

**Advisory Assistance Programme for Environmental Protection in
the Countries of Central and Eastern Europe, the Caucasus and
Central Asia**

**Support to the introduction of
ecological management of water
protection zones as a first step to the
introduction of water safety plans in
small scale water supply systems in
the Dusheti and Marneuli districts in
Georgia**

Final Report 2012

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Countries of Central and Eastern Europe, the Caucasus and Central Asia

Project-no. (FKZ) 380 01 243
Report-no. (UBA-FB) 001758/E

Support to the introduction of ecological management of water protection zones as a first step to the introduction of water safety plans in small water supply systems in the Dusheti and Marneuli districts in Georgia

Project November 2010 – July 2012

Final Report

by

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UMWELTBUNDESAMT

This publication is only available online. It can be downloaded from
<http://www.uba.de/uba-info-medien-e/4499.html>

The contents of this publication do not necessarily
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Performed by: World Health Organization (WHO),
Regional Office for Europe (WHO Europe),
Water and Sanitation Programme,
WHO European Center for Environment and Health
Hermann-Ehlers-Str. 10
53113 Bonn

Report completed in: July 2012

Publisher: Federal Environment Agency (Umweltbundesamt)
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Dessau-Roßlau, May 2013

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1. Project environment/context (Situation at project start, relevance to environmental policies, importance for target country, demand in target country)

1.1. Situation at project start

Georgia is a country with a surface area of 69,700 km² and a total population of 4.4 million people (2008). 48% of the population lives in rural areas. The latest WHO/UNICEF Joint Monitoring Programme data showed that in 2008, 92% of the urban population in Georgia used water piped on premises, while this indicator is 51% for rural population. 45% of the rural population used other improved water sources, and 4% of the rural population used unimproved water supply systems. The high proportion of rural population that depends on small scale and community water supplies and which is not yet connected to a well-managed centralized water supply makes the management of small scale water supply systems a problem of national importance.

According to data from the national authorities, state control on drinking-water safety and quality has not been carried out in Dusheti and Marneuli districts in 2008- 2010. Since 2001, no systematic investigations have been conducted on water quality of springs and individual wells used by the rural population. The municipalities Dusheti and Marneuli districts do not have drinking-water quality control laboratories and consequently, control and monitoring of water quality of small scale water supply systems has not been carried out.

The prevailing water related diseases in Georgia are salmonellosis, shigellosis, gastroenteritis, hepatitis A, and amoebiasis. Anecdotal evidence has demonstrated that the situation is usually worse in rural than in urban areas. The assessment conducted in the framework of the WECF Empowerment & Local Action (ELA) Georgia Project (2008) by the Georgian Environmental and Biological Monitoring Association (GEBMA) in some villages of the Mtskheta-Mtianeti and Marneuli regions revealed frequent outbreaks of water-related diseases, common use of groundwater without prior disinfection, uncontrolled construction of pit latrines and shallow wells, leading to further contamination of groundwater and surface water reservoirs. It is assumed that the lack of protection zones in these areas has led to contamination of the resource water and consequently to health impacts.

1.2. Relevance to environmental policies

The project supports the enforcement and implementation of relevant national laws, policies, programmes and international agreements in the area of water and health.

The major legal documents regulating water safety in Georgia are the law on water (1997), the law on health protection (1997), the law on environmental impact permit (2007), and the law on public health (2007).

The results of the rapid assessment of drinking-water quality of small scale water supply systems in the two districts will serve as an evidence basis for development of a sound legislative/normative base related to drinking-water quality.

The United Nations General Assembly on 28 July 2010 adopted resolution 64/292 recognizing the basic human right to water. The implementation of the present project and further scaling up to the entire national territory will be a significant support to allow compliance with this important resolution.

Georgia is a Party of many multilateral and bilateral international agreements. Since 17 June 1999, Georgia is signatory to the WHO/UNECE Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (*the Protocol*). The Protocol is the world's first supranational legally-binding instrument aimed at sustainable water resource management and reduction of water-related diseases. Parties to the Protocol recognize the general provision that they "shall [...] take all appropriate measures for the purpose of ensuring [...] the protection of water resources which are used as sources of drinking-water" (Art 4 §2 (a)) and in particular ensure effective protection of water resources used as sources of drinking-water, and their related water ecosystems, from pollution from other causes, [...] (Art 4 §2 (c)). Parties to the Protocol are obliged to set targets to improve the situation with respect to water-related diseases, and the subject project and its results can significantly contribute to the baseline analysis for future target setting in the area of small scale water supplies.

