2011 ANNUAL PROGRESS REPORT FOR PROJECT
IRFFI/UNDG IRAQ TRUST FUND (UNDG ITF)
REPORTING PERIOD: 1 JANUARY – 31 DECEMBER 2011

Programme Title & Project Number	Country, Locality(s), Thematic/Priority Area(s)[1]
• Programme Title: Strengthening Capacity for Management of Unaccounted-For Water (UFW) • Programme Number *(if applicable): E3-18* *UNDG ITF Atlas award number: 59777* *UNDG ITF Atlas project number: 74927*	*(if applicable)* *Country/Region: Iraq - Nation Wide with two specific pilot areas in Anbar and Najaf Governorates* *Thematic/Priority: WATSAN*

Participating Organization(s)	Implementing Partners
UNOPS (lead agency) and UNICEF	Ministry of Municipalities and Public Works (MMPW)/ MoMT/KRG

Programme/Project Cost (US$)	
MPTF/JP Contribution: • *by Agency (if applicable)*	UNOPS:US$1,831,638 UNICEF:US$1,018,462
Agency Contribution • *by Agency (if applicable)*	NA
Government Contribution *(if applicable)*	NA
Other Contributions (donors) *(if applicable)*	NA
TOTAL:	2,850,100

Programme Duration	
Overall Duration *(months):*	*25 months*
Start Date[2] *(dd.mm.yyyy):*	*30 April 2010*
Original End Date Revised End Date)[3]	30 April 2011 31 May 2012
Operational Closure Date[4]	30 May 2012
Expected Financial Closure Date	30 May 2013

Programme Assessment/Review/Mid-Term Eval.

Assessment/Review - if applicable *please attach*
☐ Yes ■ No Date: *dd.mm.yyyy*
Mid-Term Evaluation Report – *if applicable please attach*
☐ Yes ■ No Date: *dd.mm.yyyy*

Report Submitted By

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[1] Strategic Results, as formulated in the Performance Management Plan (PMP) for the PBF; Sector for the UNDG ITF.
[2] The start date is the date of the first transfer of the funds from the MPTF Office as Administrative Agent. Transfer date is available on the MPTF Office GATEWAY
[3] As per approval by the relevant decision-making body/Steering Committee.
[4] All activities for which a Participating Organization is responsible under an approved MPTF programme have been completed. Agencies to advise the MPTF Office.

FINAL PROGRAMME REPORT FORMAT

EXECUTIVE SUMMARY

- In ½ to 1 page, summarise the most important achievements of Programme during the reporting period and key elements from your detailed report below. Highlight in the summary, the elements of the main report that you consider to be the most critical to be included in the MPTF Office Consolidated Annual Report.

I. Purpose

The water and wastewater infrastructure had deteriorated significantly in the absence of a proper maintenance and capital works program, which had had an effect on the services, with water availability drastically reduced in terms of quality as well as quantity. Old water networks without proper maintenance and crisscrossing sewer lines increase the risk of potable water contamination, as evident from the outbreaks of cholera in 2007 and 2008. Unaccounted for Water (UFW) comprises the physical losses resulting from pipe bursts, leakages from service reservoirs and service connections up to the point of customer metering and the non-physical losses attributed to metering errors and illegal connections. It is understood that over 40% of the water produced is lost as UFW. This seriously affects water availability at the consumer's end, reduces financial viability of service providers through lost revenues, increases operational costs and, eventually, leads to increased capital costs. All 18 Governorates throughout Iraq are seriously affected by the tremendous water loss though breakages and therefore leads to unaccounted-for water. Anbar and Najaf were the two pilot areas chosen to reduce the unaccounted water since they are amongst those governorates where the water problem affects the population the most. The rest of the 16 governorates were fully involved in every design detail and implementation mechanism within the two governorates and therefore can replicate the work within their respective governorate.

The programme was based on three components:

Capacity building: Water Authority operation engineers from 18 governorate need to be aware of UFW issues and means to reduce the same while the senior management officials need to comprehend the purpose and methodology of conducting water audit.

Demonstration Areas: For an effective capacity building programme, it is necessary to combine it with physical works. The District Metering Area (DMA) methodology was applied in two pilot areas, one each in Anbar and Najaf governorate, selected in close collaboration with the government. The other governorates were closely involved within the steps taken throughout the project implementations.

