

Proceedings of Regional Workshops on

Water Loss Reduction in Africa

Ouagadougou, Burkina Faso, February 2011

Cape Town, South Africa, March 2011



Editors: Dr. Reza Ardakanian
Lis Mullin Bernhardt



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WATER FOR LIFE
2005-2015

UN WATER

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FOREWORD

Providing adequate amounts of fresh, sustainable water are the keystones to development and to life itself, and no where is this more evident than perhaps in Africa. Given the water crisis in many parts of the world and the connected challenges in meeting the Millenium Development Goals (MDGs) by their target in 2015, efforts to increase water efficiency, and in particular reduce drinking water losses, are important goals which can have significant environmental and even financial repercussions. Efforts need to be redoubled if we are to reach those goals, and unfortunately awareness regarding the scope of the problem and available solutions is still lacking. To contribute to addressing this need, the UN-Water Decade Programme on Capacity Development (UNW-DPC) has been continuously working on this topic since its inauguration in August 2007, via participation in international conferences, the organization of conferences and workshops, publications and videos, expert working groups, sessions and trainings for the inter-agency mechanism known as UN-Water.

UNW-DPC started working in this important area shortly after the founding of its programme in Bonn, with a first activity in the form of an International Workshop on “Drinking Water Loss Reduction: Developing Capacity for Applying Solutions” together with UN-HABITAT in September 2008. As a follow-up of the recommendations of this workshop and in order to address the issue of water loss reduction at the regional level, UNW-DPC organized in collaboration with its Working Group on Water Efficiency and in further cooperation with UN-HABITAT three regional workshops on capacity development for improving water efficiency, “Water Loss Reduction in Water & Sanitation Utilities,” with the objective of developing capacities to better

equip decision makers to address the problems of drinking water loss. The regional workshops were organised between November 2009 – January 2010 in Mexico for Latin American Countries, in Bulgaria for South East European Countries, and in Morocco for Arab and North African Countries (total number of participants was 429 representing 60 countries).

We have now continued these activities into 2011, with a further activity for the African region in Cape Town in March 2011 at World Water Day, with a seminar on the topic of “Capacity Building for Non Revenue Water Reduction: an Africa Perspective,” together with UN-HABITAT and the African Development Bank.

In addition, UNW-DPC has been further engaged with this topic through recent cooperation on international Guidelines for Drinking Water Loss Reduction together with GIZ, VAG, KIT and the University of Applied Sciences Northwestern Switzerland. To this end, our office contributed to the successful completion of a Regional Workshop on Water Loss Reduction in Ouagadougou, Burkina Faso, in February 2011. These and other activities have resulted in several editions to be found in our “Proceedings” series of publications on regional workshops, as well as a state-of-the-art book released on World Water Day 2011 on the topic of Capacity Development for Drinking Water Loss Reduction and a trilingual DVD on “Reducing Water Loss in Cities Around the World.”

I would like to take this opportunity once again to express our gratitude to our donors and partners in these activities over the past few years, in particular the German Federal Ministry of Education and Research (BMBF) and the German Federal Ministry for Economic Cooperation and Development (BMZ). We would also like to thank our collaborators within UN-Water on this topic, especially UN-Habitat, and the local cooperation from partners such as the Bulgarian Water Association (BWA), the Arab Countries Water Utilities Association (ACWUA), as well as collaboration with other local partners such as ANEAS, the Inter-American Development Bank (IDB) and the African Development Bank (AfDB).

I wish you an enjoyable read.



*Dr. Reza Ardakanian
Director, UNW-DPC
Bonn, Germany*



INTRODUCTION TO WATER LOSS REDUCTION IN AFRICA

IN JULY 2010, THE UN PASSED A HISTORICAL RESOLUTION WHICH ACKNOWLEDGES THAT ACCESS TO ADEQUATE AMOUNTS OF HIGH QUALITY WATER FOR DRINKING, CLEANING AND SANITATION IS A BASIC RIGHT ACCORDED TO PEOPLE ALL OVER THE WORLD. THIS IS A SIGNIFICANT STEP TOWARDS ADDRESSING THE FACT THAT CURRENTLY MORE THAN ONE-SIXTH OF THE WORLD'S POPULATION DOES NOT HAVE ACCESS TO SAFE DRINKING WATER. TOO LARGE OF A NUMBER OF THESE ARE IN AFRICA.

Given the fact that water quality is such an important parameter touching on all aspects of ecosystems and human well-being such as the health of a community, food production, economic activity, ecosystem health and biodiversity, ensuring adequate amounts of high enough water quality is essential if we are to improve the situation of those living at low financial, wealth and educational levels. The UN suggests that each person needs 20-50 litres of safe freshwater a day to ensure their basic needs for drinking, cooking and cleaning (World Water Assessment Programme/WWAP), and currently around 894 million people do not have access to this amount of safe freshwater (WHO/UNICEF Joint Monitoring Programme on Water Supply and Sanitation – JMP).



Safe water is the cornerstone of development. In this respect, securing enough high quality water is not enough as long as there are such great losses in the water that has a drinking level quality and is destined to households or other public access points around the world. That is what makes improving water efficiency so important – it increases the amount of high quality water that actually reaches its destination, ensuring greater impacts for those who need it most.

Millennium Development Goal 8 calls for the world to “Ensure environmental sustainability.” Although great strides have been made, sub-Saharan Africa is still unfortunately one of the regions which faces considerable challenges in this area. It has set itself the target of providing 63 per cent of its population with improved sanitation by 2015, and that will mean providing access to an additional 370 million people in the next 4 years. Globally, diarrhoea is the leading cause of illness and death, and 88 per cent of diarrhoeal deaths are due to a lack of access to sanitation facilities, together with inadequate availability of water for hygiene and unsafe drinking water (JMP).

Today 2.5 billion people, including almost one billion children, live without even basic sanitation. Every 20 seconds, a child dies as a result of poor sanitation. That's 1.5 million preventable deaths each year.

Source: Water Supply and Sanitation Collaborative Council (WSSCC)

In Sub-Saharan Africa, treating diarrhoea consumes 12 percent of the health budget. On a typical day, more than half the hospital beds are occupied by patients suffering from faecal-related disease.