In October 2011, a Memorandum of Understanding was signed between UNECE and the Ministry of Environment of Georgia, setting the basis for the National Policy Dialogue (NPD) on Integrated Water Resources Management in Georgia under the European Union (EU) Water Initiative, facilitated by UNECE. Currently, the NPD is underway in Georgia and the NCDCPH plays an active role in this process. Thus, the experiences and lessons learnt throughout the pilot project could be linked into the NPD and management of small scale water supplies and introduction of the WSP approach be reflected in the scope of the NPD.

1.3. Importance for target country

In Georgia, there is a lack of capacity for surveillance of drinking-water quality, particularly for small scale water supplies. Data on water quality is limited, thus through the assessment of water quality and identification of main risk factors of contamination, the project will provide an evidence base for future intervention measures and bring the issue of water quality surveillance and prevention of water-related diseases on the priority agenda of the national and local government policy action.

WSPs have not yet been introduced in Georgia. Identifying and assessing risks in the drinking-water catchment, and protecting the catchment area – for example through the creation of effective water protection zones – is a step towards the creation of WSP and a cost-effective way to increase compliance with the national standards and WHO guidelines for drinking-water quality, thereby contributing to a reduction of water-related diseases in Georgia.

The WHO recommends the development of Water Safety Plans (WSP) – a holistic risk assessment and risk management approach to ensure safe drinking-water – in its Guidelines on Drinking-water Quality (GDWQ) which apply to all water supplies, irrespective of their size, type of abstraction or source water etc. Experience has shown that application of the principles of the GDWQ is particularly important in rural areas where the local population depends on small scale water supply systems, and where drinking-water quality is often compromised.

The project adds value through building capacity at national and local levels on the application of internationally recognized approaches and methods such as WSP, Rapid assessment of Drinking-water quality (RADWQ) and sanitary inspections. English documentation on these approaches is not always easily understood, particularly by those involved in the operation of small scale water supplies in the rural area. Therefore, translation of the respective guidance documents into Russian and Georgian could support the application of these approaches in Georgia.

1.4. Demand in target country

The safety of small scale water supplies, and associated negative health outcomes were identified as priority issues before the start of the project. The drinking-water quality in small scale water supplies was widely unknown. There was a clear need to assess the hazards in the water catchment areas of the rural districts, assess risks and verify current controls, and provide guidance to the Georgian authorities on how appropriate management of the water protection zones could reduce the risk of contamination of the source water and ultimately the drinking-water in a cost-effective and reliable manner.

The scientific principles associated with the creation of water protection zones have been recognized by the legally-binding Protocol on Water and Health. To address above needs, in 2009 the national authorities of Georgia submitted a project proposal to the Project Facilitation Mechanism under the Protocol on Water and Health.

2. Project goals (Expected results, purpose of the assistance)

2.1. Project goal

The overall goal of the project was to assess the current situation with respect to the design and implementation of water protection zones (“Wasserschutzgebiete”), the drinking-water quality from small scale water supplies at the point of consumption, and its impacts on the health of the population in the Dusheti and Marneuli districts of Georgia.

To achieve these goals, it was planned to a) carry out an initial situation assessment for Dusheti and Marneuli b) carry out a rapid assessment of drinking-water quality and sanitary risks, c) train local authorities, d) develop awareness-building material in Georgian and conduct an outreach programme to the communities, and e) translate WHO guidance documents into Georgian and Russian and disseminate them to relevant stakeholders.

