UN-HABITAT

EVALUATION REPORT July 2007

WATER FOR AFRICAN CITIES (WAC)
DAR ES SALAAM PROJECT

UNITED NATIONS HUMAN SETTLEMENTS PROGRAMME

DISCLAIMER

This end-of project evaluation was undertaken by external consultants, Dr. Asenath Omwega and Mr. Fidelis Wamara. Findings were shared in a meeting in Nairobi with staff of UH-HABITAT and two representatives from SIDA, the main donor for the Water for African Cities (WAC) Dar es Salaam project. The views expressed and conclusions reached in the report remain those of the consultants and do not necessarily reflect the official position of UN-HABITAT.

Table of contents

ACRONYMS AND ABRREVIATIONS

BICO	Bureau of Industrial Cooperation
CAD	Computer Aided Design
CTA	Chief Technical Advisor
DAWASA	Dar es Salaam Water and Sewerage Authority
DAWASCO	Dar es Salaam Water and Sewerage Corporation
DCC	Dar es Salaam City Council
DWSSP	Dar es Salaam Water Supply and Sanitation Programme
EIA	Environmental Impact Assessment
EMA	Environmental Monitoring and Assessment
GIS	Geographical Information System
GoT	Government of Tanzania
IRA	Institute of Resource Assessment
NEMC	National Environmental Management Council
PGA	Public Granting Authority
PO	Private Operator
SIDA	Swedish International Development Agency
TIE	Tanzania Institute of Education
UWSAs	Urban Water and Sewerage Authorities
UFW	Unaccounted For Water
UCLAS	University College of Lands and Architectural Studies
UN-HABITAT	United Nations Human Settlements Programme
UNEP	United Nations Environment Programme
UNFIP	United Nations Foundation for International Partnerships
VBWSHE	Values-Based Water Sanitation and Hygiene Education
WAC	Water for African Cities
WACP	Water for African Cities Programme
WB	World Bank
WDM	Water Demand Management
WCDM	Water Conservation and Demand Management
WDMU	Water Demand Management Unit
WRBWO	Wami Ruvu Basin Water Office

Executive Summary

Introduction

This end-of-project evaluation report provides the performance of the Water for Africa Cities (WAC) Dar es Salaam Project. The project was initiated in 2003 in response to the Tanzania Government request and as part of UN-HABITAT's overall Programme on Managing Water for African Cities. The project was designed as a pilot/demonstration and was implemented through existing local institutions so as to strengthen their capacities and establish structures and systems for sustainability and best practices for scaling up. It was sponsored by SIDA, through an agreement with UN-HABITAT, for Phase I of a 3- year implementation period. The total investment in this project was about one million dollars including US$ 708, 510 from SIDA, the main sponsor of the project.

The overall objective of the project was to satisfy the water supply demand of Dar es Salaam City and protecting fresh water from pollution. Five priority areas were identified for immediate intervention: i) promote water demand management; ii) mitigate the impact of urbanization on fresh water resources and aquifers; iii) create public awareness on water resource management and environmental issues; iv) monitor ground water abstraction and aquifer changes and; v) promote value based water education in schools.

This evaluation has been conducted at the end of phase I of the project period to assess the relevance, efficiency and effectiveness of the project and its contributions towards the goal of satisfying water supply demand of Dar es Salaam City and protecting fresh water from pollution. The evaluation will also help to provide the stakeholders in the project with an objective assessment of results (outcomes) that have been achieved through project support and involvement of other actors. Lessons learned and recommendations have been generated that could improve planning and implementation of Phase II.

The evaluation team used three methods to collect information: desk review of project documents; interviews with key informants from staff of implementing institutions, beneficiaries of project as well as through field visits to the project sites. Triangulation was used to validate information given by informants that was not sufficiently backed by evidence.

Main Findings

Project performance: Overall, evaluation findings on project implementation indicate that most of the project activities and outputs were produced as planned. Annex 1 summarizes the planned and achieved outputs. A few of the outputs that had not been fully completed were largely as a result of under budgeting as well as delays in reporting by implementing agencies to enable disbursement of project funds. However, these have been incorporated into future plans.

The WAC Dar es Salaam Project has achieved positive outcomes that can be attributed to implementation strategies adopted for the project. The project has been successful in introducing the concept and promoting water demand management as well as developed capacity for monitoring environmental and water resources. Through development of strategies for WDM,

monitoring of water resources and the environment and for promoting public awareness and value based water education in schools, people's awareness on water conservation and demand management is growing.

The strategies and procedures developed for monitoring environmental and water resources have helped institute systems for regular monitoring and reporting on water quality for Dar es Salaam. The accompanying units set up in the respective implementing institutions are adding value by supporting these new functions. However, the improvement in the knowledge base on management and pollution of water resources is yet to be used in developing interventions for mitigation against pollution of water sources and over extraction of aquifers.

Stakeholder Participation: The involvement of government ministries and institutions and the formation of a multi-stake holder steering committee created a sense of ownership of the project and increased the political will and commitment to support the project. The project achievement has been a lot more than the project budget and this has been attributed, to some extent, to the institutional arrangements adopted for the project design and implementation.

Adequate institutional arrangements: The various project components were implemented within the relevant existing institutions. The project was anchored within the Dar es Salaam Water and Sanitation Agency (DAWASA), the water utility agency for the city, which was mandated to oversee the implementation of most project activities. The project coordination office was also located within DAWASA. The project, therefore, was not a stand-alone activity but was fully integrated into the implementing institutions and the water sector in general which seeks to improve access to water in a sustainable and affordable way.

Linkages and synergy with other projects: The WAC Dar es Salaam project has benefited from its linkage with other projects especially the Dar es Salaam Water and Sanitation Project (DWSSP), being implemented by DAWASA, which supports water and sanitation infrastructure rehabilitation and expansion and is funded by the IDA, WB, AfDB and the EIB. The support from the WAC project focused on capacity building for the promotion of WDM and monitoring of water resources. This has helped institute a shift in the management of water resources by introducing water demand management into the sector.

Catalytic role of the demonstration project activities: Stakeholders, partners and beneficiaries have expressed their appreciation of the project as evidenced by some of the changes project interventions have catalyzed which include:

- An increase in DAWASCO's capacity to handle network leakages thus addressing the problem of unaccounted for water(UFW). In 2005, UFW was identified as a major problem in Dar es Salaam with losses estimated at 60% of which 30% was loss through leakages in the distribution system. It is now estimated that over 50% of the illegal connections have been disconnected as a result of the increased leak detection, monitoring and repair capabilities. This has resulted in savings of about 27,300 cubic meters per day of previously unaccounted for water valued at about TShs. 17.8 million daily gains as a result of the improved water conservation and demand management interventions that have been instituted as well as the improved infrastructure.

- In terms of corporate revenue base, DAWASCO receives TShs. 1.6 billion as monthly revenue as of May 2007, compared to TShs. 954 million in May, 2005. DAWASCO attributes this success to a number of factors including improved leakage management, operations and network rehabilitation.
- The project has demonstrated that equity in access to water by low income earners can be addressed by involving the communities as the stakeholders in a public-community partnership. Water from bore holes managed by water users associations is cheaper and accessible to even the poor households. One 20-litre bucket of water is now available at TShs. 20 compared to TShs. 100 to 300 charged by private water vendors. A sense of ownership and self –governance has been raised among the WUA members. The management of the water from the bore holes under the pilot project, is progressively being transferred by DAWASA to the water users associations and the respective water management committees.
- Through public awareness campaigns, the public is taking responsibility in protecting the assets for the water supply system by reporting on vandalism and illegal connections. These cases are increasingly being reported in the media.

Persistent gaps: Despite the highlighted achievements, the following concerns and gaps persist that will need to be addressed in its next phase which will also help consolidate the achievements so far made. These include:

- Development of infrastructure and management capacity for sewerage, solid waste and water treatment facilities for pollution control, yet to be addressed.
- Ruvu River, the major source of water supply to Dar es Salaam, need to be regularized to address the water shortages related to weather fluctuations.
- Introduction and promotion of water saving and cleaner technologies in productive (industries) and domestic sectors as proposed in the Water Conservation and Demand Management Strategy.

Some of the challenges:

Although the project has helped lay a foundation for the achievement of project goal and objectives in the long term, it is yet to build on the achievements and requires time and resources to support utilization of the capacities, structures and strategies developed for implementation, consolidation and scale up of demonstration project interventions. The project is, therefore, unfinished business

A key concern that emerged from environmental monitoring work was the inadequate and dysfunctional waste water management facilities. The field assessment of these facilities by the EMA team showed that the wastewater treatment ponds have not been working well as indicated from the effluent quality. The project focused on addressing issues of access and management of water and is yet to address the issues of sanitation and sewerage. Mitigation against pollution of water sources will depend on sanitation and sewerage management. The success registered by DAWASCO in water supply in the past two years through the public

Integrating gender issues in project design makes it easy to assess how the project contributed to the achievement of results in improving the lives of both men and women. The project in its

design did not explicitly incorporate gender considerations into the project interventions. However, this weakness has been recognized and activities introduced that will address the anomaly

The project experienced delays in submission of progress reports and agreed outputs from some implementing agencies which led to delays in disbursement of funds as per the project agreements. This necessitated request for a no cost extension of six months to enable completion of the planned activities.

Monitoring and reporting was done by project component as per the cooperation agreements. It is difficult to get the complete picture of the progress in project implementation as a whole. The experiences and lessons learned from implementation of demonstration project interventions are yet to be systematically documented across implementing institutions.

Recommendations

Based on the evaluation findings, the evaluation team proposes eleven recommendations for consideration.

Recommendation 1: In view of the overall successful implementation of phase I WAC Dar es Salaam demonstration project and lessons learned and subject to UN-HABITAT and funding partners' commitment to support implementation of Phase II, the evaluation team recommends that phase II be designed as a consolidation, integration and scale up project based on the foundation laid in phase I.

Recommendation 2: Phase II project should have a clear and comprehensive design detailing expected accomplishments, outputs, activities and required inputs. These components should have indicators to measure achievements and means of verification. There is also a need to strengthen networking and collaboration between and among stakeholders and implementing institutions of the different project components to facilitate sharing of information, resources and relevant expertise and achieve economies of scale.

Recommendation 3: The project coordination office is an essential ingredient for successful coordination and management of WAC project. The project coordination office should be retained and strengthened by increasing staff to service the project stakeholders effectively. This should include capacity to undertake and support partners in the monitoring, reporting and documentation of the project work.

Recommendation 4: In view of the inter-linkages between the WAC project and other programmes in the water sector, it is recommended that a joint and comprehensive review be conducted of the Dar es Salaam water sector programmes involving all key actors to document the lessons learned and best practices and identify strategies for strengthening collaboration. This would enable participation of all actors, instill ownership and facilitate collaboration in the assessment of the water sector achievements beyond the results of individual projects.

Recommendation 5: It is recommended that the lessons learned and best practices in Water Demand Management be systematically documented across implementing institutions and project components to facilitate replication and scale up, through integration into subsequent project phases, in the whole of Dar es Salaam and other urban centres in Tanzania and to influence other WAC initiatives elsewhere.

Recommendation 6: Stability in funding through diver sources is important for project sustanability. Therefore, long term funding of the project interventions through diverse sources should be taken into account in the follow up project activities. a) public- private sector partnerships in service delivery within the project; b) partnerships between public, private and communities and; c) direct engagement by the Government and donors is crucial.

Recommendation 7: The project in its design did not explicitly incorporate gender considerations. There is a need to incorporate gender mainstreaming at the design and conception of WAC Phase II since equity in water cannot be fully achieved without fully integrating gender considerations especially in reaching the poor who constitute the majority of urban residents in Dar es Salaam.

Recommendation 8: Support implementation of critical interventions for the achievement of the project goal that were not addressed in phase I such as capacity building and infrastructure development for sewerage management and pollution control, promoting water conservation in the productive and domestic sector.

Recommendation 9: Institutions mandated to implement valued based water education syllabus, once developed by TIE, need to be brought on board in Phase II of WAC project. These include school inspectors, education officers, teachers and policy makers. This will ensure adoption and scale up of the value based curriculum and utilization of the materials developed by TIE.

Recommendation 10: The project has demonstrated that equity in access to water by low income earners can be addressed by involving the communities as the stakeholders in a public-community partnership. There is need for Phase II of the WAC project to prioritize and pay special attention to such strategies that promote water access to the urban poor.

Recommendation 11: There is an expressed need to link the GIS data on environmental and aquifer monitoring so that there is integrated spatial database for promoting WDM, conservation and mitigating against pollution and over exploitation of water sources.

1. Introduction

This report covers the evaluation of the Water for African Cities (WAC) Dar es Salaam Phase I project. The evaluation was conducted by external consultants in accordance with the Agreement between UN-HABIATAT, SIDA and the Tanzania Government, that such a formal evaluation would be undertaken at the end of Phase I with the view to assess the project achievements and impact. The terms of reference for this evaluation (Annex 1, appended).

The evaluation assessed the WAC, Dar es Salaam project against the overall objective of satisfying the growing water supply demand of Dar es Salaam City and protecting fresh water resources from pollution. It examined project design, implementation of activities and outputs, relevance and positioning of the project outcomes, effectiveness, efficiency, management, coordination as well as issues of sustainability.

This report benefited from a series of interactions with stakeholders through personal interviews and field visits and from a briefing meeting held in Nairobi which was attended by UN-HABITAT staff and representatives from SIDA. It looks at project overview and development context, project objectives and priorities. It also presents the purpose and scope of the evaluation, evaluation methodology. Also included are the main findings, lessons that have emerged from the implementation of the project and gives forward looking recommendations.

1.1 Background and Evolution of the Project

The WAC programme is a collaborative effort conceived and promoted by the United Nations Human Settlements Programme (UN-HABITAT), The United Nations Environment Programme (UNEP) and The United Nations Foundation for International Partnerships (UNFIP) with UN-HABITAT as the implementing agency of the project. The WAC programme is a direct response and follow up to the Cape Town Declaration of 1997 adopted by African Ministers.

Water for African Cities, Dar es Salaam Project is part of UN-HABITAT's programme of Water for Africa Cities (WAC).This was a pioneer programme launched in October 1999 as a special regional initiative designed to support African Cities manage the rapidly growing demand for water and mitigate against pollution of their freshwater resources emanating from poor waste management in cities. The programme supports capacity building interventions in three strategic areas: i) through efficient and effective water demand management; ii) building capacity to reduce the environmental impact of urbanization on fresh water resources and; iii) boosting awareness and information exchange on water management and conservation. The programme initially covered seven cities- Abidjan, Accra, Addis Ababa, Dakar, Johannesburg, Lusaka, and Nairobi.

