of Erbil, but only those living in part of Kwestan Quarter. There is some evidence, however, that the people in the Kwestan Pilot area experience higher water pressure due to the improvements to the network carried out under the Project.

The primary beneficiaries of the project were the staff of DOW Erbil, who benefitted from the training and other capacity development activities.

⁵⁶Final Report Erbil City Water Network Management Project, Public Awareness, Advocacy and Media Relations, Stockholm 2 July 2010

As for the Objectives of the Project Components:

1. A BP was developed. Although assessed as incomplete in some respects, the BP did provide a good base for developing an Action Plan for 2010 – 2012 and for the DOW budget proposals. Apart from the BP itself, the process of workshops and seminars covering the elements of the BP have developed the capacity of DOW Erbil. The expectation behind the BP –that it would be possible within the short project period to decentralize power to the DOW Erbil to allow them to retain the income from water distribution and that water tariffs could be changed – was unrealistic. There is no National Water and Sanitation Policy and the legal and regulatory frameworks for the water sector in all of Iraq and in KRG are outdated and incomplete. To reform the sector, a market-based water-pricing policy is required, enforcement capacities need to be improved, and an overarching national policy is required to guarantee that all three spheres of governance – the Region of Kurdistan, Baghdad Municipality and the rest of Iraq – utilise a standard set of measures to monitor delivery and compliance, both public and private.⁵⁷
2. Significant improvements in O&M have been observed. There is now a much greater focus on data collection and monitoring, and in using the data to proactively manage the asset stock. The installation of a CMMS would further enhance the effectiveness of the O&M data collection, and its use for planning purposes, and should be procured. In addition, a customer complaints call centre could potentially improve handling of customer complaints and feedback. The beneficiaries of this component (i.e. DOW Erbil operations staff) have indicated that prior to this intervention they had only a basic understanding of maintenance. Further that this Project had ‘opened their eyes’ about concepts such as preventive maintenance, and substantially broadened their understanding of O&M in general. It can therefore be concluded that these outcomes are directly attributed to this Project. Unfortunately this mind-set stops at the DOW Erbil, and is not yet entrenched in the MOMT and beyond. Therefore, budget and bureaucratic delays will continue to impact on DOW Erbil’s performance, limiting the impact and effectiveness of what DOW can potentially achieve if it were given greater autonomy
3. DOW Erbil has achieved a good level of competency in GIS, mapping and hydraulic modelling. Since the end of the Project DOW Erbil has continued to demonstrate this capacity by extending the mapping and modelling to new areas of the network. This has given DOW greater confidence. It is now seen as an equal partner when dealing with foreign consultants and is more in control of its future direction and strategy. The improved skills and knowledge of the network have led to improved planning and monitoring capabilities.
4. There is no evidence that the project managed to increase awareness about saving water or to reduce water consumption as a result of the public awareness campaign. From the DOW Erbil perspective the media campaign was adversely affected by unfavourable timing – to be effective it needed to coincide with the introduction of a new consumption-based water tariff, and following the installation of household water meters. The specific objective of the advocacy component was only partially achieved, due to the low priority within the ministries for this issue and the delays related to the election. Knowledge of water and government issues among journalists has increased, but there is no evidence that gender awareness has increased.

⁵⁷ Iraq Water and Sanitation Scoping Study. Geopolicy Inc. 2010

The achievements and effectiveness may in the future be limited by the available budget for DOW Erbil, which is not within its control, and by the existing bureaucracy and slow pace of decision-making by DOW's senior Ministries (MOMT and MOF).

4.2 The impact and outcomes of the project

4.2.1 Component 1

The primary beneficiaries of this component are the DOW Erbil and its staff. The training in project management (in Sweden) and the seminars and workshops in Erbil during the process of developing the BP have greatly contributed to improving the planning and monitoring in DOW. ("We did planning before too, but now we do real planning"). For the organization, the impact is the improved capacity to manage a modern water network with acquired knowledge of how to use a number of management tools such as using performance indicators, developing action plans, using financing models and regularly monitoring achievements.

For the first time, a BP and Action Plan for 2010 were developed by DOW. For 2011, work was initiated on creating a new BP for 2011, but it was decided not to produce another paper document but instead to create a *PowerPoint* presentation that could be a "living document"; easy to change, add or revise slides and be used by everyone. The Annual Action Plans are based on needs and cover all areas that DOW has responsibility for. Data is regularly collected for about half of the Performance Indicators and is used as input in the planning process for setting targets. The problem now is that DOW does not get financial resources to implement the Action Plans. In 2011, they received USD 0.5 million of the USD 3 million that had been proposed for the implementation of the 2011 Action Plan.

A system for monitoring all DOW projects is being set up. DOW regularly visits project sites to follow up progress and performance data from the projects is regularly collected. This is said to be inspired by the participation in the project management training.

At a personal level, respondents to interviews at DOW said that the lasting impact of the Project was that it changed their way of thinking and working. A process of development at individual and organizational level began and work processes were changed. An unexpected effect was that the training offered under the project was an "eye-opener" to many staff and encouraged some of them to continue with other kind of training, e.g. two employees have enrolled on a Master of Business Administration course.

It is difficult to see any other major cause for the changes that had taken place other than the impact of the Project. There have been some other capacity building projects in the DOW, but they have not been linked to issues covered in the development of the BP. The management and planning capacity of DOW would probably not have been developed without the Project, which is also a problem since the development is not linked to an overall management development process in the KRG. For a more rigorous impact evaluation, a baseline should have been done, comparisons could have been made with the DOWs in Sulimanya and Dohuk, and the evaluation should have been planned as part of the Project design.

4.2.2 Component 2

The improvements in O&M achieved as a result of the Project are having a positive impact on DOW's planning and operations. There is now a much greater focus on data collection and monitoring, and on using the data to proactively manage its assets.

DOW staff is the main beneficiaries of this. Their improved capability and knowledge acquired from the Kwestan Pilot area are now being applied to other parts of the network. DOW Erbil senior staff have enthusiastically embraced the concept of 'preventive maintenance' after having observed its benefits. The improved O&M practices within DOW Erbil have led to better planning and monitoring, and there is real evidence of cost savings⁵⁸ through scheduled preventive maintenance and LCC analysis being carried out. While this is indeed encouraging, the risk remains that the effectiveness and impact of these gains will be negated by external factors, namely upstream bureaucracy and budget procedures that are less sympathetic to DOW Erbil's needs.

It is also noted that the Project has had an unintended but positive impact on Qandil. As a result of their role as Project Manager, Qandil was able to transition from the humanitarian field (where it was already accomplished) into the development field. This transition reflects the increased stability of Kurdistan, and is creating space for capacity and physical development in the Governorate. The Project has given Qandil valuable experience in managing and monitoring a complex development project. There have also been instances where Qandil staff have been direct beneficiaries of training⁵⁹. Qandil staff have also benefitted indirectly through their active participation in workshops and training that targeted DOW Erbil staff. At the time of the evaluation, Qandil was developing its new organizational strategy to determine the future focus of the organization, but had so far not been engaged in any other development project.

Without the Project, DOW Erbil staff would probably also have developed their skills, but the Project provided an effective learning methodology, based on practical training and theory-based seminars and workshops, and using participatory processes. This resulted in sustainable learning and ownership of the results of the training.

4.2.3 Component 3

DOW Erbil has achieved a good level of competency in GIS, mapping and hydraulic modelling and has continued to demonstrate this capacity by extending the mapping and modelling to new areas of the network. The improved skills and knowledge of the network have led to improved planning and monitoring capabilities. The impact is also evident in the way DOW Erbil staff are able contribute significantly to subsequent projects as a result of their GIS, mapping and modelling capabilities. The initial competencies established under this Sida-funded Project have been built-on through further training provided under other projects and donors currently active in DOW Erbil.

Components 2 and 3 are closely inter-related. Similar to comments under Component 2 above (Section 4.2.3), DOW Erbil staff have been the main beneficiaries of the achievements and effectiveness of Components 2 and 3 combined. The physical improvements to the Kwestan Pilot area have led to improved water supply for consumers in that area, who report⁶⁰ better pipeline pressures (i.e. less need to use their in-house booster pumps), and greater availability of water in the drier summer months. Much more needs to be done to improve the water network for the whole of Erbil, and this will require considerable investment. This is taking place to a certain extent, when aid grant funding is available. However, at the same time DOW Erbil is facing considerable pressure to connect and supply water to new demand areas on the fast-developing periphery of Erbil city.

⁵⁸Refer to Section 4.1.2

⁵⁹This was allowed for in the project design. Examples include Qandil staff undergoing training in project management and gaining PMI accreditation

⁶⁰From structured interviews carried out in the Kwestan Pilot area.