2.2. The expected results

- Review of the current regulatory framework and enforcement mechanism for the establishment and enactment of water protection zones (“Wasserschutzgebiete”), and develop recommendations for improvements;

- Assessment of the quality of drinking-water at the point of consumption and its compliance with the WHO GDWQ and the Georgian National Standards on Drinking-water Quality; assessment of negative health outcomes in localities of the Dusheti and Marneuli being served by small scale water supplies;
- Detailed review of the hazards and risks that impact the quality of the source water destined for the production of drinking-water by Georgian experts supported by international experts as needed;
- Detailed review of current control measures employed in the small scale water supply systems and verification of their effectiveness to reduce the risk and bring the quality of the water in line with the quality criteria of the WHO GDWQ and the Georgian National Standards on Drinking-water Quality;
- National training programmes for local authorities. These training programmes aimed at the national professionals from the environment and health sector, owners/operators of small scale water supply systems, and health sector workers. The focus of the training was: to introduce concepts of protection, particularly regulation and enforcement, for water protection zones (“Wasserschutzgebiete”), to introduce the concepts of WSP, and to strengthen the outbreak detection and contingency planning and reporting-capacity of local health systems;
- Awareness raising programme for the local residents, aimed at increasing their understanding of the importance of source water protection and hygiene behaviour, the link between water contamination and disease, and empowering them to protect water sources and operate and manage small scale water supply systems;
- Strengthening the health laboratories as required, both in diagnostic capacity as well as in reporting quality controlled data; and
- Translation of WHO guidance documents *Water safety plan (WSP) manual: Step-by-step risk management for drinking-water suppliers* and draft document on *Rapid assessment of drinking-water quality* from English into Georgian and – as part of the project extension – guidance on *Water safety planning for small community water supplies* from English into Russian and dissemination of these documents to the project team and relevant stakeholders.

2.3. Purpose of assistance

The overall scope of this project was to implement a demonstration programme based on the knowledge available from national experts, and a transfer of know-how and technical expertise from a leading scientific institution such as the German Federal Environment Agency (Umweltbundesamt – UBA), in order to be later able to transfer the project outcomes for further development of WSPs in small scale water supplies and scaling up over the national territory in a step-wise, coordinated way.

3. Course of project implementation (Activities carried out, broken down to different project measures and results)

The Water, Sanitation and Health Programme of the WHO European Centre for Environment and Health facilitated overall project implementation. The national project team was responsible for daily coordination and implementation of the planned activities. UBA, WHO Collaborating Centre on Research on Drinking-water Hygiene, in the persons of Mr Oliver Schmoll and Ms Bettina Rickert provided valuable technical advice throughout the project implementation.

The project has been implemented in three stages: preparatory stage, field work, and data analysis and evaluation. According to the detailed project implementation schedule (Annex 1) the following activities were carried out as part of the project.

3.1. Activities carried out in the preparatory stage

i) *Establish national core project team:*

The team was established at the first project meeting held at the National Center for Disease Control & Public Health, Georgia (NCDCPH) on 26 January 2011 (Annex 2). The team was coordinated by Dr Nana Gabriadze, expert of the NCDCPH and Dr Manana Juruli, director of GEBMA. Responsibilities of the team included: overall project management (e.g. monitoring of budget and timelines), preparation of field work (e.g. preparation of SI forms, scheduling and coordination of field work and lab analyses), appointment and training of field staff, data management, conducting and documenting field work, facilitating translation of relevant documentation into Georgian and dissemination and reporting of project outcomes.

ii) *First advisory mission and coordination meeting:*

The first advisory mission by the experts from UBA and WHO European Centre for Environment and Health was carried out from 31 January to 3 February 2011. During the advisory mission methodological training for project implementation was provided by the experts of UBA. Introductory field visits to Dusheti and Marneuli were conducted. The agenda of the advisory mission, agenda of stakeholders meeting, outcomes of the mission and the initial project information leaflets in English and Russian are provided in Annex 3, Annex 4, Annex 5, Annex 6 and 7 respectively.

A project kick-off meeting for stakeholders took place on 31 January 2011 during the first advisory mission. Representatives from the health, environment, and agriculture ministries, NCDCPH, sanitary epidemiology inspection, water supply authority, academic institutions and nongovernmental organizations (NGOs) attended the meeting. Dr Nata Avaliani, general director of NCDCPH and Dr Rusudan Klimiashvili, head of WHO Country Office in Georgia gave opening speeches. Dr Shinee Enkhtsetseg, Ms Bettina Rickert and Mr Oliver Schmoll gave introductory statements and presentations about the project and their roles in the project implementation. Dr Nana Gabriadze, national coordinator of the project, introduced the different project activities. Presentations were also given by the ministry of agriculture and GEBMA. The participants noted the need for this project in Georgia and expressed their commitment to its implementation.