Water Auditing of Major Water Treatment Plants: Many water treatment plants (WTPs) have not been properly maintained for years resulting in production well below its designed capacities. The absence of reliable data on the inflow and outflow from the WTPs has been a problem.

Specialized leak detection equipment was procured for the usage of the governorates of Anbar and Najaf. Additional, basic and intermediate leak detection equipment was also provided to the remaining 16 governorates.

It is expected that the inhabitants within the two selected pilot areas at the two governorates shall have access to basic quantities of safe water. The other governorates will be encouraged to replicate the project within the respective governorate. The immediate beneficiaries include staff from the

MMPW, Governorate Departments, Governorate Councils and the Governor's Offices in the 18 governorates.

The project contributes to the achievement of the following goals:

National priority or goals:

NDS 2007 – 2010: Pillar Three: Improving the Quality of Life
Goal 1: Improving access to water and sanitation

ICI Benchmarks (as per the Joint Monitoring Matrix 2008):

4.4.1.5 Improve access to water and sanitation by one third
4.4.1.5.2 Undertake specific measures to ensure universal access to services (WatSan, housing, etc.)

Sector Team Outcome(s):

Outcome 1: Sustainable access to safe water for urban and rural populations increased;
Outcome 3: Government of Iraq is able to manage the WatSan sector in an effective manner;

Integrated Programme Outcome(s):

Outcome 1: Water sectors management and planning capacities strengthened

Outputs and Outcomes:

- MMPW/directorates of municipalities' governorates are able to deliver and monitor water services.
- Water authorities in 18 governorates have improved capacities in water management.
- Water treatment plants personnel within the selected governorate are able to put in place water audit mechanism
- MMPW, governorate water departments offices are better able to plan and provide improved water audit services in addition to proper management of UFW within the governorates

Objectives of the programme:

1. To provide a comprehensive purpose-based training in management of Unaccounted for Water (UFW) for the MMPW, Governorate Departments and the Governorate Councils in the 18 governorates, specifically for the personnel's working in Water Authorities.
2. The counterparts' capacity will be strengthened in WatSan management
3. Enhanced access to safe water through the provision of specialised equipment.

II. Assessment of Programme Results

The capacity of the water authorities were improved after training was conducted on planning, implementation, operations and management of water loss based on District Meter Area (DMA) and on the latest technologies in water audit. The water authority engineers now have the ability to plan and execute the DMA methodology for identification and reduction of Unaccounted for Water (UFW) losses in the systems. The identification of water loss will lead to reduction of the same, using leak detection equipment procured and thereby increasing the quantity & quality of water and eventually reducing water born diseases (the measurement of the latter however takes some time to become evident). This will improve the social conditions which may contribute to security and political stability.

- UNOPS have trained 40 technical staff from MMPW and MMT/KRG on UFW

- Two pilot areas were established to demonstrate DMA methodology and measure the water consumption and water losses successfully in the DMA area. Measured leakage levels were 44.2% and 31.6% for Ramadi and Najaf DMAs respectively.

- Water leak detection equipment was procured for all the governorates of Iraq.

- UNICEF have trained 138 management staff from MMPW , MoB and MMT/KRG on Definition of UFW & NRW, Real & Apparent losses and Water loss reduction strategy staff.

- Field assessments were also carried out at wastewater treatment plants in Najaf and Anbar, and small-scale rehabilitation and the installation of flow metering equipment undertaken.

- Media Intervention - Awareness campaigns using media messages in coordination with GDW was implemented, and two TV spots on water conservation were prepared and broadcasted in Iraqi Satellite TVs to celebrate World Water Day in March 2011.

The immediate beneficiaries included staff from the MMPW, Governorate Departments, Governorate Councils and the Governor's Offices in the 18 governorates and the ultimate beneficiaries will be the population of Iraq who will benefit from increased access to cleaner water.

UNOPS appointed a Site Engineer, who co-ordinated with the water authorities to collect the water network drawings and prepare the BoQ and contract document for the establishment of the DMAs at the two selected pilot sites in Ramadi and Najaf.

Following an initial delay in handover of the plans from the water authorities, the ITB was published on November 15, 2010 with a deadline for submission of bids set for December 15, 2010. On the last date of submission, the project received 4 bids which were evaluated and resulted in a recommendation for award of contract to the best of the lowest-cost bidders.