The consumers, or customers, of DOW Erbil already have a continuous and reliable water supply. Their main inconvenience relates to low network pressures which requires consumers to invest in booster pumps and header tanks to 'suck' water from the service pipes – particularly during peak demand times when network pressures are lowest – and store it for later use. A properly functioning network would operate at sufficient pressures such that consumers could access water at all times, without the need for booster pumps and storage. Therefore for new connections/customers this cost (i.e. booster pump and storage) could be avoided in a properly functioning network. But given that nearly all existing customers have already invested in booster pump/storage, the benefit to them of an improved network will be a saving in electricity costs through a removed need for pumping.

The main beneficiary of an improved network will be the Government of Kurdistan, which currently funds the DOW Erbil. If the average per capita water consumption is considered to be in the order of 300 – 450 litres/day, and that actual demand for water is only 150 litres/day, then it follows that considerable water is being wasted through overuse and leakage. This has been confirmed by the measurements and water balance studies carried out under the Project. Although more work needs to be done on the water balance to confirm these estimates, the existing data certainly confirms that over-consumption of water is a serious issue, as is water leakage (particularly in the old sections of the network). If consumption of water can be scaled back to 150 litres, then more water becomes available for new customers without the need to increase the source capacity. The potential costs savings (or avoided costs) from a reduction in consumer demand would include:

- Investments in new source and treatment capacity can be deferred for many years
- Reduced operating costs (e.g. pumping costs, chemical costs, etc.)
- Reduced wastewater discharges
- Environmental impacts avoided or reduced (e.g. since the current available water supply could potentially serve double the current population of Erbil, there would be less need for groundwater, at least in the short to medium term, and some of the boreholes could be decommissioned, allowing the groundwater table to recover).

Leakage can be addressed through network improvements (e.g. pipe replacement, etc.) but over-use of water by consumers is due to water pricing which is most effectively addressed via a new water tariff⁶¹ structure that prices actual metered consumption of water and sends price signals to consumers that excessive use and wastage of water will be penalised through higher incremental tariffs.

As for Component 2, without the Project, DOW staff would probably also have developed their skills but the Project also provided an effective learning methodology, based on practical training and theory-based seminars and workshops, and using participatory processes. This resulted in sustainable learning and ownership of the results of the training.

4.2.4 Component 4

There was a high awareness of saving water already before the project, as documented in the 2009 baseline survey. The Project has probably contributed to maintain the awareness but there is no evidence that the public awareness campaign achieved a sustainable further increase in awareness, nor resulted in reduced water consumption in Kwestan area. There is still a good level of awareness about sustainable use of water in the Kwestan area, documented by the evaluation, through interviews at schools and with men and women in the area. People still remember the campaigns and the messages.

⁶¹ A new tariff structure has been developed and has been submitted through MOM, and currently awaits approval of MOF.

All material from the communication component, posters, flyers, etc. was handed over to KRG at the end of the project, to allow KRG to continue with its communication activities. However, no Communications Department was created within DOW or MOMT to take responsibility for campaigns to the public or for media relations, and no funds were made available in the budget for such activities. There is still an interest and capacity at DOW to arrange campaigns and, to some extent, posters and flyers from the project are still copied and distributed (about 500 per year).

There are seldom articles in the media about water issues⁶², possibly because the KRG rarely informs the media about news and events related to water or development of the water network. Journalists will not write about water issues unless there is something new to report or an issue that will catch the public's attention.

Component 4 targeted civil servants, journalists and the public in a confined area (Kwestan). The pilot project in Kwestan created a model of local engagement and cooperation that could be duplicated in other areas. The pilot model also developed campaign methods that could later on be used by DOW on a larger scale. After the handover of the project to KRG, no budget has been allocated to this kind of activities.

The capacity building on communication issues among senior communication staff in the ministries increased knowledge about water as well as strategic communication in general. The suggested media department within the MOMT was never created and no communication activities have been initiated after the project was finished.

Cooperation with media increased the understanding among journalists and editors about water issues and of the different roles that media and civil servants play in a democratic society. After the project period, water issues have not been covered in the media⁶³.

4.3 The relevance of the project

4.3.1 Relevance according to needs and problems expressed in the Pre-Feasibility study

According to the PFS⁶⁴, the main problem for the water supply system is the poor state of the water distribution network and the unsatisfactory and inefficient management system.

Main technical problems were:

- Low water pressure in large parts of the network, due to leakages and inadequate pipe dimensions, creating problems in the supply of water to the consumers.
- Many consumers have installed their own booster pumps, via illegal connections, to get water from the network. This means further pressure decrease.
- Losses of water due to the leakages.
- The treated water from the WTPs is usually of good quality, but the quality deteriorates as storm-water or sewage can penetrate into the network due to the leakages and low pressures. Occasionally there are serious water quality problems.

⁶² Interview with Qassim Khidir, former local consultant in the Project

⁶³ Ibid

⁶⁴ Pre-Feasibility Study – Erbil City Water Supply System, SWECO 7 January 2008

The technical problems have been tackled by building capacity in leak detection and repair, network mapping, hydraulic modeling and physical improvements (limited to the Kwestan pilot area). However, the technical problems remain today since the Project was not expected to solve all of the network problems. The Project was however relevant to the technical problems, since it provided some practical demonstrations of the measures needed to improve the Erbil network.

Managerial problems included:

- A bureaucratic system
- Poor operation and maintenance system
- Inadequate budgetary system; the budget is not “owned” by the Directorate of Water
- The budget is supplied to the Directorate of Water by the Ministry of Finance, through a fixed sum per month
- No proper tariff system – the water rate is based on house area, i.e. not on consumption.
- The collection practice is not efficient. The collected revenues are supplied to the Ministry of Finance.
- Lack of regulations for water use and no enforcement measures
- Mapping of the water supply network is poor
- Lack of sufficient data as indicators for the water supply network properties and operation
- Leak repairs are not efficiently used for recording the piping system’s data and qualities.

To tackle the management problems, the project has focused on improving the management system and the capacity of DOW, primarily by developing a Business Plan and an O&M Strategy. The key element was to install water meters and to change the tariffs to consumption-based tariffs. It was assumed that DOW would be given greater autonomy and retain the income from consumers.

Most of the problems remain today although the project has contributed to improvements in operations and maintenance, the mapping of supply network and using leak repairs to record the pipe system.

The project activities were also relevant to the management problems, but underestimated the difficulties of reforming the tariff system and creating greater autonomy for DOW.

4.3.2 According to policies and priorities of Kurdistan (Master Plan)

Kurdistan currently lacks a national water policy or an overarching strategy for urban water supply.

The “Master Plan for the Modernisation of Water Distribution Networks in the Cities of Dohuk, Erbil and Sulimanya in Iraq”⁶⁵ proposed a reorganisation of the water and sanitation sector in Kurdistan and the creation of independent public utilities under the municipalities of cities which “*are responsible and capable to operate and maintain their systems on a cost covering basis*” as a first step, to be followed by eventual transformation of the utilities into public companies, as a second step. There has been no progress made on this proposed new institutional structure for DOW Erbil. In the opinion of the evaluators, a revised institutional structure granting greater autonomy is required if DOW Erbil is to make further progress and realise its potential. The recommendations of the Master Plan with regard to an improved institutional structure are still relevant to DOW Erbil.

⁶⁵By SETEC Engineering, 2003

The characteristics considered relevant to a well-performing urban water utility are summarised in the text box below. It can be seen that many of these characteristic cannot be realised under the current institutional structures of DOW Erbil.

Characteristics considered relevant to a well-performing urban water utility are:

- Political support and trust of local/regional government
 - Strong leadership
 - High level of autonomy, being independent to manage professionally without arbitrary interference by others
 - Accountable for its performance, being answerable to another party for policy decisions, use of resources, and performance
 - Strongly customer-focussed
 - Transparency of reporting on performance
 - Community participation and consultation actively pursued
 - The general trajectory is of improving technical and administrative performance over time
- Ref. p24, Characteristics of Well-Performing Public Water Utilities. Baietti, A., Kingdom, W. and van Ginneken, M. (2006). World Bank/WSP*

4.3.3 According to policies and strategies of Sida

The Project was assessed by Sida to be in line with the then present Swedish Country Strategy for cooperation with Iraq. The Country Strategy listed infrastructure as a priority area.

According to the Sida policy for urban development and poverty⁶⁶, Sida shall support the development of institutional frameworks (such as policies, laws and regulations), capacity development of institutions (such as local governments, NGOs and other drivers of change) and communication among these institutions. The Project design was well in line with this policy, having advocacy activities directed at institutional level in Component 4 and capacity development as the main focus in the other components. However, the limited scale of the activities was not enough to make any impact at the level of the KRG. Water tariffs were not changed; coordination and planning among ministries were not improved, etc.