The methodological technical training for project core team members was carried out from 1-2 February 2011 at NCDCPH. Experts from UBA, the WHO Collaborating Centre WHO Collaborating Centre on Research on Drinking-water Hygiene, gave lectures on: rapid assessment of drinking-water quality, sanitary inspection, and framework regulations and enforcement strategies for drinking-water protection zones. The survey design was discussed in detail, leading to modifications of sample size, selection criteria of the sampling site, parameters, and the phases of the field work. Details on the outcomes of the first advisory mission are included in Annex 5.

Field visits to Marneuli district centre and Jandara village and Dusheti district centre and Bulachauri village district were carried out on 3 February 2011. The aim of the visits was to meet local authorities and stakeholders and get an overview of the current situation of drinking-water supplies in rural villages. During the mission, the features of water distribution networks from district centre to village, household water storage, springs and public stand taps were observed. Data on inventory and detailed number of water supplies in the villages was not available. No protection zones had been established for wells and springs.

iii) *The Water Safety Plan (WSP) manual and the draft document on Rapid Assessment of Drinking-water Quality (RADWQ)* have been translated into Georgian (Annex 8 and Annex 9).

The Georgian translation of the WSP manual was printed (160 copies) and distributed to project team members and stakeholders. The translated RADWQ document has been used internally by the national project team for the project implementation. However, the team suggests using the final document as an official publication for future work throughout the country. At the time of this report, the English original of the RADWQ document is still a draft version, and finalization and publication of the Georgian translation is therefore not possible at this stage.

iv) *Development of awareness raising materials for the communities:* The national project team developed the leaflet „Proper management of wells“ in Georgian, and printed 900 copies (Annex 10). It was used for the community outreach programme in two pilot areas.

v) *Development, adaptation, translation and training on sanitary inspection (SI) forms*

The WHO “standard” SI forms were provided to the national team by the international experts. The project team facilitated translation of the SI forms from English into Georgian and conducted in-depth training for field team members on the use of these forms including practical exercises in water works. The types of water supplies in the two selected districts were the same as assumed at the start of the project. Therefore, the SI forms were applied in the field without modification (Annex 11 a-11f). The local experts and project team members gained knowledge and experience in their application and are able to further disseminate this information to other parts of the country.

vi) *Preparation of laboratory work*

A tender was held for laboratory selection, and laboratory analyses. Analyses for drinking-water quality were conducted in an accredited laboratory of G. Natadze Scientific- Research Institute of Sanitary, Hygiene and Medical Ecology. The laboratory has many years of experience in the area of drinking-water research. The laboratory provided cold boxes and ice containers for proper collection and transportation of water samples.

vii) Adapting and pre-testing of an Excel based data management template

Following the first advisory mission, an Excel spreadsheet has been created developed from a template provided by the experts in accordance with the RADWO manual for data management. It was tested and verified for use in the field (Annex 12).

3.2. Field work

- viii) **Phase 1** of the field work was conducted in March-April 2011. It aimed at fact finding for identifying the supplies in the villages to be included in the survey, and pre-testing the SI forms in the field. Four trips (1 to Dusheti and 3 to Marneuli) were organized by the project team for selection of the sampling points. Meetings were held with the representatives of local authorities in two villages, including the heads of the municipality. The field team introduced the project's main objectives and expected results to the local authorities. During the meetings, required tasks and support by the local authorities for implementation of the project were discussed. As a result, in two districts a total of 260 sampling points were identified for assessment
- ix) **Phase 2** of the field work aimed at sampling for drinking-water quality analyses and sanitary inspection of supplies selected in phase 1, and conducting outreach activities to village communities. Two teams were organized which carried out the field work in May-July 2011. Teams consisted of staff of the NCDC and GEMBA (*see Annex 13 List of field team members*). Each field team consisted of specialists with experience in water-quality analysis and water-sampling procedures. Field work was headed by a fieldwork manager. 30 trips were carried out to Dusheti and Marneuli districts for taking drinking-water samples and filling out sanitary inspection (SI) forms.

The following types of drinking-water supplies were investigated: protected spring (PS); dug well with hand pump (DWHP), borehole with mechanised pumping (BMP), piped water: distribution system (PWDS), household piped water (HPW) and household containers (HHC).

