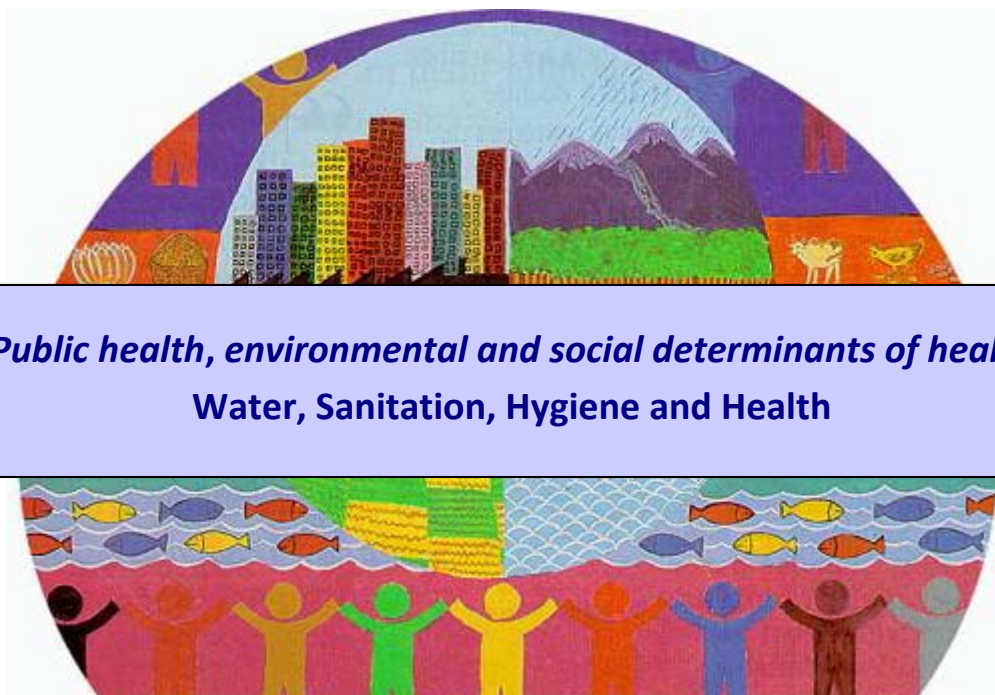




**Report of the
seventh meeting of the
International Small Community Water Supply Management
Network:
Focus on the European Region**

Bishkek, Kyrgyzstan

26–27 June 2014



Public health, environmental and social determinants of health
Water, Sanitation, Hygiene and Health



**World Health
Organization**

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**Report of the
7th meeting of the
International Small Community Water Supply Management
Network**

Bishkek, Kyrgyzstan

26–27 June 2014

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Abstract

The seventh meeting of the WHO-hosted International Small Community Water Supply Management Network was held on 26–27 June 2014 in Bishkek, Kyrgyzstan. Its objective was to promote collaboration and exchange of information and experiences between countries in eastern Europe, the Caucasus and central Asia and the Network, as well as to identify possibilities for collaboration and mutual support. The meeting examined the challenges relating to small-scale water supplies in these countries, considering policy goals and practical realities; reviewed the forthcoming update of volume 3 of the WHO guidelines for drinking-water quality; investigated the added value of one-off rapid assessments of drinking-water quality; discussed the roles of water safety plans and of sanitary inspections in drinking-water quality surveillance; and considered the role and future of the Network.

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Executive summary

The seventh meeting of the WHO-hosted International Small Community Water Supply Management Network (SCWSMN) was held on 26–27 June 2014 in Bishkek, Kyrgyzstan. It was organized jointly by WHO headquarters and the WHO Regional Office for Europe in cooperation with the WHO Country Office, Kyrgyzstan, and United Nations Economic Commission for Europe (UNECE), and was financially supported by the German Federal Ministry for the Environment, Nature Conservation, Building and Reactor Safety and the Federal Environment Agency via the Advisory Assistance Programme for Environmental Protection in the countries of central and eastern Europe, the Caucasus and central Asia. The meeting was attended by 55 participants, including 15 country representatives and 11 WHO staff members.

The objectives of the meeting were to promote collaboration and exchange of information and experiences between countries in eastern Europe, Caucasus and central Asia (EECCA) and the SCWSMN and to identify possibilities for collaboration and mutual support. It also aimed to support implementation of the 2014–2016 programme of work under the WHO/UNECE Protocol on Water and Health, in which small-scale water supplies are a priority area.

In the WHO European Region, small-scale supplies are the backbone of water supply in rural areas and small towns. One third of the European population lives in rural areas and about one quarter is supplied by small-scale systems; in some EECCA countries up to 73%¹ of the population lives in rural areas where small-scale systems are prevalent. The meeting confirmed that small-scale water supplies in the EECCA region face a series of common challenges related to qualifications of personnel, operation and management, aged infrastructure, lack of financing, enforcement of regulation and surveillance and inadequate local sanitation management.

A questionnaire survey, conducted under the Protocol on Water and Health, addressed the situation of small-scale water supplies in the WHO European Region. Key findings of the survey include the following.

- “Small-scale water supplies” are defined differently across countries in the WHO European Region.
- About half of the responding countries have no minimum qualification requirements for operators of small public supplies.
- Regulatory requirements for source protection are lacking in supplies serving up to 50 people.
- Insufficient capacity is available for surveillance of water quality and water-related diseases.

The meeting served as a source of inspiration for setting specific targets to improve small-scale water supplies and sanitation under the Protocol on Water and Health. It addressed numerous technical areas for target-setting, such as rapid assessment and safe management approaches, equitable access and compliance with microbial and chemical parameters in small water supplies.

Meeting participants confirmed the added value of one-off rapid assessments of drinking water quality (RADWQ) to appraise the situation of small-scale water supplies in a given region or country, particularly where data from regular surveillance are not available. As shown by the experiences of a situation assessment of small-scale water supplies in Georgia, RADWQ results support establishing baseline information regarding water safety and ongoing risks to water supply in rural areas; the

¹ Progress on sanitation and drinking-water, 2014 update. Geneva: World Health Organization and United Nations Children’s Fund; 2014 (<http://www.wssinfo.org/documents/>, accessed 12 November 2014).

outcomes can increase understanding of and raise awareness about the situation of water supplies in rural areas.

The meeting addressed the forthcoming update of volume 3 of the WHO guidelines for drinking-water quality, which addresses surveillance and control of community water supplies. Participants were invited to share their needs and input regarding the content of an updated version. The meeting's recommendations included, among others:

- expanding the scope of the document beyond “community-managed” supplies to include private and small municipality-managed supplies;
- further work on developing guidance in the area of risk-based surveillance;
- highlighting links between sanitation practices and water quality.

Participants from the EECCA region clearly emphasized the need to make WHO guidance materials and tools available in Russian; this will foster implementation of WHO-promoted approaches in the EECCA region significantly.

A draft version of a WHO-commissioned decision tree to support risk-based monitoring approaches was presented to the meeting. The tool supports the selection of indicator organisms and sampling frequencies for monitoring; increases understanding of available monitoring techniques and their respective strengths and weaknesses; supports stakeholders in the selection of techniques, especially in resource-limited settings; and thereby facilitates development of effective monitoring programmes as part of water safety plan (WSP) implementation. In this context, the meeting also discussed available field testing tools, their pros and cons and the financial and regulatory obstacles that may hinder their use.