Source: WSSCC

Despite improvements in sanitation since 1990, 2.6 billion people across the world lack access to improved sanitation today, and sub-Saharan Africa is one of the most severely hit. Acknowledging great challenges for Africa, for example, in the sectors of health, sanitation, freshwater sustainability, drinking water quality, and water efficiency in agriculture, UN-Water has made this continent a priority action area. UNW-DPC therefore also focuses many of its activities on and for the African region.

In reality, many countries in the world are facing water scarcity problems, and often basic human needs cannot be met, especially in urban areas. Africa is a specific case, despite the fact that progress has been made. Currently about 13% of the world's population comes from Africa, but its world economic output is only 2%. Africa is the second driest continent in the world and it is predicted that 1.45 billion people will face water scarcity in the coming years. Reports state that fourteen countries are experiencing water stress at the moment, and 11 are at the verge of joining the water stress problem by the year 2025 (WWF International, 2011).

Simultaneously, UN-HABITAT (2004) projects an increase in the urban population of about 2.12 billion people between 2000 and 2030, with most increases occurring in developing countries, leading to higher water demands. However, not only increased water demands are drivers of water scarcity, but additionally low water use efficiencies due to inappropriate water management are worsening the situation.



© UN Photo Olivier Chassot

"IN MANY DEVELOPING COUNTRIES PUBLIC UTILITIES DO NOT PERFORM WELL BECAUSE OF LOW MOTIVATION, POOR MANAGEMENT, INADEQUATE COST RECOVERY AND POLITICAL INTERFERENCE."

WORLD WATER DEVELOPMENT REPORT 3,

CHAPTER 7

Physical water losses in the water distribution networks are crucial aspects in managing water demands, and high benefits could be reached through more efficient water loss management by water utilities – this is particularly the case in water-stressed areas such as can be found in many parts of Africa. Production costs could be reduced and decreased leakages would lead to higher system pressure, resulting in better services regarding pressure, continuity and reliability. The potential of water savings due to decreased leakages lies in the range of 20% to 30%, demonstrating the real economic advantage and need for an improved water loss management.

Realizing the need for capacity development in the field of water use efficiency, UNW-DPC organized a series of international and regional workshops on "Drinking Water Loss Reduction: Developing Capacities for Applying Solutions" together with UN-HABITAT between 2008 and 2010, with an additional activity on the topic for the African region in March 2011. Around 500 participants gathered to discuss the problems of water losses and possible solutions regarding technical, political and administrative aspects in these four different areas of the world:

Latin America and the Caribbean, Southeast Europe, and Arab Countries, and the fourth regional activity carried out specifically for Africa.

UNW-DPC's main objectives in these workshops were to transfer knowledge and best practices regarding efficient water management, while encouraging communication between policy makers, water managers and researchers between different countries. With this in mind UNW-DPC contributes directly to achieving the MDG target, to halve the number of people without sustainable access to clean water by 2015.

The results from each of these workshops were carried into the activities for other regions, and also enshrined in various publications, including a recent state-of-the-art book on Drinking Water Loss Reduction, which was published by Paffenholz printers in March 2011. Another state-of-the-art synthesis of UNW-DPC's drinking water loss activities was brought out in a special 15-minute movie on "Reducing Water Loss in Cities Around the World," brought out on DVD in a trilingual version for World Water Day in March 2011 and available on the UNU YouTube channel.

UNW-DPC has, however, done much more in the area of Africa: in fact all of its partnerships in its regional series of trainings (for decision makers, for increased water efficiency in agriculture through the use of the AquaCrop software, for training of media, etc) have had one foot firmly planted on the continent.



OVERVIEW OF UNW-DPC'S OTHER INTERNATIONAL AND REGIONAL ACTIVITIES ON WATER LOSS REDUCTION

UNW-DPC IS A PROGRAMME OFFICE OF UN-WATER, AN INTER-AGENCY MECHANISM THAT STRENGTHENS COORDINATION AND COHERENCE AMONG UN ENTITIES DEALING WITH ISSUES RELATED TO ALL ASPECTS OF FRESHWATER AND SANITATION. THIS INCLUDES SURFACE AND GROUNDWATER RESOURCES, THE INTERFACE BETWEEN FRESHWATER AND SEAWATER AND WATER-RELATED DISASTERS.

In its work, UN-Water concentrates on a number of Focus Areas, one of which is focused on “Water Scarcity” – others are water quality and capacity building. Many of these focus areas are implemented within time-bound Task Forces or Thematic Priority Areas (which are longer-term in nature and entail a strong focus on interagency collaboration and coordination) of UN-Water, and UNW-DPC is a member or supporter of most of these Task Forces and Thematic Priority Areas. In addition, our programme was set up to expressly address the “capacity building” activities for UN-Water, and to do this we work on all areas of strategic importance to UN-Water.

Water scarcity affects every continent in the world. While some areas suffer from physical scarcity, many people around the world face economic water shortage, where countries lack the infrastructure to bring water from rivers and aquifers. Urban areas also have special demands on their water supplies, and in particularly arid lands, water scarcity is a reality that affects all areas of development and requires active improvement of knowledge transfer and capacities. But by far the biggest user of water is agriculture, accounting for about 75 per cent of all withdrawals in developing countries. The Food and Agriculture Organization (FAO) predicts a 14 per cent net expansion of use between 2000-2030 to meet food demands. With increasing demand on water resources, it is becoming necessary to manage these resources effectively and to improve economic performance. Improving water use efficiency requires, among other things, improved technologies, increased maintenance to reduce leakages, better knowledge and appropriate policies.

Within the area of water scarcity, UNW-DPC has made one of its greatest and most consistent contributions. It is a member of the Task Force on Water Scarcity, led by FAO, and provides secretariat support to a Working Group on Water Use Efficiency within this Task Force, specifically looking at agriculture. This complements well the extensive amount of work that UNW-DPC has already done on water loss reduction in urban areas, including a series of regional workshops, the setting up of a special scientific UNW-DPC Working Group on Water Efficiency, resulting in special academic publications and a 15-minute professionally made DVD on this topic.