A total of 260 water samples were taken for the survey. 55 of those were taken in Dusheti district (24 from the source, 11 from storage, 15 from piped distribution and 5 from household containers). In Marneuli district 205 samples were taken and of these samples 103 were from the source, 12 from storage, 69 from the distribution and 21 were from household containers. SI forms were filled in (*see Annex 11 SI forms in Georgian*) and assessed for all 260 sampling points.

Each day the sampling notes were recorded in the daily report forms (Annex 14) together with the cluster number, date, and name of analyst. Upon completion of the field work, the NCDC&PH organized a one-day meeting in Tbilisi on 17 June 2011 where field teams reviewed their experiences of work in Marneuli and Dusheti districts.

x) **Community outreach activities**

Meetings with the community representatives were carried out from 27 to 30 July 2011 in Dusheti district and from 31 July to 5 August 2011 in Marneuli district. The communities were informed about the visit of the project team in advance. The representatives of local authorities, schools, kindergartens, water operators and village residents attended the meetings. The meetings were conducted twice a day and approximately 40 persons attended each meeting. Presentations were given on the following themes:

1. "Approaches to Water Safety Plans" (N. Gabriadze)
2. "Identification of hazards in the water supply" (M. Juruli)
3. "How to avoid water-borne diseases" (M. Lashkarashvili)

4. “Chemical and microbiological contamination of water” (Inga Gvineria);
5. “Sanitary inspection of small water supply systems” (A. Mindorashvili)
6. “Review of legislation on drinking-water “ (K. Laperashvili)

Detailed explanation was given why it is important to develop WSPs in communities, how to identify risks from catchment to consumers, what the main sources of contamination are and how to avoid harmful impact on health and the environment. Awareness raising materials such as leaflets on prevention of waterborne diseases, drinking-water quality national standards and sanitary rules for construction of wells were distributed.

xi) Training for local authorities

Training of local authorities was planned as part of the project field activities. Five workshops were organized for local authorities and representatives from the water supply service centers and operators of small scale water supplies in Dusheti and Marneuli districts in September 2011. About 20 persons attended each workshop. The national project team members made presentations on the WSP approach, water quality control, waterborne diseases, and personal hygiene, importance of involving the public in WSP development, specific issues related to small scale water supply systems, potential risk factors of contamination and introduced Georgian legislation on drinking-water.

Results of water quality analyses were introduced to the heads of two districts and local authorities, and the main risk-factors identified through the SI were discussed. Copies of protocols of drinking-water testing were handed over to local authorities (to the *Gamgebeli* – head of municipality).

In addition, detailed information was given on the importance and benefits of WSPs in communities, identification of hazards and risks from catchment to consumers, control measures to improve quality of water and prevention/reduction of water related diseases. During conversation it became clear that there is a lack of knowledge and skills of water supply operators on water quality control, on process monitoring, and on provision of technical services to prevent contamination of water sources. The local authorities made a commitment to conduct detailed investigations of pollution sources and to take control measures. The participants were satisfied with the knowledge provided on WSP.

In October 2011, meetings were held with the local authorities to discuss possible ways to address the problems identified during the project implementation. The local authorities highlighted the need for a systematic continued training programme on safe water management for local authorities and water supply operators. As a result of work with the local authorities, a limited liability company (LTD) was created in Marneuli district. This company will manage small water supply systems and is committed to apply the WSP approach, identify contamination sources and organize sanitary protection zones at the water sources. They expressed a need for setting up a laboratory for drinking-water quality control. The head of municipality of Dusheti district expressed a great interest in establishing a LTD similar to the LTD in Marneuli district which will serve the local population with safe drinking-water.

Detailed information on the field work is described in the field work report prepared by the national project team (Annex 15).

xii) **High Level** Summary Conference was held on 7 November 2011 at the NCDCPH Conference Hall. The representatives from different ministries, institutions, NGOs, and experts from NCDCPH, in total 40 participants attended the conference. The main objective was to introduce preliminary findings of the project and get feedback from the professionals on the field report. Intensive discussions held on the need to improve access of population to safe drinking water, in particular for the people living in small scale water supply areas, to strengthen drinking-water quality control, and the need to further develop the Georgian legislation taking into consideration these priority issues. The participants noted importance of the project for the country and expressed their interest for the expansion of the project.