Infrastructure and municipal services such as water, sanitation, energy, urban transport and solid waste management are mentioned in the Policy as areas for support. These services need to be pro-poor, financially viable and environmentally sustainable. The project has not explicitly targeted water services for poor people in Erbil. The overall objective was to supply water to all of Erbil City, including the poor. No study has been done to find out the specifics of poor people in Erbil City, where they live, their living conditions, if they are connected to the water system, etc.

The relevance in relation to gender is analysed in Section 4.6 below.

4.3.4 Technically adequate

The Project implementation team has worked closely with DOW Erbil throughout to ensure that all activities and components are both technically appropriate and relevant to DOW Erbil's needs and context. As this has been a capacity-building project there has been an emphasis on training and 'software'. The training has been carried out in a highly participatory manner, with a good balance of

⁶⁶ Fighting Poverty in an Urban World – Support to Urban Development, Sida 1 October 2006

classroom theory and practice. The participatory approach has resulted in a high level of ownership by DOW Erbil staff, and has also ensured that the new approaches and methodologies are relevant to the Erbil city context.

The hardware and software systems introduced under the Project (e.g. GPS/GIS database and mapping, hydraulic modelling) are appropriate to the water sector and sufficiently tried and tested to give confidence in their suitability for purpose.

4.4 The sustainability of the benefits generated by the project

The Project did not have an explicit exit strategy. Project sustainability and an exit strategy were discussed at a meeting at Sida headquarters⁶⁷ in which issues of continued collaboration and follow-up monitoring were raised. The previous country strategy (until 2009) gave priority to infrastructure development, and the Kurdistan Project was based on that strategy. Infrastructure projects often have a component of capacity development, which is usually a long-term commitment. Although the new country strategy had other priorities, the abrupt shift in priorities, not allowing any follow-on activities negatively affected the sustainability of the Project. The need for an explicit exit strategy, to strengthen prospects for sustainability, was thus not further developed. The default exit strategy relied on DOW and MOMT taking full ownership of the Project⁶⁸.

4.4.1 Component 1

The improved capacity to manage a modern water network seems to be a sustainable result of the Project. One year after the project, work was in progress making a new BP for 2011. An Action Plan was also produced for 2011. Data is regularly collected for the Performance Indicators and is used as input in the planning process for setting targets. The problem now is that DOW does not get financial resources to implement the Action Plans.

A factor that is contributing to sustainability is the implementation of other water projects that are continuing to provide opportunities for DOW Erbil to use the acquired skills in planning and implementation.

4.4.2 Component 2

The participatory nature of the training, with its emphasis on classroom-based and practical demonstrations, ensured that learning took place. This approach was consolidated through follow-up Project activities which built on the learning and increased prospects for sustainability. Other factors contributing to the improved O&M capacity, and its sustainability, within DOW Erbil included:

- The high calibre of some of the senior staff in DOW Erbil resulted in a strong sense of ownership. These staff really 'got it' and became highly motivated and were able to translate the learning into improved procedures and practices.
- Other donor-funded projects being implemented by DOW Erbil⁶⁹ are also providing training and experience for DOW Erbil staff, e.g. in hydraulic modelling and mapping etc. The opportunities made available by these other projects have in fact ensured continuity of learning and development of GIS, mapping and modelling capabilities for DOW Erbil.

⁶⁷ Dated February 11, 2010. In attendance were SWECO, Global Reporting, Qandil, Sida and Monitoring Consultant.

⁶⁸ Ibid. This is discussed on the meeting minutes under 'Sustainability'.

⁶⁹ EG Khatib and Alami, Water Supply Improvement Project in Kurdistan Region, July 2010; Water Master Plan by SETEC, funded by JICA (soft loan)

4.4.3 Component 3

An objective of this component was to have *“a workable hydraulic model for the water network of the Kwestan area, to have used this for planning network improvement measures in Kwestan”*. The intention was for the Kwestan Pilot area to become a model network area, and the work carried out there could be replicated for other areas of the network. However this could not be fully achieved due to the physical limitations of the network. The calibration and hydraulic modelling identified that further physical improvements were required, which were not budgeted for in the Sida funding. As a result, a proposal for this extra work, estimated at USD 250,000, was forwarded through MOMT to Ministry of Finance (MOF) in order to fully develop the Kwestan Pilot area as a model network. However, thus far no funding has been secured to carry out these works. The proposal to make the Kwestan Pilot area into a model network goes beyond the scope and objectives of the TOR. However, it is evident that for a relatively small additional funding allocation, the Kwestan Pilot area could have been made into a model ‘state of the art’ network and provided a useful benchmark for DOW Erbil in terms of upgrading the rest of the network.

The sustainability of the training and competency skills transferred to DOW Erbil under this component is well secured, for the reasons previously discussed under Section 4.4.2 above. In terms of the physical network improvements carried out, sustainability will be undermined by constraints in funding allocations from MOF. As a result of their experience on the Kwestan Pilot area, DOW Erbil have learned useful lessons about planning and implementing network improvement measures - even though this fell short of making Kwestan into a well-operating ‘model network’. After this experience, DOW Erbil has been able to replicate this experience elsewhere in the network, but only to a limited extent, due to lack of funds to purchase necessary valves and metres. Other donor-funded projects are, however, expected to give DOW Erbil greater scope to improve other areas of the network.

4.4.4 Component 4

There is still a good level of awareness about sustainable use of water in the Kwestan area, documented by the evaluation, through interviews at schools and with men and women in the area. There is however no conclusive data to indicate that this has resulted in a decline in the use of water in Kwestan area.

Since no Communications Department was created within DOW or MOMT to take responsibility for campaigns to the public or for media relations, and no funds were made available in the budget for such activities, very little is being done one year after the Project was finished. There is still an interest and capacity at DOW, however, to arrange campaigns and, to the extent possible, posters and flyers from the Project are still copied and distributed (about 500 per year).

There are seldom articles in the media about water issues⁷⁰, possibly because the KRG seldom inform the media about news and events related to water or development of the water network. Journalists will not write about water issues unless there is something new to report or an issue that will catch the public’s attention.

4.5 The efficiency of the project implementation

An in-depth analysis of efficiency, using any kind of economic evaluations, has not been possible within the scope of this evaluation. As discussed in the Methodology (Annex 4), results at any level of the Project cannot be measured in a quantitative way and the costs of the Project cannot be allocated to the results, without considerable efforts – if at all. This Section therefore builds on the experiences and

⁷⁰ Interview with Qassim Khidir, former local consultant for the Awareness and media component

opinions of the evaluators and what they have read, seen, heard and observed. Efficiency has been assessed primarily from a technical point of view (technical or internal efficiency).

Administrative cost, according to the budget, makes up 10% of the total Project costs. This refers to the administrative cost of Qandil. In addition, administration was also part of the responsibilities of the other implementing partners (Qandil office in Erbil, SWECO and Global Reporting) although combined with the technical support, so it is not possible to see how much was administrative versus technical support.

For a capacity building project where the beneficiaries are based in Erbil, a reasonable supposition is that consultant time spent in Erbil is more efficient (and more effective) than time spent in Sweden. The aim for SWECO, as negotiated with Qandil, was that time in Erbil should be not less than 85% of total consultant time. In reality, SWECO spent 73% of the time in Erbil.

For Global Reporting, their financial proposal was based on spending 33 days in Sweden, 124 days in Iraq and 388 days for the locally contracted consultant in Erbil. In reality 98 days were spent in Sweden, 70 days in Erbil and the local consultant spent 273 days in Erbil. According to Global Reporting the increased time in Sweden was required since there was more work with project administration, financial follow-up and reporting than anticipated.

Although the evaluators acknowledge that time in Sweden can be efficiently spent, the significant increase in time spent in Sweden for administration and reporting has reduced the productive time available in Erbil for interaction between consultants and beneficiaries.

The engagement of a monitoring consultant (Colling Water Management AB) was an additional administrative cost to the Project, since this is a role that would normally have been carried out by Qandil as Project Manager. However this can be justified on the grounds that Qandil's lack of previous project experience in development projects was more than made up by their long-term local presence, resources and institutional knowledge of Kurdistan.

The evaluators have not found any other instances of inefficiency in the Project implementation.

4.5.1 Component 1

For the development of the BP and its different components, the Project used a highly participative approach with workshops and seminars and homework for participants between sessions. The BP was developed and written jointly by the Project consultants and the participants. This is considered to be an efficient approach, which is demonstrated by the effectiveness, impact and sustainability of the capacity building.

Efficiency would probably have been even greater if the content of the BP and the training had been more adapted to the context of DOW. Some components in the BP, e.g. the financial modelling, could have been given less time considering that it was beyond the scope of what DOW could do. More time could instead have been given to the components that were within the mandate of DOW.