The Dar es Salaam project started three years later, In 2003, the Government of Tanzania requested to join the WAC and an Agreement was signed with UN-HABITAT, thus making Dar es Salaam the eighth city in the WAC Programme. The main funding for the Dar es Salaam project was provided by SIDA through a grant of US$ 708,510 while UN-HABITAT and the Government of Tanzania made in-kind contributions of US$ 200,000 and 80,000 respectively.

Dar es Salaam, with an estimated population of about 4 million people is the largest city in the country. It is a major port for Tanzania and the neighboring landlocked countries and, therefore, a commercial hub and the economic engine of the country. However, in spite of its economic potential and attraction for human settlement, Dar es Salaam is faced with water crisis. The Dar es Salaam Water and Sewerage Authority (DAWASA) mandated to develop and supply water and manage sewerage is limited in capacity to handle the water crisis.

The challenges that faced DAWASA at the start of the project included:

- The revenue DAWASA raised from providing the services was inadequate to meet its operational and management costs resulting in inadequate water sources and lack of funds to develop available water resources;
- Only an estimated 30% of the water supplied was metered encouraging wastage and misuse by consumers;
- Unaccounted for water was estimated at 60% of which 30% was through leakage;
- Total revenue per month was TShs. 800 million;
- The infrastructure for both water and sewerage system was dilapidated and insufficient. Some of the water transmission and distribution networks were over forty years old and therefore worn out and not responded to the growing population and ;
- Water distribution network covered about 50% of the total population.

It is in response to the above challenges that the Government of the United Republic of Tanzania selected the City of Dar es Salaam for participation the WAC initiative. A project implementation plan was developed through a consultative process involving key players and stakeholders in Tanzania. A multi-stakeholder steering committee was set up comprising representatives from Ministry of Water and Livestock Development, Dar es Salaam City Council (DCC), DAWASA and NEMC. UN-HABITAT and UNEP were also engaged throughout the project development and planning process.

With funding secured from SIDA, implementation of phase I of the Dar es Salaam project commenced in August, 2003.

1.2 Project Objectives and Priorities

The overall objective of the Water for African Cities (WAC) Dar es Salaam Project is: "To manage the growing demand for water supply for Dar es Salaam City and protect its freshwater resources from the increasing pollution loads". In order to address the underlying causes of the water crisis in Dar es Salaam and achieve the objective, four primary objectives were identified for this project:

a) To improve efficiency and equity of water supply and use in Dar-es-Salaam, both in the productive and domestic sectors through appropriate water demand management strategy within existing legislative framework;
b) To improve the knowledge base of the impact of urbanization on water and aquatic ecosystems in Dar es Salaam;
c) To create public awareness on urban water resource management and related environmental issues in Dar es Salaam City;
d) To promote value based water education in formal and non-formal education aimed at increasing understanding and creating a new water ethic amongst water providers and consumers alike.

It was recognized from the start that the project needed to take a step-by-step approach in implementing the project and achieve the set objectives. Therefore Phase I focused on interventions in five inter-related areas of focus as the foundation of the WAC initiative in Dar es Salaam:

a) Promoting Water Demand Management in areas served by Dar es Salaam Water and Sewerage Authority (DAWASA);
b) Mitigating the environmental impact of urbanization on water resources (pollution control) and aquatic ecosystems with a special focus on aquifer management in Dar es Salaam;
c) Conduct an environmental impact assessment of Ruvu River with the aim of a dam developed that will regulate the river;
d) Public Awareness campaign on water demand management, sanitation and related environmental issues in areas served by DAWASA and;
e) Value based education in areas served by DAWASA.

1.3 Expected Results

The project investments were predicted on the expected results set out during the project planning stage. Table 1 provides the type of results/outputs that were envisaged at the planning stage.

Table 1: Project objectives and expected outputs

Objective/Intervention	Outputs-objectively verifiable indicators
1.Promote water demand management in DAWASA area	• WDM strategy developed for Dar es Salaam City • WDM Unit established in DAWASCO • GIS in place in DAWASCO Leak detection capacity built in DAWASCO
2.Mitigate the impact of urbanization on fresh water resources and aquatic ecosystems	• Procedures and guidelines for environmental monitoring developed • Routine monitoring system and data base established • Environmental monitoring of water institutionalized in DAWASA
3.Create Public awareness on water resource management and environmental issues Introduce water demand management in community managed ground water sources	• A strategy and action plan for public awareness campaign in Dar es Salaam developed • Widespread public awareness on various messages done • Train communities in WDM
4. Promote value based water education in formal education	• Draft syllabi developed • Teachers with knowledge to implement the contents of the syllabi in place • Teachers' guide developed
5.Monitor aquifer behaviour and impact of ground water abstraction	• 5 observation boreholes drilled • Carryout borehole inventory and set up database • Monitoring unit established in WRWB

2. Purpose and Scope of the Evaluation

The purpose of this evaluation is to provide stakeholders with feedback on the project performance in relation to the prior set objectives and expected results with emphasis on forwarding looking recommendations that would help improve project design and implementation effectiveness in |Phase II. The 3 -year Phase I WAC Dar es Salaam Project which started in August 2003 ended in December, 2006 after a six month no-cost extension. Before starting the next phase, UNHABITAT, in collaboration with the project partners commissioned this end-of project evaluation. This was in accordance with the project agreement that a formal end of project evaluation would be undertaken at the end of Phase I.

In order to determine the performance of the project over the three year period, the evaluation has reviewed the relevance, validity and appropriateness of project design. It has also reviewed the efficiency and cost effectiveness of achievement in implementation and monitoring of the planned project activities and outputs against actual result. Also examined are institutional arrangements and issues of sustainability. As far as possible, project outcomes have been highlighted. Key lessons learnt from and challenges encountered in project implementation have been noted and recommendations made.

3. Approach and Methodology

This evaluation is an independent assessment which was conducted by two consultants, Dr. Asenath Omwega (international consultant) and Mr. Fidelis Wamara (local/national consultant). The methodology adopted was designed to meet the requirements and expectations set out in the terms of reference for this evaluation. The approach is considered credible to identify outcomes attributed to the project.

3.1 The Evaluation Plan

The evaluation team synthesized the evaluation methodology, identified the issues to be addressed, developed guiding questions and identified sources of information on all aspects of project planning and implementation. This resulted into an evaluation work plan and methodology (Annex 2) which was circulated to all stakeholders and helped inform them about the evaluation exercise and prepare them for their involvement in the process.

3.2 Document Review

A desk review was done of project documents including, but not limited to, relevant project documents, outputs, monitoring financial and narrative (progress reports such as quarterly/annual project implementation reports, submitted to SIDA/UNHABITAT); project development /initiation materials; relevant correspondences among stakeholders; specific products developed for the project by implementing/ collaborating partners such as workshop reports, training materials, curriculum materials, policies, strategic plans, technical reports and data bases. The desk review also included evaluation reports from other WAC projects such as the Phase 1 Forward Looking Assessment of 2002 for initial phase of the WAC programme and other WAC programme reports and Government Water Sector strategies and policy documents.

3.3 Key Informants Interviews.

Interviews were conducted with individuals and in groups in key project implementing institutions. These comprised of Wami Ruvu Basin Water Office (WRBWO); Dar-es-Salaam

Water Supply and Sewerage Authority (DAWASA); DAWASCO; Tanzania Institute of Education (TIE); sub-contracted IRA team; randomly selected community based water committees, sewerage private service providers; and UN-Habitat staff associated with the WAC programme. Structured guiding questions, based on expected achievements and defined roles, were used as the tool for interacting with individual officers/key informants to get information on the various aspects of project implementation process, achievements and challenges.

3.4 Field Visits

Field Visits to project sites were conducted to view the activities and assess the out comes and impact of the project. It also provided opportunities for meetings with beneficiaries and implementing teams from collaborating agencies. The sites visited included DAWASA, DAWASCO, WRBWO, TIE and pilot schools for the education component, sewerage private provider, and community ground water management and public awareness campaign.

3.5 Stakeholder Involvement

The project evaluation has been conducted using a participatory approach whereby the consultants engaged with the project management team in HABITAT Head Office in Nairobi as well the field based Chief Technical Advisor in Dar es Salaam for logistical and administrative support for the smooth conduct of the evaluation. The evaluation team also had close interactions with the various stakeholders involved in project implementation which facilitated direct discussions with them for independent views on the project performance. The information on project performance has, therefore, been derived from both primary and secondary sources. Findings on project performance and final recommendations for the evaluation are based on analysis made of information collected through three main methods; desk review of project documents; interviews with key stakeholders and project staff as well as through field visits.

4. Limitations of the Evaluation

The evaluators were faced with methodological challenges with regard to performance measures for relevance, effectiveness and efficiency of the project that is influenced by many actors and external factors. The project was ambitious with expected results that were, in some cases, not commensurate with the inputs but it did benefit from unquantified and undefined inputs from implementing institutions as well as projects funded by other donors. This made it difficult for the evaluation team to accurately ascertain the contribution of the WAC project towards the overall achievement of the project. It should also be noted that this evaluation had the mandate for and focused on the WAC project, but this is only part of the Dar es Salaam water progamme funded by various partners and addressing different but related aspects.

The time allocated for the evaluation exercise of this project was underestimated. The extent to which the project activities have expanded with a large number of stakeholders and beneficiaries had not been anticipated by both consultants and UN-HABITAT. This became clear after the evaluation exercise commenced. The evaluation team needed more time in the field to reach the unanticipated areas of impact.

Due to the time constraint, this evaluation could only focus on independent views of consumers of water supplied by DAWASCO that are directly involved in project implementation. However,

the evaluation did interact with some of the consumers of community managed ground water supplies.

5. Main Evaluation Findings

5.1 Project Design and Implementation Strategy

Looking beyond project design, Dar es Salaam Project Phase I has achieved positive outcomes that can be attributed to implementation strategies adopted for the project.

A key enabling condition for effective evaluation is the early establishment of monitoring and evaluation framework in the project planning phase. Project logic models represent the logic underlying project design, indicating how various components are expected to interact. Normally, the logic model indicates resources to carry out activities that produce outputs which will lead to desired outcomes/results. As shown from Table 1, the project lacked sound project design. It also lacked clear indicators to track progress and the external factors that would influence the project. The lack of logic model made it difficult for the evaluators to identify the most relevant measures of the project performance on a systematic basis in terms of efficiency, effectiveness and customer satisfaction. This was more so when statements about project achievements were not sufficiently backed with evidence. To cross check the evidence triangulation ahs been used to minimize this effect. However, it may have not been done adequately such as capacity building where achievements attributed the project may be under or over estimated.

In addition, the Dar es Salaam project was very ambitious and expected outcomes that were dependent on substantial contributions from other players especially the implementing institutions and other separately funded development projects in the water sector for Dar es Salaam City. While this created synergies that helped to implement the project, it creates a challenge of evaluating this project in isolation as it is difficult to determine the exact contribution of the project in the overall achievements.

Nevertheless, the WAC Dar es Salaam project has been successful in introducing the concept and promoting water demand management and its and monitoring urban water resources of Dar es Salaam City. This was achieved through development of strategies for WDM, monitoring of water resources and the environment and for promoting public awareness and value based water education in schools. A number of initiatives were also implemented to demonstrate WDM for surface and ground water sources as part of long term urban water resource management.

The project goal and objectives were clear for a demonstration project and provided the framework for priority areas for water sector reforms in Dar es Salaam. In addition, the project involved internal and external stakeholders in determining the priority areas which were relevant for the Dar es salaam context but it benefited from the experiences and lessons from the other WAC projects.

It is worth noting that the timing of the project launch coincided with implementation of major water sector reforms in Dar es Salaam . This included the revised national water policy which embraces water conservation and demand management and engagement of private operators in water and sewerage service delivery through private-public partnership. The project was also designed as part of the water programmes for Dar es Salaam funded and implemented alongside the WAC project. The design of the project activities, outputs and intended outcomes had a strong focus on supporting the water sector reform.

5.1.1. Institutional Arrangements for project implementation.

The WAC Dar es Salaam project was designed to be implemented within existing institutions and is not a stand alone project. The various project components were integrated into the relevant institutions and support the Government water sector reforms, and are aligned with Government priorities.

Through the consultative process of the project initiation phase, institutional arrangements for project implementation were agreed upon with UN-HABITAT. The Ministry of Water and Livestock Development was the designated overall national counterpart agency with UN-HABITAT for the project. UN-HABAITAT entered into Cooperation Agreements (CA) with three key local institutions: DAWASA, WRBWO and TIE which were identified by the multi-stakeholder project coordination committee, to facilitate implementation of the identified interventions in the five key areas as indicated in the Table 2 below.

Table 2: Institutional Arrangements.

Project Component	**Implementing agency**
Water Demand management	DAWASA
Public Awareness Campaign and Community involvement in Water Demand Management	DAWASA
Aquifer monitoring	Wami-Ruvu Water Basin Office (WRWBO)
Environmental Monitoring	DAWASA
Value based water education	Tanzania Institute of Education (TIE)

DAWASA subcontracted specific components and activities to other specialized agencies but was responsible for ensuring that those activities were implemented as per the cooperation agreement with UN-HABITAT.

The primary responsibility for the water sector reforms rests with the Tanzania Government and its line ministries and institutions. The Dar es Salaam water sector reforms largely involved the Ministry of Water and Livestock Development and DAWASA. Dar es Salaam Water Supply and Sewerage Authority (DAWASA) is the public authority established by the urban water supply Act of 1981 and subsequently amended in 1989 and 1999. It is responsible for regulation and management of water supply and sewerage services in Dar es Salaam area as well as Kibaha and Bagamoyo townships. In 2000, Parliament passed a bill for the establishment of an agency to regulate energy and water. Under this bill, the roles of DAWASA were split into two sections, Public Granting Authority (PGA) for asset holding became the responsibility of DAWASA and operation and commercial management arm which was subcontracted to a private operator (PO). The WAC project was aligned to these structural and institutional changes and this and contributed to strengthening of the synergy and capacity of the key institutions.

Establishment of an in-country project coordination office headed by a chief technical advisor which was located within DAWASA helped anchor the project within the utility agency which was mandated to oversee the implementation of most project activities. This also facilitated coordination with project implementing institutions and integration of WAC interventions into other related programmes of DAWASA and the sector Ministry.

5.1.2 Multi-stakeholder Project Steering Committee.

The involvement of government ministries and institutions and the formation of a multi-stake holder steering committee created a sense of ownership of the project and increased the political will and commitment to support the project. The project achievement has been a lot more than the project budget and this has been attributed, to some extent, to the institutional arrangements adopted for the project design and implementation.

A multi-stakeholder Project Steering Committee was set up which comprised of representatives from key players in the implementation of the project. These included DAWASA, Dar es Salaam City Council (DCC), Ministry of Education, Sustainable Dar es Salaam Project (part of Sustainable Cities Programme) Ministry of Health, National Environmental Management Council (NEMC) and the Chief Technical Advisor (CTA) of the project.