3.3. Data analysis and evaluation

xiii) **Data analysis:** The overall bacteriological and chemical drinking-water quality was identified for the two districts. For each supply type, microbiological data was compared to sanitary risks in a “risk-to-health matrix”. The proportion of water samples in compliance with WHO guideline values and national standards for microbial, physical and chemical parameters was disaggregated by technology and analysed. Household samples were also analysed to determine if the quality of the drinking-water decreased between the distribution pipes and the household. The sanitary inspections conducted to identify risks and the results were matched with the results of drinking-water quality testing.

Based on the data analysis in September 2011 the national project team prepared a draft field work report on which WHO Europe provided advice and input. It has been translated from Georgian into English (Annex 15).

3.4. Second advisory mission

xiv) **The second advisory mission** by UBA experts to Georgia was carried out 28 – 30 November 2011 (see also Annex 16). A meeting of the coordinating body (NCDCPH, GEBMA, UBA and WHO country office) was held on 28 November 2011. Subsequently, the project team and advisors worked together on 28-29 November 2011 on the following issues:

- Project implementation and results
- Problems identified during the project implementation
- Review of conclusions and recommendations
- Added value of the project and potential future uses
- Planning of the future activities

The advisors reviewed the project implementation in detail and gave advice on the final reporting.

3.5. Project amendment and extension

xv) **Project amendment and extension process** WHO/Europe formulated a project amendment proposal based on a request from the national project team and consultations with the donor on the scope of additional work. The project amendment contract was signed between the Federal Environment Agency (22 November 2011) and WHO Europe (9 December 2011). As part of this project amendment, the

project end date was extended to 29 February 2012. The scope of amendment work included (a) organization of a national stakeholder workshop to disseminate project outcomes and introduce WSP approach and (b) translation from English to Russian, lay-out and printing of a guidance document on *Water safety planning for small community supplies*. In early 2012 WHO headquarters (HQ) has been finalizing the text of this guidance document in English, therefore, the project end date was extended until 31 July 2012 to allow accomplishment of this work.

Activities carried out during the extension period

xvi) National workshop on “Drinking-water Safety in small scale water supplies and introduction to water safety plan approach The remaining (saved) funds from the activities before project extension were used for a national workshop which was held on 30 November 2011 in the NCDCPH conference hall. In total 42 participants from the key ministries, parliament of Georgia, research institutes, university, the United Water Supply Company (which is involved in the management and surveillance of small scale water supplies in Georgia), representatives of the local authorities of Dusheti and Marneuli districts, NGOs and other interested parties attended the workshop. The purpose of the workshop was to disseminate project outcomes and introduce the WSP approach to relevant stakeholders. The agenda of the workshop and the list of participants are presented in Annex 16. Mr Otar Toidze, chairman of the health care and social issues committee, parliament of Georgia, acknowledged the project outcomes, underlined usefulness of WSP approaches for improvement of the drinking-water quality, and emphasized the need for giving more attention to the small scale water supplies in rural areas. He advised that this issue should be submitted to the parliament session. The workshop was highlighted by several TVs. The participants expressed their great interest in further scaling up and implementation of WSPs in Georgia.

xvii) WHO guidance document Water safety planning for small community water supplies

WHO headquarters developed a new guidance document on “*Water Safety Planning for Small Community Water Supplies*” (see Annex 17). The English version of the document was finalized by WHO headquarters in May 2012. Translation into Russian, editing and layout was contracted by WHO Regional Office for Europe to Practica Publisher – WHO accredited translation service. This work was completed in a satisfactory manner. Quality check of the translation was done by the language department of WHO Europe and ISBN for Russian version is issued by WHO headquarters (Annex 18). At the time of reporting, Russian version is available in low and high resolutions and the document is posted in the WHO website

(http://www.who.int/water_sanitation_health/publications/2012/water_supplies/ru/index.html). The clearance for printing obtained from WHO headquarters. The quotations of cost estimate for printing have been obtained from local printing companies, printing is in progress and will be completed by the end of July 2012.