2.1 | *Regional Drinking Water Loss Reduction Workshops*

Water loss reduction was one of the first topics to be taken up by UNW-DPC after its inauguration in 2007, beginning in September 2008 with an international workshop on “Drinking Water Loss Reduction: Developing Capacities for Applying Solutions” together with UN-HABITAT. The results of this successful international workshop can be found in our “Proceedings No. 1” document available online. After this workshop, a scientific Working Group on Water Efficiency was established at UNW-DPC, which coordinated UNW-DPC’s later activities and followed recommendations from UN-HABITAT and other participants at the international workshop, for UNW-DPC to organize a series of regional workshops on this topic. The aim of the regional workshops was to disseminate recommendations from the international workshop, to document available know-how and best practices and to recommend new approaches for more efficient management in the field of water and sanitation with a focus on water loss reduction. These workshops also encouraged follow-up projects and the establishment of communication between the policy makers, water managers and researchers, as well as the providers of technical solutions.

The first of these regional workshops, for Latin American Countries, was co-organized by UNW-DPC and UN-HABITAT in November 2009; the second was for South East European Countries held in Sofia, Bulgaria on 16-18 November 2009 together with UN-HABITAT and the BWA, and the third for Arab Countries was held in Rabat, Morocco on 20-21 January 2010 together with UN-HABITAT, ONEP-IEA, and ACWUA. Results from these first three regional workshops have been published in the UNW-DPC “Proceedings” series: number 3 (Latin America), number 4 (South Eastern Europe), and number 5 (Arab Countries). All are available at UNW-DPC’s website in a PDF format.

TOTAL PARTICIPANT DISTRIBUTION

429

Participants

60

Countries



INTERNATIONAL WORKSHOP

Global

Bonn, Germany

3-5 September 2009

Workshop

UN-WATER COLLABORATORS

UN-HABITAT

OTHER CONTRIBUTORS

BMBF, BMZ

1ST REGIONAL WORKSHOP

**Latin American &
Carribbean Countries**

Guanajuato, Mexico

2-4 November 2009

Workshop

UN-WATER COLLABORATORS

UN-HABITAT

OTHER CONTRIBUTORS

ANEAS, IADB



2ND REGIONAL WORKSHOP
Southeast Europe

Sofia, Bulgaria
16-18 November 2009
Workshop

UN-WATER COLLABORATORS

UN-HABITAT

OTHER CONTRIBUTORS

BWA, EWA



3RD REGIONAL WORKSHOP
Arab Countries

Rabat, Morocco
20-21 January 2010
Workshop

UN-WATER COLLABORATORS

UN-HABITAT

OTHER CONTRIBUTORS

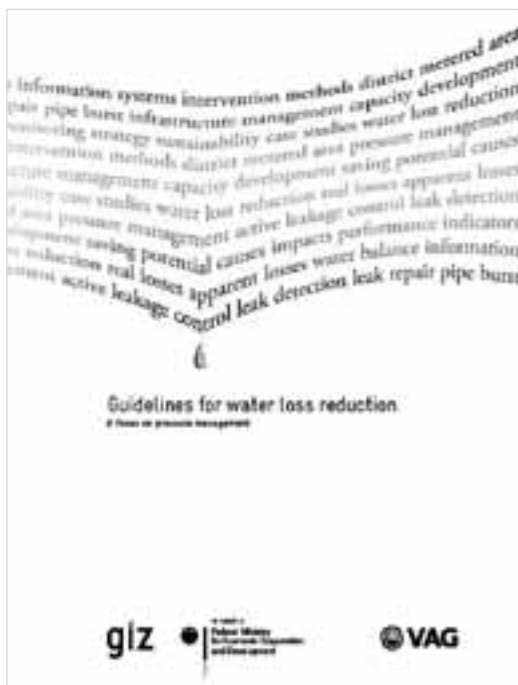
ACWUA, ONEP-IEA

2.2 | *Cooperation on Guidelines for Water Loss Reduction*

It has become increasingly clear that leakage from water supply systems represents a major obstacle in the achievement of the human right to water and sanitation. Given the world's scarce and further diminishing water resources, extensive water losses are incompatible with the principles of sustainable management. This is a classic case for the need for improved capacity development: firstly, although the reasons for water losses are manifold they are well-known to practitioners; secondly, they encompass not only technical problems but also administrative and institutional dimensions; and thirdly, under the right conditions solutions can be fairly easily shared between individuals or regions and adapted for local conditions via trainings and dissemination activities such as publications and videos.

In order to address these problems, we must be more innovative in the types of collaborations we seek, engaging partners from around the world and from both the public and private sector. A recent and effective strategic alliance in the context of a public-private partnership exists between the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (German International Cooperation) and VAG Armaturen GmbH, one of the world's leading manufacturers of specialised valve solutions.

These partners believe that improving the management of existing water supply networks, with a special focus on the method of pressure management, can go a long way towards solving problems of water loss. Together with the support of UNW-DPC and the input and advice from many other external experts and academic institutions, they have prepared a set of Guidelines for Water Loss Reduction, available in print form and downloadable at <http://www.waterloss-reduction.com>.



The GIZ-VAG partnership was formed to introduce, promote and support Pressure Management (PM) as a best practice instrument for water loss reduction in selected developing and emerging countries as well as to develop internationally accepted guidelines in order to share knowledge with interested stakeholders around the world. To do so, they engage in various activities, many of which with the collaboration of UNW-DPC:

- Awareness raising (Stakeholder Dialogues)
- Capacity building (Trainings)
- Pilot projects in pressure management
- Partnerships

One of these major awareness raising activities, a successful Stakeholder Dialogue for West and Central African Countries which took place in Burkina Faso in February 2011, is described in more detail in the next chapter.