The steering committee was most active during the project initiation phase and was instrumental in the development of the project implementation plan and selection of institutions to implement the various components of the project. The committee also facilitated the definition of roles and responsibilities of the implementing institutions which were based on the expertise and mandate of the respective institutions.

The NEMC dropped out of the steering committee during implementation as they could not agree with the conditions for engagement. Instead, DAWASA engaged the expert services of the Institute of Resource Assessment (IRA). Another change which emerged during the project implementation was the sector reform related restructuring in DAWASA which led to the separation of the operational roles and the oversight and supervisory responsibilities. This resulted in the engagement of a private operator City Water Services Ltd to undertake the operational function but the contract was terminated after one year. In its place, the Government constituted a public owned corporation, Dar es Salaam Water and Sewerage Corporation (DAWASCO). All operations related components of the project assigned to DAWASA were transferred to DAWASCO. To ensure implementation, these WAC project activities were incorporated into the performance based agreement between DAWASA and DAWASCO.

5.1.3 Stakeholder Participation

The implementation strategy adopted of developing partnerships with existing local institutions and experts instead of creating new institutions for implementing project activities contributed to stakeholder participation and integration of the project into these institutions. The evaluation team considers this to be an efficient and cost effective, capacity strengthening and ownership building approach.

The project design incorporated a strong focus on stakeholder ownership, management and implementation throughout the project cycle. As designed, the Dar es Salaam WAC project was initiated on demand by the GoT which requested for participation in the Managing Water for African Cities Project. The project implementation plan was developed through a consultative process involving key players and stakeholders in Tanzania who also included the project steering committee. The local institutions which are responsible for implementing the various components of the project are also stakeholders in all aspects of the project.

Stakeholder workshops held at local, national and regional levels which involved beneficiaries, experts, practitioners, staff members and decision makers provided opportunities for direct engagement and participation in project implementation. These workshops were important for the development of the strategies, procedures, guidelines and training materials that were critical outputs of the project. The workshops also provided opportunities for testing, consensus building and approval of these strategic documents and decision making on the various project components. For example the strategy for water conservation and demand management required the engagement and approval and adoption by stakeholders who are to own and implement it. the Curriculum developers, teachers, school inspectors and ministry of education representatives were involved in the development, testing and piloting of the Value Based Water Education training materials and teachers' guides. Introduction of WDM into ground water supply also involved the community engagement through water users' associations and management committees as co-owners and managers of the boreholes they are responsible for.

The overall design of the Phase I of this project was to focus on implementation of interventions in selected interrelated areas by developing strategies, procedures and structures that will develop capacities through which water conservation, demand management and pollution control of water resources were to be introduced and promoted in Dar es Salaam City. This approach reflects the catalytic role the WAC demonstration project has played of building capacities of the key player institutions in the water sector for improved water supply and management in Dar es Salaam.

5.2 Implementation of Project Activities and Outputs.

Evaluation findings on project implementation indicate that most of the project activities and outputs were produced as planned. Annex 4 summarizes the planned and achieved outputs. A few of the outputs that had not been fully completed were largely as a result of under budgeting but have been incorporated into future plans and therefore would be finalized with additional resources.

5.2.1 Promoting water demand management in the areas served by DAWASA.

Four key activities were planned and implemented towards achieving this objective: i) development of a water demand management and conservation strategy for the city of Dar es Salaam; ii) setting up of a Water Demand Management Unit in DAWASCO; iii) building the capacity of DAWASCO in GIS and iv) building capacity in leak detection and repairs. DAWASA was responsible for the implementation of these activities under the cooperation agreement with UN-HABITAT, but were implemented by DAWASCO as was envisaged.

i*) Development of a water demand management and conservation strategy for the city of Dar es Salaam.*

The work of preparing this strategy was assigned to the Bureau of Industrial Cooperation (BICO) of the University of Dar es Salaam through a consultancy agreement with DAWASA. Under this agreement, two consultants from BICO facilitated the strategy development process which involved a participatory and consultative approach of engagement with experts and key stakeholders. The process involved the following stages:

- The consultants developed a detailed work plan for preparing the strategy (inception report) which outlined the rationale and activities to be carried out and the expected outputs.
- A workshop of stakeholders and team of experts was conducted to discuss the proposed process (inception report) and recommendations were incorporated.
- The consultants conducted detailed water conservation and demand management situation analysis, made consultations with stakeholders and developed a draft strategy which was circulated for comments.
- Stakeholders and team of experts participated in a second workshop that discussed the draft strategy and recommended changes for the final document.
- The consultants incorporated the recommendations and submitted the final document to DAWASA.

A "Comprehensive Water Conservation and Demand Management Strategy" (WCDMS) document for the City of Dar es Salaam was finalized and adopted by the stakeholders at a workshop in November, 2005. The strategy supports the implementation of the national water policy and is now the basis for water conservation and demand management activities in WAC Dar es Salaam.

ii) Establishment of a Water Demand Management Unit

The task of developing the procedures for setting up the WDM Unit was given to a technical team of two consultants from BICO through a consultancy contract with DAWASA. Through the project support, BICO conducted a detailed consultative institutional capacity and needs assessment of DAWASCO and DAWASA to determine the need and role that the unit could play in the implementation of the Water Conservation and Demand Management Strategy in Dar es Salaam City.

The required technical and administrative skills were determined and staffing capacity proposed. Training needs of existing staff were assessed and a training programme was proposed. The required equipments and software for effective operations of the WDM unit were identified and recommended. A detailed report was produced which defined the procedures to be followed in setting up the WDM Unit in DAWASCO. The proposed process was used in the setting up of the WDM unit which is now staffed and responsible for all aspects of WDM.

The procedures developed for setting up the WDM unit have served as the implementation plan that the DAWASCO board has used to institute major restructuring in the institution which includes the setting up of the Water Demand Management unit. The operations staff and structure that DAWASCO inherited from DAWASA were overhauled to enable effective implementation of the contract agreement with DAWASA which is based on the principles of water conservation and demand management outlined in the DWCDM strategy and enshrined in the Tanzania Water Policy.

The initial plan in this project was to set up the WDM Unit in DAWASA. However, this changed as a result of the water sector reforms outlined in the water policy of 2002. The reforms resulted in DAWASA becoming a Public Granting Authority (PAG) with changes in mandate from an operational role to a supervisory role in the supply of water and sanitation services in Dar es Salaam City. The operational aspects were contracted to a Private Operator, City Water Services Ltd. Following poor performance, the Government terminated the contract with the private operator and in its place created a public owned corporation (DAWASCO) to undertake all operational functions under a performance based contract with DAWASA. The project activities related to the setting up and operationalising the WCDM strategy were, therefore, transferred from DAWASA to DAWASCO. This adjustment helped keep the project on track and contributed to the achievement of the objective.

The evaluation team established that a functional Water Demand Management Unit (WDMU) has been established in DAWASCO, now in its second year of operation. The WDMU is now discharging the following responsibilities:

- Managing bulk meters on the water supply system;
- Carrying out hydraulic modeling;
- Carrying out water balance in the system and;
- Managing Assets through computerized databases.

iii) Capacity Building in GIS

The implementation of the capacity building in GIS activities were facilitated by the University College of Lands and Architectural Studies (UCLAS), through a consultancy agreement with DAWASA. UCLAS conducted a detailed skills audit and training needs assessment in both DAWASA and DAWASCO to determine the gap between the current GIS skill capacity and required levels. A training programme was developed followed by training modules for the different cadres and skills enhancement in GIS in the two institutions.

During project implementation, two staff from DAWASA and 8 from DAWASCO have been trained in basic GIS skills. A second phase, beyond the project funding, is ongoing and focuses on applied GIS to equip operations staff to utilize the GIS in the day- to-day work of these institutions. DAWASCO has continued with the capacity building in GIS beyond the initial training under the project funding. The focus is 8 staff, three women and five men who are undergoing advanced training, by experts contracted from South Africa, using the software package ArchGIS module 9.2. This training covers four practical areas that will improve the operational capacity of DAWASCO. The areas are:

- A complete system to author, serve and use geographic information;
- Tools for generating and accessing of geographic information through mobile, web based or desk top medium for different users and uses;
- A complete developer environment for building customized and integrated systems;
- A scalable, high performance information and application infrastructure that offers high flexibility and capability for different purposes.

Four of the trained staff are using GIS information that supports leak detection and maintenance related work while other four are concentrating on developing skills that support water demand management. The trainees are also being prepared to serve as trainers in GIS for DAWASCO and other institutions in future.

A GIS laboratory with all necessary equipment, hardware and software has been set up. Funds for the purchase of the equipment (i.e. leak detection equipment, computers, plotters, pipes and fittings for repairs) were provided by the WB and the GoT funded project that supports rehabilitation and expansion of the water supply infrastructure. The linkage with other projects was envisaged as reflected in the cooperation agreement between UNHABITAT and DAWASA.

High resolution aerial base maps for Dar es Salaam city have been acquired by DAWASCO and are being used in the customer survey and inventory. Development of a GIS database of pipes, fittings, hydraulic equipment processing is being set up by the GIS Unit and is now linked with Leak detection work. Figure 1 is a picture showing the GIS laboratory in use in DAWASCO.

Figure 1: GIS laboratory in DAWASCO

The GIS capability is being used in the customer survey mapping exercise that started in October, 2005 and is in progress. The survey is currently estimated to have covered about 80% of the target. The initiative took off from the existing distribution map broken into blocks of 100x100 meters for the entire operation area which has since been digitized. Information on new customers is entered into the system directly thus keeping the customer database updated.

A GIS intelligent asset management capability has also been achieved in DAWASCO. Computerized databases for asset registers, pipe libraries for network data have been established and are being updated and integrated with the leak detection and repair activities. This network model has been in operation since March, 2007.

A computerized, user friendly billing software has been procured and is in use. The system is now linked to the customer survey data base. This capability has contributed towards improved revenue collection from water customers.

With the already digitized information, DAWASCO is able to link operations data base with commercial data base. The goal is to have a GIS network enabled system that supports both, the operations maintenance systems with monitoring capabilities.

iv) Capacity Building in Leak Detection and Repairs.

DAWASA engaged the services of experts from the University of Dar es Salaam who conducted a capacity and needs assessment in DAWASA in leakage management. A strategy for capacity building in leakage detection, repairs and monitoring was developed and submitted to DAWASA for implementation. It was recommended that, in addition to upgrading of skills of existing staff, additional staff be recruited with specialized skills to enhance the capacity for supervision and monitoring of leakage detection and repairs.

All Staff of DAWASCO involved in leak detection and repairs have undergone on the job training in leak detection and repair. This includes the four staff that have been trained in GIS and its applications in leakage management. In addition, 10 engineers and 42 technicians have been hired to cover the 10 zones served by DAWASA. The leakage detection team has been divided

into groups and assigned responsibilities for three categories of water pipes with diameters of : 1.5 to 8 inches; 8- 12 inches and 12 to 54 inches. Field operation offices have been set up in each zone managed by an engineer and a team of technicians. As most of the leaks occur in the smaller diameter pipes, DAWASCO has set up larger team members decentralized in all the zones to manage the detection and repairs. They are responsible for surveys, leak detection and repairs. The team managing the main distribution lines works in two groups, Upper Ruvu and Lower Ruvu zones. DAWASCO has also set up a surveillance patrol team that monitors major pipe bursts thus reducing the water loses previously experienced due to poor detection and repair system. Figure 2 shows repairs in progress.

Figure 2: Technicians repairing/replacing burst pipe

A computerized database for asset management based on the inventory and updates of assets in the water distribution system of DAWASA area have been established and a network model has been in operation since March, 2007.

Installation of bulk meters is in progress with 19 out of 54 meters already installed by June, 2007. This is part of the ongoing interlinked, World Bank and GoT funded, project on rehabilitation and extension of water distribution system. When completed, the bulk meters will provide DAWASA information on the amount entering the distribution system and hence improve ability to account for available water.

5.2.2 Mitigating the Impact of Urbanization of Fresh water resources and aquatic systems

Three outputs were expected from this focus area. Development of procedures and guidelines for environmental monitoring; establishment of routine monitoring system and data base; and institutionalization of environmental monitoring in DAWASA. All project activities on environmental monitoring were delegated, by DAWASA, to the Institute of Resource Assessment (IRA) for implementation through a consultancy contract reviewed annually under an ongoing five year MOU between the two institutions. Discussions on the work plan for the second year of the contract are underway.

The main task of this component was to develop a system for environmental monitoring of water sources in Dar es Salaam and undertake the monitoring activities. In order for IRA to effectively implement the assigned work, IRA set up an Environmental Monitoring Assistance (EMA) team of experts. The EMA team comprised of five experts from relevant departments of the University of Dar es Salaam with the team leader from IRA. These were: Prof. R. Mwalyosi, the team leader and environmental analyst from the Institute of Resource Assessment; Prof. D. A. Mashauri , a senior environmental expert from the College of Engineering; Dr. R. Mato, an environmental expert from the University College of Lands and Architectural Studies (UCLAS); Mr. Pallangyo, a water analyst in the College of Engineering, and Mr. F. Mlenge, a database manager, University College of Lands and Architectural Studies (UCLAS).

i) Development of environmental monitoring procedures and guidelines

The following activities were undertaken by the team:
Conducted a comprehensive review from primary and secondary data sources on ground and subsurface water and environmental pollution monitoring in Dar es Salaam which helped establish the status and identify gaps for an effective monitoring system.
A draft report was developed which outlined the procedures and guidelines to be followed in environmental monitoring of surface and groundwater in Dar es Salaam.
Conducted a workshop with all stakeholders to discuss and approve the proposed procedures and guidelines for environmental monitoring. The participants (stakeholders) included the Ministry of Water, DAWASA, DAWASCO, National Water and Sanitation Programme, Central Laboratory and representatives from the donor community (ADB, IDA and UN-HABITAT).

ii) ***Carried out environmental monitoring according to agreed and finalized procedures and guidelines.***

- The EMA team conducted the first environmental monitoring exercise using the developed procedures and guidelines. The team visited Mtoni Water Treatment Plant (MWTP), Kimara Water Tanks, University Water Tanks and the Msasani Waste stabilization Ponds (WSP) to establish the status of the water supplies and sewerage facilities.
- The EMA team established monitoring sites from where initial sampling was done to assist in planning the monitoring programme and define the monitoring parameters. A total of 30 samples were collected (20 from the distribution system and 10 from boreholes).
- Analysis of the water samples was conducted at the Water Resources Engineering laboratory at the University of Dar es Salaam and results were generated.
- Based on the initial environmental monitoring exercise, a reporting format for monitoring water quality was developed. Regular monitoring is now undertaken by IRA and reporting is done using the developed reporting format to prepare bi-monthly monitoring reports submitted to DAWASA and other stakeholders.

iii) Institutionalization of environmental monitoring in DAWASA

An environmental compliance unit (ECU) was set up in DAWASA and is tasked with ensuring compliance to EMP and safeguard policies are implemented and reported on all aspects of DWSSP. Three DAWASA staff were trained to enable them carry out the environmental

monitoring in the long term. More are to be trained in the second phase of DAWASA monitoring exercise to be started in the near future.