The contract for DMA establishment was awarded to SGI Studio Galli Ingegneria S.p.A., Italy on February 9, 2011. The Water Authorities as agreed handed over the DMA sites on 6th and 7th of April 2011 for Najaf and Ramadi respectively to start the establishment of the two DMAs. The contractor completed the establishment of the DMAs, one each at Ramadi and Najaf and measured the Minimum Night Flow (MNF) to establish the leakage losses. A final report with leakage loss in the systems was completed and submitted to UNOPS. The findings were shared with the water authorities and showed the leakage levels of 44,2% and 31,6% for Ramadi and Najaf DMAs respectively. The results of this study which covers the leakage in the smaller District Metered Areas only, can be used as basis to estimate the water leakage loss in the entire systems in the two locations. The water authorities were subsequently able start the active UFW control programmes to actually reduce losses in the systems based on the results of the study. In addition, by carrying out the pilot projects, DMA methodology was successfully demonstrated to the water authorities from across Iraq.

Data logger Fixed During the Establishment of DMA to measure the water loss in the DMA

Specifications for leak detection equipment was prepared by UNOPS and submitted to the Directorate of Water, Ministry of Municipalities and Public Works on 17 March 2011 for approval before proceeding for procurement.

Following competitive bidding, Seba Dynatronic was awarded the contract on 24 October 2011. The equipment arrived in Baghdad at the beginning of December 2011, however, could initially not be distributed to the directorates due to a delay in providing the customs and tax clearance letter for the equipment from the water directorate. In spite of repetitive requests and follow up with the Water Directorate, the tax exemption letter was at 31 May yet to be issued for collection and distribution of equipment. UNOPS site engineer continued to regularly visit the water directorate office in Baghdad to expedite the process until the end of the project, and after its formal closure, UNOPS assigned other personnel to follow up on the delivery to the directorates. At the time of writing, equipment has been delivered to 19 out of the 20 water authorities (see the below list), however, the Baghdad Water Directorate has yet to accept the equipment and UNOPS is continuing to follow up on the matter to see that the last equipment reaches its intended destination.

Leak detection equipment delivered to the following water authorities:

- Ninewa Water Directorate
- Kirkuk Water Directorate
- Salah al- Din Water Directorate
- Diyala Water Directorate
- Anbar Water Directorate
- West Desert Water Directorate
- Wassit Water Directorate
- Babil Water Directorate
- Najaf Water Directorate
- Karbala Water Directorate
- Qadissiyya Water Directorate
- Thiqar Water Directorate
- Al Muthanna Water Directorate
- Missan Water Directorate
- Basrah Water Directorate
- Erbil Water Directorate
- Sulaymaniyah Water Directorate
- Dohuk Water Directorate
- Baghdad Suburbs Water Directorate

UNOPS trained 39 engineers from the water authorities from all over Iraq on the management of UFW. The training which was divided into a theoretical part held in Erbil from 2-6 January 2011 in Erbil and a practical part in Amman, Jordan from 13-28 February 2011 was successfully completed enhancing the water authorities' abilities to manage their UFW activities better, thereby reducing the chances of water contamination and related water born diseases. A UNOPS site engineer was present during the trainings to facilitate/co-ordinate with the participants and training provider. One of the engineers originally planned to participate in the training from the Najaf Water Directorate was unfortunately unable to attend due to personal reasons. Hence the final number of participants was 39 instead of 40 as originally planned.

UNOPS - Training on Management of UFW Activities

UNOPS - During Field Training, Water Authority Staff at One of the Water Supply Station in Amman for Collecting Data on Water System

UNICEF organised trainings on comprehensive water audit and UFW for 46 staff members from water directorates (management staff involved with the water sector from MMPW (Ministry of Municipalities and Public Works), MoB (Mayoralty of Baghdad) and MMT/KRG (Ministry of Municipalities and Tourism in the Kurdistan Region of Iraq)) at a training in Amman, 10 staff members at a training in Erbil, 21 at a training in Baghdad and another 17 at a training in Najaf. The participants reported their full appreciation of the presented topics and the highly skilled trainers. They also asked for an expansion of such sessions and recommend conducting a high level workshop to advocate for the importance of the UFW and Non-Revenue Water (NRW) management and its impact on Iraq.