OVERVIEW OF UNW-DPC'S ACTIVITIES ON WATER LOSS REDUCTION IN AFRICA

“WATER CAN MAKE AN IMMENSE DIFFERENCE TO AFRICA’S DEVELOPMENT IF IT IS MANAGED WELL AND USED WISELY. GIVEN CLEAR POLICIES AND STRATEGIES AND REAL COMMITMENTS TO IMPLEMENTATION, WE CAN USE WATER TO HELP ERADICATE POVERTY, REDUCE WATER-RELATED DISEASES AND ACHIEVE SUSTAINABLE DEVELOPMENT.” (*UN-WATER/AFRICA, AFRICAN WATER VISION, 2001*)

Another one of UN-Water’s main focus areas is on “Africa – a region for priority action.” To this end, UNW-DPC has carried out numerous capacity development and training activities in Africa for all of its target areas of participants: decision makers, water professionals, trainers and media. All of our regionally-focused series of workshops have had one foot in Africa, including training for journalists in Egypt, training of trainers in the use of the AquaCrop software for water efficiency in the agricultural sector in Burkina Faso and South Africa, training for policy makers in the MENA region, collaboration in the first workshop for the scientific G-WADI network in Senegal, and a UN-Water-Capacity Development Seminar in Kampala, Uganda (March 2010) on the occasion of the 15th African Water Association Congress.



As described in the previous chapter, one of the flagship and key activities of UNW-DPC since its inception has been on water efficiency, including its regional drinking water loss reduction workshops for water managers. One of these workshops already occurred in North Africa in Rabat, Morocco, for Arab States, in January 2010.

Most recently, in 2011 UNW-DPC continued its extensive activities on the topic of water loss reduction in Africa with two further activities: the first was within the framework of UNW-DPC's cooperation on the Guidelines for Drinking Water Loss Reduction together with GIZ, VAG, KIT and the University of Applied Sciences Northwestern Switzerland, with the contribution from our office to the successful completion of a Regional Workshop on Water Loss Reduction in Ouagadougou, Burkina Faso, in February 2011. In addition, a seminar in Cape Town in March 2011 for World Water Day on "Capacity Building for Non Revenue Water Reduction: an Africa Perspective," together with UN-HABITAT and the African Development Bank, added to our series of regional events on water loss reduction.

Also at World Water Day, UNW-DPC released a professionally-made trilingual DVD, made in collaboration with the UN University's Media Studio in Tokyo, "Water Loss Reduction in Cities Around the World." In this 15-minute video, water experts discuss the challenges of water loss faced every day and suitable solutions to increase efficiency in urban water supply systems and apply suitable approaches to develop capacities. The video is also available on the UNU YouTube channel at <http://www.youtube.com/watch?v=Kjngd7MO4iM>.



A book launch on Capacity Development for Drinking Water Loss Reduction at World Water Day rounded out UNW-DPC's activities. This state-of-the-art book outlines the various problems and needs related to water efficiency; the technical, political and institutional challenges for water loss reduction in specific cases around the world; and options for actions and solutions, which includes a discussion on the capacity development that is essential for the achievement of greater water efficiency.

Including Africa in all of our regional activities allows for UNW-DPC to enable cross-fertilization between policymakers within Africa and between Africa and other world regions, making available knowledge more accessible and promoting the uptake of solutions. They provide the opportunity for various communities to become informed about local and regional policy questions and to consider responsive solutions. In addition, our specific targets aimed at water professionals, decision makers, media and trainers in Africa are intended to sow the seeds for maximum further involvement and training to others.

UNW-DPC AT WORLD WATER DAY 2011 ACTIVITIES, MARCH 2011, CAPE TOWN, SOUTH AFRICA

3.1 | Regional Workshop on Water Loss Reduction for West and Central African Countries, Ouagadougou, Burkina Faso, February 2011

One recent UNW-DPC activity was a Regional Workshop on Water Loss Reduction for west and central African Countries, hosted by ONEA (the National Water and Wastewater Company of Burkina Faso) with support from GIZ, in collaboration with AfWA (the African Water Association) and UNW-DPC.

In many developing countries, water utilities are struggling with excessive water losses from their water distribution networks. In a World Bank report (2006) based on data from 900 water utilities, commercial water losses in the developing world have been estimated to be in the range of 40% to 50% of the water produced. But local water utilities very often do not have reliable figures on the actual level of losses in their own system. The reasons are a lack of institutional pressure and control, fragmentary or defective monitoring systems (bulk meters, customer meters) and inadequate knowledge of the distribution networks and the resulting impracticality of setting up a complete water balance. Instead, most available figures about water losses are based only on assumptions. However, determining the annual water balance based on reliable measurement data and adequate estimations which take all relevant components into consideration is a precondition for efficiently reducing water losses and selecting the optimum countermeasures.

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the private valve manufacturer VAG-Armaturen GmbH entered into a strategic alliance with the objective of assisting water utilities in developing countries to combat water losses. Two universities, the Karlsruhe Institute of Technology and the University of Applied Sciences Northwestern Switzerland, support this partnership.



The project has three levels of intervention:

- elaborating technical guidelines
- realising capacity development measures
- implementing pilot projects to demonstrate the efficiency of pressure, and
- management for reducing real water losses

Within this framework, a transboundary “Stakeholder Dialogue on Water Loss Reduction for Water Utilities in West and Central Africa” was organized in February 2011 in Burkina Faso by GIZ and the local water utility ONEA, with support from UNW-DPC, with the following objectives:

- raising awareness of decision-makers for the significance of the matter
- exchanging information about the actual water loss situation in the participating countries
- presenting the technical guidelines for water loss reduction, and
- testing the developed training concept and materials

STAKEHOLDER DIALOGUE ON WATER LOSS
REDUCTION FOR WATER UTILITIES IN WEST
AND CENTRAL AFRICA, BURKINA FASO,
FEBRUARY 2011

3.1.1 | *Participants*

About 45 representatives of water utilities from eight francophone West and Central African countries (Benin, Burkina Faso, Burundi, Congo RDC, Guinea Conakry, Mali, Senegal and Togo) and from the African Water Association (AfWA) participated in this forum, as well as representatives of the organizing institutions. Among the materials distributed at the workshop were a set of elaborate Guidelines on Water Loss Reduction (in French) written by GIZ and VAG, and commented by UNW-DPC.