Newly available guidance materials from Woman in Europe for a Common Future (WECF), among others, were introduced; these aim to support rural communities in developing an integrated water and sanitation safety plan for small-scale water supplies, which puts specific focus on sanitation, wastewater and hygiene issues. While the EECCA region still has limited experience with WSPs in small-scale supply systems beyond pilot projects, WSP implementation is seen as a viable option to improve the situation of such systems and scale-up was recommended by meeting participants. SCWSMN members supported putting emphasis on WSP implementation at different levels of sophistication in an updated version of volume 3 of the WHO guidelines for drinking-water.

The meeting addressed sanitary inspections – it expanded on the concept from the WHO guidelines and considered global monitoring perspectives. Practical experiences with sanitary inspections in various countries, as well as available guidance and resource materials, were shared during a roundtable discussion. The meeting underlined the importance of sanitary inspections as onsite tool to complement water quality monitoring. The SCWSMN recommended further development of currently available sanitary inspection concepts as a tool to support WSP implementation in small-scale supplies, noting that this could be addressed in the updated version of volume 3 of the WHO guidelines.

A greater number of risk assessment tools to support operators or assessors of small-scale systems have become available at the national level (including examples from Australia, England and Wales, Germany and Ireland). WHO is also currently developing a tool for global use to support managers and operators of small-scale supplies in hazard identification and risk assessment as part of developing a WSP. Several SCWSMN members offered their assistance in reviewing and piloting the WHO tool.

The value of a human-rights based approach for small communities was highlighted, as well as possible local approaches to reach universal water supply coverage for those living in difficult and remote settlements. The meeting also highlighted the value of health promotion concepts in the context of achieving water supply improvements at the community level. An example from Cameroon demonstrated the vital importance of community participation in managing small-scale supplies; another shared experience of the main barriers to implementation of water supply policies in Australian communities.

In the session on policy goals and practical realities, presentations touched on progress on water and sanitation in the EECCA region and considerations of equity in the post-2015 debate. It was shown that the average progress in access to improved water and sanitation for the WHO European Region tends to mask stagnation and even decreasing trends in some countries of the EECCA region. Different models that added a dimension of equity monitoring into progress in access to improved drinking-water and sanitation were presented. The meeting recognized the importance of these diversified approaches to global monitoring, in particular in the light of the 2015 final report on Millennium Development Goal monitoring and topics relevant for the post-2015 phase. Members States present at the meeting were encouraged to submit their latest access data to WHO in order to ensure that these will be reflected in the final report.

Finally, the meeting addressed the practical relevance and future of the SCWSMN. The debate was conceptualized as an occasion for participants to inform WHO's work on small-scale supplies, future activities under the Protocol on Water and Health and networking activities. Participants from EECCA countries highlighted the strong need for further exchange between stakeholders in the field of small-scale water supply systems within and beyond the WHO European Region, as well as advocacy to raise awareness of the importance of small-scale water supply systems among health decision-makers at the international and national levels. In terms of guidance development, future work should focus primarily on support of WSP implementation, development of effective approaches to risk-based surveillance of small-scale supplies and integration of drinking-water and sanitation aspects at the small community level. The need to address regulatory aspects of small-scale supplies was emphasized, and specific research questions were discussed.

1. Background

Small-scale water supplies are a globally recognized concern. They are particularly vulnerable to contamination, breakdown and poor management, potentially resulting in poor drinking-water quality and an increased risk of waterborne diseases in the populations they serve. Although definitions of small-scale water supplies vary in different countries, they face similar challenges globally and across countries of different levels of economic development. Common challenges relate to operation and management, qualification of personnel, aged infrastructure, lack of financing, enforcement of regulations and surveillance and inadequate local sanitation management and include the following.

- Small-scale supplies receive less attention and fewer resources than large supplies.
- Their infrastructure has relatively higher capital costs.
- They frequently lack capacity for essential management, control of environmental risks, operation and maintenance.
- It is challenging to recruit and retain sufficiently qualified operators; they frequently face limited opportunities for training and education.
- They are more prone to gradual decline in functionality.
- Roles and responsibilities within such suppliers may be unclear, at both regulatory and operator levels.
- Small-scale supplies may be remote, isolated and dispersed over large areas.
- Their operators and consumers may have low (health) literacy, and lack understanding of the relationship between drinking-water quality and health.

In order to respond to these challenges and to accelerate action towards improving the management of small-scale water supplies, the SCWSMN was established in 2005, hosted by the Water, Sanitation, Hygiene and Health Unit at WHO headquarters. Its goal is to accelerate progress towards universal and sustainable access to safe water through increased focus on and improved management of small community water supplies. A key milestone in its aims is achievement of the Millennium Development Goal (MDG) drinking-water and sanitation target by 2015.

Network members cooperate on their shared objectives to:

- support decision-making;
- advocate and collaborate with stakeholders to bring small-scale supplies into the mainstream policy environment;
- assist stakeholders at all levels in improving the management of small-scale systems, including developing and facilitating access to guidance and tools.

The SCWSMN has about 125 members from approximately 35 countries. It is managed in English and has three main methods of work: the WHO-hosted secretariat, which coordinates the network, its activities and membership; a virtual forum that serves as a platform for sharing and exchange of information, knowledge and country experiences; and face-to-face meetings for the same purpose, held on an irregular basis. Six Network meetings took place in Iceland, Australia, Canada, Scotland, Uganda and Spain prior to the meeting in Kyrgyzstan.

2. Introduction

The Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes is a multilateral policy instrument that links prevention and reduction of water-related disease and sustainable water management. Challenges related to small-scale water and sanitation systems in rural areas and small towns are a recognized priority concern throughout the WHO European Region and are thus a thematic priority area of the Protocol's 2014–2016 programme of work. This aims to support countries in the Region in improving the situation of small-scale systems by fostering regional networking, capacity-building and developing guidance on effective approaches for regulation, safe management and surveillance, among others. Germany, Serbia and the nongovernmental organization (NGO) WECF are lead parties of this programme area. The WHO Regional Office for Europe and UNECE provide secretariat services to the Protocol.

The Protocol's programme of work stipulates improved linkages between EECCA countries and global initiatives such as the SCWSMN. To support the programme, the seventh meeting of the SCWSMN was held on 26–27 June 2014 in Bishkek, Kyrgyzstan (see Annex 1 for the meeting programme). It was organized jointly by WHO headquarters and the WHO Regional Office for Europe in cooperation with the WHO Country Office, Kyrgyzstan, and UNECE, and was financially supported by the German Federal Ministry for the Environment, Nature Conservation, Building and Reactor Safety and the Federal Environment Agency via the Advisory Assistance Programme for Environmental Protection in the countries of central and eastern Europe, the Caucasus and central Asia.

Oskonbek Moldokulov (WHO Country Office, Kyrgyzstan) and Marat Kaliev (Deputy Minister of Health of Kyrgyzstan) welcomed the participants. The meeting was attended by 55 people, including 15 country representatives and 11 WHO staff members (see Annex 2). It was structured into seven sessions and chairs and rapporteurs were designated for each. The working language was English, with simultaneous interpretation into Russian.