4.5.2 Components 2 and 3

There is a close relationship between the activities of Components 2 and 3. For instance, training in leak detection and development of a hydraulic model (Component 2 – Activities 13 and 14) relate directly to Activity 18 (Component 3) 'leak detection and water balance'. It is therefore more useful to consider Components 2 and 3 together for the purposes of the evaluation criteria.

The project approach was to use technical experts from SWECO, supported locally by Qandil project staff, to work with DOW Erbil component teams in an action-learning methodology that combined theoretical teaching with practical demonstrations. The approach was made highly relevant since the practical work was carried out within the Erbil network area using DOW resources, assets and systems as case studies. Three of the training sessions were carried out in Sweden, namely:

- Training in repair of water leakage (5 days). This was changed from Erbil to Sweden at the SWECO expert's request (6 people attended – 4 from DOW and 2 from Qandil).
- 3-day general training in hydraulic modelling (5 people)
- 5-day training on modelling of Erbil water network (5 people) in Sweden, followed by 5 days training in Erbil.

It is normally considered more efficient to carry out training in the country context, using realistic scenarios based on the prevailing conditions that the trainees will be confronted with on a day-to-day basis. Although the vast majority of training took place in Erbil, the need for some training to be carried out in Sweden, at considerably higher cost, can be questioned. The attendance of Qandil personnel⁷¹ at the training carried out in Sweden blurs the line of separation between project management and project beneficiary. It is explained by the temporary secondment of technical staff from DOW to Qandil, with the expectation that the seconded staff, who were beneficiaries of the training carried out in Sweden, would eventually return to DOW. In fact the Project Director of this project was seconded from DOW, and in his role as Project Director and overall in charge of managing all project inputs, was at the same time a beneficiary and participant of training provided by SWECO, in Sweden and Erbil. This would appear to be a conflict of interest for Qandil.

In other respects, the usual procedures were followed to ensure 'value for money' in the procurement of equipment, through the use of competitive bidding. The role and contribution of DOW Erbil was also significant in ensuring efficient use of resources. The Project was able to make use of DOW facilities and resources at no cost to the project. DOW Erbil made critical contributions to the project e.g. construction of meter chambers and manholes in the Kwestan pilot area; provision and installation of household water meters; made available its maintenance crews to install meters and valves, and other necessary tasks, etc.

4.5.3 Component 4

Some elements in the implementation of this component have contributed to internal efficiency, such as the use of local consultants and the production of the campaign material to be used as models for other cities of Kurdistan. Respondents also refer to the campaigns directed at schools in Kwestan and to media journalists as particularly efficient parts of Component 4.

In the absence of financial data disaggregated for each of the sub-components and/or specific objectives, efficiency in relation to costs could not be calculated.

Regarding the time spent in Sweden vs. time in Erbil, please see page 50 above.

⁷¹Note Qandil staff also took part in other training sessions in Erbil, provided under the Project.

4.6 Gender equality

In Erbil City, a relatively well-off city in a lower middle-income country, the gender issue in relation to water is not as in most developing countries, where women have to spend considerable time fetching water. In Kurdistan society women are traditionally responsible for domestic duties which typically involve the use of water e.g. cleaning the house, doing the laundry, etc. In Erbil City the problem is the general over-consumption of water and the low pressure and occasional scarcity of water.

The Overall Project Objective is found to have relevance to gender equality since improvements in the water system have the potential to benefit women disproportionately. However, during the short Project period, the Project did not have a significant impact on the water situation in the pilot area and thus did not benefit the women of Erbil.

Instead, the primary beneficiaries were the staff of DOW Erbil, which is a traditional engineering-biased government department. While the majority of their staff is male, women are represented at a senior level in the organisation. In general, the beneficiaries of the training reflected the prevailing gender ratio of the organisation.

In Component 4, women were part of the groups consulted in the campaigns and were active participants, specifically girls in the school activities.

The concluding opinion of the evaluators is that the Project's overall objectives were relevant from a gender perspective. The Pre-feasibility study, the design of the Project and the Sida assessment were weak in identifying and addressing gender issues. In the implementation and follow-up of the project, gender issues did not receive any particular attention.

4.7 Complementary questions

During the de-briefing, a number of the complementary questions of the TOR for the evaluation were discussed. The answers are summarized in the following table.

Table 1: Response to evaluation questions at meeting with DOW.

Evaluation questions	Yes	NO
Was the approach with a Sida – Qandil negotiated agreement appropriate?	√	
Was procurement according to Sida Guidelines? Did DOW participate?	√	
Were modifications to the inputs during implementation consistent with requirements of DOW?	√	
Was there political support during and after the project? Was there ownership by KRG?	√	√
Has the installation of centrally procured household water meters commenced?		√
Is the installation of household water meters integrated into an implementation strategy that includes public communication?		√
Are improvements in hydraulic modeling, metering and enhancement of services in the Kwestan area maintained by DOW?	√	
Is financing for upgrading of water supply system arranged for the Kwestan area?		√
Is the competence of hydraulic modeling maintained and applied in other areas?	√	

Is the O&M Manual upgraded and utilized within DOW as intended?	√	
Have funds been allocated to commence design and implementation of the wastewater collection, treatment and disposal system in Erbil?	Only design	√
Is the project in Erbil duplicated or experiences otherwise utilized elsewhere in Kurdistan?	Partly	√

Some of the questions can be answered just by a yes or no, while others need further elaboration. The first question about the project approach is elaborated further in Section 3.1.

There was political support during the preparation and implementation of the Project, in the sense that the concerned ministries expressed support, collaborated and participated in the Project activities and took the decisions that were needed for the Project to be approved and implemented, with the exception of some of the most important decisions like approving the new water tariffs and installation of the household water meters.

The problem has also been that political support has not translated into financial support for the continued improvement of the water supply system in the Kwestan area, for implementation of the sewage system, for continued media campaigns, for improved public communication, for establishment of a call centre, etc.

5. Lessons learned

The Project's aim was to start to address systemic service level deficiencies in the DOW Erbil (i.e. the water utility) using a series of targeted, limited-scale improvements. The project set itself some realistic goals, recognizing that organizational change (of the type required) would require substantially more resources and a longer time frame to achieve sustainable results. In order to realize its objectives, the project strategy was based on:

- Knowledge improvements to the DOW internal operations through capacity-building measures, mainly training and implementation of new systems (e.g. improved business planning; improved O&M practices; improved understanding of the water network through improved mapping and maintenance records; computer modeling of water network)
- Physical improvement to the pipe network in one area (replacement pipes, valves, metering, etc.)
- Use of media (i.e. improved communication) recognizing that the beneficiaries (i.e. DOW customers) need to be engaged if the project benefits are to be sustained

International experience tells us that strengthening the performance of water utilities requires improvements to the utilities' *internal operating environment*⁷² as well as striving for a more favourable and supportive *external environment*⁷³ for utilities. The Project, however, dealt primarily with DOW

⁷²*Internal Environment* – relates to the core operational function of a water utility i.e. water service provision. It includes the traditional management, administration and technical functions of the utility. The utility management generally has a high degree of control over these functions.

⁷³*External Environment* – includes policy, ownership, regulations, financing, accountability and strategic issues. The utility management generally has little control over these aspects, while it can exert some influence.

Erbil's internal operating environment. Past approaches, with their focus on the utility's internal environment, failed to adequately address key external environmental influences such as governance and institutional context (see text box below).

Today, there is a very good understanding that past approaches to and interventions in (water utility) reform will not work. The record has been poor. Part of the reason for this failure is the fact that efforts were inordinately focused on changing the (water) utility by strengthening its management and its processes, but without making commensurate advances on the governance framework or the institutional environment in which the (water) utility operates.

Ref. p24, Characteristics of Well-Performing Public Water Utilities. Baietti, A., Kingdom, W., and van Ginneken, M. (2006). World Bank/WSP.

The importance of the DOW Erbil's external environment is illustrated schematically in Figure 2. The key external environment stakeholders of DOW Erbil are the MOMT and the MOF of the KRG. The MOF determines the budget for DOW, and its decisions in this regard appear to be based on different priorities to DOW itself. DOW therefore only gets a fraction of requested funds. It appears that DOW has some leverage with the MOMT, its parent ministry, but little influence over MOF decision-making. The decisions of MOF are a *fait accompli* and the logic and reasons are generally not explained to DOW.