UNW-DPC presented a session at the workshop to give details on its programme, technical guidance to water loss reduction, and provide a best practice example of water loss reduction in a specific target country, Bulgaria, which led to a lively discussion and some interesting conclusions:

- Technical guidance, like what has been elaborated in the GIZ paper, recommendations and book from IWA and including the benchmarking from AWWA (the American Water Works Association) are very helpful. Some adaptation to the working conditions in West Africa might be needed, to find tailor-made solutions on a case by case basis.
- There is still a big gap regarding information and knowledge about economics and finance (easy to read not only for technical water experts, but also for treasurers, decision makers influencing budget priorities, and NGOs).
- Capacity development, as a continuous effort, preferably combining capacities from the public sector with private industries (like VAG, one of the organizers of the workshop) is of high priority



3.1.2 | *Programme*

The programme of the forum consisted of a stakeholder dialogue, held on the first day, addressing firstly decision makers and giving UNW-DPC the opportunity to present its activities to the audience. Its objective was to emphasize the importance of water loss reduction by addressing the economic impacts caused by non-revenue water.

On the second day, technical directors and engineers of the participating water utilities were trained in identifying water losses and their causes. This opportunity was used to test the newly developed training materials.

On the third day pressure management – as one option to fight water losses – was discussed in more detail and a field trip was made to a pilot zone of Ouagadougou, where VAG equipment had been installed.

The fourth day involved a lecture that was held at the university of the 2IE foundation, addressing Masters students in environmental technology who have specialised in water resources management.

The main outcomes of stakeholder dialogue

Questions	Burkina Faso	Burundi
Important water losses	About 18 %	25 - 45 %
Strategy for fighting them	Action plan to reduce to 17 %	Studies and modulation ongoing
National policy on WLR	no	under development
Rules and regulations for WLR	no	no
Enforcement	-	-
Structures for WLR	Working groups on national and local level	WLR cell established
Water tariffs	478 FCFA/m ³ (= 0,73 €) in average (elevated)	State doesn't pay royalties (30 %)
Financing of water services	Water provision is covered, sanitation not	Study on tariff arrangements under way
Proposals for future	Extension of ...	Establishment of ...

Congo RDC	Guinea	Senegal	Togo
elevated	About 40 % => reduction to 25 % envisaged	bout 20 % (80 % real and 20 % apparent)	About 28 %
Action plan for WLR, execution has started	Maintenance of network; Mobilisation of resources	Rehabilitation of the network	Less reactive maintenance
no	no	yes, national action plan	no
no	Decrees, not accepted yet	Water law	Water law
-	-	Performance contracts	Regulation of service
Institutional reform underway	6 leakage fighting teams	Pilot committee for follow-up; 2-3 interventions teams per sector	2 intervention teams in Lomé
Fixed by the government	No information given	No information given	No information given
Households pay only 1/3 of the real costs	Tariffs don't cover needed investments	97 % of the costs covered; private system, auto financed	Tariffs don't cover needed investments
Institutional	Trainings on ...	Trainings on ...	Trainings on ...

The main outcomes of this first day stakeholder dialog have been reported in local newspapers and TV news (cf. <http://www.youtube.com/watch?v=4W0jmQaP4S4>). Kerstin Bark, 21.03.2011 page 5

3.1.3 | *Discussions and Results*

The stakeholder dialogue was opened by the Technical Advisor of the Ministry of Agriculture, Water and Fishery - Ministère de l'Agriculture, de l'Hydraulique et des Ressources Halieutiques MARH. He welcomed the President of the African Water Association, the Director General of ONEA, the country representative of GIZ and the audience. The official inauguration was followed by a visit of the CE-MEAU premises. The stakeholder dialogue then started with a discussion of the objectives and the presentation of the programme of the three days to come. The GIZ-VAG project was presented and experiences with a case study from Peru were shared, before the guidelines on water loss reduction were introduced with a deepening of pressure management as one contribution to WLR.

The following questions were asked and discussed in the working groups, the answers to which are summarized in the table on the previous page:

1. Do you have problems with water losses in your utility?
 - a. How important are they?
 - b. Do you have a strategy for fighting them?
 - c. Does a national policy for WLR exist?
2. Legal situation with respect to WLR?
 - a. Rules and regulations?
 - b. Enforcement?
3. Do you have a structure(s) in your utility dealing with WLR?
4. Economic situation?
 - a. Water tariffs?
 - b. Financing of water services?
5. Ideas proposals for future activities/ projects?

The results obtained were shared in the plenary, showing some similarities, but also big differences between the countries/ water utilities present. In the afternoon the representatives of UNW-DPC emphasised the importance of fighting water losses by stressing their economic impacts and by sharing experiences from the Sofia water utility in Bulgaria. The co-ordinator of the UNW-DPC Working Group on Capacity Development for Water Efficiency informed the audience of the activities of UN-Water, aiming to strengthen coordination and coherence among UN entities and non-UN partners dealing with issues related to all aspects of freshwater and sanitation. Results from previous case studies were presented.



3.2 | UNW-DPC AT WORLD WATER DAY 2011, CAPE TOWN, SOUTH AFRICA

INTERNATIONAL WORLD WATER DAY IS HELD ANNUALLY ON 22 MARCH AS A MEANS OF FOCUSING ATTENTION ON THE IMPORTANCE OF FRESHWATER AND ADVOCATING FOR THE SUSTAINABLE MANAGEMENT OF FRESHWATER RESOURCES.

An international day to celebrate freshwater was recommended at the 1992 United Nations Conference on Environment and Development (UNCED). The United Nations General Assembly responded by designating 22 March 1993 as the first World Water Day.

Each year, World Water Day highlights a specific aspect of freshwater. On this page, we present a brief overview of the different themes that have been the focus of World Water Day celebrations.



WALK FOR WATER IN CAPE TOWN, SOUTH
AFRICA, WORLD WATER DAY 2011

The international observance of World Water Day is an initiative that grew out of the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. The United Nations General Assembly designated 22 March of each year as the World Day for Water by adopting a resolution. This world day for water was to be observed starting in 1993, in conformity with the recommendations of the United Nations Conference on Environment and Development contained in chapter 18 (Fresh Water Resources) of Agenda 21.

States were invited to devote the Day to implement the UN recommendations and set up concrete activities as deemed appropriate in the national context.