The objectives of the meeting were:

- to strengthen participation in and contributions of EECCA countries to SCWSMN;
- to share regional initiatives related to small-scale water supplies, including activities carried out under the Protocol;
- to improve and promote collaboration and knowledge-sharing among EECCA countries and between countries in the WHO European Region and SCWSMN, and to identify possibilities for collaboration and mutual support.

3. Meeting proceedings

Session 1: introduction

The first session was introductory, giving background information on small community supplies, the SCWSMN and activities under the Protocol on Water and Health. During the welcome and opening remarks the health risks from poorly managed small-scale water supplies in Kyrgyzstan were highlighted, with emphasis on the fact that many post-Soviet countries in the WHO European Region are facing similar challenges in this area of work. Concerns were expressed about the direct use of surface water in rural areas of Kyrgyzstan: drinking-water quality is one of the priorities in the national strategy on sustainable development.

The situation of small-scale water supplies in the WHO European Region

In the WHO European Region, small-scale supplies are the backbone of water supply in rural areas and small towns. One third of the European population lives in rural areas and about one quarter is supplied by small-scale systems; in some EECCA countries up to 73%² of the population lives in rural areas where small-scale systems are prevalent. There is a need for decentralized solutions in these areas because connecting all households to centralized systems is neither technically nor economically viable. Nevertheless, small-scale systems in rural areas face a number of challenges related to qualifications of personnel, inadequate sanitation and manure management practices at the local level, aged or disrupted infrastructure and disrupted electricity supplies.

Addressing these challenges does not result in better population health alone: improvements to small-scale systems leading to the prevention of acute diarrhoeal illness have been shown to have a positive cost–benefit ratio.³ In recognition of the importance of small-scale water supplies, the topic has become a thematic priority area under the Protocol on Water and Health, and many countries have explicit programmes targeted at improvements in such supplies.

Recent network developments

Various SCWSMN developments have been updated since the last meeting in Zaragoza, Spain, in 2012.

- Guidance on water safety planning for small community water supplies has been published.⁴
- Development of communication guidance materials has stalled, mainly due to a lack of funding, but it should be noted that a WHO publication entitled *Health and environment: communicating the risks*⁵ may to a large extent address the needs expressed by SCWSMN members for such materials.
- The web interface WHO EZcollab, which serves as the network's virtual forum, has been updated.

² Progress on sanitation and drinking-water, 2014 update. Geneva: World Health Organization and United Nations Children's Fund; 2014 (<http://www.wssinfo.org/documents/>, accessed 12 November 2014).

³ Hunter PR, Pond K, Jagals P, Cameron J. An assessment of the costs and benefits of interventions aimed at improving rural community water supplies in developed countries. *Sci Total Environ.* 2009;407(12):3681–3685.

⁴ Water safety planning for small community water supplies: step-by-step risk management guidance for drinking-water supplies in small communities. Geneva: World Health Organization; 2012 (http://www.who.int/water_sanitation_health/publications/2012/water_supplies/en/, accessed 11 November 2014).

⁵ Health and environment: communicating the risks. Copenhagen: WHO Regional Office for Europe; 2013 (<http://www.euro.who.int/en/publications/abstracts/health-and-environment-communicating-the-risk>, accessed 11 November 2014).

- The draft document on WSP training requirements is in use by the WHO Regional Offices for South-East Asia and the Western Pacific, which are planning to develop WSP training materials for small-scale supplies in the Asian context.
- The update process has been initiated for volume 3 of the WHO guidelines for drinking-water quality on surveillance and control of community supplies.
- WHO headquarters has initiated the second phase of development of a risk assessment tool for small community water supplies under the WHO/AusAID Water Quality Partnership for Health.

Activities on small-scale water supplies under the Protocol on Water and Health

The Protocol on Water and Health's programme of work 2014–2016 has identified several priority thematic areas, including:

- prevention and reduction of water-related diseases
- small-scale water supply and sanitation systems
- safe and efficient management of water supply and sanitation systems
- equitable access to water and sanitation.

Protocol activities in the area of small-scale systems completed since 2010 include:

- publication of an information document on small-scale water supplies⁶
- translation of various WHO guidance materials on WSPs into Russian
- support of field project implementation in Bulgaria, Georgia and Tajikistan
- publication of a field guide to improving drinking-water safety in small communities.⁷

Current and future activities in this area of work include two publications: a good practice document for policy-makers on small-scale water supply and sanitation systems and an analytical report on a survey of these systems in the WHO European Region.

Preliminary results of the survey of small-scale water supply and sanitation systems under the Protocol were available. The questionnaire had been sent to all 53 Member States in the WHO European Region and responses were received from 43 countries. The survey covered regulatory requirements and institutional responsibilities, the numbers of people served by individual or non-piped supplies and information on drinking-water quality. Key findings of the survey include the following.

- No clear definition of the term “small-scale water supply” exists: it is classified differently across countries in the WHO European Region.
- Of the responding countries, 49% stated that no minimum qualification is required for operators of small public supplies.
- Regulatory requirements for source protection are lacking in supplies serving up to 50 people.
- Insufficient capacity is available for surveillance of water quality and water-related diseases.

⁶ Small-scale water supplies in the pan-European region: background, challenges, improvements. Copenhagen: WHO Regional Office for Europe; 2011 (<http://www.euro.who.int/en/health-topics/environment-and-health/water-and-sanitation/publications/2011/small-scale-water-supplies-in-the-pan-european-region.-background.-challenges.-improvements>, accessed 11 November 2014).

⁷ Rickert B, Schmoll O, Rinehold A, Barrenberg E. Water safety plan: a field guide to improving drinking-water safety in small communities. Copenhagen: World Health Organization; 2014 (<http://www.euro.who.int/en/health-topics/environment-and-health/water-and-sanitation/publications/2014/water-safety-plan-a-field-guide-to-improving-drinking-water-safety-in-small-communities>, accessed 11 November 2014).

Session 2: WHO guidelines for drinking-water quality, volume 3 – applicability and needs

The second session covered the latest updates to the WHO guidelines for drinking-water quality. These have undergone several revisions; the fourth edition was published in 2011. Volume 3 on surveillance and control of community supplies, however, has not been updated since 1997.⁸ The SCWSMN has previously encouraged WHO to provide up-to-date guidance on small community water supplies, and WHO initiated the development of an update in early 2013. At a working group meeting on the guidelines, gaps in the current document and solutions for these shortcomings were identified.

- The WHO risk management framework should be introduced in the context of small-scale supplies. This will involve the following considerations:
 - introducing the concept of health-based targets in a way that is of relevance to a small-scale supply context;
 - addressing different levels of sophistication in WSP implementation;
 - supporting prioritization of interventions on risks at the community level.
- Concrete advice on how to implement the WHO risk management framework in the context of small-scale community supplies is needed. This should comprise the following elements:
 - advice on water testing methods
 - improved guidance on sampling frequency
 - guidance on the selection of priority parameters
 - guidance on household water treatment and safe storage
 - advice on what to do in the absence of regulatory oversight.

It is expected that the current contents of volume 3 will be restructured as two parts. The first will be guidelines on achieving sustainability of services, setting national standards and targets, technical interventions, application of WSPs, independent surveillance and how to derive public health action from surveillance results. The second part, a field guide, will focus on undertaking fieldwork, including water safety planning, sanitary inspections, surveillance and water testing, and will include a section with technology fact sheets.