Additional training sessions on UFW were successfully completed in Kenya / Nairobi 4-9 September 2011 wherein 12 trainees from different Iraqi Authorities participated. Certificates, training materials, folders and CDs have been distributed to all participants, and the final report was also received by UNICEF.

Training on the installation of flow meters and accessories was conducted in Amman for 20 Staff from MMPW, MoB and MMT/KRG 28 April--3 of May 2012, the training included practical training on installation and activation of flow meters (ultrasonic clamp on, insertion and portable types of flow meters), pressure transmitters and data loggers, as well as the definition of UFW & NRW, real & apparent losses, water loss reduction strategy, controlling water loss, leakage tools & pipe locator methodologies, water audit, leakage management & control strategy, and pressure management.

Additional training on software for 12 staff was conducted in 2012 in Amman on Bentley software and Innovyze software in Turkey.

The overseas and in-country trainings of senior management staff of the water authority were successfully completed, UNICEF has received the final report.

UFW equipment was procured and delivered to both Najaf and Anbar. Software including handbooks on planning, design, operation and maintenance of water facilities were distributed to directorates of water in ten governorates.

UFW equipment including flow meters, pressure transmitters, computers and tapping devise, data loggers and cables were delivered and installed in both Najaf & Anbar WTPs and the construction works of concrete chambers for the installation of flow meters was completed. Staff who were trained on the installation of flow meters and accessories in Amman carried out the installation of UFW equipment in Najaf and Anbar, the only remaining works are the installation of pressure transmitters in both governorates which will be managed by the water directorates.

The announcing of the real losses index for Najaf city was made in a ceremony attended by both deputies of the Najaf governor, Najaf province council members, MMPW representatives, directors and staff of Najaf DoW, DoM and engineers form most of Iraqi water directorates.

The ceremony was held after practical application conducted on Najaf WTP in which the equipment that UNICEF had delivered was installed and data obtained with participation of engineers of DoWs from 14 governorates.

The figures of Losses Performance Index = 640 liter /service connection per day and the figure of overall losses = 24.5% were received with warm welcome for its accuracy and utility. The presentation included details of recommended actions and after the presentation, it was agreed that the water directorate should intensify its efforts to half these figures by the end of 2015.

Additionally, software including handbooks on Planning, Design, operation and maintenance of Water facilities were distributed to water directorates in ten governorates.

It should be noted that in accordance with the project document, UNICEF appointed two technical facilitators to carry out required assessments in coordination with the local authorities throughout the project.

Additionally, awareness campaigns using media messages in coordination with the General directorate of Water were produced and are continuing to be used in addition to two TV spots on water conservation which were broadcasted on Iraqi Satellite TV channels. A water sector challenges meeting was held with the attendance of participants from different authorities. UFW was the main highlighted challenge in this meeting.

The primary partners are the General Directorate of Water and Water Directorates at 18 Governorates from all over Iraq. The recipients were the Technical and managerial staff from water authorities for capacity development on management of UFW and water audit activities. The project also supplied water leak detection equipment for identification and reduction of UFW.

The water authority was selected as primary partners in their capacity as the main entity responsible for the water and wastewater infrastructure in Iraq.

UNOPS & UNICEF worked hand in hand with Najaf and Anbar Governorate Water authorities for the implementation of the project as well as with representatives from the governorate water authorities across the other 16 governorates of Iraq and the Ministry of Municipalities and Public Works (MMPW) which is also a major partner on this project.

Improved access to water will benefit both men and women equally across Iraq.

The project encouraged female employment with UNOPS and UNICEF and also put pressure on the Water authorities to provide employment opportunities for female engineers. The outcome was that one of the supervising engineers from the Anbar Governorate was female. Women were also encouraged to seek employment on the project.