The training programme included on-the-job training where 3 DAWASA staff participated in the sample collection and analysis under EMA supervision. In addition, one week practical courses were held at the UDSM. Three DAWASA staff attended the course. The training consisted of a short lecture on the theories behind water and wastewater analysis, followed by practicals.

5.2.3 Public Awareness on Water Demand Management, Sanitation and Related Environmental Issues.

i) Developing of WCDM Strategy and action plan for public awareness.

The project supported the process of strategy formulation and an action plan for conducting public awareness campaigns. A consultant was hired by DAWASA to facilitate this process. A public survey was conducted which helped assess the level of knowledge on WDM and their attitude/behavior towards water consumption and conservation. The survey covered different groups including policy makers, communities, school children and the public as a whole.

In consultation with DAWASA, the consultant developed a draft strategy and action plan for public awareness campaign based on the survey results. After review by DAWASA and campaign experts, the awareness campaign strategy was adopted by DAWASA for implementation.

ii) Public Awareness on WDM.

The campaigns involved the use of different approaches which were proposed in the public awareness campaign strategy document. To date, DAWASA has utilized different strategies to communicate messages to the public.

These include:

- the media: radio (15 minutes each) = 8 shows and television broadcasts (15 minutes each) 4 times as well as advertisements through local newspapers, 12 releases made;
- promotional materials such as brochures, leaflets- 500 pcs. and T-shirts;
- Drama and theatre performances by local groups- 6 times
- Public Barazas, seminars and workshops for different stakeholders consultations -9 events
- Special events such as international water week.

iii) Training Communities in WDM

A Public Awareness Campaigns Unit has been established in DAWASA which is responsible for all public awareness campaign activities related to promoting water conservation, demand management and pollution control. DAWASA and DAWASCO are collaborating closely in this activity. The evaluation team noted the advertisements in public offices encouraging customers to pay their water bills. DAWASCO has set up centres for payment of water bills in various parts of the City. Other messages include reporting on illegal connections, vandalism and leakages.

5.2.4 Introduction of Water Demand Management in community managed ground water supply projects.

The community Liaison office of DAWASA was responsible for the implementation and coordination of the community based management of ground water supplies activities of this project. Integration of water conservation and demand management into ground water supplies was piloted in selected boreholes developed by DAWASA and given to the communities to manage. DAWASA entered into partnership with NGOs (Plan International and Care Tanzania), which are already working in water related projects in the pilot project sites for community mobilization and training in WDM. The drilling of the boreholes is separately funded under the Water and Sanitation Programme while the funds from the WAC project supports community mobilization and capacity building to promote WDM.

The local NGO staff who include a water engineer and community mobilizers and trainers work closely with the community at all stages of the development of ground water supply system. The community managed pilot boreholes are designed to facilitate efficient accounting for all the water and minimize any loses. The boreholes are fitted with a main meter to monitor extraction and supply and other meters are fitted at every distribution and sale point (Figure 4).

Figure 4: Community Managed borehole in Mwananyamala.

The project has facilitated the establishment of Water Users Association groups that are responsible for managing the water supply from bore holes developed through ownership arrangements of buying 5% equity with DAWASA. To date, 38 Water User Association groups have been formed out of which 28 have been registered and the rest are in the process. The evaluation team visited a registered Water User Association, Ngilangwa, and was informed that, putting borehole management under these groups helps improve the supply of water to poor communities. Each borehole serves as many as 400 families. The metered water is affordable and the money collected is used by the management committees to pay for the costs of supply the water. This is an indication of the potential for a multiplier effect this project has to achieve increased access to safer and cost effective water resource, improved sanitation and hygiene if extended to all the boreholes.

Through the WAC project support, a training programme for water management committees and water users associations has been developed and is being used in the community managers of ground water supplies in all aspects of water demand management. The water management committees are now responsible for the day to day management of the boreholes and ensuring that revenue collection is efficient and operational costs are covered.

5.2.5 Promotion of value based water education in formal education

The task of implementing the value based water sanitation hygiene education (VBWSHE) was given to Tanzania Institute of Education (TIE) through cooperation agreement with UNHABITAT. The institute is responsible for curriculum development in Tanzania. The following activities and outputs were identified for immediate implementation:

- Develop value based water education teaching materials to be included in the school syllabus
- Train teachers and curriculum developers to implement the programme
- Develop Teachers' Guide for the curriculum.
- Implement the curriculum in the pilot schools

The (VBWSHE) programme was launched in August 2004 by the current UNHABITAT Executive Director as a pilot project and right from the start received publicity and acceptance beyond the target pilot institutions. The implementation was preceded by a participatory action plan that instituted the processes that led to the development of a syllabus for VBWSHE curriculum. A national stakeholder training workshop on value based water sanitation and hygiene education (VBWSHE) was held from 9th May to 12th May, 2006 in order to review the prepared draft action plan developed by the TIE at Ndola sub-regional Workshop held earlier in Zambia. Review process was followed by testing of the training manuals and teacher guides for teaching/learning for both primary and secondary schools in order to establish their applicability and the gaps for improvements. During the workshop, a total of 33 participants that included teachers from pilot primary and secondary schools, Teachers' colleges, inspectors and curriculum developers were trained. The trained team now serve as the trainers in VBWSHE.

The following materials have been developed and tested as was planned:

- Training Manuals
- Manual for Human Values in Community/Non-Formal VBWSHE
- Training Manual for Networking Strategies on VBWSHE
- Training Manual for the Integration of VBWSHE into the School Curriculum
- Manual for VBWSHE in dedicated classrooms
- Teachers Guides
- Teachers' guide for secondary school subjects
- Guide for non-formal VBWSHE
- Teachers' guide for VBWSHE in Primary Schools
- Teachers' guide for integration
- Teachers' guide for dedicated classrooms

Six pilot schools, two secondary and four primary schools were selected for the project. These are Barbro Johansson Model Girls Secondary School and Kibasila Secondary School whereas selected Primary Schools were Uhuru Mchanganyiko, Tandale, Mwalimu Nyerere and Kipawa.

The selected pilot schools represent primary and secondary, private and public and in terms of coverage, representation in each of the three municipalities of Dar es Salaam City.

The trained teachers from the pilot schools have been instrumental in the launching of VBWSHE in their respective schools. The key activities that have been implemented at the school level include formation of Water Clubs (whose leaders are drawn from among school children through democratic elections), seminars and dissemination of leaflets and participation in environmental day are being undertaken as well. Progress reports from TIE and discussions with the senior management of TIE indicate the activities at the pilot schools are a big attraction to students. In some cases neighboring schools have started visiting pilot schools and expressed interest in starting the program in their schools.

Continuous monitoring and evaluation is embedded in the VBWSHE action plan where feedback information and lessons learnt are reported by the pilot schools to TIE and form part of the reporting to UN-HABITAT. It is envisaged that this monitoring system will continue to be used as other schools join the initiative and other institutions in the established network become fully functional.

5.2.6 Monitoring Aquifer and Impact of Ground Water Abstraction.

Implementation of the project activities on aquifer monitoring in Dar es Salaam was assigned to the Wami Ruvu Basin Water Office (WRBWO) through a cooperation agreement with UN-HABITAT. The WRBWO is a statutory Government Agency mandated to oversee the eastern Wami-Ruvu Basin which includes the water catchment for Dar es Salaam. Three key activities were planned for and implemented that were aimed at developing the capacity for monitoring ground water resources in Dar es Salaam area to determine the status of both the quality and quantity. These included:

a) Drilling of five observation boreholes;
b) Conducting a ground water inventory and set up a database and;
c) Establishing a ground water monitoring unit.

a) Drilling of five observation boreholes:
New boreholes were not drilled. The WRBWO used existing boreholes drilled by DAWASA as observation sites for ground water monitoring. Initial work on ground water quality monitoring undertaken with 330 samples of water were collected for physiochemical and 218 samples for bacteriological quality analysis were taken from some of the boreholes which are located in areas with high potential for contamination. Analysis of these pilot samples was done and the results will be used as benchmark for subsequent monitoring of these boreholes for water quality and changes in the aquifers.

b) Conducting a ground water inventory and set up a database
Through the project support, a groundwater sources inventory exercise for Dar es Salaam was launched in Ilala and Kinondoni Districts, (two of the three Districts of Dar es Salaam), where 418 boreholes were identified and located using GPS. The survey also involved documentation on the specific characteristics of the boreholes and their use. A computerized database for ground water supply sources has been established and contains information on the location, owner, driller, number, yield, water use and quality, and water right for the 418 boreholes.

Information from the ground water inventory for the two zones indicates that a significant proportion of the Dar es Salaam residents depend on ground water sources extracted from boreholes as indicated by the concentration of boreholes in the two zones. The boreholes are drilled, owned and managed by a variety of public and private institutions, and individuals. A large number of these boreholes have been drilled without approval from the authorities as required and, therefore, there is no record of their existence nor the amount of water being extracted. The borehole inventory has therefore provided valuable information that will help get accurate estimates of ground water resources already being extracted once the data analysis is done. The exercise has also highlighted some critical issues regarding control and management of ground water resources that will need to be addressed as part of the mitigation against pollution and unsustainable exploitation of the water resource.

c) ***Establishing a ground water monitoring unit.***
A ground water monitoring unit has been established within the Wami Ruvu Basin Water Office (WRBWO) at the Ministry of Water HQ in Dar es Salaam. The Unit has the minimum capacity for monitoring of ground water quality and some aquifer characteristics. The Unit activities are coordinated by two hydrologists who also have access to the services of Ministry of Water field technicians that the operations of the Unit may require.

A training programme for capacity building for the WRBWO personnel in ground water resources monitoring was launched. The initial course was a practical training on ground water monitoring during the borehole inventory exercise and ground water sampling and analysis for water quality.

The ground water monitoring unit staff informed the evaluation team that they have developed long term plans that will be implemented through the unit. The plans consist of completion of the already started activities under WAC and consolidation of the aquifer monitoring procedures, they include:

a) Establishing aquifer boundaries in order to allow meaningful planning for monitoring and exploitation of the aquifer resources.
b) Developing an effective groundwater observation network of boreholes.
c) A comprehensive inventory and digitized mapping of existing ground water infrastructure to account for and monitor ground water extraction.
d) Setting up and building staff capacity for a GIS/GPS enabled System for aquifer related data/information storage and retrieval database to facilitate a comprehensive monitoring and reporting system on changes in aquifers and ground water management.

d) Environmental impact assessment for Kidunda Dam
The project proposal study and the Environmental Impact Assessment (EIA) for Kidunda Dam along Ruvu River have been undertaken and the final reports produced. The dam is intended to regulate Ruvu River in order to assist in checking the outflow that result into shortages during the dry spell periods that affects water supply.

The terms of reference and parameters for conducting an EIA were developed and used in the conduct of the EIA. The project proposal study and the Environmental Impact Assessment (EIA) for Kidunda Dam along Ruvu River have been undertaken and the final reports produced. The dam is intended to regulate Ruvu River in order to assist in checking the outflow that result into water shortages during the dry spell periods.

5.3 Some Achievements of Project Outcomes

This section examines the level and extent of achievement of project outcomes which must be viewed in the context of the situation before the project intervention in relation to the potential and actual changes that the project has influenced. It also takes into account other external factors that contributed to the project achievements and outcomes.

5.3.1 Water Demand Management promoted

Although a revised national water policy had just been developed and adopted in Tanzania, a strategy to operationalize it had not been developed and, therefore, the concept and strategy of WDM had not been effectively introduced. It was also noted that water development projects and programmes had not incorporated WDM. Water Demand Management is a key feature in the National Water Policy which states that "WDM measures will be undertaken to conserve and use the available water efficiently and equitably" It also address the need to account for all water in the distribution system through metering and states that "All water produced and water supplied to every customer shall be metered and private sources will not be allowed unless with consent of regulating authority". The WAC Dar es Salaam project adopted the proposed strategies in the water policy for promoting WDM which involves the following:

- appropriate tariff setting that covers costs and discourages wastage;
- Instituting effective metering, billing and revenue collection mechanism and;
- Leakage control through effective leak detection and repair system.

The WCDM strategy is now an integral part of the operations of both DAWASA and DAWASCO. DAWASA has extensively used it in developing the performance based contract it has developed with DAWASCO as the private operator water and sewerage utility for Dar es Salaam. The strategy has also been fully incorporated into the mid-term strategy and annual work plan for DAWASCO. Adoption of the WCDM strategy by the key water utility institutions is an indication of the potential for impacting on water demand management in Dar es Salaam.

Capacity building in leak detection and repairs was seen as a critical area of intervention towards promoting WDM. Unaccounted for water in Dar es Salaam was a major source of water shortage and loss of revenue. in building the capacity of DAWASCO for rapid leak detection and repairs and GIS capacity that support and promote WDM in the DAWASA area. The evaluation findings indicate that the project has played a catalytic role by facilitating capacity building in GIS in DAWASA to support its supervisory role and for the operations work in DAWASCO.

The Geographic Information System (GIS) is indeed a valuable tool for running an effective and efficient water distribution, conservation and demand management system. The GIS capacity has facilitated digitized mapping and inventorying of water distribution and sewerage network system which intends to cover the entire city of Dar es Salaam and enable easy retrieval and updating of the information. The ability to link digitized customer survey information and information on status of the water distribution system has increased DAWASCO's ability to influence water conservation and demand management.

The capacity of DAWASCO to detect and repair leakages has been enhanced compared to what it was in 2005. At the start of the project, unaccounted for water (UFW) was identified as a major problem in Dar es Salaam with losses estimated at 60% of which 30% was loss through leakages in the distribution system. The project has contributed towards the significant progress in

addressing this problem. There has been increase in DAWASCO's capacity to handle network leakages. It is estimated that 27,300 Cubic meters per day of previously unaccounted for water is now saved resulting in both financial gains as well as more water supply capacity. Service coverage on those with piped water has also increased from 38 % in 2005, to about 68 % in 2007 as a result of ongoing rehabilitation of the water distribution system through the World Bank project funding.

Figure 4: Illegal water connections in Dar es Salaam

The illegal connections which were a major cause of water leaks within the city have, to a large extent, been controlled as a result of the increased leak detection and monitoring capabilities. For example, it is estimated that about 60% of the illegal connections, which were accounting for 30% of the loss to leaks in the system, have been disconnected from the water distribution network within DAWASA/DAWASCO area of operation.

The project has demonstrated that with adequate capacity and systems to detect monitor and repair water leakages, leakages can be successfully managed. This is indicated by the significant reduction in response recorded by DAWASA in the ten zones to as low as one hour and an average of 4 hours compared to the target of 8 hours. However, it should be noted that at the moment, DAWASCO is only able to deal with the detection and repairs of surface leaks and not the subsurface leaks.