Representatives from Belarus, Kyrgyzstan and the Russian Federation explained that they use volume 3 as a reference document when making national regulations, which the WHO meeting secretariat confirmed was the appropriate and intended method of using the guidelines. The representatives stated that the document is very useful for practical application but mentioned difficulties in accessing hard copies.

Meeting participants were invited to make suggestions on the scope and topics to be covered in the updated version of volume 3 that the meeting secretariat could present to the working group handling its update. Suggestions included the following.

- The guidelines need to be translated into other languages – especially Russian.

⁸ Guidelines for drinking-water quality – second edition. Volume 3: surveillance and control of community supplies. Geneva: World Health Organization; 1997 (http://www.who.int/water_sanitation_health/dwq/gdwq2v1/en/index2.html, accessed 11 November 2014).

- The following definitions should be included:
 - small-scale supplies
 - different types of technology
 - roles and responsibilities of authorities and operators.
- The focus should go beyond community-managed supplies to include private supplies and small municipality-managed supplies.
- The links between risk factors, health impacts and communicable disease outcomes should be clearly highlighted.
- Risk-based surveillance guidance should include:
 - an emphasis on the need for and benefits of risk assessment and management approaches rather than over-reliance on water quality testing;
 - advice on prioritization of water quality parameters for monitoring, such as specific advice on what to do after adverse events and how to deal with chemicals from agricultural activities, including selection criteria for pesticides;
 - guidance on surveillance of the quality of trucked water and bottled water;
 - recommendations on the use of sanitary inspection as powerful tool for surveillance;
 - advice on the frequency of sampling/monitoring and sanitary inspection visits;
 - details of the role of water testing by communities.
- The guidelines should include an explanation of or reference to RADWQ methodology.
- Guidance on field testing methods and emergency water supplies (such as trucked water or bottled water) should be made available.
- Advice on safe sanitation and the links between sanitation practices and water quality should include:
 - explanations of routes of exposure;
 - information on sanitary conditions of sanitation facilities;
 - safe excreta and wastewater management guidance;
 - details of how to integrate drinking-water and sanitation aspects at the community level;
 - hygiene education and hygiene behaviour information.

Other topics included:

- products and materials in contact with water;
- risk assessments in health care facilities;
- Legionella prevention;
- information on treatment technologies in the small-scale supply context – specifically the pros and cons of individual treatment options for removing microbiological and chemical hazards;
- standard requirements for digging shallow wells, including:
 - selection of water sources
 - construction materials
 - prerequisites for construction
 - how to construct wells.

Since the fourth edition of the guidelines for drinking-water already covers several aspects of emergency water supplies⁹ it would be not realistic to follow up the request for better guidance on engineering aspects. This is beyond the scope of WHO guidelines, which focus on health aspects, but the update could refer to relevant further reading.

Session 3: sanitary inspections of small-scale supplies

The third session addressed the role of sanitary inspections in drinking-water quality surveillance. Sanitary inspections are a powerful onsite tool to complement drinking-water quality monitoring and identify risks that may not be detected by water quality analysis alone. They are a means to identify, evaluate and record conditions, devices and practices constituting potential or actual risks to the drinking-water supply. Sanitary inspections can be applied to all components of the water supply, including:

- sources – to investigate which environmental hazards are present;
- abstraction points – to check whether the integrity of structures and devices is compromised (e.g. allowing ingress of faecal matter) and/or whether they are insanitary;
- treatment methods – to establish whether the means of treatment adequately reflect the source water quality;
- distribution and storage systems – to check whether the integrity of structures and devices is compromised (e.g. allowing ingress of faecal matter) and/or whether they are insanitary;
- households – to establish whether storage handling practices at the household level are safe.

Sanitary inspections improve knowledge of the supply system, assist in generation of information about ongoing risks and facilitate prediction of future changes. Thus, sanitary inspections and water quality monitoring constitute two complementary surveillance activities.

Examples of sanitary inspections forms are presented in Annex 2 of volume 3 of the WHO guidelines for drinking-water quality. Simple use of “yes/no” questions in the assessment ensures a harmonized methodology that can be used by different inspectors. This facilitates calculation of an overall risk score that will enable authorities to prioritize their actions, especially if used jointly with water quality testing. The frequency of routine sanitary inspections is determined by the resources of the surveillance agency, the vulnerability of the supply and the size of the system. Furthermore, sanitary inspections should be conducted after adverse events, such as heavy rainfall.

No concrete figures on the costs of sanitary inspections are available, and the overhead costs of, for example, reaching remote communities are not lower for sanitary inspections than for taking samples. In terms of materials, however, conducting sanitary inspections is cheaper than water quality testing: water quality test kits, sampling devices and laboratory equipment are more expensive than sanitary inspection sheets.

⁹ Application of the guidelines in specific circumstances. In: Guidelines for drinking-water quality – fourth edition. Geneva: World Health Organization; 2011 (http://www.who.int/water_sanitation_health/publications/2011/dwq_chapters/en/, accessed 11 November 2014).

Sanitary inspections and global monitoring

Sanitary inspections were also considered in the context of global monitoring. The WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation is tasked with monitoring the MDG water and sanitation-related targets. The current JMP uses proxy indicators for safety by measuring access to improved drinking-water and sanitation, while the actual quality of drinking-water is not considered. The JMP is, however, developing future indicators that could provide more accurate estimates of drinking-water quality. The notional starting-point is to combine indicators of proactive risk management (for example, whether WSPs are required, developed and audited, the training and certification of operators and sanitary inspection risk scores) with water quality testing results. Against that background, it is conceivable that results of sanitary inspections could be used not only by individual schemes and their users, local, regional and national authorities, but also by WHO for global monitoring purposes.

Country experiences and resources

A risk assessment tool for small-scale (“private”) supplies in England and Wales – where 1%¹⁰ of the population is served by such systems – was created by the United Kingdom’s Drinking Water Inspectorate. Although small-scale supplies have been regulated since 1991, their noncompliance rates were significantly higher than those of large supplies. In response, new regulation was introduced in 2010 and the existing risk assessment methodology was revised. The new risk assessment tool¹¹ is based on the WHO guidelines for drinking-water quality, particularly with reference to the WSP approach. The tool has predetermined severity scores and allows “yes/no” answers to hazard questions. These cover a broad range of treatment processes and reflect the source-to-tap approach, as well as requesting an assessment of confidence in the supplier (in terms, for example, of willingness to learn and record-keeping).

The tool is Excel-based and consists of several sections where information about the supply can be entered, such as names and addresses of people relevant to the supply and details of the system’s description. The risk assessment section has around 50 predefined questions regarding hazards and predetermined severity scores generated on the basis of the experience and expert judgement of assessors and inspectors. Likelihood scores are predefined for some hazards but the assessors can enter their own likelihood estimates for others. For every hazard question answered, the tool calculates the corresponding risk level and highlights the result in corresponding colours (see Fig. 1). It also includes sections that offer guidance on the respective hazards, summarize required remedial action and highlight very high risks, high risks and aspects to be confirmed.

¹⁰ Drinking Water Inspectorate (2014): Drinking water 2013 –Private water supplies in England. London: DWI. Retrieved from: <http://dwi.defra.gov.uk/about/annual-report/2013/>. Accessed on: 12.01.2015

Drinking Water Inspectorate (2014): Drinking water 2013 –Private water supplies in Wales. London: DWI. Retrieved from: <http://dwi.defra.gov.uk/about/annual-report/2013/>. Accessed on: 12.01.2015

¹¹ Private water supply risk assessment [website]. London: Drinking Water Inspectorate; 2014 (<http://dwi.defra.gov.uk/private-water-supply/locaut/ratool.html>, accessed 11 November 2014).