Given Kurdistan's recent history it is not surprising that the KRG remains a highly centralized traditional model of government. It has not had the time and space to consider significant reform. Hence the DOW Erbil's external environment should be considered less open to persuasion and influence than many other countries that have longer histories of stability and development. The expectation assumption behind the BP – that it would be possible within the short project period to decentralize power to the DOW Erbil, to allow them to retain the income from water distribution and that water tariffs could be changed – was unrealistic. There is no National Water or Sanitation Policy and the legal and regulatory frameworks for the water sector in all of Iraq and in KRG are outdated and incomplete. To reform the sector, a market-based water-pricing policy is required, enforcement capacities need to be improved and an overarching national policy is required.⁷⁴

Other potential stakeholders such as the media and advocates are not yet well developed in Kurdistan. A vibrant media and strong civil society groups (e.g. a Water Forum representing the interests of DOW Erbil consumers) can act as water advocates and put subtle pressure on governments to improve water services for all.

⁷⁴Iraq Water and Sanitation Scoping Study. Geopolicity Inc. 2010

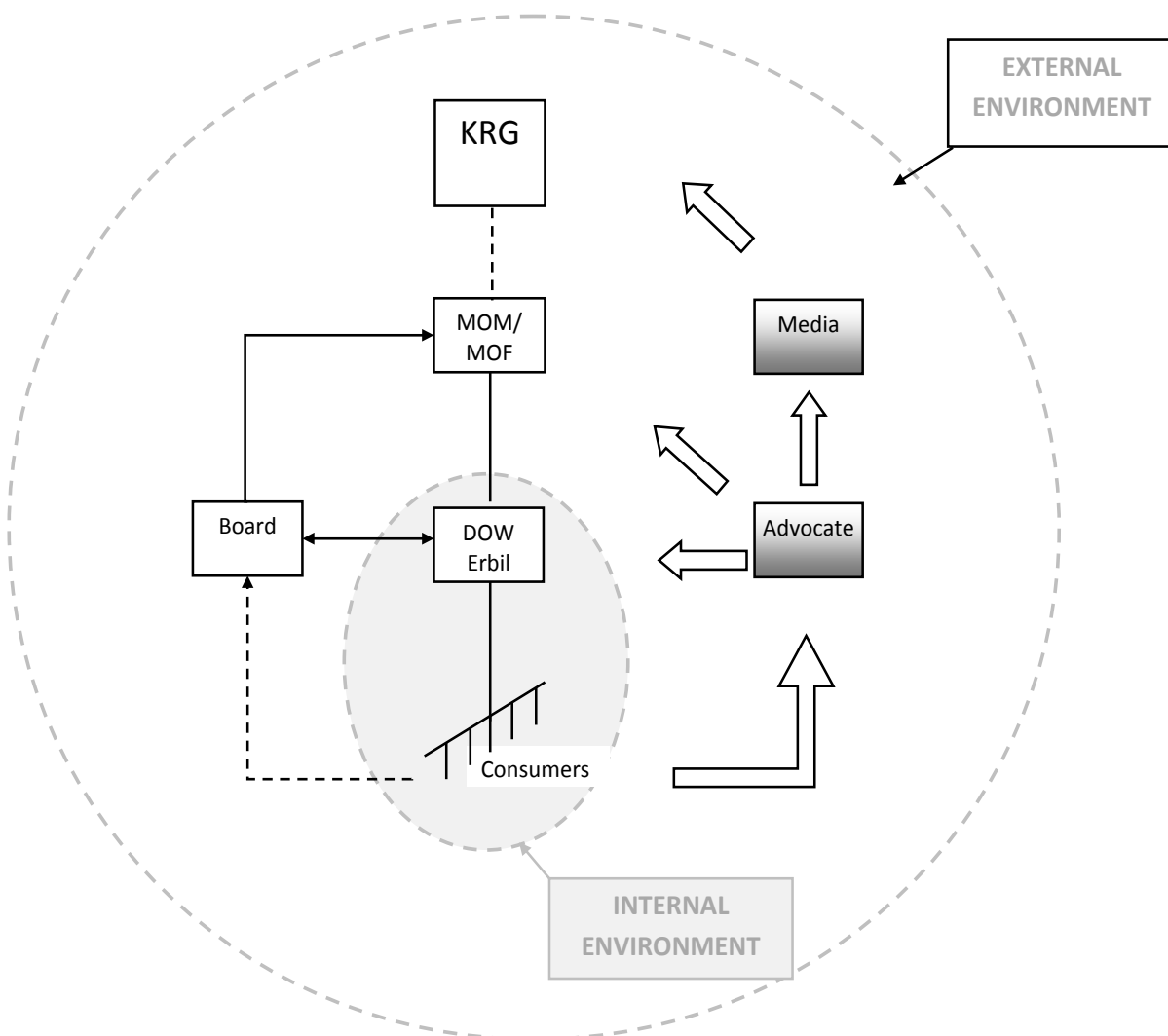


Figure 2. DOW Internal and External Operating Environment

Studies⁷⁵ undertaken into water utilities have identified characteristics of those that are well functioning:

- Political support and trust of local/regional government
- Strong leadership
- High level of autonomy, being independent to manage professionally without arbitrary interference by others
- Accountable for its performance, being answerable to another party for policy decisions, use of resources and performance
- Strongly customer-focussed
- Transparency of reporting on performance
- Community participation and consultation actively pursued
- The general trajectory is of improving technical and administrative performance over time

Many of these characteristics are, to a large degree, determined/influenced by the utility's external environment. A key ingredient of the external environment is the control of the setting of tariffs. Tariffs

⁷⁵“Characteristics of well performing public utilities” Water Supply and Sanitation Working Notes No 9 May 2006. WSP
Evaluation of the Water Network Management Program in Erbil, Iraqi Kurdistan

set the overall level of income and hence to a significant degree influence the ability of the utility to provide services and maintain assets.

An essential lesson, therefore, is that projects aimed at strengthening the performance (i.e. management, financial and operating performance) of water utilities, need to address the utility's internal as well as external environments, often with a long-term and high level approach. In the case of this Sida-funded Project, emphasis has been on the improvements to DOW Erbil's internal operating environment only. This has yielded some positive and encouraging results. However, without a supportive external environment, further sustained performance improvements may be difficult to achieve.

For DOW Erbil to advance further i.e. to transform it into an efficient, customer-focused, business-oriented enterprises able to self-fund improved service levels and increased numbers of connections, will require a new organizational structure. A suitable new institutional structure has been elaborated in the Master Plan⁷⁶, and has also been discussed in Section 4.3.2. In the opinion of the evaluators a revised institutional structure, granting greater autonomy, is required if DOW Erbil is to make further progress and realise its potential. The recommendations of the Master Plan with regard to an improved institutional structure should be considered a high priority for DOW Erbil.

Lessons Learned from the Project are:

1. The current external environment factors are not favourable to DOW Erbil, and are limiting its potential to further improve. Projects aimed at strengthening the performance (i.e. management, financial and operating performance) of water utilities, need to address the utility's internal as well as external environments. In the case of this Sida-funded Project, emphasis has been on the improvements to DOW Erbil's internal operating environment only. This has yielded some positive and encouraging results. However, without a supportive external environment, further sustained performance improvements may be difficult to achieve.
2. As a result of the Project, DOW Erbil's management and operations have shown notable improvement in planning, data collection and operations. All the indications are that it is ready to assume greater responsibility in a new institutional framework under which it is granted greater autonomy and accountability for its future. A suitable institutional structure and framework is described in the Master Plan, which can be used to guide the process of transformation. This cannot happen without the external environment stakeholders (MOMT and MOF, KRG) being supportive.
3. However, the lack of ownership of the Project by KRG has been demonstrated by its failure to approve tariff reforms and allocate funding for network improvements that would have improved project outcomes. It has proved difficult for the Project to gain access to KRG representatives, and to get them to honour their commitments.
4. The Project provided an effective learning methodology, based on practical training and theory-based seminars and workshops, and using participatory processes. This resulted in sustainable learning and ownership of the results of the training.