In monetary terms, estimates from DAWASCO indicates that about TShs. 17.8 million per day is saved as a result of the improved water conservation and demand management interventions that have been instituted. In terms of corporate revenue base, DAWASCO receives TShs. 1.6 Billion as monthly revenue, as of May 2007, compared to TShs. 954 million in May, 2005. DAWASCO attributes this success to a number of factors including improved leakage management operations and network rehabilitation.

The need to establish a Water Demand Management Unit was necessitated by the then prevailing situation where various elements of WDM in the water sector in the DAWASA area were not coordinated. The concept and policy on water demand management was new to water delivery in Dar es Salaam and indeed Tanzania having been introduced into the sector through the water policy which came into effect in 2002. Although meters were being installed to improve revenue

collection, there was no differential tariff setting system to encourage water conservation and there was neither system nor capacity in place for systematic leak detection and repair. DAWASA was not proactively engaged in promoting water conservation and demand management. The purpose of establishing a dedicated WDM Unit, therefore, was to enhance the institutional capacity of DAWASCO in WDM, a role that the new Unit is already playing. The evaluation team was informed by staff in both DAWASA and DAWASCO that the unit has been instrumental in promoting and ensuring that WDM principles are integrated into other projects being funded and implemented in the DAWASA area along side the WAC project.

Although remarkable progress has been made in promoting WDM, there is still much more to be done in the long run to progressively build a strong WDM system. The focus on building capacity in technical strategies for WDM will need to be accompanied with law enforcement to address vandalism, illegal connections and lack of payment of water bills as well as increased public accountability and value based WDM through public awareness raising campaigns. Leak detection and repairs have largely focused on surface with limited attention on subsurface leaks. Another area that was not planned for in the pilot phase is interventions to address water conservation in both the productive and domestic uses.

5.3.2 Public awareness on Water Demand Management increased.

People's awareness about water conservation and demand management is growing. The starting point has been the decision makers and institutions which were engaged in the implantation of this project and are the ones mandated to promote water conservation and demand management. The evaluation team found the staff and management teams in the Ministry of Water, DAWASA, DAWASCO, education sector and the community to be knowledgeable and fully committed to water conservation and demand management. Although the public awareness campaign project activities were targeting Dar es Salaam City, the outreach has been much bigger especially for messages communicated through the print, radio and television media which have national coverage.

Public participation in the World Water week activities has increased since the launch of the water policy and subsequent projects such as WAC which have helped raise people's awareness of the significance and threat to the water resource. Such events are launched by senior government officials, a clear indication of the significance policy makers now attach to water conservation and demand management.

The public has started taking responsibility for policing and protecting the DAWASA owned water distribution system against theft and vandalism. A recent case was reported in the local daily where in Kiluvya village the community noticed thieves vandalizing the water system and apprehended the culprits. They reported the case to DAWASCO team. The recovered equipment was worth over TShs. 50 million. Such action by the public saved DAWASA and DAWASCO money as well as ensured that water supply was not disrupted nor wasted. The critical role of public awareness campaigns in WDM has been appreciated and the need to scale up and diversify the strategies and reach a wider audience has been recognized.

5.3.3 The capacity for environmental monitoring has been strengthened.

The project has contributed towards building the capacity for environmental monitoring of surface and ground water supplied in Dar es Salaam. The project facilitated the development of procedures and guidelines for environmental monitoring of surface and ground water sources in Dar es Salaam which were tested and are being used in the regular environmental monitoring of water in Dar es Salaam. The results from the field visit to the water treatment and sewerage facilities together with the initial environmental monitoring sampling have provided valuable information on the status of the water quality and potential for pollution. Together with the collected data from continuous monitoring, the results helped in establishing the monitoring sites and in deciding which parameters to include in the monitoring programme.

The WAC project environmental pollution monitoring intervention has been a significant contribution as there was no institution that was conducting continuous pollution monitoring or checking the quality of water supplied to Dar es Salaam. The Central Government Laboratory monitors water at national level but sample is taken on ad-hoc basis, when there is a demand for such from the government circles. Now pollution monitoring undertaken by DAWASA through EMA team is a regular activity. Although currently DAWASA does not have full internal capacity yet to monitor water pollution on its own, that capacity is gradually being built. DAWASA has some of the equipment but not all that is required; and their technicians are not yet capable of doing all monitoring aspects alone although by the end of 2007, it is estimated by EMA team of experts that DAWASA will have managed 80% capacity.

The setting up of an environmental compliance unit (ECU) in DAWASA has helped strengthen and institutionalize the environmental monitoring work. The Unit which is tasked with a mandate to ensure compliance to Environmental Management Plan (EMP) and safeguard policies on environmental and water quality are implemented on all aspects of DWSSP. DAWASA and DAWASCO both report on compliance annually and in order to avoid conflict of interest, IRA was incorporated to the project as an independent environmental monitoring and training expert. Quality assurance on DAWASCO as private operator has been instituted and strengthened.

Environmental pollution and water quality monitoring is now a regular activity by DAWASA and DAWASCO with technical support from IRA. An environmental monitoring database, that is interactive and user friendly has been developed and installed at DAWASA and is used by the environmental unit to monitor water quality. DAWASA technicians are now able to feed and analyze some of the parameters although on their own cannot do all data manipulations. During WAC Phase II, they will be taught data analysis manipulations with changes in environmental pollution and water quality conditions.

With the environmental monitoring capability developed, it is possible to determine the status of environmental monitoring performance of DAWASA/DAWASCO as well as the status of the water consumed and wastewater disposed of into the inland water bodies in the city. It has been established from monitoring findings, for example that, during the first year of monitoring, DAWASCO has succeeded in supplying safe drinking water, in terms of bacteriological and chemical quality. The nitrate levels were generally low and faecal contamination were to a large extent, not observed in almost all boreholes and distribution network, although just a few scattered sites were noted with abnormality in faecal and chlorine levels in the water.

A major gap and concern that emerged from environmental monitoring work was the inadequate and dysfunctional waste water management facilities. The field assessment of these facilities by the EMA team showed that the wastewater treatment ponds have not been working well as

indicated from the effluent quality. One private operator in solid waste and sewerage informed the evaluation team that waste management is a major challenge in Dar es Salaam. Although DAWASA and DAWASCO depend largely on private operators, the system is experiencing problems resulting in most private operators terminating their services because it is not cost effective. At the moment, only about 6 PO are involved in contrast with about 80 two years ago, an indication of the potential for engaging the private sector in waste management. The success registered by DAWASCO in water supply in the past two years through the public-private partnership should extended to the waste management to improve the service and protect water resources from pollution.

5.3.4 WDM has been integrated in community managed ground water supply projects.

Mobilization of the community through the 38 water user associations and water management committees has helped promote WDM principles, equity, gender mainstreaming, ownership and inclusive governance values in the management of ground water supplies in the demonstration projects. The group leadership committees are democratically elected; women participation with 50% representation in water management committees is a requirement. The Ngilangwa water user association in Mwananyamala which the evaluation team visited has 15 elected committee members of whom 10 are women.

The project has demonstrated that equity in access to water by low income earners can be addressed by involving the communities as the stakeholders in a public-community partnership. Water from bore holes managed by water users associations is cheaper and accessible to even the poor households. A 20 litre bucket of water is now available at TShs. 20 compared to TShs. 100 to 300 charged by private water vendors. A sense of ownership and self –governance has been raised with the management of the water from the bore holes is progressively being transferred to the water management committees and water users associations.

The project has successfully piloted and introduced water demand management into community managed borehole water supply systems. Through partnership with NGOs which have expertise in community mobilization and capacity building in water management, water users associations and water management committees have been formed through which WDM practices in ground water supplies can be promoted. Results from this project activity indicate the potential for a viable partnership between the public and the community in the ownership and sustainable management of water supplies. However, this pilot phase only covers a few boreholes, replication and scale up to all WUAs is needed.

5.3.5 Capacity for monitoring aquifers and ground water abstraction improved.

The project interventions have contributed towards building capacity of WRWBO to monitor and develop appropriate actions for mitigation. The project has facilitated implementation of three key activities which have contributed towards a better understanding of the state of ground water sources in the DAWASA area. These are the ground water extraction inventory, establishment of a monitoring system for ground water and setting up of a ground water monitoring unit in the Wami Ruvu basin Water Office. Although ground water form an important source of water for Dar es Salaam, no comprehensive account of the water extracted existed and nor a system for monitoring the changes in aquifers.

The information which has been generated from the ground water inventory for the two administrative districts of Dar es Salaam (out of three) indicates that a significant proportion of the Dar es Salaam residents depend on ground water sources extracted from boreholes as indicated by the concentration of boreholes in the two districts, 418. The boreholes are drilled, owned and managed by a variety of public and private institutions, and individuals. A large number of these boreholes have been drilled without approval from the authorities as required and, therefore, there is no record of their existence nor the amount of water being extracted. The borehole inventory has, therefore, provided valuable information that will help get accurate estimates of ground water resources already being extracted once the data analysis is finalized.

The exercise has also highlighted some critical issues regarding control and management of ground water resources that will need to be addressed as part of the mitigation against pollution and unsustainable exploitation of the water resource. It has been noted that although WRBWO is mandated to monitor and control ground water extraction, it does not have access to the information on approval, drilling records and water extraction from the boreholes as these are managed by other departments.

Setting up and building staff capacity for a GIS/GPS enabled System for aquifer related data/information storage and retrieval database to allow more efficient asset management and monitoring for planning purposes.

The newly created unit for ground water monitoring has helped institutionalize aquifer monitoring in WRBWO. The unit is now the reference point and serves as the advisor on ground water exploitation for other projects. For example, the unit is involved in the ongoing World Bank project aimed at increasing ground water supply by drilling boreholes where they have indicated the need to adhere to the monitoring procedures such as demarcating aquifer boundaries and providing drilling information.

5.3.6 Value based water education promoted in formal schools

The objective of introducing VBWSHE in selected pilot schools was to introduce a water-wise and sanitation-friendly ethics amongst children and communities through formal and non-formal education system. The broad aim of the programme is to influence changes in behavior and personal attitudes among water consumers and to promote better understanding of the environment in a water context. It was conceived that in order to achieve this, it is important to develop capacity in schools, colleges and communities in order to promote human values in relation to water, sanitation and hygiene education. The project succeeded in developing the capacity as planned through the development of the teaching guides, trainings materials and curriculum for both, students and teachers as well as trained 33 trainers who represent the target institutions, schools and colleges. The pilot activities in the selected schools indicate that the value based education programme can be integrated into the formal education system.

Although the VBWSHE was a relatively small intervention in terms of funding and immediate outreach the activity in the pilot schools has been fully embraced into the school curriculum. Monitoring reports indicate a growing interest and demand from non-pilot schools to start the Water Clubs. Two of the pilot schools, Barbro Johanson Sec. School and Mwalimu Nyerere Primary Schools, have set up water resource rooms schools using their own resources which are serving as demonstration and resource centres to these schools as well as neigbouring schools.

The development of VBWSHE materials, syllabus and guides in addition to the trained teachers in pilot schools is an achievement whose results have started to show through the kind of programmes already started in the pilot schools. The challenge facing this project is the resources to scale up the implementation in schools and colleges beyond the pilot schools. Feedback from the trained teachers indicated that the VBWSHE syllabus can be integrated into the existing curriculum thus indicating the potential for its adoption into the school system throughout the country. Feedback and lessons shared by the staff of TIE with the evaluation team indicate that in order to take this project component to the next level, it is important to engage more directly those that are directly involved in the implementation of the developed syllabi that should include: the inspectorate, teacher training institutions, schools and colleges.

5.4 Project Coordination and Management

A project management office was established in Tanzania with a chief technical advisor (CTA). The office was strategically located within DAWASA which ensured easy integration and interaction with key sector players and implementing agencies.

The office provided coordination and liaison between UN-HABITAT and stakeholders and also facilitated interaction and information sharing among implementing agencies. Monitoring and reporting on project implementation were also managed through this office.

The office facilitated the process of identifying the stakeholders relevant for the implementation of different project components and supported the drafting of cooperation agreements. A multi stakeholder workshop was convened by UN-HABITAT to launch the project where CAs, project work plans were discussed.

The CTA provided continuous support to stakeholders in administrative as well as technical aspects of the project implementation. The CTA's participation in workshops and meetings, convened by the stakeholders, helped to strengthen the relationship between UN-HABITAT and the partners. All implementing agencies visited by the evaluation team expressed appreciation of the role this office played in facilitating their work.

Monitoring of project activities was largely done through the implementing institutions. Monitoring reports formed part of the indicators and control mechanism for project funds. Disbursement of project funds was linked to delivery of project outputs and production of progress reports. Although there were delays in reporting, this approach ensured that the project funds were utilized as agreed. There is need to train staff, responsible for project implementation, on monitoring and reporting.

5.4.1 Monitoring and Reporting on Project implementation

Monitoring and reporting on project implementation were important elements that were included in the project document as well as the cooperation agreements (CAs) that UN-HABITAT signed with the Government of Tanzania and the three implementing institutions, DAWASA, TIE and WRBWO. The three CAs for the implementation of the various project components were designed as performance contracts that linked implementation of project activities with disbursement of the project funds. Thus, project funds were released in installments upon receipt of implementation or progress reports on the agreed activities and outputs. Only the initial disbursement was made upon signing of the CA. Therefore, each implementing agency produced

project progress reports as per the schedules agreed which varied from agency and project component to another.

For the project components and activities that DAWASA subcontracted to DAWASCO, IRA and UCLAS, similar monitoring and reporting requirements were incorporated into the consultancy agreements. These agencies reported to DAWASA, which then reported to UN-HABITAT. Although this resulted in double reporting, it ensured that the project activities and expected outputs were produced as agreed.

To facilitate UN-HABITAT track progress in the expected project outputs and disbursement of project funds, a format for bench marking reports was developed for each agency and formed part of the CA. The evaluation team confirmed that the form was regularly updated by UN-HABITAT indicating the project outputs that had been achieved and time and amount of funds disbursed to each agency.

In addition to tracking progress in project implementation and achievement of outputs, the monitoring system helped keep track on utilization of project funds. The evaluation findings show that although the CAs clearly indicated the timeframes for implementation of the project activities and completion of the outputs, these schedules were not always followed and resulted in delays. Consequently there were delays in disbursement of funds and partly resulted in the request for a no cost project extension to enable completion of project activities and outputs. In spite the delays, the system ensured that the project resources were used efficiently and the planned outputs were produced.