Fig. 1. Screen shot of the Drinking Water Inspectorate risk assessment tool

Risk No.	Hazard Description	Yes/No/ TBC/N/A	Hazard	Likelihood	Severity	Risk
2						
3	A1 Is there a site plan and/or schematic showing location of source, chambers, tanks, distribution network including valves, pipes, consumer premises etc.?			5	5	
4	A2 Are there any procedures and/or written records for the supply (i.e. for checks, monitoring or maintenance, etc.)?	Yes		5	5	
5	A3 Are there any manufacturers' instructions for the equipment on the supply?	TBC		5	5	TBC
6	A4 Is there an emergency plan for the provision of an alternative water supply?	Yes		5	5	
7	A5 Has the owner or operators had appropriate training for the supply?	No	H	5	5	PH
8	A6 Does the sampling history identify the presence of any hazards?	Yes	H	5	3	H
9						
10	Section E - SOURCE: Mains water supplied by means of pipes (Regulation 8 supplies)					
11	E1 Is there evidence the supply main is coal tar lined?				4	
12	E2 Are there sediments in the main?	Yes	H	3	3	M
13	E3 Is the section of main upstream of the point of supply subject to good turnover of water (e.g. are there connections to properties nearby which would ensure the water is refreshed in the main constantly)?	No	H		3	Likelihood Required
14	E4 If the area feeding the supply has had water quality related complaints in the last 12 months, have the causes been mitigated?				3	
15	E5 Have any chemical parameters exceeded the standard in the previous 12 months in the mains supply?				5	
16	E6 Are there backflow protection deficiencies at any upstream industrial or commercial premises?				4	
17	E7					

In England and Wales prioritization of supplies for sanitary inspection is not informed by water quality testing results but by risk assessment. Under national legislation, small-scale supplies (except single domestic dwellings) are subject to sampling, although this is not an EU legal requirement, with the focus primarily on risk assessment. In practice, however, local authorities often rely on water quality testing rather than on risk assessment and management of the supply. The results of the risk assessment help the local operator prioritize necessary improvements.

Practical experiences with sanitary inspections in various countries, as well as available guidance and resource materials, were shared during a roundtable discussion.

- In Armenia the ministry of health has developed a checklist based on sanitary rules and norms for drinking-water quality. The frequency of inspections is risk-based: the regularity of follow-up visits depends on the results of previous inspections.
- Sanitary inspections are encouraged in Australia for small-scale supplies and required if the water is sold to others (for example, in tourism). They are conducted by local public health officers, suppliers and officers of regional councils. Sanitary inspections form the basis of a good WSP, especially since WSPs are not documents but active assessments of the system, involving site visits of all aspects of the supply. Sanitary inspections are essential to building relationships between suppliers and authorities. They also create the possibility of making small repairs directly; this is particularly encouraged when working with indigenous communities in order to communicate reliability.
- Since no EU legal requirements cover very small systems serving fewer than 50 people, the German authorities have published a practical guide for operators of such systems, among others, explaining the legal requirements, listing typical hazards and providing recommendations for onsite inspections. The guide also includes a set of sanitary inspection forms. The authorities have also produced a WSP manual addressing operators of small-scale utilities, which includes a comprehensive list of possible hazards and hazardous events.

- The frequency of sanitary inspections is risk-based in Kazakhstan: supplies at low risk are inspected once a year, while those at high risk can be inspected up to three times a year. The idea is to provide incentives for supplies with good management. Continued good sanitary inspection and laboratory results allow operators to conduct self-checks and report these to the ministry of health. Efforts have been made to legalize community-managed supplies in order to make them subject to formal requirements.
- In the Republic of Moldova the ministry of health has developed standards for sanitary inspections and the law on public health promotes their application.
- Sanitary inspections are required on the basis of local laws or bylaws in Serbia. A sanitary inspection form has been prepared at the national level but does not involve a risk-scoring element. Practical challenges include a lack of continuity of inspections and avoidance of small-scale supplies by inspectors, especially if there is legal uncertainty regarding who is responsible for operating the system.
- In England and Wales problems of legal uncertainties have been overcome by defining the “person responsible for the water supply” by law and creating the opportunity to clarify the situation through arbitration procedures or court judgements.
- The sanitary epidemiological service has units in all parts of Tajikistan: they are required to conduct sanitary inspections regardless of the size of population covered by a supply, but the frequency of inspections depends on the number of people supplied. Authorities have the right to conduct unannounced inspections at any time and a checklist to be used for inspections is in place. There is a dearth of inspectors, however, and it has been found that not all inspectors use the checklist, which may be the result of a lack of training.
- Following initial experiences with WSPs in urban areas, Mongolia has designated rural areas to pilot the WSP concept. In that context, the use of sanitary inspections to support WSP implementation will be explored.
- In Ukraine sanitary inspections are organized by the State Sanitary and Epidemiological Service. Procedures for inspections in schools and preschools have been established, including a list of questions to be used by inspectors. A distinction is made between regular inspections and special inspections. The frequency of the sanitary inspections is based on criteria set by the Cabinet of Ministers of Ukraine. It ranges from one inspection a year (for enterprises that conduct economic activities with the water, such as the tourism or food industries, for example) to one every five years in low-risk settings.

Session 4: WSPs and health promotion

The fourth session introduced the topic of health promotion in the context of WSPs, conveying the following key messages.

- Successful health promotion interventions lead to changes at all levels: individual, community and public policy.
- Health promotion theories offer many ideas on how to address behaviour change at the individual level. Common to all is the principle that behaviour change is a staggered process and requires support in all phases.
- Change strategies at the community level usually touch upon the key components of “empowerment” (encouraging active participation in community life) and “relevance” (using the needs of the community as the driving factor).

- A marketing component is important in planning health promotion strategies. This can be achieved by asking and answering questions that guide such efforts.
 - Why are WSPs better than what is currently in place?
 - How do WSPs relate to the intended audience?
 - Are WSPs easy to use?
 - Can WSPs be tried before there is a decision to implement them (for example, in a pilot village)?
 - Are the results of WSP implementation observable and measurable?
- A great deal of knowledge about health promotion is usually available in national or regional public health service departments outside environmental health (such as tobacco control, obesity prevention and similar). It may be beneficial to seek input from experts in these areas when conceptualizing WSP implementation in the context of health promotion.

Example: Cameroon

The importance of community participation in managing small-scale water supplies was highlighted. Community water supply schemes in the north-western region of Cameroon are owned and managed by communities as social facilities. The communities set up a committee to oversee management, operation and maintenance; they make financial, material and labour contributions for construction and draw up rules and regulations for the scheme. The committee of between five and nine people is elected by the village; consideration is given to gender and minority representation.

The advantages of such schemes include affordable services, a sense of ownership, proximity and flexibility of management. Several mechanisms can be used to sustain community participation, such as regular community meetings for discussion and decision-making, paid contributions from community members, an elected committee that is accountable to the population and an appointed local caretaker who is responsible for operation and maintenance. Challenges to community participation include:

- insufficient technical knowledge and equipment for operation and maintenance;
- inadequate finances to sustain, expand and upgrade schemes;
- inadequate coordination and collaboration by stakeholders sharing the same priorities;
- limited knowledge of water quality, as little water testing is done by the committees.