⁷⁶ Refer 'Masterplan for the Modernisation of Water Distribution Networks in the Cities of Dohuk, Erbil and Sulaimaniya in Iraq', SETEC Engineering, 2010

5. The Project had a significant and positive impact on the planning, operations and management of DOW Erbil. Component 4 (Media), though well delivered, suffered from the absence of necessary parallel actions (tariff reform, establishment of Media Centre, timely installation of household water meters). As a one-off exercise Component 4 had only limited impact.
6. Performance Indicators provide a useful measure of a utility's financial, operational and administrative performance. The PI database initiated under the Project will enable DOW Erbil to measure its performance, set itself targets, identify its areas of weakness and strength, etc. It will also enable DOW Erbil to compare (i.e. benchmark) its performance against other comparable water utilities. In order to take full advantage of benchmarking possibilities, DOW Erbil should take a broader perspective on its selection of PIs to harmonize them with international 'standard' water utility practice.
7. Main objectives of the public awareness campaign was to inform beneficiaries that water meters would be installed, tariffs would be based on consumption and to create an understanding that people need to decrease consumption and use water in a sustainable way. Since few water meters were installed and tariffs were not changed, the campaign lost much of its importance and became disconnected from the other Project components. It might have been better in that situation to cancel the campaign.
8. Public awareness campaigns need to be sustained and repeated during a long period of time in order to be able to change the knowledge, attitudes and behaviour of people. One year after the Project ended, people in the pilot area do not seem to have changed their water consumption habits.
9. The objectives of the advocacy sub-component were far too optimistic. It cannot be expected that a relatively limited project can increase openness and transparency as well as improve planning and coordination of several ministries. It would have been more realistic to focus on communication methods of government organizations.
10. The Project implementing partnership of Qandil, DOW Erbil, SWECO, and Global Reporting has been largely effective, although there has been some blurring of roles at times. Project monitoring and oversight was largely left to the Monitoring Consultant and there is little evidence of the role of Sida. The Project management and monitoring has been relatively uncritical and at times lacking in thoroughness. There are instances where TOR requirements have not been met, and the monitoring has not picked up on this.
11. For this Project, Sida contracted Qandil, an NGO, which is used to working with humanitarian assistance and infrastructure projects. The contracting of an NGO for an urban infrastructure project worked reasonably well given the circumstances that this was a short term project over only two years and Qandil had all the contacts and knowledge about the local situation that were required for implementing the Project. However, had the Project been able to live up to the expectations, i.e. that it would also be able to work with institutional change, it would have been more of a challenge for Qandil.
12. The Project design had unrealistic objectives and a weak risk analysis. It was far too optimistic to think that a short term Project like this, which would obviously confront institutional change issues, would achieve its objectives. The design of the Project would have been more adequate if it was the first phase of a long term project.

6. Recommendations

For KRG:

1. DOW Erbil should be given greater autonomy in line with international recommendations for water utilities and as recommended in the BP. Other urban water utilities should follow after they have been given appropriate training and capacity building. DOE Erbil could be the pilot water utility for implementing greater autonomy.
2. A revised consumption-based tariff structure needs to be urgently approved and implemented, along with installation of household water meters. This is essential for reducing water consumption and wastage, and for sending appropriate price signals to consumers about the value of water.
3. The O&M Strategy recommended the implementation of a suitable CMMS (Computerized Maintenance Management System) and the establishment of a customer complaints call centre. These should now be implemented in order to improve O&M effectiveness.
4. The range of PIs selected should be reconsidered in the light of regional and international experience, in order to benchmark DOW Erbil's performance against comparable water utilities regionally/internationally.
5. The KRG should prioritize funding for implementation of the DOW Erbil Action Plan.

For Sida

6. Future projects in Kurdistan need to engage more effectively with the KRG and MOF.
7. Assessments should be more in-depth in order to properly identify risk factors and "killing factors"
8. For future projects, Sida should be better at assessing the risks of the Project. In this case none of the crucial risks that actually arose were identified in the Assessment memo (water tariffs not being changed, water meters not being installed, DOW not being able to get control over revenue from water consumers).
9. Sida needs to be stronger in making sure that gender issues are mainstreamed, especially in countries and projects where the partners are less experienced in these issues.
10. Sida should always develop a dialogue strategy for the dialogue issues defined in the Assessment memo
11. Evaluations should be built into the project design from the beginning to assure that baseline studies are done and data for the evaluation is collected throughout the project duration.
12. Projects with institutional development components should be more long-term commitments than this two-year Project

Annex 1 – Terms of Reference for the evaluation

TERMS OF REFERENCE / Draft Final 2011-06-16

Evaluation of the Water Network Management Program in Erbil, Iraqi Kurdistan

Evaluation Purpose and Introduction

The purpose of the assignment is to evaluate the two-year programme to improve the Erbil City water network. The evaluation shall be a systematic and objective assessment of the program, its design, implementation and results. The focus of the end-of-programme evaluation shall be on the process during the programme as well as on its impact and sustainability.

The Erbil City Water Network Management Project in Kurdistan, Iraq was implemented from mid-2008 to mid-2010 through grant financing from Sida of MSEK 25.5 to the Swedish NGO Qandil. The Implementing Agency was the Directorate of Water (DOW) in Erbil.

The Project was aimed at developing sustainable and safe supply of drinking water to the population of Erbil City through the following main components:

1. Develop a Business Plan for the water supply and network;
2. Develop an Operation and Maintenance Strategy;
3. Improve the water network in one confined area; and
4. Improved Public Awareness and Communication.

The objectives of each of the components were:

1. To have an operating Business Plan fully workable and in use for guiding and improving the management and the activities of the Directorate of Water (DOW), as regards the water supply and network.
2. To have a workable Operations and Maintenance Strategy fully functional for the water supply and network, with adequately trained staff.
3. To have a workable hydraulic model for the water network of the Kwestan area, to have used this for planning network improvement measures in Kwestan, to have started the work of making a hydraulic model for the remaining part of the confined block of the City, and to have performed studies and preparations for making a hydraulic model for the water network for the whole Erbil City.
4. To ensure the success of the Project through three communication components:
a) public awareness campaigns, b) advocacy, and c) media journalism.

Qandil, by contract with Sida, engaged SWECO as consultants to support the technical services (Components 1-3 above) and Global Reporting – for Public Awareness and Communication (Component 4 above).

Sida engaged Colling Water Management AB as Monitoring Consultant during the implementation of the program.

Background

The programme was developed during a 12-month preparation period funded by Sida. During that period Sida also carried out a system audit of Qandil.

A Pre-Feasibility Study was developed by SWECO under an assignment with Qandil during 2007. (The Study later became an annex to the Qandil agreement with Sida.)

An original proposal by Qandil to Sida was rejected, mainly due to high costs of administration and inclusion of a separate component not linked to the main program. It was also questioned whether Qandil

was the most appropriate channel for the type of intervention, given the profile of Qandil being an NGO providing humanitarian assistance and not having the experience of long-term development programmes. The revised proposal focusing on the water network programme with a revised budget corresponding to Sida's recommendations was assessed by Sida in May 2008, after which a decision was taken to support it.

In addition to the agreement with Sida, Qandil had one agreement for the services with the Iraqi Kurdistan Regional Government (KRG) and one with the Ministry of Municipalities (MOMT). The DOW falls under the GDOW under the MOM (later MOMT). The services were fully financed by Sida. A prerequisite for the Sida financing was that the MOM should take the responsibility for carrying out a separate wastewater project based on a Master Plan of January 2007, once financial resources were made available.

The programme has not been subject to an agreement between the KRG and Sida.

During the implementation, a number of modifications were introduced, most notably the omission of supply of household water meters within the pilot area.

Stakeholder Involvement

The responsibility for the research, assessments and reporting rests with the evaluators. The following stakeholders are expected to be interviewed and contribute to the evaluation:

- Sida Mena-Iraq in Stockholm
- Qandil, Head Office in Stockholm and Field Office in Erbil
- Ministry of Municipalities and Tourism (MOMT)
- General Directorate of Water (GDOW)
- Directorate of Water (DOW) in Erbil
- SWECO International
- Global Reporting
- Colling Water Management AB

Evaluation Questions

The point of departure in the evaluation is the country strategy for cooperation with Iraq in force at the time of Sida's financing decision.. The strategy was valid until 2009-12-31 with areas for cooperation covering democracy and human rights, infrastructure and support to governance issues.

The main objective is to assess and identify the results and experience of the programme in relation to the specific goals and expected results defined in the Agreement, Pre-Feasibility Study and LFA. The results should also be analysed according to the overall goal of poverty reduction. An analysis of the gender equality should also be included. The programme ended in mid-2010. In comparison with the results at the end of the program, what is the situation at the time of evaluation with regard to lasting effects and potential future sustainability? The Monitoring Consultant presented a result evaluation of the 19 specific activities in his Final Report of December 2010. The evaluator(s) are not called upon to duplicate the detailed review unless deviations are found during the evaluation that warrants an in-depth analysis of particular activities.

The evaluator(s) are expected to address the following questions:

Effectiveness

To what extent do development changes in the DOW accord with planned outputs, purpose and goal of the evaluated program?

To what extent is the identified development the result of intervention rather than extraneous factors?

What are the reasons for the achievement or non-achievement of the objectives?

What could have been done to make the intervention more effective?

Impact

What are the intended and unintended, positive and negative effects of the intervention on people, institutions and the physical environment? How has the intervention affected different groups of local stakeholders?

What do beneficiaries and other local stakeholders affected by the programme perceive to be the effects of the intervention on themselves?

What is the impact of the programme on the recipient country organization(s) that manage it? To what extent does the intervention contribute to capacity development and the strengthening of institutions?

To what extent can changes that have occurred during the period covered by the programme be identified and measured?