5.5 Project Sustainability

The goal of the WAC Programme to support African Cities manage the rapidly growing demand for water and mitigate against pollution of their freshwater resources emanating from poor waste management in these cities is acknowledged as a long term ambition and undertaking. The project design and implementation strategy reflects this fact by focusing on building the capacities of the relevant institutions and putting in place systems and structures needed for effective management of water for these cities. The Dar es Salaam project, as designed and implemented, indicates that several building blocks have been put in place that will support sustainability of the project activities and impact. However, this will depend on their application and support for consolidation and scale up in the long term.

a) Government support and ownership

The Dar es Salaam WAC project has a strong ownership which emanates from the way it was designed and implemented. The project was initiated on request by the Government and selected Dar es Salaam as pilot city and through the water sector ministry, was involved in its development. Therefore, from the start, it is seen as a joint venture between the UN-HABITAT and the Government of Tanzania through the commitments in the project agreement between the two institutions. This provides an enabling environment for its implementation and future support by the Government.

The evaluation findings reveal a direct link between the WAC Dar es Salaam project objectives and the National Water Policy objectives as well as the water sector reforms, especially the introduction of the public-private partnership in public service delivery, as has been the case for DAWASA and DAWASCO.

b) Capacity building of and ownership by implementing local institutions

The institutional set up for project implementation through existing institutions rather than creating new ones was aimed at building sustainability into the project interventions. The capacity building is targeting the institutions that will be responsible for continuing with the project interventions beyond the project life as this is within their mandates. For example DAWASA is the water utility agency responsible for water supply and management for Dar es Salaam while DAWASCO is now the private operator responsible for all operational aspects of water supply and management. The implementing institutions are appropriately aligned with project activities according to their mandate and normally assigned roles and areas of expertise. This approach has contributed to the integration of the WAC activities into the operations of these institutions and laid a good basis for project sustainability. As indicated earlier, some of the WAC objectives and activities have been integrated into the long term plans of the said institutions.

The project has supported the establishment of special units within the respective agencies. These included the water demand management Unit in DAWASCO, environmental monitoring unit and public awareness unit in DAWASA and an aquifer monitoring unit in WRBWO. These structures for institutionalizing new components into the local institutions are part of the project strategy to in-build sustainability into the process. For example, DAWASCO has incorporated WAC strategic objective of promoting water conservation and demand management in Dar es Salaam in

its 3-year Strategic Plan. The activities have also been reflected in the annual operational plans which are an indication of sustainability and ownership of the project interventions.

WAC interventions in WDM have largely catalyzed and influenced the ongoing reforms through private-public partnerships in the water sector. The performance of DAWASCO in the past two years indicates that it could soon reach profitable level it its operations and therefore be able to cover its operational costs. The challenge will be to get the balance between profit making and achieving the MDG of access to water for all including the urban poor.

The pilot project component that supported the introduction of WDM into ground water sources indicates good potential for sustainability. The communities have 5% ownership which is a critical element for taking responsibility for the water. The water users associations formed and the water management committees who are being trained to manage the boreholes form important structures for sustainability. The pilot however needs to be extended to all the boreholes to ensure comprehensive integration of WDM into the ground water sources.

Strengthened capacities of staff implementing agencies through training in relevant skills such as environmental monitoring and water pollution, aquifer monitoring, leak detection and repairs and GIS applications provides a strong foundation for sustainability of the project interventions.

Working with existing institutions has also been cost effective as project funds have been used for direct interventions rather than setting up new ones. Therefore, implementing agencies will not have the burden of raising funds or diverting their budgets to sustaining new institutions but rather will support the activities thus increasing the chances of their sustainability.

The project supported strategies, procedures; guidelines and education curriculum are all aimed at supporting long term work in WDM, monitoring environmental pollution, water quality and aquifers. The sustainability of this project as a whole, therefore, will depend on the extent to which these instruments and tools will be internalized and utilized by the responsible agencies for the intended purpose as these activities are crucial in achieving the overall WAC objectives in the long run.

c) Linkages with and synergy from other related projects

Most of WAC Project activities were linked to both ongoing initiatives in the implementing agencies as well as embedded in already funded work. The WAC project benefited from other related donor funded project activities such as those of the WB, JICA, European Investment Bank and IDA that were instrumental in procurement of equipment and other capital investments in the water sector as part of the sector reforms. The rehabilitated water and sewerage infrastructure system and equipment for GIS procured through funding from other sources enabled DAWASCO to have an enabling environment for introducing the water conservation and demand management components into their operations. This approach has enabled the limited funding for the WAC project to play a catalytic role in entrenching the water conservation and demand management interventions in the broader water sector reforms which will continue to get financial support.

d) GIS Benefit

Evaluation findings indicate that GIS applications have potential for use beyond the institutions that are currently using it for WDM. Data from aquifer monitoring and environmental monitoring

are yet to be linked. Other agencies, Tanzania Revenue Authority, TANESCO and National Housing Corporation have also contacted DAWASCO and requested for the digitized customer survey information being generated. This will also help them locate their facilities/assets and customers. The full extent of the value of the data being collected under WAC is yet to be determined. Partnership with these institutions on the use of the GIS capabilities could help strengthen the sustainability and expanded use of the facilities.

e) Project transition and continuity

The Dar es Salaam WAC project does not seem to have factored in the design the process of transition from one phase to the next and from an externally supported project to a fully integrated function of the respective institutions into phase I of the project. Therefore it is not explicit how the implementing institutions will eventually integrate the WAC initiative into their budgets and operations fully when the externally supported capacity building and support will end. Phase II will, therefore, needs to include a clear exit strategy to be built into the long term plan of the various project components and reflected in cooperation agreements. This should include:

- An agreed long term plan for transfer of full financial responsibility and ownership of the project activities with the implementing institutions. WAC to focus on supporting capacity building to achieve this process. Milestones on what is to be achieved and required support in financial and skills capacity should be indicated.
- Development of viable public-private and public-community partnerships in other aspects of water management and pollution control should be explored based on the experience from the DAWASA-DAWASCO in surface water.
- Government obligations and commitment for long term support and impact should be determined and negotiated for inclusion in the cooperation agreement. This should focus mainly on budgetary and relevant policy environment support for relevant sectors e.g. water, urban planning, finance and education.
- The design of phase II should prioritize integration of all WAC components into the national plans and infrastructure development funded projects in the relevant sectors to ensure long term budgetary and institutional support.
- A monitoring and evaluation system of the transition and exit from external dependence be instituted to track progress and allow for necessary adjustments.

5.6 Challenges in Project Design Implementation

Despite the project achievements, the following are some of the challenges experienced:

Project design: Although the project has helped lay a foundation for the achievement of project goal and objectives in the long term, it is yet to build on the achievements and requires time and resources to support utilization of the capacities, structures and strategies developed for implementation, consolidation and scale up of demonstration project interventions. The project is, therefore, unfinished business.

The WAC project by design focused on addressing water management Crisis. However, water is only one of the inter-related problems of chaotic urban development affecting Dar es Salaam. Poor physical and environmental urban planning affects water quality and infrastructure development and maintenance. For example some main water supply lines in Dar es Salaam are now under buildings or in areas which are inaccessible for rehabilitation or repairs. DAWASCO is being forced to establish new systems in some areas an option which is very costly. This problem has also forced DAWASCO to focus on surface leaks as subsurface leaks in many areas are obstructed by developments.

The termination of the contract with the private operator, temporarily delayed implementation of the water demand management component. However, with the creation of the public corporation, DAWASCO, the project has surpassed its target in that area.

The ground water inventory exercise revealed that a large number of the boreholes in Dar es Salaam have been drilled without approval from the authorities as required and, therefore, there is no record of their existence nor the amount of water being extracted. The WRWBO team spent time and resources locating unplanned boreholes. This will continue to create an information gap in monitoring and managing ground water extraction aquifers until the drilling is controlled and streamlined.

The evaluation team noted that because the project was implemented by several agencies which reported separately, it was difficult to get a complete picture of the implementation of the project as a whole. It was also noted that although most of the expected project outputs were produced, there was no one depository for them and, therefore, took time to access them. The evaluation team suggests that both the monitoring and the reporting be consolidated and that the implementing agencies be trained on monitoring and reporting to avoid delays.

A consolidated bench marking and reporting format that comprises of all the project components, activities and outputs from all implementing agencies could facilitate the production of consolidated monitoring reports for the whole project on a regular basis. This could be done through the project coordination office.

Pollution control: A key concern that emerged from environmental monitoring work was the inadequate and dysfunctional waste water management facilities. The field assessment of these facilities by the EMA team showed that the wastewater treatment ponds have not been working well as indicated from the effluent quality. The project focused on addressing issues of access and management of water and is yet to address the issues of sanitation and sewerage. Mitigation against pollution of water sources will depend on sanitation and sewerage management. The success registered by DAWASCO in water supply in the past two years through the public-

private partnership and funding for rehabilitating and expanding infrastructure for sewerage management should be extended to the sewerage and solid waste management to improve the service and protect water resources from pollution.

Gender mainstreaming: Integrating gender issues in project design makes it easy to assess how the project contributed to the achievement of results in improving the lives of both men and women. The project in its design did not explicitly incorporate gender considerations into the project interventions. However, this weakness has been recognized and activities introduced that will address the anomaly

Project management and coordination: The project experienced delays in submission of progress reports and agreed outputs from some implementing agencies which led to delays in disbursement of funds as per the project agreements. This necessitated request for a no cost extension of six months to enable completion of the planned activities.

Both the project coordination office and the UN-HABITAT country coordination office have one technical officer each. The evaluation team found these two offices over stretched to adequately provide the much needed technical and coordination support to implementing agencies. This has contributed to the challenges noted in follow up on monitoring, reporting and documentation of project interventions. However, there is need to increase the capacity of the coordinating office in Dar es Salaam.

Monitoring and documentation: Monitoring and reporting was done by project component as per the cooperation agreements. It is difficult to get the complete picture of the progress in project implementation as a whole. The experiences and lessons learned from implementation of demonstration project interventions are yet to be systematically documented across implementing institutions.

.

6. Lessons Learned and Conclusions

6.1 Lessons Learned

The following are some of the lessons identified:
Demonstration projects designed to introduce new concepts and strategies are successful when appropriate and supportive policy environment is in place.

- Implementing project activities within existing institutions with the mandate for those activities and building capacities to implement and integrate the activities into the normal operations of those institutions can be cost effective and promotes project sustainability but requires long term technical and financial support.

- Although a multi-stakeholder steering committee strengthened coordination and local ownership, it required consensus building and is time consuming and difficult to sustain beyond project design and start up phase.

- Strategies, procedures or guidelines developed through participatory processes, are demand driven and are accompanied with capacity building and structures in the respective institutions that will implement them.

- Adequate time and resources to support application and institutionalization of the developed strategies, procedures and syllabi are a prerequisite for effectiveness of this approach in achieving the project objectives.

- Stakeholder engagement in the project design, implementation and monitoring strengthens project ownership and sense of accountability for its success.

- Cooperation agreements and consultancy contracts are instrumental in ensuring that the roles and responsibilities as well as expectations of each implementing agency, based on expertise for the required tasks, are defined and budgetary commitments specified for each activity and contribute to the overall success of the project.

- Public-private partnership can be a successful vehicle for managing water conservation and demand management in cities when supported by performance based contracts, supportive policy environment, appropriate strategies, adequate and well mnatained infrastructure fro water supply as well as adequate technical and operational capacities.

6.2 Conclusions

a) Although the WAC Dar es Salaam project was a modest initiative in terms of its budgetary capacity, its achievements over the 3 years of implementation have surpassed the investment made. It has played a catalytic role in influencing changes bigger than the investment in key strategic institutions and processes.

a) The project support has contributed towards the development of a public-private partnership between DAWASA and DAWASCO in WDM. This has been achieved through capacity building and integration of WDM approaches by setting up the WDM

unit with restructuring and appropriate staffing, capacity building in key skills which have contributed to the turn-around success in performance of the private operator for water supply and management in Dar es Salaam. This partnership, however, is yet to address the sewerage management and hence pollution of water sources.

b) The data bases developed if completed and maintained have the capacity for updating and retrieval. The information available from the assessments and inventories form a basis for developing mitigation strategies for controlling pollution of both ground and surface water sources. For example the borehole inventory by WRBWO will be instrumental for determining aquifer extraction and account for ground water supply to the city.

c) Gender mainstreaming seems to have been missed in the project design and implementation. This gap is now being addressed. A series of regional and country specific workshops have been held through which assessment has been made to determine the gaps and entry points for integrating gender into the project activities. Within the project, it was also noted that there are areas where the project was able to recognize the significance of incorporating gender issues such as in the management of community underground water. The water users' associations and water management committees fully recognize the role of women and require at least a fifty percent representation in the management teams.

d) Evaluation of this project has helped highlight gaps and areas of priority that will need to be addressed in its next phase which will also help consolidate the achievements made so far. These include:
   - Development of infrastructure and management capacity for sewerage, solid waste and water treatment facilities for pollution control, yet to be addressed.
   - Ruvu River, the major source of water supply to Dar es Salaam, need to be regularized through the construction of the Kidunda Dam as proposed to address the water shortages related to weather fluctuations.
   - Introduction and promotion of water saving and cleaner technologies in productive (industries) and domestic sectors as proposed in the Water Conservation and Demand Management Strategy.
   - The replication and scale up of demonstration project interventions
   - The strategies and procedures developed for monitoring water resources and environmental pollution have helped institute systems for regular monitoring and reporting on water quality for Dar es Salaam. The accompanying units set up in the respective implementing institutions are adding value by supporting these new functions. The improvement in knowledge on management and pollution of water resources is yet to be used in developing interventions for mitigation against pollution of water sources and over extraction of aquifers.

7. Recommendations

Based on the evaluation findings, the evaluation team proposes areas of focus and improvement in design and implementation of phase II of the project through the following recommendations:

Recommendation 1: In view of the overall successful implementation of phase I WAC Dar es Salaam demonstration project and lessons learned and subject to UN-HABITAT and funding partners' commitment to support implementation of Phase II, the evaluation team recommends that phase II be designed as a consolidation, integration and scale up project based on the foundation laid in phase I.

Recommendation 2: Phase II project should have a clear and comprehensive design detailing expected accomplishments, outputs, activities and required inputs. These components should have indicators to measure achievements and means of verification. There is also a need to strengthen networking and collaboration between and among stakeholders and implementing institutions of the different project components to facilitate sharing of information, resources and relevant expertise and achieve economies of scale.

Recommendation 3: The project coordination office is an essential ingredient for successful coordination and management of WAC project. The project coordination office should be retained and strengthened by increasing staff to service the project stakeholders effectively. This should include capacity to undertake and support partners in the monitoring, reporting and documentation of the project work.

Recommendation 4: In view of the inter-linkages between the WAC project and other programmes in the water sector, it is recommended that a joint and comprehensive review be conducted of the Dar es Salaam water sector programmes involving all key actors to document the lessons learned and best practices and identify strategies for strengthening collaboration. This would enable participation of all actors, instill ownership and facilitate collaboration in the assessment of the water sector achievements beyond the results of individual projects.