Various suggestions were made to overcome some of these challenges:

- building capacities of relevant actors for quality and competent management (such as a community water school with a certified programme);
- creating and running community water supply systems as social enterprises;
- setting up a proper accountability system with independent audits;
- establishing adequate systems for community water testing and treatment.

Example: WECF

WECF produced a new compendium on developing a water and sanitation safety plan (WSSP) in a rural community.¹² This aims to enable communities to develop a WSSP for small-scale water supplies and to assess the quality of sanitation facilities, such as school toilets, at the same time. The document is

¹² Developing a water and sanitation safety plan in a rural community: compendium. Utrecht: WECF; 2014 (<http://www.wecf.eu/english/publications/2014/WSSP-Publication.php>, accessed 12 November 2014).

mainly targeted at local authorities and water operators but can also be used by teachers, schools and NGOs. Two main features are the increased focus on sanitation, wastewater and hygiene (particularly hand-washing) issues and the fact that the text was specifically adapted for the EECCA region.

The compendium consists of 19 modules divided into three parts – A: how to accomplish a WSSP; B: background information for developing a WSSP; and C: how to involve schools. Currently only available in English, the intention is to translate the document into Russian, Macedonian and Romanian.

Transfer of ownership: from community to state responsibility

A discussion about community-owned and -managed water supplies in relation to transfer of ownership to larger utilities revealed that community-managed supplies may constitute a temporary solution; it is conceivable that the state might take responsibility when higher levels of development are reached. An example was shared from Portugal, where communities have a strong sense of ownership and are resisting a forthcoming change in legislation that will require them to transfer their supplies to municipal utilities. Although examples of community systems that are safely managed exist, the driving factor for changing legislation in Portugal is that small-scale systems experience more problems than larger ones; thus, converting them is a long-term plan aiming for a better long-term outcome. The regulatory agency has not yet developed definitive solutions for the transfer process but these may involve communities selling supplies. In the discussion it was suggested that a concession could be granted in return for handing over the supply. The importance of trust that reliable drinking-water is received (which communities may or may not have in the authorities) was emphasized.

Another example was shared from the Republic of Moldova, where a boom in community construction of electrical supply systems resulted in a lack of specialists to run and service the systems. Eventually, a Spanish company was contracted to take over their management. The systems were transferred to the company free of charge.

The SCWSMN secretariat noted that this topic should be addressed further in the future: there is a need to exchange options, solutions and challenges. This type of topic is also under discussion in the WHO-hosted International Network of Drinking-water Regulators (RegNet).¹³ In addition, the Rural Water Supply Network provides information and support for community-based management organizations.

Session 5: risk assessment and field testing of water quality

The fifth session focused on risk assessment and risk-based monitoring. Monitoring is an integral part of the WHO framework for safe drinking-water outlined in the guidelines for drinking-water quality, but it would be impossible to monitor all disease-causing pathogens that might be present in water. Against this background, and in order to support risk-based monitoring approaches, the Dutch National Institute for Public Health and the Environment (RIVM) developed a decision tree, commissioned by WHO. The draft decision tree aims to:

- support the selection of indicator organisms and appropriate sampling frequencies for monitoring;
- increase understanding of available monitoring techniques and their respective strengths and weaknesses;
- support stakeholders in the selection of techniques, especially in resource-limited settings;
- facilitate development of effective monitoring programmes as part of WSP implementation;
- support policy and regulatory frameworks that promote WSP implementation.

¹³ International Network of Drinking-water Regulators [website]. Geneva: World Health Organization; 2014 (http://www.who.int/water_sanitation_health/dwq/RegNet/en/, accessed 12 November 2014).

The decision tree was designed in a universal pdf format. It comes with a background document that provides an explanation of how to use it and contextual information on considerations for choosing a test. The decision tree consists of a series of questions and is structured as three steps:

- 1: selection of the type of water quality monitoring according to the purpose – for example, validation monitoring, operational monitoring or verification (compliance) monitoring;
- 2: selection of water quality parameters – for example, *Escherichia coli*, thermotolerant coliforms, turbidity, acidity and residual chlorine;
- 3: selection of the test method, including the required test outcome (such as colour change, “yes/no” outcomes or quantitative counts).

Outcomes show options for detecting the desired parameters and highlight the advantages and disadvantages of these. The decision tree has been piloted after a first phase of development and a second round of piloting is envisaged. The question and answer session following the presentation highlighted the following points.

- The document needs to be translated into national languages and to be adaptable to national circumstances. Adaptation to local needs may be challenging: the developers aim to address this challenge by piloting the draft tool in various countries.
- Advice on test selection remains relevant beyond regulatory monitoring requirements; the decision tree is not designed to assess existing requirements but rather to design monitoring plans, in particular for operational monitoring in the WSP context.
- The tool may also be helpful where monitoring requirements are in place but not enforced for some reason.
- The decision tree can help operators and authorities to reconsider the importance of microbial testing where resources are scarce; it is particularly useful for small community supplies.
- Some issues relate to the availability of the different brands of test: sometimes new methods are announced under different names. The background document includes a list of brand names but not the costs of tests. Participants suggested that the background document (or an additional document) should address availability of different products and brands in different countries, especially regarding purchasing and import. These considerations are subject to frequent changes, however, and are therefore difficult to keep up to date.
- Brief pros and cons for each test are provided briefly next to the outcomes in the decision tree and more in-depth information is available in the background document, which includes performance characteristics of tests but does not culminate in an overall judgement of which tests are better.

Field testing tools

An overview of available field testing tools was considered. Detection of pathogens themselves is difficult, so detection of microorganisms that are indicators of faecal contamination provides a workable solution. Two main methods are available for detection of microorganisms, based on either cultivation or biomarkers. Several types of cultivation-based test are available.

- Presence/absence test: a water sample is added to a medium that facilitates growth of a particular microorganism or group of microorganisms. The only conclusion that can be drawn from this method is the presence or absence of the microorganism in the test volume.

- Most probable number: this approach uses replicated presence/absence tests of different volumes or dilutions to estimate the concentration of microorganisms in a water sample, based on which sample volumes grow the target microorganisms (presence) and which do not (absence).
- Membrane filtration: microbes are retained on a membrane through which the water sample is filtered; the membrane is placed onto an appropriate medium and incubated.
- Direct plating: bacteria can be enumerated by plating sample dilutions on plates containing a (semi-) solid medium and counting the colonies after incubation. The direct method can be carried out by spreading the sample onto a solid medium (spread plates) or by mixing the sample with a molten medium containing gel-forming substances (pour plates).

The choice of testing method also depends on the level of laboratory equipment and expertise available. Where laboratories are not available or samples cannot reach laboratories within 24 hours, field testing provides a suitable option. Field testing kits are easy to use in the field, do not require laboratories close to sampling sites and contain supplies for testing for standard microbiological (such as total or thermotolerant coliforms), chemical (such as nitrate or fluoride) and physical (such as acidity or turbidity) measurements. It is important that the results produced by field testing kits can be interpreted correctly and that positive results lead to informed action.

During the subsequent discussion, the following points were made.