4. Project results

4.1. Key findings and conclusions

Residents of the two pilot districts use water from local small scale “village type” water supplies. Water is mostly distributed by gravity pipes. People also take water from individual wells and from natural springs. Sufficient water quantity is available in both Marneuli and Dusheti districts, but due to a lack of awareness on safe water and unsanitary conditions at the sources, abstraction facilities and distribution systems, drinking-water poses a risk to the health of the rural population.

According to drinking-water analyses of this project, almost 50% of the water samples taken from Marneuli and Dusheti districts had bacteriological contamination. This is mainly due to limited resource protection, and unsatisfactory conditions of the abstraction facilities and distribution

networks of the small scale water supply systems. Main sanitary risks identified during the sanitary inspections (SI) included that no sanitary protection zones are present for small scale water supplies, pit-latrines were built close to the water sources, wells had no coverage, spring boxes were faulty and water storage practices in households were inadequate.

In most small scale supplies drinking-water is not disinfected (chlorinated), and in places where the chlorination installations are in place, the existing practice is inadequate. Surveillance, inspection and monitoring of drinking-water quality of the small scale water supplies are not carried out systematically. Public awareness on water hygiene and risk-factors of water-related diseases is lacking.

The analysis of health statistics data showed that in 2007- 2010 the incidence rate (per 100,000) of water related diseases like shigellosis, hepatitis A, amoebic dysentery and other gastrointestinal diseases decreased in Georgia. This might be due to underreporting as a result of a lack of laboratory capacity and lack of in-depth epidemiological surveillance of these diseases. The significant part of these diseases remains without laboratory investigation and is recorded as diarrhoeas of presumably infectious origin. On the other hand, in 2010, the number of incidences of diarrhoeas of presumably infectious origin doubled compared to previous years. Campylobacteriosis and cryptosporidiosis are not included in the surveillance programme in Georgia.

People in general practice self-treatment of diarrhoea and approach the health care centers only in complicated conditions. This leads to underreporting of actual cases and reflection in the official statistical data accordingly.

4.2. Recommendations from the national team

- At national level: the team recommends to further develop the regulatory framework and set an effective mechanism for ensuring the protection of water sources, especially for small scale water supplies and to promote development and implementation of WSPs, a risk assessment and risk management approach, by the water suppliers through relevant legislation.
- Sanitary protection zones shall be organized, the distribution network shall be restored, drinking-water shall be treated (e.g. chlorinated) with monitoring of the technological process, disinfection of individual wells shall be ensured, and systematic and routine drinking-water quality surveillance established in both districts.
- At local level: pit-latrines shall be constructed in accordance with the Sanitary Rules, sanitary protection zones shall be properly organized, dug wells shall be covered, masonry of springs shall be protected (covered), and abstraction of drinking-water shall be carried out in accordance to hygienic rules.
- At local level: routine monitoring and inspection of drinking-water quality of small scale water supply systems shall be improved and the relevant control laboratories shall be established locally
- At national level: control, inspection and monitoring system of small scale water supply systems shall be strengthened; the Water Safety Plan approaches shall be introduced to ensure delivery of safe water.

- At national and local level: communication with population shall be improved to raise their awareness through e.g. TV programs, newspaper articles, publications, radio-programs, and meetings.

4.3. Main deliverables

- i) A *detailed project implementation plan* was developed and updated (Annex 1).
- ii) A national project team was set up, defined roles and responsibilities were defined within the team. A list of members of the national core project team and their roles is presented in Annex 2.
- iii) On-hand methodological training and was provided by the experts during the 1st project mission for project team members to assist in the project implementation (Annexes 3-5). Project information sheets were developed (Annexes 6-7).
- iv) The WHO *Water safety plan manual* (WSP) and draft document on *Rapid assessment of drinking-water quality* (RADWQ) have been translated into Georgian and were used by the team in the project implementation and disseminated to stakeholders (Annexes 8 and 9). The local experts and project team members gained knowledge and experience on the application of these documents and are able to further disseminate these approaches to other parts of the country.
- v) *Awareness raising material* for prevention of water related diseases was developed and disseminated to the communities (Annex 10).
- vi) The *sanitary inspection forms* were pre-tested, translated into Georgian and applied in the field (Annexes 11a-11f).
- vii) *Field teams* with a good theoretical knowledge on risk based approach were formed (Annex 13) and gained practical experience on the use of SI forms and assessment of risks in the field. An Excel based data management template (Annex 12), a daily report form (Annex 14) were prepared and applied.
- viii) Field work was completed and a detailed *field report* was prepared by the national team (Annex 15). The local authorities were informed on the situation on water quality in respective areas, risks/hazards in the water supply and were introduced to key principles of the WSP approach.
- ix) The *second advisory mission* was conducted and a *national workshop* on “Drinking-water Safety in small scale water supplies” to disseminate the project outcomes and introduce WSP approach was organized and successfully held in Tbilisi (Annex 16). The workshop participants expressed need for scaling up and implementation of the WSPs in Georgia.
- x) The English (Annex 17) WHO guidance document *Water Safety Planning for Small Community Water Supplies* has been translated into Russian (Annex 18).