Recommendation 5: It is recommended that the lessons learned and best practices in Water Demand Management be systematically documented across implementing institutions and project components to facilitate replication and scale up, through integration into subsequent project phases, in the whole of Dar es Salaam and other urban centres in Tanzania and to influence other WAC initiatives elsewhere.

Recommendation 6: Stability in funding through diver sources is important for project sustanability. Therefore, long term funding of the project interventions through diverse sources should be taken into account in the follow up project activities. a) public- private sector partnerships in service delivery within the project; b) partnerships between public, private and communities and; c) direct engagement by the Government and donors is crucial.

Recommendation 7: The project in its design did not explicitly incorporate gender considerations. There is a need to incorporate gender mainstreaming at the design and conception of WAC Phase II since equity in water cannot be fully achieved without fully integrating gender

considerations especially in reaching the poor who constitute the majority of urban residents in Dar es Salaam.

Recommendation 8: Support implementation of critical interventions for the achievement of the project goal that were not addressed in phase I such as capacity building and infrastructure development for sewerage management and pollution control, promoting water conservation in the productive and domestic sector.

Recommendation 9: Institutions mandated to implement valued based water education syllabus, once developed by TIE, need to be brought on board in Phase II of WAC project. These include school inspectors, education officers, teachers and policy makers. This will ensure adoption and scale up of the value based curriculum and utilization of the materials developed by TIE.

Recommendation 10: The project has demonstrated that equity in access to water by low income earners can be addressed by involving the communities as the stakeholders in a public-community partnership. There is need for Phase II of the WAC project to prioritize and pay special attention to such strategies that promote water access to the urban poor.

Recommendation 11: There is an expressed need to link the GIS data on environmental and aquifer monitoring so that there is integrated spatial database for promoting WDM, conservation and mitigating against pollution and over exploitation of water sources.

ANNEXTURES

Annex 1*: Summary of Planned and achieved outputs*

Objectives/Activities	Expected Outputs	Outputs/ Achievements
1) Promote Water demand management in the areas served by DAWASA.		
1.1 Developing a comprehensive strategy for water demand management for the entire city of Dar es Salaam	• Completion of a detailed draft WDM strategy with business plans • Present draft strategy and obtain stakeholders acceptance and commitment • Review comments and finalize the strategy	• Water Demand Management Strategy document was developed and adopted by the stakeholders after the final version had been discussed. Implementation of the strategy is evident in DAWASA and DAWASCO.
1.2 Establishment of WDM unit	• Procedures for developing WDM unit in DAWASA • WDM unit established in DAWASA	• Established a water demand management unit (WDMU): DAWASCO embarked on implementing the strategy by ensuring that a water demand management unit is established within DAWASCO (WDMU). • WDMU is now discharging following responsibilities: • Manage bulk meters on the water supply system, • To carry out hydraulic modeling • To carry out water balance in the system and • Asset management • Promotion of WDM in existing and planned water projects is now • Taking place.
1.3 Capacity building in GIS	• Key staff in DAWASA trained in GIS • Map updating • Draft CAD drawing • GIS data base formation and updating	• GIS Capacity built: Application of geographical information system (GIS) in data collection, storage and retrieval within the water supply system in Dar es Salaam projects.
1.4 Capacity building in DAWASA to monitor leak detection by the Private Operator.	• Training carried out in the following areas: • Area delineation (high leakage index) • Night flow monitoring • Leak quantified • Valves replacement	• Water Flow data has been computerized and is linked to leak detection and infrastructure mapping. • The capacity in leak detection has been enhanced in DAWASCO through staff training in leak detection and repair. • Response target time of 8 hours has decreased to as low as 1 hour in some zones but mainly for surface leaks. • DAWASA area has been divided into 10 zones with staff in place (10 engineers and 42 technicians) for leak detection and repair. • Night flow monitoring done and
2).Mitigating the environmental impact of urbanization on water resources (pollution control) and aquatic ecosystems.		
2.1 Environmental Assessment and monitoring	Develop procedures and guidelines for environmental monitoring of surface and groundwater in Dar es Salaam	• Procedures and guidelines for environmental monitoring were developed. • Parameters to be used were determined • Reporting format developed, tested and adopted • Staff in DAWASA trained in monitoring. • A system for monitoring quality of surface and groundwater resources supplied by DAWASCO in Dar es Salaam was put in place.
2.2 EIA of Ruvu River in anticipation that the river will be regulated by a dam	Review TORs for EIA of the proposed Kidunda dam site and two other sites.	TOR developed for EIA for Development of Kidunda Dam EIA conducted and a report produced that links EIA with the development and costed plan for Kidunda Dam.

Objectives/Activities	Expected Outputs	Outputs/ Achievements
1) Promote Water demand management in the areas served by DAWASA.		
at Kidunda		
3. Aquifer Monitoring	• Drilling of observation boreholes • Establishing monitoring unit within DAWASA • Purchasing of groundwater monitoring tools and equipment • Training of monitoring unit personnel • Conducting recharge assessments	A monitoring unit was established by the Wami Ruvu Basin Water Office (WRBWO) and is operational. Due to financial constraints observation boreholes were not drilled as planned. WRBWO used DAWASA boreholes for observation and ground water monitoring. Monitoring is consequently being carried out by WRBWO using these boreholes. • WRBWO has carried out borehole inventory in 2 out of 3 districts. • Established groundwater monitoring network and monitoring unit within RWBWO in Dar es Salaam; and trained two monitoring unit personnel.
4. Public awareness campaign on water demand management, sanitation and related environmental issues in areas served by DAWASA.		
Awareness Campaign on Water Demand Management and Related Environmental Issues	Awareness Campaign on Water Demand Management and Related Environmental Issues carried out.	• The strategy and Action Plan for public awareness campaign was developed and adopted by the concerned parties (stakeholders). • the media: radio (15 minutes each) = 8 shows and television broadcasts (15 minutes each) 4 times as well as advertisements through local newspapers 12 times; • promotional materials such as brochures, leaflets 500 pcs and T-shirts • Drama and theatre performances by local groups 6 times • Public Barazas, seminars and workshops for different stakeholders consultations 9 events • Special events such as international water week.
5. Value based water education in formal education in areas served by DAWASA.		
School Curriculum developed for awareness on water resources management and development	• Develop a value based water education teaching material to be included in the schools syllabuses. • Train teachers and curricula developers. • Develop Teachers' Guide. • Select pilot schools . • Implement the contents of the value based water education syllabus in the pilot schools. • Evaluate success of the awareness created.	• Syllabi containing value based water education materials were developed; • Training Manuals • Manual for Human Values in Community/Non-Formal VBWSHE • Training Manual for Networking Strategies on VBWSHE • Training Manual for the Integration of VBWSHE into the School Curriculum • Manual for VBWSHE in dedicated classrooms • Teachers Guides • Teachers' guide for secondary school subjects • Guide for non-formal VBWSHE • Teachers' guide for VBWSHE in Primary Schools • Teachers' guide for integration • Teachers' guide for dedicated classrooms Six pilot schools were selected, demonstration activities implemented.

Annex 2

UN-HABITAT`
Water for African Cities Programme:
Dar es Salaam Project

TERMS OF REFERENCE

Project title: Water for African Cities Programme: -Dar es Salaam Project

Starting Date: 1 May 2007

Duration: 40 days

Duty station: Nairobi / Dar es Salaam

1. Background

Water for African Cities Programme (WAC) which began in October 1999, is the first regional initiative of its kind to support African Cities to manage the growing water demand and protect their freshwater resources from the increasing pollution loads from cities. The initiative is implemented and promoted jointly by the United Nations Human Settlements Programme (UN-HABITAT), The United Nations Environment Programme (UNEP) and The United Nations Foundation for International Partnerships (UNFIP). The programme was first implemented in seven cities: Abidjan, Accra, Addis Abeba, Dakar, Johannesburg, Lusaka, and Nairobi. The Government of Tanzania requested to join WAC and signed a Letter of Intent with UN-HABITAT to this effect in August 2003.

The Government of the Republic of Tanzania selected the City of Dar es Salaam as the Candidate City to develop an Implementation Plan for participation in the Managing Water for African Cities Project. The Project activities in Dar es Salaam focused on five-interlinked areas: 1. Water Demand Management in areas served by Dar es Salaam Water and Sewerage Authority (DAWASA), 2. Mitigating the environmental impact of urbanization on water resources (pollution control) and aquatic ecosystems with a special focus on aquifer management in Dar es Salaam, 3. Environment impact Assessment of Ruvu River under the scenario that the river will be regulated by a dam at Kinunda site, 4. Public Awareness campaign on water demand management, sanitation and related environmental issues in areas served by DAWASA, 5. Value based education in areas served by DAWASA.

1.2. Main objectives

The overall objective of the Water for African Cities (WAC) Dar es Salaam Project was to manage the growing demand for water supply for Dar es Salaam City and protect its freshwater resources from the increasing pollution loads.

1.3 Areas to be addressed include:

On Water Demand Management Activities:

- Water Demand Management and Conservation strategy for the city of Dar es Salaam prepared
- Water Demand Management Unit established in DAWASA
- GIS in place in DAWASA
- Leak detection capacity built in DAWASA

On Environmental Assessment and Monitoring

- Procedures and guidelines for environmental monitoring developed
- Routine monitoring system and data base established
- Environmental monitoring of water institutionalized in DAWASA

On Public Awareness

- A strategy and Action Plan for public Awareness campaign in Dar es Salaam developed
- Widespread public awareness on the various messages

On Awareness Creation in Formal and Non-Formal Education

- Draft syllabi developed
- Teachers with knowledge to implement the contents of the syllabi in place
- Teachers' Guide developed
- List of selected pilot schools

On Water Resources and Aquifer Monitoring and Management

- Five observation boreholes drilled
- Groundwater monitoring tools and equipment purchased
- Monitoring unit established within DAWASA
- Recharge assessment conducted
- Strategies formulated for Community involvement in Water Demand Management
- A monitoring unit established in DAWASA

2. Purpose of the evaluation

The Water for African Cities Programme - Dar es Salaam Project has now been in operation for more than three years. The Swedish support of Phase I of the Dar es Salaam project having come to an end and before embarking on a new phase with new priorities and slight different focus, an evaluation is required to provide project management with a basis for identifying an appropriate way forward, together with a clear set of monitoring and evaluation tools to better demonstrate results.

3. Scope and focus

The consultants (s) will:

(a) Identify particular issues relating to design, implementation management and monitoring of the project and propose recommendations for improvement;
(b) Assess the progress made towards the achievement of results at the activity, output and outcome levels;
(c) Assess the reasonability of the relationship between project costs and results
(d) Assess performance in terms of the relevance of results, sustainability, shared responsibiltities and appropriateness of project design;
(e) Identify mechanisms that can enhance synergies in water and sanitation sector level activities;
(f) Assess to what extent the project incorporated gender issues;
(g) Identify lessons learned and provide forward-looking recommendations for phase 11 project programming.

4. Evaluation methodology

The evaluation will be carried out by multiple methods including:

- Review of relevant documents on the project
- Conduct of interviews with main Stakeholders including those of DAWASA, DAWASCO, Ministry of Water, Tanzania Institute of Education (TIE), Wami Ruvu Basin Water Office (WRBWO) and relevant UN-HABITAT staff members
- Carry out field visits to project sites
- The evaluation will be carried out in conformity with the principles, standards and practices set out in the UN-HABITAT Monitoring and Evaluation Guide (2003).

5. Stakeholder involvement

The consultants are expected to conduct a participatory evaluation providing for meaningful involvement by project partners, beneficiaries and other interested parties. Stakeholder participation is to be an integral component of evaluation design and planning; information collection.

6. Accountabilities and Responsibilities

The consultants are responsible for : (i) conducting the evaluation; (ii) the day-to-day management of evaluation operations; (iii) production of deliverables in accordance with contractual requirements. The Consultants will report to the Chief, Monitoring and Evaluation Unit, UN-HABITAT.

7. Evaluation team

The evaluation will team will be composed of the international and local consultants. They are both required to have extensive experience in conducting evaluations and a proven record of delivering results.

8. Expected deliverables

The consultant are to prepare: (i) an evaluation work-plan; (ii) draft evaluation report; (iii) Final evaluation report. These deliverables are to be prepared in English and to be submitted to UN-HABITAT via e-mail or diskette.

The final report should in standard format that is acceptable by the UN-HABITAT. For the guidance see the proposed structure.

9. Projects level of effort

Activity	**No. Days International consultant.**	**No. Days Local Consultant.**
Workplan preparation	4	4
Data collection and field work	10	10
Analysis, reports preparation and debriefing	26	16
Total	40	30

PROPOSED FORMAT FOR EVALUATION REPORT

1. Table of Contents, List of Acronyms, Executive Summary,

The **executive summary** should be a synopsis of the whole report and should contain, in not more than 3 pages:

(a) Brief context of evaluation;
(b) Purpose and scope;
(c) Brief description of the methodology;
(d) Main findings;
(e) Conclusion ;
(f) Recommendations.

2. Evaluation Background or Introduction

a. Purpose and Scope of the Evaluation
b. Approach and Methodology
c. Structure of the report

3. Background to the Project:

a. project objectives
b. What results were expected to be achieved
c. Project achievements so far

4. Evaluation context

(a) Reason for carrying out the evaluation at this point;
(b) Evaluation methodology used;
(c) Description Data sources, data collection and analysis used and Limitations;
(d) Participation/ stakeholders contributions

6. Review of project design

i. resources vs planned activities
ii. Implementation achievements compared to plans
iii. Coordination of activities

7. Evaluation findings

(a) Evaluation issues arrived at by data analysis
(b) Findings about outputs
(c) Findings about results and impact
(d) Progress compared with initial plans (achievements/ challenges)
(e) Findings on unintended effects

12. Conclusions

Should add value to the findings;
Focus on issues of significance related to performance relative to expectations.

13. Recommendations

(a) Recommendations should:
(b) Contain suggestions to improve future performance
(c) Be supported by evidence and findings

14. Annexures

(a) Terms of Reference for Evaluation team
(b) Evaluation
(c) List of persons interview
(d) Documents reviewed

Annex 3: Evaluation work plan

1. Programme Overview

Dar es Salaam WAC Programme is one of the integrated initial phase of Water for African Cities (WAC) Programme that currently covers seven cities in Africa. The programme was conceived and inaugurated as a direct follow-up of the Cape Town Declaration, adopted by African Ministers in December during the UNCHS-Habitat conference held in Cape Town in 1997. The Programme was initiated by UNHABITAT and UNEP within the framework of the United Nations Special Initiative on Africa. The funding for the Dar es Salaam programme has been facilitated by SIDA through a contractual agreement with UNHABITAT. The Programme addresses the urgent need for improved water management in African Cities. The strategic vision of the Programme is to reduce the urban water crisis in cities through efficient and effective water demand management; building capacity to reduce the environmental impact of urbanization on fresh water resources; and boosting awareness and information exchange on water management and conservation.