- Field testing is common in rural areas of Nepal but incubation periods and battery recharging are issues.
- Temperature and period are important aspects of testing – for example, enzyme tests work at room temperature while lactose testing needs higher temperatures.
- Field testing kits can perform up to 200 bottle samples. Several kits are available and costs can be up to US\$ 5000.
- Nepal, Kyrgyzstan and Tajikistan have used field testing methods. Kyrgyzstan and Tajikistan do not use them regularly as it is difficult to replace the consumables or buy new kits.
- Approval of field testing methods and trainers in Nepal is done by local authorities: no licensing system is in place at the national level. The agencies responsible provide kits for dissemination and training for trainers, who go on to train local people.
- Using field testing kits as an approved method for regulatory purposes is not common in countries in the WHO European Region; regulations frequently require analysis by reference laboratories. This may hinder the use of field testing equipment. It is important to validate field testing methods through reference laboratories for regulatory monitoring purposes and/or national surveys.

Situation assessment of small-scale supplies in Georgia

The findings of a recent situation assessment of small-scale water supply systems in the Dusheti and Marneuli districts of Georgia¹⁴ covering a total population of 150 000, which used a RADWQ,¹⁵ were presented to the meeting participants. The assessment was a one-off exercise aimed at increasing

¹⁴ Situation assessment of small-scale water supply systems in the Dusheti and Marneuli districts of Georgia. Tbilisi: National Centre for Disease Control and Public Health; 2013 (<http://www.umweltbundesamt.de/en/publikationen/kleine-wasserversorgungen-in-georgien-0>, accessed 11 November 2014).

¹⁵ Rapid assessment of drinking-water quality: a handbook for implementation. Geneva: World Health Organization; 2012 (http://www.who.int/water_sanitation_health/publications/2012/rapid_assessment/en/, accessed 12 November 2014).

understanding and raising awareness of the situation of water supplies in rural areas. The project resulted in establishing baseline information regarding water safety and ongoing risks to water supply that could be used for target-setting under the Protocol on Water and Health.

The survey comprised water quality testing as well as sanitary inspections. Due care was taken with statistical representativeness, timely analysis of samples and valid techniques for taking samples and laboratory analysis. The results showed high levels of noncompliance: in both districts over 60% of all samples showed *E. coli* noncompliance and the rate of compliance with national standards for all parameters was only 26% in Dusheti and 20% in Marneuli. It was concluded that the high levels of microbial contamination and the significant number of supply systems with high sanitary risk factors require urgent attention. As a result, several recommendations were made at the national level, such as establishing a routine drinking-water quality surveillance system covering small-scale systems and a regulatory framework that would effectively protect water sources. The findings of the assessment resulted in a national parliamentary hearing on small-scale water supply systems.

The project cost US\$ 100 000. It had support from a WHO expert and the ministry of health provided transportation. The staff included 14 people from different ministries, including drivers. Local authorities were very supportive, which facilitated the work of the national experts.

The discussion touched on the following points.

- The RADWQ can be modified to target specific investigations and/or geographical areas. The requirements of the RADWQ method were taken into account for the design of this situation assessment.
- The assessment materials were taken from the RADWQ handbook and translated into Georgian.
- Water samples were taken in the field and analysis was carried out in certified laboratories. A cold chain for samples was ensured.
- The situation assessment did not include an investigation of disinfection by-products.
- Health indicators were not investigated as that would have been beyond the scope of the study: inclusion of health information would be challenging, since many people use self-treatment and data are only available for registered cases.
- A correlation between the presence of fluoride and tooth disease was not studied, but the project results could be used for follow-up activities.
- As in the Baltic countries, monitoring of water quality is performed by the ministry of agriculture, monitoring of health aspects by the ministry of health and monitoring of water resources by the ministry of nature protection in Georgia.
- The results of the analysis were not compared with national statistics as information was scattered within the country. A national plan has now been adopted, which includes quality assessment of drinking-water throughout the country.
- Several programmes in Georgia aim to improve the situation, including an EU twinning programme that promotes exchanges of professionals to improve the monitoring system.
- The decision to conduct such an assessment in other districts of Georgia lies with parliament. It is desirable that more funds are allocated to such activities and that water and sanitation operators use the documented results to generate momentum; it is very important to use the results for legislative and regulatory purposes.

Protect your well application

An online application was developed by the Irish Environmental Protection Agency (EPA), aimed at owners of private wells.¹⁶ It consists of a short set of easy questions, such as “Do you know if your well water has ever been tested?” and “Does your well water smell?” The assessment culminates in advice and contact information for the responsible authorities in the private well owner’s location. The web application has a public use license so that other interested authorities can adapt it to their circumstances, translate it and use it in their countries, as long as its development by the EPA is acknowledged.

WHO risk assessment tool

The SCWSMN initially proposed development of a WHO risk assessment tool to support managers and operators of small-scale supplies in hazard identification and risk assessment as part of developing a WSP. The tool was first developed under the leadership of the SCWSMN: existing tools worldwide were collected and reviewed and a list of hazards was developed by working group members and other stakeholders. In a second phase, under the leadership of the WHO/AusAID Water Quality Partnership for Health, tool programming was completed and a review by WHO consultants was initiated. While several risk assessment tools exist globally, the WHO tool is intended for worldwide use and is adaptable to national settings. Perspectives from the EECCA region, however, are needed for the further development of the tool.

Meeting participants were invited to volunteer to pilot the tool in the weeks following the meeting. Representatives from the Republic of Moldova and Tajikistan and NGOs Armenian Women for Health and Healthy Environment, Community Initiative for Sustainable Development, International Secretariat for Water, Kyrgyz Alliance of Water and Sanitation and Oxfam GB Tajikistan volunteered to pilot the tool and provide feedback to WHO through a questionnaire. Representatives from the Drinking Water Inspectorate in England and Wales and the German Federal Environment Agency offered to review the tool.

The structure and design of the tool was demonstrated and an example provided of what a paper-based version of the usually computer-based tool might look like. The tool is currently at review stage and there is willingness to make major changes on the basis of the results of the piloting experiences. Subsequently, the participants were invited to share comments and thoughts on the tool.

- A computer-based and a paper-based version are not mutually exclusive. It was agreed that availability of the computer-based tool would be useful at the local authority level; the tool could be modified, the list of questions and hazards preselected and the relevant forms easily printed off to take to the field. The tool should also allow operators to include identified hazards themselves.
- Usability of the computer-based version is paramount. It may be advisable to consult with experts on such aspects.
- More detailed advice on the preselected severity and likelihood scores should be provided. National and local authorities should be able to decide whether they would like to use predetermined severity scores, fill in their own scores or leave both aspects blank to be completed by WSP teams.

¹⁶ Protect your well assessment application [website]. Wexford: Environmental Protection Agency; 2014 (<http://erc.epa.ie/water/wells/#.VEoSqnpOPDA>, accessed 11 November 2014).

- It is important that the questions in the tool can easily be translated into national or local languages and that user manuals and similar are also available in different languages.
- Once finalized, WHO should organize training on how to use the tool and provide materials for training of trainers.

Session 6: policy goals versus practical realities faced by small community water supplies

The sixth session on policy goals and practical realities investigated progress on water and sanitation in the WHO European Region; included considerations of equity in the post-2015 debate; and addressed practical challenges of implementation and examples of human rights-based approaches.