To what extent can identified changes be attributed to the program? What would have occurred without the intervention?

Have plausible alternative explanations for identified changes been considered and convincingly ruled out?

Relevance

Was the intervention consistent with the strategies and conditions of the DOW? How urgent was it from the point of view of the development of the Erbil DOW?

Was the intervention well in tune with the development policies and administrative systems of the Iraqi country government at the national level and the KRG at the regional level? Was it consistent with a policy of supporting partner country ownership?

Was the programme a technically adequate solution to the development problem at hand? Has it eliminated the main cause of the problems?

Does the programme have a potential for replication?

Sustainability

Was the programme consistent with the partners' priorities and effective demand? Was it supported by local institutions and well-integrated with local social and cultural conditions?

Were the requirements of local ownership satisfied? Did the partner country stakeholders participate in the planning and implementation of the program?

Are relevant host country institutions characterized by good governance, including effective management and organization?

Were the activities and technology utilized in the programme appropriate to the economic, educational and cultural conditions of the partner country?

Do the local water utility and the government have the financial capacity to maintain the benefits from the program?

Was the programme compatible with a sustainable use of natural resources? Have there been any negative effects?

Efficiency

Has the evaluated programme been managed with reasonable regard for efficiency? What measures were taken during planning and implementation to ensure that resources were efficiently used?

Could the programme have been implemented with fewer resources without reducing the quality and quantity of the results?

Could more of the same results have been produced with the same resources?

Could an altogether different type of intervention have solved the same development problem but at a lower cost?

Was the programme economically worthwhile, given possible alternative uses of the available resources?

Should the resources allocated to the intervention have been used for another, more worthwhile, purpose?

Gender equality

Did the implementation of the programme enhance gender equality within the DOW, other local stakeholders or in the society?

Environmental Impact Assessment (EIA)

Did the EIA component enhance the understanding and role of EIA within the DOW? Will the component have any significant value in the development of the water utility?

Complementary questions:

Was the approach with a Sida – Qandil negotiated agreement appropriate to the needs and local circumstances?

Qandil – a humanitarian organization managing the program, with SWECO and Global Partnership being the respective intervention specialist entities. Positive and/or negative consequences. Lessons learned?

Management and team staff changes in Qandil and SWECO. Consequences to the implementation?

Was the procurement of services and equipment by Qandil carried out according to Sida guidelines, appropriate and transparent? Did the DOW participate in and contribute to the process?

Were the modifications to the inputs during the implementation consistent with the requirements and demand of the DOW?

The Steering Committee was established only towards the end of the programme and with few members. Consequences to the programme and sustainability?

Political support during and after the program? Ownership by the KRG?

Is the Business Plan used in the management of the DOW? Is it developed and updated on a yearly basis?

Have there been any policy changes in financial management and tariffs after completion of the program?

Have any concrete decisions been taken?

Has the implementation of centrally procured household water meters begun? Is it integrated into an implementation strategy that includes public communication?

Hydraulic modelling, metering and enhancement of services in the Kwestan pilot area. Are the improvements maintained? Has local financing been arranged for upgrading the system?

Is the competence of hydraulic modelling maintained and applied in other areas of the water distribution system?

Is the Operation and Maintenance Manual upgraded and utilized within the DOW as intended?

Have local funds been allocated to commence design and implementation of the wastewater collection, treatment and disposal system in Erbil?

Is the programme in Erbil duplicated or experiences otherwise utilized elsewhere in Kurdistan?

Does Swedish competence have any comparative value-adding advantage to a programme of this nature?

In addition to the questions above, further questions are likely to appear during the evaluation and should both be asked and answered to enable a conclusive assessment. The evaluator(s) are expected to make general observations and draw conclusions providing an overview of the effectiveness, impact, relevance, sustainability and efficiency of the program.

Lessons Learned and Recommendations

A key purpose of the evaluation is to identify lessons learned that can be applied to future programmes, for example, what lessons for design, procurement, organization, implementation, monitoring and follow-up can be learned from the program? What preconditions might be recommended prior to deciding on the financing of a similar program?

Recommendations for an improved future institutional development program, within the municipal water utility sector as well as other public infrastructure entities, based on the evaluation findings should be elaborated.

Methodology

The evaluation should be guided by Sida policy documents, with particular reference to the Sida Evaluation Guidelines 2010.

The methodology to be used for data collection and analysis involves an initial collection and study of written material, interviews in Sweden and in Kurdistan, followed by analyses and reporting.

The primary sources of written material include the following documents:

- Assessment Memo, Sida 2008-05-19
- Pre-Feasibility Study, SWECO 2008-01-07
- Agreement Sida – Qandil, August 2008
- Agreements Qandil – the KRG and Qandil – the MOM
- Undertaking by the MOM on WTP of 2008-04-08 ToR Communication and Public Awareness
- Progress reports, minutes and annual reports by Qandil
- Business Plan and other project documents
- Monitoring reports by the Monitoring Consultant
- Final reports by Qandil
- Final Report by the Monitoring Consultant.

Interviews should be carried out with relevant officials and resource people from the stakeholders referred to above. Contact details will be provided by Kurt Granberg, Sida Program Officer, kurt.granberg@sida.se, and Olle Colling, colling@collingwater.se.

It is expected that the evaluator(s) will undertake one field trip to Kurdistan for fact-finding and interviews with implementing partners, key staff of the DOW and the GDOW, managers and key decision makers.

Reporting shall clearly state the sources used and meetings held.

Work Plan and Schedule

The following work plan and schedule are envisaged:

2011-08-22	Assignment to begin
One week	Review of documents and preparatory work, initial interviews in Sweden
2011-09-01	Inception report prior to field work
Two weeks	Field work in Kurdistan
	Home office complementary interviews & report preparation
2011-10-10	Draft report submitted to Sida
	Draft report presentation at Sida
Two weeks	Sida review and comments to evaluator(s)
Two weeks	Evaluator(s) preparation of final report
2011-11-15	Final report submitted

The ToR assumes engagement of two experts as outlined below. Time allocation is assumed as follows:

- 2 x 5 days home office prior to field work, including interviews in Sweden
- 2 x 12 days in Kurdistan, including travel
- 2 x 10 days in home office, complementary interviews, preparation of reports and meeting at Sida.

Reporting

The following reports should be written in English:

- Inception report
- Draft evaluation report.

The draft shall be submitted to Sida for discussion and comments. After the submittal of the draft final report, the author(s) shall make a presentation at Sida in Stockholm.

- Final evaluation report.

The final report shall include an executive summary not exceeding 2 pages. The final report shall be delivered electronically and in two printed hard copies to Sida.

The evaluator(s) should adhere to the terminological conventions of the OECD/DAC Glossary on Evaluation and Results-Based Management as far as possible.

The evaluation report should apply the report format of the Sida Evaluation Guidelines 2010.

Evaluation Team

The assignment requires excellent knowledge of evaluations in the field of development cooperation, in particular institutional strengthening of municipal utility entities. Sector knowledge of water utility development in comparable environments is essential.

For the purpose of these ToR it is envisaged that one expert does not possess all the required skills. Consequently, a team of two people is anticipated as follows:

Team Leader - Institutional evaluation expert.

Expert with substantial international experience from developing countries and/or countries in transition. Master of Science in Business Administration, Economics or related fields having at least 15 years of relevant professional experience, including institutional assessments, capacity building, training programmes, audits and public administration. The expert must have knowledge of, and experience from, Sida's organization and policy framework.

Water utility development expert.

Engineering Expert with substantial international experience from developing countries and/or countries in transition, having at least 15 years of relevant professional experience in water utility development, including business planning, operation and maintenance strategies.

The experts shall have an excellent command of the English language.