Improved wastewater treatment will help prevent environmental damage from pollution and sewage, providing a long-term benefit that residents of the region and of downstream areas can enjoy.

ii) Indicator Based Performance Assessment:

	Performance Indicators	Indicator Baselines	Planned Indicator Targets	Achieved Indicator Targets	Means of Verification	Comments (if any)
IP Outcome 1: GoI is able to manage WatSan sector in an effective manner						
IP Output 1.1 MMPW/directorates of municipalities are able to deliver and monitor water services	Indicator 1.1.1 Number of WatSan Governorate staff trained on latest technologies in water audit, and UFW concepts	0	200 (1000 person days of training)	39 (780 person days of training)	Training Report	Completed The agreed upon training for the Governorate staff was completed with more in depth training provided for the key staff responsible for the tasks) One trainee was unable to attend the training due to personal reasons.
	Indicator 1.1.2 Percentage of WatSan governorate trained staff fully satisfied with the quality of the training in terms of relevance and usefulness	NA	80% of trainees	n /a	Post training participants' assessment	
	Indicator 1.1.3 Number of pilot areas demonstrated DMA methodology to measure water consumption successfully	0	2	2	Programme progress report	Completed
	Indicator 1.1.4 Formation of a UFW unit within the ministry	No unit	Unit formed	n/a		
IP Output 1.2 Water authorities have improved capacities in water management	Indicator 1.2.1 No. of Water Authority staff trained on planning , implementation, and operations management related to water losses reduction	0	100	106	Training Report	Completed
	Indicator 1.2.2 Percentage of trained Water Authority staff fully satisfied with the quality of the training in terms of relevance and usefulness	NA	80% of trainees	n/a	Post training participants' assessment	
IP Output 1.3 Water Treatment Plants personnel within the selected governorate	Indicator 1.3.1 Number of WTP staff trained on water pressure reduction in addition to flow meter monitoring techniques	0	15	20	Training Report	

are able to put in place a water audit mechanism	Indicator 1.3.2 Percentage of trained WTP staff fully satisfied with the quality of the training in terms of relevance and usefulness	NA	80% of trainees	n/a	Post training participants' report	
	Indicator 1.3.3 Number of leak detection equipment and peripherals provided	0	36	34	Programme records	Lead detection equipment was procured and delivered to 19 of the 20 water directorates of Iraq. The equipment for the 20th is procured and is pending customs clearance in Baghdad but is expected to also be delivered within short.
IP Output 1.4 MMPW, governorate water departments offices are better able to plan and provide improved water audit services in addition to proper management of UFW within the governorates	Indicator 1.4.1 Number of UFW policies formulated according to the International Water Association (IWA) concept for water loss	0	4	n/a	Programme progress reports	
	Indicator 1.4.2 No. of personnel trained on Infrastructure Leakage Index (ILI) strategy and policy formation	0	5	12	End of training assessment	

iii) Evaluation, Best Practices and Lessons Learned

During the project, studies were conducted in Ramadi and Najaf on the water leakage and measure of Minimum Night Flow from District Metered Areas. A final report with leakage loss in the systems was completed and submitted to UNOPS which was also shared with the water authorities and showed the leakage levels of 44,2% and 31,6% for Ramadi and Najaf DMAs respectively. The results of this study which covers the leakage in the smaller District Metered Areas only, can be used as basis to estimate the water leakage loss in the entire systems in the two locations. The water authorities were subsequently able start the active UFW control programmes to actually reduce losses in the systems based on the results of the study. In addition, by carrying out the pilot projects, DMA methodology was successfully demonstrated to the water authorities from across Iraq.

Field assessments were also carried out at wastewater treatment plants in Najaf and Anbar, and small-scale rehabilitation and the installation of flow metering equipment undertaken.

No overall programme evaluation was envisioned under this project, however UNICEF continues to build on its programming and work with the authorities in this area.

It is worth noting that due to their daily work in maintaining the services and keeping them functioning for the public, the local authorities are not always in the position to extend their attention to the project implementation. At times this caused temporary delays in the project which were however recapped under other components.

The internal customs clearance process for the leak detection equipment in the Iraqi administration took significantly longer time than expected, holding up the final delivery of the equipment which was delivered to Iraq already at the end of 2012 but which could at first not be delivered to the governorates. UNOPS exerted significant effort on the follow up on this matter to be able to complete this component as soon as all permissions were obtained. UNOPS site engineer was regularly visiting the water directorate office in Baghdad to expedite the process and at the time of writing, 19 out of 20 water directorates have received their equipment. While the project is now operationally closed, UNOPS has allocated extra organizational resources to ensure that the last piece of equipment purchased which is currently in Baghdad, is also delivered to its end destinations at the Baghdad water directorate,

The main constraint that UNICEF faced was the delay in the in-house procurement process which was due to the introduction of a new management system, however, constrains were treated and all planned activities have been successfully implemented.