1.2 Objectives and priorities

The overall objective of the Water for African Cities –Dar es Salaam Project is:
"**To satisfy the growing water supply demand of Dar es Salaam City and protect its freshwater resources from the increasing pollution loads".**

The following **specific objectives** were identified for the WAC Dar es Salaam project:

- To improve the efficiency and equity of water supply and use in Dar es Salaam, both in the productive and domestic sectors, through appropriate water demand management strategy and measures within existing legislative framework;
- To improve the knowledge base of the impact of urbanization on water and aquatic ecosystems in Dar es Salaam
- To create public awareness on urban water resource management and related environmental issues in Dar es Salaam City.
- To promote value based water education in formal and non-formal education aimed at increasing understanding and creating a new water ethic amongst water providers and consumers alike.

2. Evaluation profile

The 3 -year Phase I WAC Dar es Salaam Project has come to an end. Before starting the next phase, UNHABITAT in collaboration with the project partners have commissioned an end of phase I project evaluation to be undertaken to inform the design, focus and direction of the next phase. The purpose of this evaluation is therefore to provide project management with the basis for identifying an appropriate way forward based on the lessons learned and recommendations from the implementation of phase I.

The evaluation will be conducted by two consultants: Dr. Asenath Omwega (International Consultant) and Mr. Fidelis Wamara (local/national consultant). The evaluation will be strategically oriented and forward looking to provide guidance into the direction of the next phase of the project while drawing lessons from the previous phase.

2.1 Main Activities to be carried out

This project evaluation will be conducted as an in-depth evaluation using participatory methods. Findings and final recommendations for the evaluation will be based on information collected through three main methods; desk review of project documents; interviews with key stakeholders and project staff as well as through field visits.

2.1.1 A desk review of project documents including but not limited to:

i) The project documents, outputs, monitoring financial and narrative (progress reports such as quarterly/annual project implementation reports etc, submitted to SIDA/UNHABITAT)
ii) Project launch/initiation materials
iii) All relevant correspondences with partners, SIDA, UN-HABITAT offices etc.
iv) Review of specific products developed for the project by implementing/ collaborating partners. These will include workshop reports, training materials, curriculum materials, policies, strategic plans, technical reports, data bases.
v) Project review reports
vi) Project website?

2.1.2 Interviews and discussions with key institutions and individuals involved in the project implementation.

a) Relevant UN-HABITAT Water and Sanitation Unit staff
b) Philemon Mutashibirwa (UNDP)
c) Dr. Mark Mujwahuzi, WAC project manager
d) Implementing partner institutions will be drawn from the following list:
    i) Energy and Water Utilities Regulatory Authority (EWURA),
    ii) Dar-es-Salaam Water Supply and Sewerage Authority (DAWASA as Public Granting Authority (PGA)),
    iii) DAWASCO as Private Operator (PO) – as Dar's Urban Water and Sewerage Authority (UWSA),
    iv) WAC's Multi Sector Steering Committee,
    v) Institute of Curriculum Development (ICD),
    vi) Tanzania Institute of Education (TIE),
    vii) Wami Ruvu Basin Water Office (WRBWO)
    viii) Schools covered in Water Education Pilot Project,
    ix) Randomly selected community based water committees, water users
    x) UN-HABITAT's Coordinating staff members, among others.
    xi) To determine capacity and strength of private/public sector partnerships in the operations and management as per national water policy review. There may be a need to interview a few (i.e. two) available service providers in solid and liquid waste collection and rehabilitation of drainage/sanitation facilities – in order to determine what need to be done in order to shape the role of private sector during the implementation phase (Dar's WAC Phase II).

2.2.3 Field Visits to project sites will also be conducted to view the activities and assess the out comes and impact of the project. This will involve meetings with beneficiaries and implementing teams from collaborating agencies. Selected guiding questions will be used with individual officers/key informants as well as focused group discussions to get information on the respective aspects of the project.

The key project sites for the activities that will be visited that represent project outcomes are as follows:

a) Lower Ruvu Water Treatment and Transmission mains (points) at Kibaha, Bagamoyo and Dar-es-Salaam townships – to physically establish designated infrastructure upgrades,
b) Selected Sewerage system Sites – waste water stabilization pond sites, gravity and sewerage pumping stations, a cross section of private sewer waste collectors from septic tanks/pit latrines – in collaboration with Dar-es-Salaam City Council (DCC),
c) Envisaged sites for GIS at DAWASA/DAWASCO,
d) Environmental health hazard points (i.e. in low income settlements) and improper waste disposal sites (considered pollutants of water) to grasp a clear picture of gaps related to mitigation for environmental impact of urbanization on water resource envisaged in phase I. Site visits in collaboration with National Environmental Management Council (NEMC),

e) Capacity building and public awareness campaign sites – to establish achievements and gaps regarding envisaged water demand management, sanitation and related issues as part of envisaged capacity building interventions under phase I,
f) Value based water education pilot project sites – at education curriculum developer sites such as Institute of Curriculum Development (ICD) and Tanzania Institute of Education (TIE), covered pilot project school sites.
g) All other relevant sites as deemed appropriate.

2.2 Project Evaluation Parameters and Lines of Enquiry

- **Achievement of project objectives and planned results:**
  the evaluation will make assessment of:
  -main achievements of the project and their coherence to the original objectives.
  -contributing factors to the successful achievement of objectives
  -reasons for sub-optimal results
  -reasons for unmet objectives

Determine the **relevance** of the project in relation to UN-HABITAT mandate as well as the appropriateness of the project design and concept. Did the design reflect the stakeholder consultation and needs, best practices from WAC programme etc

- **Effectiveness :** evaluate how and the extent to which the stated project objectives have been realized taking into account the "achievement indicators" stated in the project document and log frame. The evaluation will further explore the extent to which the outcomes have brought about the desired changes anticipated from the project and the challenges faced especially in terms of: institutional set up, level of resources support and staffing.
- **Efficiency:** This will involve assessment of the cost-effectiveness of the project implementation and achievement of objectives in relation to inputs, costs and implementation time. The evaluation will also determine whether there were additional resources and other inputs leveraged for the project.
- **Implementation and management Arrangements**
  Examine administrative and project implementation arrangements, challenges and responses. Assess the **stakeholder participation** and benefits accrued from the project activities. Assess how WDM is embodying community based approaches to ownership, inclusive governance through empowerment and capacity building at grassroots and institutional level.
- **Sustainability of the project** (institutional capacity-systems, structures, staff, expertise, etc, policy and regulatory frameworks that will support project objectives, financial sustainability:
  - Assess the likelihood of continuation of project activities, outcomes and benefits beyond the current project time frame
  - Assess the factors that will require attention in order to improve and guarantee the prospects for sustainability of the project outcomes.

3. Accountability and responsibilities

Responsible	Accountability	Responsibility
Monitoring and evaluation Unit	• Delivery of the evaluation conduct (appropriateness of design, resources etc) • Value realized (usefulness, credibility of results etc) • Compliance with Agency and professional standards • Adequate resourcing	• Guiding the evaluation • Overseeing contract negotiations • Providing advice on performance management approaches, techniques, practices • Ensuring that contractual requirements are met • Monitoring the implementation of recommendations
WAC Programme officers	• Giving all require documentation and briefings • Reviewing the draft report and giving comments • Implement implementing recommendations as appropriate	• Commenting on deliverables (Draft and final report • Facilitating access to key documentation and key informants • Providing perspectives on key issues • Overseeing of sharing the results with partners, donors and stakeholders
Evaluation team	• Producing evaluation report • Meeting professional and ethical standards • Meaningful stakeholders involvement	• Informing UN-HABITAT about evaluation progress • Conducting interviews • Producing deliverables (as per contract requirements)

Annex 4 : List of persons interviewed and project sites Visited

INSTITUTION	UNIT(s)/INTERVENTION	INTERVIEWED	DATE
1. SINCON ENVIRON LTD. (Private Service Provides – Solid & Liquid Waste collection)	Private Solid & Liquid Waste Collection Service Provider	1. Mr. Peter Siniga (Managing Director)	11TH June, 2007
2. WAMI RUVU BASIN WATER OFFICE (WRBWO)	Aquifer Monitoring Unit	1. Petro Molel – Hydrologist 2. Praxeda P. Kalugendo - Hydrologist	12th June, 2007
3.INSTITUTE OF RESOURCE ASSESSMENT (IRA of UDSM)	Environmental Monitoring component sub-contracted to IRA by DAWASA	Dr. Matto R. – Water Expert in IRA Team (Senior Lecturer at UCLAS of UDSM)	13th June 2007
4. DAWASA	Public Campaign Unit	Mrs. Lydia Ndibalema – Coordinator, Public Campaign Unit	13th June, 2007
5. Ngilangwa BoreholesWater User Association, Mwananyamala area, Kinondoni District	Members of the Association leadership (Elected Committee)	1. Godfrey Mbando – Engineer from Cate International – Borehole Construction 2. Selemani Ramadhani Gwingwi (Committee Chairman) 3. Committee Secretary 4. M/s Suzan Lwango – Committee Member	13th June, 2007
6.TANZANIA INSTITUTE OF EDUCATION (TIE)	Value for Water (VFW) Formal Education Component	1.Mr. Fred Sichizwa (Deputy Director, TIE) 2. Mrs. Angela Katabaro (VFW Coordinator)	14th June, 2007
7.DAWASCO	(i) WDM Unit (ii) GIS Unit (iii) Leak Detection Unit	Mr. Jackson Midala (Chief Operations Manager)	14th June, 2007
8. UNHABITAT – Dar-es-Salaam Coordinator	WAC Principal Liaison Officer at UNDP Offices	Mr. Philemon Mutashubirwa (UNHABITAT Dar es Salaam Overall Coordinator)	15th June, 2007
9. UNHABITAT WAC COORDINATOR OFFICE	Dar es Salaam WAC Liaison Coordinator, DAWASA Office	Prof. Mark Mujwahuzi	15th June, 2007
UN-HABITAT HQ	Water and Sanitation	Andrea Dzikus Debashish Bhattachrjee Martin Barugahare	

Annex 5 List of Documents reviewed

A Documents related to the project

1. Project Document: Managing Water for African Cities Programme. Managing Water for the city of Dar es Salaam Project (Approved in January, 2003).

2. Water for African Cities: The Initial Phase Funded by the United Nations Foundation. A Forward Looking Assessment WAC Evaluation Report. March, 2002.

3. WAC Dar es Salaam Progress Reports 2003-2006.

4. End of WAC Project Report from CTA Draft Report.

5. WAC Dar es Salaam Monitoring and Evaluation Plan.

6. United Republic of Tanzania. Ministry of Water and Livestock Development. National Water Policy. 2000.

7. Dar es Salaam Urban Water and Sanitation Strategy.

8. Cooperation Agreements between UN-HABITAT and implementation partners: TIE, DAWASA and WRBWO.

B. Water Demand Management and Conservation Strategy for the City of Dar es Salaam

- Final Report: Development of Water Demand Management Strategy for the City of Dare es Salaam , establishment of a WDM Unit in DAWASA, Capacity Building in DAWASA to monitor leak detection works. November, 2005.
- A Comprehensive Water Conservation and Demand Management (WCDM) Strategy for the City of Dar es Salaam
- Establishment of a WCDM Unit in DAWASA. , November, 2006.
- GIS Needs Assessment and Development for DAWASA.
- A Leak Detection and Repair Strategy for the City of Dar es Salaam. June, 2005.
- Pressure Measurement at key locations in the water distribution systems in Dar es Salaam. May, 2005.
- Capacity Building in DAWASA to monitor leak detection works . November, 2005.
- Proposal for Implementation of the Kidunda Dam for Dar es Salaam Water Supply
- DAWASCO 3 Year Strategic Plan. 2006-2008.

C. Environmental Assessment and Monitoring

Environmental Monitoring Assistance to Dar es Salaam Water and Sewerage Authority: Annual Reports and Three months environmental monitoring reports submitted to DAWASA by IRA.

D. Public Awareness Campaign

- Public Awareness Campaign Strategy on Water Demand Management and Related Environmental Issues for Dar es Salaam City
- Campaign materials: brochures and videos.

E. Awareness Creation in Formal and Non-Formal Education

Water Education Teaching Materials

- Training Manual for Networking Strategies on Value-Based Water Sanitation and Hygiene Education

- Training Manual for the Integration of Value Based Water Education into the School Curriculum, December, 2004

- Manual for Value-Based Water, Sanitation and Hygiene Education (VBWSHE) in Dedicated Classrooms

- Trainers Manual for Human Values in Community/Non-Formal Water and Sanitation Education.

- Babro Johansson Girls Secondary School VBWSHE action plan. January, 2006.

- Establishing a water classroom at Kibajila Secondary School, 2006.

- Establishing a water classroom at Babro Johansson Girls Secondary School , 2006.

Training Teachers and Curricula Developers

- National Training Workshop proceedings report on Value-Based Water, Sanitation and Hygiene Education (VBWSHE), July, 2004.

- National Training Workshop proceedings report on Value-Based Water, Sanitation and Hygiene Education (VBWSHE). May, 2006.

- Training Manual for networking strategies on VBWSHE. December, 2004.

- Training Manual for human values in community and non-formal water and sanitation. December, 2004.

Teacher's Guides

- Mwongozo wa Mwalimu wa Kufundishia Elimu ya Maadili ya Maji katika Shule za Msingi
- Mfumo wa Elimu Usio Rasmi (Non-Formal System)
- Teachers' Guide for Secondary School Subjects
- Tecahers' Guide for VBWSHE in dedicated classrooms. June 2006.
- Criteria Used in the Selection of Pilot Schools

K Aquifer Monitoring

- Aquifer Monitoring Report in Dar es Salaam: Wami Ruvu Basin Water Office
- Boreholes Inventory and Problems Encountered.
- Establishing Aquifer Monitoring Unit with Wami Ruvu Basin Water Office. April, 2006.

L List of Documents related Proceedings of Workshops, Seminars and Conferences in Which WAC Participated

- Proceedings of the Workshop on Implementation of the Water for African Cities Programme: Dar es Salaam Project. Dar es Salaam, October 2003
- Proceedings of the Project Launch Workshop held at Paradise Holiday Resort, Bagamoyo, October 15 – 16, 2003
- Proceedings of the Workshop on Dar es Salaam Groundwater Monitoring. Held at Kurasini, Tanzania Episcopal Centre. 1st. December 2003

Proceedings of the Community Based Water and Sanitation Services Think Tank Workshop, Dar es Salaam, 22 June 2004

Proceedings of the LVWATSAN Capacity Building Workshop, 16-18th October 2006

Proceedings of Water for African Cities Water Pro-poor Water Governance Meeting, UN-Gigiri, Nairobi. 4-5th December 2006
Proceedings of Capacity Building Workshop on Partnerships for Improving the Performance of Water Utilities in the Africa Region, 6-8 December 2006, .