Annex 2 – Work schedule

Initial work 22 August to 9 September			
Day	Time	Activity	
22 – 30 August		Preparation of Inception report	
Wednesday 31 August	10.00	Meeting with Olle Colling at Indvelop	
	14.00	Meeting with Qandil, St. Eriksgatan 117	
Thursday 1 September	10.00	Meeting about Inception Report at Sida	
Tuesday 6 September	10.00	Meeting with SWECO	
Wednesday 7 September	10.00	Meeting with Global Reporting	
	15.30	Meeting with Qandil	
Thursday		Preparations for field visit	
Field work in Kurdistan 10 to 24 September			
Day	Time	Activity	
Saturday 10 September	Morning	Arrival of consultants: Tom Ryan will arrive Saturday 10 September 10.30 am with Etihad Airways flight EY 557. Bernt Andersson will arrive also on Saturday 10 September 2.50 pm with Austrian Airlines flight OS 0829. Pick-up at airport and transport to Ainkawa Palace Hotel.	
	Afternoon	Evaluation team meeting	
Sunday 11 September	Morning, 9.00	Briefing meeting at Qandil office in Erbil about work plan, schedule and logistics for the evaluation Meeting at DOW about Component 1	
	Afternoon	Writing on the Report	
Monday 12 September	Morning	Meeting at DOW about Component 2	
	Afternoon	Writing on the Report	
Tuesday 13 September	Morning	Meeting at DOW about Component 3	
	Afternoon	Session with O&M Section on O&M Procedures and Manuals. Field visit to Water Treatment Plant Ifraz 2 Observe maintenance activities?	
Wednesday 14 September	Morning	Meeting at DOW about Component 4 Demonstration/simulation of Network Model, GIS and	

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		databases.	
	Afternoon	Writing on the Report	
Thursday 15 September	Morning	Initial information meeting with Erbil authorities, KRG, MOMT, GDOWS, DOW to inform about the evaluation and confirm the schedule of meetings and field visits	
	Afternoon	Meeting with Qandil about the schedule for second week. Performance Indicators – SIGMA Software database, presentation of data.	
Friday 16 September	Morning		
	Afternoon		
Saturday 17 September	Morning		
	Afternoon		
Sunday 18 September	Morning	Meeting with Qandil about the schedule for second week Meeting with Ministry of Religious Affairs Meeting with GDOW	
	Afternoon	Meeting with former project leader, Wirya Ali Ismael	
Monday 19 September	Morning	Follow-up meetings with DOW	
	Afternoon	Visit to Water Treatment Plant Ifraz 1	
Tuesday 20 September	Morning	Field visit to Kwestan Quarter to view installations by the project Interviews with households in Kwestan Quarter	
	Afternoon	Meeting with Ministry of Education School visit in Kwestan Quarter	
Wednesday 21 September	Morning	Meeting with Qandil Preparation of briefing note	
	Afternoon	Preparation of briefing note	
Thursday 22 September	Morning	Debriefing with local stakeholders	
	Afternoon		
Friday 23 September	Morning		
	Afternoon		
Saturday 24 September		Departure of evaluation team	
Preparation of Evaluation Report 26 September to 15 November			
September 26 – October 9		Writing Evaluation report	
October 10		Submission of Draft Final Evaluation Report to Sida	
Before October 30		Comments from Sida	
November 15		Submission of Final Evaluation Report to Sida	

Annex 3 – People that were met

Stockholm

Olle Colling, Colling Water, Monitoring consultant
Kurt Granberg, Program Officer, Sida
Bernt Norén, SWECO
Petter Bolmare, Global Reporting
Anders Wikman, Qandil
Anders Nordqvist, Qandil
Carina Hedenberg, Qandil
Lage Elgstrand, Qandil

Erbil Department of Water (DOW)

Masud Muhammad, Director of DOW
Sabri Sami, Income Department
Ahmed R. Ali, GIS Department
Aveen T. Muhsin, Engineer, Planning Department
Mushda R. Hassan, Engineer, Planning Department
Muhammed A. Oumey, Accounting Department
Haval A. Ahmed, Water Treatment Plants
Nafith Karim H, Engineer, Technical Department
Sidiq M. Mahmud, Technical Department
Khasraw R. Nadir, GIS Department
Sirwan Maghded, Administration Department

General Directorate of Water (GDOW)

Sahand Serwan, Director General of GDOW and Chairman of the Project Steering Committee

Qandil, Erbil Office

Jalal Jawher Sa'adun, Technical Officer
Salar M. Rasheed, Program Coordinator
Ferman

Ministry of Religious Affairs

Kamil H. Ali, Minister
Salam Sidan, Director

Ministry of Municipalities and Tourism

Samir Abdulla Mustafa, Minister

Ministry of Education

Hanna JahalMerani, Manager, Directorate of Relations
Dier Ibrahim, Media Director, Directorate of Relations

Others

Wirya Ali Ismael, former Project Leader
Qassim Khidir, Journalist, Kurdish Globe and former project leader for Component 4 of the Project,
Deputy Manager, Dawam Primary School, Kwestan Quarter

Evaluation of the Water Network Management Program in Erbil, Iraqi Kurdistan

Annex 4 – Methodology

The evaluation is an external expert evaluation. The main stakeholders identified in the TOR, i.e. Qandil and DOW Erbil, were involved and informed of the evaluation and its methodology in initial meetings with the evaluation consultants, and debriefed about preliminary findings before the consultants left.

Predominantly qualitative approaches were used in combination with the analysis of primary and secondary data. The methods used were:

- Desk review of documents, including national development and sector policies, plans and reports, relevant programme documents, minutes and PowerPoint presentations (see Annex 6);
- Formal and informal individual and group interviews, using semi-structured discussion guidelines with consented informants to obtain a wide range of informants' perceptions (see Annex 3);
- Focused observations and transect walks for assessing, among others, the work with repair of leakages, the O&M of water plants, performance assessments, infrastructure developments and the availability and condition of equipment procured by the Project, and
- Presentations of preliminary findings in a meeting with DOW and Qandil to share and validate observations, findings, lessons learned and recommendations and to assure quality assurance of the review report.

In order to interpret the meanings of what has been read, seen and heard, to reduce bias and to obtain a more 'holistic' view of the implementation and monitoring of the Project, several forms of triangulation were used:.

Sampling

Different sampling methods were used. The sampling depended strongly on purposeful sampling to allow for looking for 'good informants', primarily from DOW officials and relevant stakeholders and for visiting relevant institutions, ensuring a sound mix of informants with different responsibilities, and of facilities at different levels.

To collect information from ultimate beneficiaries of the water network, in the morning of 20 September, as many houses as possible were selected by walking the streets in the pilot area and calling on every fifth house and interviewing the person who opened the door. If nobody opened, the next house was selected. The interviews were done with the assistance of a female Kurdish interpreter. One or several members of 12 households were interviewed.

Data and information analysis and interpretation

Since the review was mainly qualitatively driven, primary analysis and interpretation of the data and information was partly conducted while still in the field. Regular meetings with DOW and Qandil were held to discuss, analyse, interpret and validate preliminary findings and obtain missing information. Further, a debriefing meeting was held to validate the findings.

Methodological concerns

Three major methodological concerns were identified. First, lack of any baseline data at the start of the Project; second, the difficulty in interviewing people that were not available or hard to reach one year after the Project ended and third, the lack of data to use for economic analysis of efficiency.

Ethical code of conduct

The team members declared that they were free from conflicting interests in conducting this review; guaranteed privacy and confidentiality, obtained informed consent from all informants, and respected their professional Ethical Code of Conduct.

Annex 5 – Household interviews

Summary of household interviews in Kwestan Quarter 20 September

On the morning of 20 September, 12 houses were selected by walking the streets and calling on every fifth house and interviewing the person who opened the door. The interviews were done by Bernt Andersson and Tom Ryan with the assistance of a female Kurdish interpreter. 9 women and 3 men were interviewed.

A limited number of questions were drawn from the earlier surveys done by the project in 2009 and 2010. The following open questions were asked:

1. Have you heard about a public awareness campaign aimed at reducing water consumption in Kwestan?
2. What do you remember about the campaign?
3. Do you think the water services have improved during the last year, and if so, in what way?
4. Have you reduced your water consumption during the last year?
5. During the last year, have you avoided keeping the hose running for long hours when not using it?

Findings:

Few people have heard of the campaign and some recall that they have heard the message of saving water from the Mullahs. Some also recall that they get some messages with the water bill. Everybody think that the water services are good and they have water all the time. All have water pumps and tanks, often 2 or even 3 tanks. In the summer they need the pumps to fill the tanks, but this month and during the winter, most of them do not need the pumps anymore. Some think that the water services have improved because they now get water from the new water treatment plant, Ifras 3. The water quality has improved or is the same as before.

People interviewed said they use water whenever they need to clean the house, for washing, laundry and cleaning outside the house. Some said that they have not changed their habits; when they need water, water is always there and they use it. Some said that everybody knows they must save water these days.

They said, however, that they have reduced their consumption, which is contradicted by the observations from the interviews. We saw the water flowing in the gutters, people washing their cars and cleaning their yards and outside their houses with water flowing from hoses. From what we saw, it appears that people are not saving water.

Conclusion

Water is always available and people use as much as they like. The problem is still the over-consumption of water. The public awareness campaign does not seem to have had any lasting effect.

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EVALUATION OF THE WATER NETWORK MANAGEMENT PROGRAMME IN ERBIL, IRAQI KURDISTAN

This evaluation report presents the results and experiences of The Erbil City Water Network Management Project in Iraqi Kurdistan. The main problems were not the availability and production of water, but rather the poor state of the water distribution network and the lack of a modern and appropriate management system. The objective of the Project was to develop sustainable and safe supply of drinking water to the population of Erbil City.

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