5. Evaluation of project by the recipient of the grant/contractor (Experiences and difficulties)

The subject project was the first facilitated by WHO Europe addressing the specific challenges in the small scale water supply systems in the Caucasus and central Asia region. This project has greatly contributed to the implementation of the cross-cutting activity on small scale water supply and sanitation for the 2011 – 2013 work programme of the Protocol on Water and Health. Furthermore, the project contributes to a baseline analysis for target setting under the Protocol with respect to small scale water supplies.

The project also promoted use of the WHO Guidelines for Drinking-water Quality and facilitated the application of the WSP approach in the recipient country.

The progress and outcomes of the project were presented and appreciated in the Task force meeting on Indicators and Reporting of the Protocol held in 19-20 October 2011, Tbilisi, Georgia, at the national project dissemination workshop in the end of November 2011 and at the eighth session of the Bureau of the Protocol on Water and Health in February 2012.

Collaboration with UBA, WHO Collaborating Centre has been expanded and experiences gained during this demonstration programme and the WHO guidance document on water safety planning for small community water supplies will also be applied in other projects in the EECCA region, such as the BMU funded Climate Change and Health project in Tajikistan.

There was a slight delay in the project commencement due to required administrative and financial procedures at the start of the project. Closure of the WHO Regional Office for Europe Rome office has led to a temporary reduced administrative support in August 2011. Furthermore, translation of the WHO guidance document on water safety planning for small community water supplies extended due to the timeline of the English original document. However, these did not affect overall project status and the planned activities have been implemented successfully thanks to good collaboration between WHO Europe, UBA and the national counterparts. It is important to note the high commitment and dedication of the national project team and technical input by the UBA experts.

6. Evaluation of project by the beneficiary of the advisory assistance (Evaluation of the project's implementation, the project's results and of the long-term effectiveness, e.g. additional activities of local actors)

- The national project team and field team members appreciated the availability and usefulness of WSP and RADWQ documents in Georgian. The RADWQ methodology and sanitary inspections (SI) shall be used for the assessment of drinking-water quality throughout Georgia. The results of the rapid assessment of drinking-water quality of small scale water supply systems will be the basis for strengthening the legislative/normative base on drinking-water quality. Existing hygienic norms and technical regulations need to be revised taking into consideration WHO Guidelines for Drinking-water Quality (fourth edition, 2011), guidance documents on Water safety planning for centralized and small scale water supply systems as well as local climatic-geographic, social-economic and other conditions.
- The project implementation has enhanced community awareness on drinking-water quality. As a result of outreach activities, improved awareness of the local community on the sanitary-hygienic

situation in the districts, on protection of water sources, safe storage of water at household level and prevention of waterborne diseases has been achieved. The community representatives also learned about their right of access to safe drinking-water.

- During the project implementation improved stakeholders' cooperation at national as well as regional level has been achieved. The local decision-makers made a commitment for action to improve drinking-water quality and take measures to protect the water sources.
- The national project team noted that introduction of WSP in small scale water supply systems will enable detailed knowledge of the water supply system, identification of possible risk-factors and control measures at each stage of the supply system and thereby can improve water quality and health of the population.
- The project team highly acknowledged the technical input/advice given by the UBA experts throughout the project implementation, formulation of field work report and active facilitative role at the national stakeholders meetings.
- The local and national stakeholders acknowledged the importance of the project and expressed their interest to further scaling up implementation of the WSPs in Georgia. The documents translated and developed under this project will also be widely used for further WSP projects and drinking-water quality surveillance and community education programmes in the country.