World Water Day in 2005 marked the start of a new UN International Decade for Action on water. The “Water for Life” Decade 2005-2015, of which UNW-DPC is one of the results (as one of the two “Decade Programmes”) gives a high profile to implementing water-related programmes and the participation of women. The UN created this Decade in the hope that it would boost the chances of achieving international water-related goals and the United Nations Millennium Declaration.

Within the “Water for Life” Decade, the focus is on the extent to which water and sanitation are critical factors to alleviate poverty and hunger, for sustainable development, for environmental integrity, and for human health.

The first water decade – from 1981 to 1990 – brought water to over a billion people and sanitation to almost 77 million. But the job was only half done. There are still almost 800 million people without adequate access to water and more than 2 billion without adequate sanitation.

While creative technological solutions are certainly needed, the biggest challenges will be to ensure that the poorest people have access to clean water and safe sanitation, to help communities find sustainable ways to manage and pay for water and to develop acceptable ways of introducing safe latrines and of encouraging good hygiene practice.

The lesson of the first water decade is that pipes, cement and infrastructure could not do the job without engaging with people and communities. This remains a challenge for the “Water for Life” decade.

To reach these goals, each year UN Water decides the specific theme of that annual World Water Day as well as which UN agency will take the lead to organize an event on 22 March, including a website with resource materials. Many organizations in the world also organize local WWD events and other activities.



WORLD WATER DAY 2011, CAPE TOWN,
SOUTH AFRICA

The 2011 topic for World Water Day was on “Water for Cities: Responding to Urban Challenges,” and focused on the impact of urbanization, industrialization and uncertainties caused by climate change, conflicts and natural disasters on urban water systems. 2011 World Water Day activities were held in Cape Town, South Africa, and organized by the United Nations Environment Programme (UNEP) and the United Nations Human Settlements Programme (UN-HABITAT).

Based on its work plan and specific fields of activities, UNW-DPC was involved in a number of activities at the WWD2011:

- Participation in and representation at the UN-Water booth
- The launch of the UNW-DPC Book on “Capacity Development for Drinking Water Loss Reduction: Challenges and Experiences”
- The launch of the UNW-DPC DVD on “Reducing Water Loss in Cities around the World”
- A session on Non Revenue Water Reduction: an African Perspective
- A workshop on UN-Water Mapping Exercise on Water Quality

3.2.1 | *Session on “Non-Revenue Water Reduction: an African Perspective”*

This session was convened by UNW-DPC, UN-HABITAT, and the African Development Bank on 21st March 2011 from 2-6 pm during the World Water Day conference in Cape Town, South Africa.

UNW-DPC, together with UN-HABITAT and the African Development Bank, used the opportunity of the World Water Day to bring together experts and various stakeholders involved in non revenue water reduction, especially operators and operational staff from the African Region, during the session entitled “Capacity Building for Non Revenue Water Reduction: thoughts and cases for the rest of Africa.

The objective of the session was to bring together practitioners and experts to exchange on their respective know-how and expertise, as well as to showcase some good practices from champion utilities on the continent.

Highlights and major outcomes

1. Welcome Address: In the welcome address, it was noted that the term “NRW” (Non-Revenue Water) is perceived as placing the blame on the non-paying water consumers. Therefore, UN-Water prefers the term “WL” (water losses) as more appropriate to address responsible water utilities and to encourage them to act.

2. Water Operators’ Partnership and NRW: In this section the potential of inter-utility sharing of know-how regarding water loss reduction was emphasized. Here, the speaker saw a great opportunity for cooperation of GWOPA under UN-HABITAT with UNW-DPC.

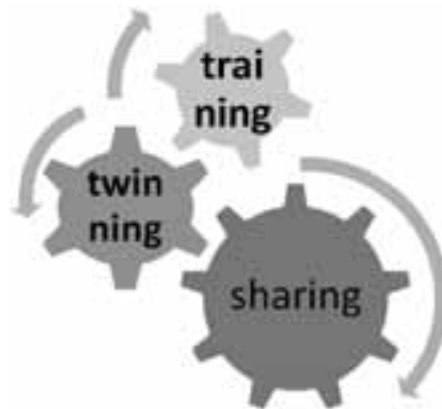
The Global WOPs Alliance is a network of partners committed to helping water operators help one another:

- to improve their collective capacity
- to provide access to water and sanitation services for all

GWOPA's main premise is that Practical knowledge and expertise are existing in water utilities – but they are unevenly distributed. Sharing this living library of knowledge helps bridging capacity gaps .

3. AfDB and Non-Revenue Water: At this point AfDB emphasized its interest in financing water loss reduction programs, with efficiently operating utilities able to secure loan repayment. AfDB has been financing hardware investments for water loss reduction (like network repairs) as well as software investments (customer database collection, etc.). Counter-finance and pre-finance through local banks is helpful.

4. Capacity Development for Water Loss Reduction: A needs analysis presented by speaker Dr. Hani Sewilam of UNW-DPC revealed that the exchange between donor agencies has to be strengthened to avoid duplication and to enhance synergies. UNW-DPC intends to do this, and focus on electronic tools. An important e-capacity tool, the UNW-AIS was introduced here and has been developed. It is available online.



5. Non-Revenue Water Reduction: A case study of a major water urban utility, FIPAG, which signed a Public-Private Partnership (PPP) between FIPAG/VEI/Netherlands' Ministry for Development Cooperation, was presented by Nelson Beete. He described how the water utility FIPAG in Mozambique has developed and executed a water service performance contract as a PSP (Private Sector Participation) solution. The experiences from four cities were explained. During this testing period, house connections have tripled, service hours improved from an average of 10 now up to 24 hours per day, and NRW came down from 50 to 20%.

6. How to use GIS technology innovation for NRW: Swaziland Water Services Cooperation:

The speaker, Dumisa Dlamini, highlighted the essential importance of appropriate space related data and information for all utility operations. A GPS hand-held unit to locate and monitor water meters was introduced as a successful tool to build the GIS – based data system not only for revenue collection, but also for mapping of consumption and system planning. Investments were recovered (amortization) within less than three years.

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After the presentations by the experts in the panel, the group discussion with a question and answer session was very lively, with the following main points resulting:

- Many commentators agreed with the findings that not only the poor sectors of society are responsible for meter manipulation and non- payment, but also quite often wealthy customers have had to be located and disciplined.
- A lot of high level technical issues were raised, and detailed information exchanged between the participants (mainly experienced operators from utilities).
- Intervention of politicians is a burden to cost recovery, introducing appropriate water tariffs, and private participation may ring-fence political interventions.

7. Economic Aspects of Water Loss Reduction for African Countries: The costs of water loss per cubic meter exceed by far the tariffs or direct costs for production and distribution of supply water. The economic value of water is much higher. Surplus damages have to be considered, like the reduction of the technical network lifetime. Therefore, the benefits of water loss reduction are higher than usually estimated.

8. Reducing Non-Revenue Water in Lake Victoria Utilities – Experiences from Kisii Town, Kenya

John Alloys Magoba, Managing Director of Gusii Water & Sanitation, provided this presentation. In 2004 UN-HABITAT formed the Lake Victoria Region Water and Sanitation Initiative (LVWATSANI) through association with governments of Uganda, Kenya and Tanzania, with the primary goal of addressing the water needs of the secondary towns around Lake Victoria designed to achieve the MDGs targets for water and sanitation.

In 2007, UN-HABITAT identified the Uganda National Water and Sewerage Corporation (NWSC) through its external services unit as a suitable and competent partner to carry out a capacity building programme to effectively manage the expanded water and sanitation system in Kisii. (Production and Network expansion).

This resulted in a successful PIP (Performance Improvement Program) which aimed to reduce NRW from 60% to 42% in 5 years and had specific targets for adequate cost recovery systems, the expansion of the revenue base, improved customer relations, reduction of NRW, and improved staff productivity.

Key challenges were found in PIP implementation, in inadequate financing for improving capacity, in a lack of engineering data/maps, inadequate skills of workforce, staff attitude and change management, lack of political goodwill and support, and reform transition was not supported to logical conclusions.

Recommendations therefore included suggestions to:

- Develop an investment plan with a pro poor focus
- Continue with PIP implementation and more partnerships
- Continue capacity building programmes staff and systems
- Embrace change and sound leadership/professionalism
- Source for funds for implementation of interventions to meet targets set out by MDGs and Vision 2030 in alignment with new constitution

- Carry out demand management study and prepare and digitize engineering maps for the network type and age
- Involvement of all stakeholders including local leaders.
- Procure leak detection equipment

9. How a small size local utility addresses NRW The speaker, Antonio Madeira Junior, described the efforts of his water utility in Mozambique, EMA S.A., to deliver water following the rapid increase in demand. Losses could be reduced somehow, but the collection rate went down significantly, because not all additional customers and additional demand could be served to customer satisfaction. The lessons learned were that the private operators should be involved in the NRW investment, and that asset owner and asset operator should share the cost of training, as well.

He listed the four main causes of the high level of NRW as:

- A mixture of new and old networks
- Very high illegal consumption levels
- Poor quality HH connections and
- Poor quality repairs on the network

Possible solutions that the speaker listed were:

1. Deactivation of the old network (needs investment)
2. A survey of clients one by one, road by road, pipe by pipe (needs investment)
3. Replace fittings as leaks appear with proper fittings

Question & Answers

An excellent and lively Q&A session followed the presentations, which discussed the economic optimum of water loss in individual cases, the question of whether the human right to water hampers efforts to reduce administrative water losses by allowing access to water even for those who are not even willing to pay, and whether and how politicians can be encouraged to support actions that seem unpopular at the moment.

The panel discussion brought three main findings, namely 1) The vicious circle (poor budget/ poor maintenance/ poor services/ low customer satisfaction/ little political support/ low tariffs/ poor budgets) can only be overcome through public awareness; 2) Water loss reduction is just one aspect which should be integrated in overall water demand management; besides technical issues, social issues are important.; and 3) The survey among utility-CEOs (presented by Prof. Rudolph) came to an interesting result: The highest priority was given to capacity development as a bottleneck factor of success. At any rate it is clear that in addition to individual capacity development, more institutional capacity development is needed. UNW-DPC will focus on this need in the future.

3.2.2 | Launch of new Capacity Development Book and trilingual DVD on “Reducing Water Loss in Cities Around the World”

After the session, Johan Kuylenstierna moderated a panel to release the new UNW-DPC book on Capacity Development, in which other prominent panel members were also involved:

- Prof. Karl-Ulrich Rudolph, lead contributing author and head of UNW-DPC Working Group on Water Efficiency
- Dr. Reza Ardakanian, Director, UNW-DPC
- Dr. Hani Sewilam, contributing author and Programme Officer, UNW-DPC

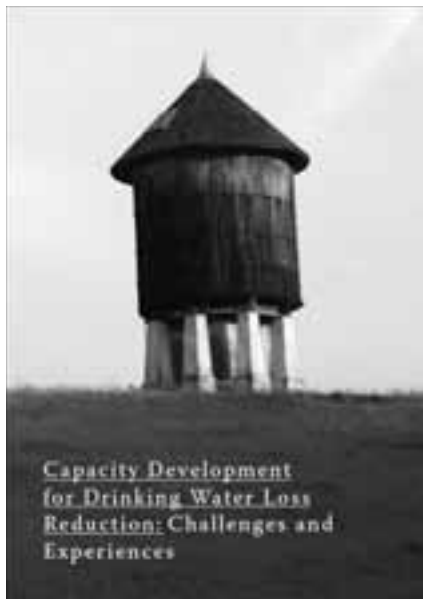


LAUNCH OF THE UNW-DPC BOOK ON “CAPACITY
DEVELOPMENT FOR DRINKING WATER LOSS
REDUCTION” AT WORLD WATER DAY 2011 IN
CAPE TOWN

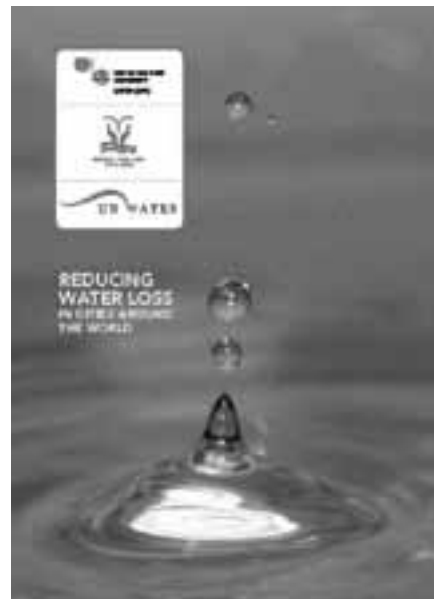
Synopsis of the book:

Water efficiency, and particularly drinking water loss, is a widespread issue which has significant financial and environmental repercussions. However, awareness regarding the scope of the problem and available solutions is lacking. To contribute to addressing this need, the UN-Water Decade Programme on Capacity Development (UNW-DPC) presented a book which is one of the results of three years of collaboration with other partners within UN-Water on this topic, including a series of regional workshops on capacity development for improving water efficiency.

This book outlines the various problems and needs related to water efficiency; the technical, political and institutional challenges for water loss reduction in specific cases around the world; and options for actions and solutions which include a discussion on the capacity development that is essential for the achievement of greater water efficiency.



CAPACITY DEVELOPMENT FOR DRINKING WATER
LOSS REDUCTION



TRILINGUAL DVD ON "REDUCING WATER LOSS IN
CITIES AROUND THE WORLD"



THE UN-WATER BOOTH AT WORLD WATER DAY

2011 IN CAPE TOWN

3.1.3 | UNW-DPC at the UN-Water booth

Another major activity was contribution to the UN-Water booth and the devotion of personnel to disseminate and provide visitors with requested information and materials about our programme and the rest of UN-Water. The booth contained stands displaying the publications and water-related activities of the different UNW-DPC events. It also contained a monitor to display the videos developed by UNW-DPC to raise awareness on different water and urban challenges, such as UNW-DPC's Water Loss Reduction video for urban areas. Visitors were introduced to UN-Water's structure and objectives and then to the specific activities and projects of UNW-DPC. A wide variety of materials on water and urban challenges were distributed. Visitors were very interested in the publications available and over the course of the week over 2,000 materials were distributed.



4 CONCLUSION

GENERAL CONCLUSIONS AND RECOMMENDATIONS:

THROUGHOUT THE HISTORY OF ITS PROGRAMME SO FAR, UNW-DPC HAS WORKED ON THE GAMUT OF PRIORITY AREAS WHICH UN-WATER FOCUSES ON. OUR PROGRAMME, HOWEVER, HAS PLACED A SPECIAL EMPHASIS ON WATER EFFICIENCY, AND IN PARTICULAR THE SPECIFIC AREA OF DRINKING WATER LOSS REDUCTION, PARTICULARLY IN URBAN AREAS.

One of the reasons for this is because the extent of the problem is grave, with far-reaching consequences for economic and social development and health. Just as important from a capacity development perspective, however, is the fact that this problem is also manageable. In particular, with appropriate amounts of training, finances and planning, the know-how to improve these problems can be passed from one person to another and from one region to the next.

In all of our activities to date since 2007, it has become clear that a region that needs particular attention and care is Africa, which is the major impetus behind writing this publication.

In particular, the series of regional training workshops, outcomes of UNW-DPC's Water Efficiency Working Group, and academic papers that UNW-DPC has produced on the topic show that a holistic approach is essential for Water Loss Reduction (WLR) success. It needs to be promoted and encouraged within water utilities, where the awareness is not yet strong enough. Through capacity development efforts, trainings, eTools and other continued attempts at scaling up

such as how UNW-DPC is working within UN-Water and its two dozen UN member agencies, the kind of awareness that is currently lacking can be improved.

Lessons from our activities show that other technical and technological aspects are important, in particular:

1. Short-term (technical level) operations and long-term strategies (design, planning and political decisions) should be complementary and coordinated;
2. Financial viability relies on revenues, revenues rely on metering of water, so there is a need to maximize efficiency of metering (implementation of high accuracy water meters and minimization of metering process inaccuracies – human errors); and
3. GIS is a useful tool to keep all data from the technical side, including knowledge management and customer service.

In addition, financial and economic aspects in water loss reduction also cannot be ignored. The main lessons that UNW-DPC has found in this sector are as follows:

1. WLR technologies are available, but some adaptation to regional conditions is needed;
2. WLR economic/financing tools are necessary at an early stage of WLR projects to define the optimum level (decision and optimization); and
3. WLR technologies and financial tools are useful, but should be embedded in institutional developments - that is why capacity development is so important.

Finally, when it comes to administrative and regulatory aspects, standards (such as those from IWA) are useful but still need to be adapted to the context in specific regions, particularly as many in Africa lack meters and poor data quality and reliability is available. Using different, local languages would also be useful in this regard.

There are several measures that can be taken in order to improve these aspects and gain a better picture of local conditions, attitudes and needs:

- Proper customer surveys and good data are needed
- There should be more of a focus on the connections that are more cost-benefit relevant, and
- Training activities are needed in order to improve the amount of skilled labor and trained technical staff

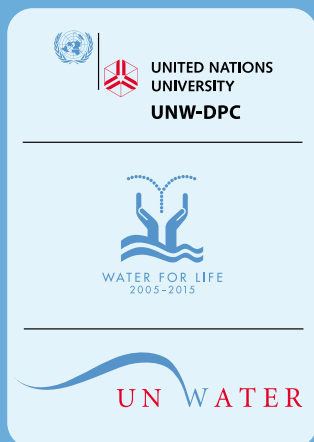
THE WAY FORWARD

UNW-DPC will continue to work on the area of water efficiency and drinking water loss reduction, in particular via UN-Water member and partner programmes as well as via planned activities with UN-Water Task Forces and Thematic Priority Areas.

It is clear that technical, individual and institutional capacity development activities are still needed, both in the form of trainings but also via eTools that can help to scale up the activities of UN-Water members and partners and reach larger numbers of those who can most benefit from these technologies.

Adding Value in Water-Related Capacity Development

The UN-Water Decade Programme on Capacity Development (UNW-DPC) is a joint programme of UN agencies and programmes cooperating within the framework of UN-Water and hosted by the United Nations University.



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