Progress on water and sanitation

The JMP monitors progress towards MDG target 7c: “to halve by 2015 the proportion of population without sustainable access to safe water and basic sanitation”. In the WHO European Region 67 million people still lack access to improved sanitation – it is thus off track to meet the sanitation target for 2015. The drinking-water target was met in the Region in 2012; nevertheless, 19 million people still rely on unimproved sources of drinking-water and 100 million people do not have access to a piped supply¹⁷.

Large disparities also exist within the Region and averages tend to mask significant differences between subregions. In the Caucasus and central Asia, for instance, a reducing trend in coverage by piped supplies has been observed and people living in rural areas are most disadvantaged. Furthermore, access to “improved” sources does not necessarily mean access to safe drinking-water, as illustrated by two examples. In the Republic of Moldova use of improved water sources in rural areas is 93% and in some districts not all wells comply with the sanitary norms on chemical quality. In Georgia, where the use of improved water sources is 97.3%, the situation assessment in Dusheti and Marneuli districts revealed high levels of microbial noncompliance (see the section on the situation assessment of small-scale supplies in Georgia in Session 5). According to the WHO-hosted central information system for infectious diseases, giardiasis, campylobacteriosis, hepatitis A and shigellosis are the most frequently reported water-related infectious diseases in the WHO European Region. An overview was given of the monitoring frameworks including JMP at the global level, the Protocol on Water and Health at the regional level and joint sector reviews at the national level. WHO activities in this area, such as training and capacity-building events and country briefs, were outlined.

Discussion of global progress on access to water and sanitation and an update on the post-2015 discussion with a focus on equity followed. The MDGs have been criticized because they are inaccurate for estimating access to safe drinking-water and because they do not consider equitable access. In addition, they reflect neither the normative criteria of the human rights to water and sanitation (quality/safety, availability, acceptability, accessibility and affordability) nor the crosscutting criteria (nondiscrimination, participation, accountability, impact and sustainability). The current proposals for post-2015 monitoring targets, to be met by 2030, include:

- eliminating open defecation;
- achieving universal access to basic drinking-water, sanitation and hygiene for households, schools and health facilities;

¹⁷ Progress on sanitation and drinking-water, 2014 update. Geneva: World Health Organization and United Nations Children’s Fund; 2014 (<http://www.wssinfo.org/documents/>, accessed 12 November 2014).

- halving the proportion of the population without access at home to safely managed drinking-water and sanitation services;
- progressively eliminating inequalities in access.

The 2014 JMP report includes various matrices that show country developments in terms of reductions in urban–rural disparities and quintile gap inequalities.¹⁸ The JMP has developed different methods of conceptualizing and measuring inequities in access. Examples from countries in the WHO European Region were provided where such indicators were available from national surveys.

- Data from Ukraine were used to categorize geographical differences according to location (north, east, south, west and central regions) and access to drinking-water according to type of urban or rural area (rural, small town, urban and large city). Through this distinction it was shown that the urban–rural gap in access to piped water on premises was 54 percentage points.
- Data from Uzbekistan were used to stratify access to improved drinking-water sources by differences in mother tongue: the multiple indicator cluster survey of 2006 showed that people whose mother tongue is Russian have significantly higher access to water piped into the dwelling than those with other mother tongues.
- Data from Kyrgyzstan were used to take into account wealth quintiles when looking into rural water coverage; evidence showed that richer quintiles gained access to improved and piped drinking-water more quickly than poorer quintiles.

During the subsequent discussion, the following points were made.

- Concern was expressed that if water quality measures are included in post-2015 monitoring countries would be measured against different standards, since WHO does not stipulate global standards.
- More recent data are available from Uzbekistan than those presented, but data can only be used for the JMP once validated by the government and formally submitted. If more recent data are available, countries are kindly asked to submit them. It is desirable that as many countries as possible submit their latest data this year, since the next JMP report will be the 2015 status report.

Example: Australia

Small-scale water supplies in remote Australian communities often face numerous challenges such as poor-quality source water, high rainfall variability and managers who usually have a good understanding of operational procedures but low capacity to manage risks and assets. Four Australian states require WSPs for small-scale supplies and developed a community water planner to facilitate WSP implementation: this is web-based software, used by the states for reporting. In response, the Centre for Appropriate Technology developed a community water planner field guide, which consists of a booklet, posters and other materials for direct use in the field; these are designed for people with low levels of education and literacy.¹⁹

¹⁸ Progress on sanitation and drinking-water, 2014 update. Geneva: World Health Organization and United Nations Children's Fund; 2014 (<http://www.wssinfo.org/documents/>, accessed 12 November 2014).

¹⁹ Field guide to the community water planner [website]. Alice Springs: Centre for Appropriate Technology; 2014 (<http://www.waterra.com.au/publications/community-water-planner-field-guide/>, accessed 12 November 2014).

Several barriers to implementation exist, however. While successful implementation of the tool needs institutional support, provision of such support from regional governments is rather weak: they suffer from a high turnover of staff and deal with many competing demands, resulting in reactive rather than proactive action. Different jurisdictional service provision arrangements result in inconsistent reporting procedures that make it difficult to see investment and progress. Similarly, funding cycles are often not long enough to demonstrate benefits. It is therefore important that all levels of government support consistent reporting processes for comparable results and that staff in subnational agencies are engaged in ongoing training and support. Identifying champions at all levels will ensure that WSPs are also promoted throughout phases of low policy attention and finances.

Human right-based approaches

The human right to water²⁰ requires a human rights-based approach when working with small community supplies. One implication of the human right to water is the need to reach universal coverage through progressive realization. While small-scale systems will probably be crucial in reaching the last hurdle, it is important that the management, maintenance and operation of existing systems are not neglected when installing new systems and connections, since that would grant enjoyment of the human right to some at the expense of others. A major barrier to achieving universal access is that those without access often live in the most difficult and remote settlements, where supplying them may be particularly expensive, although some methods have been developed to deal with this issue.

- The “Everyone, forever” initiative in Honduras is an example of achieving local universal access. The idea is to concentrate efforts on reaching everyone in an entire municipality in a relatively short time span rather than spreading investments thinly throughout larger regions. This avoids leaving out the hardest-to-reach villages and can create synergies between water and sanitation efforts. Tensions may exist, however, with a national government’s mandate to invest throughout the country; thus, this approach might be more relevant for NGOs and donors.
- Municipal budgeting is an alternative approach. Recognizing that communities may not be able to cover all recurrent costs – particularly for capital replacement – local governments can support them by putting sustainable financing mechanisms in place, such as multiannual (10-year) budgets that include costing estimates for development of new systems, expected major replacement works and support of community supplies.
- Differentiated approaches for different types of supply within rural areas can be part of solving the dilemma, such as encouraging professionally managed supplies in bigger villages and supporting community-managed and private self-supplies through programmes for good management and upgrade.

The human right goes beyond coverage: good service levels in terms of quantity, quality, accessibility and reliability need to be ensured and should be explicitly defined and monitored in laws and regulations.

²⁰ The Right to Water. Geneva: Office of the United Nations High Commissioner for Human Rights; 2010 (Fact sheet no. 35; <http://www.ohchr.org/EN/PublicationsResources/Pages/FactSheets.aspx>, accessed 12 November 2014).

A roundtable discussion followed on challenges, opportunities and practical solutions at the small community level. Meeting participants were invited to share experiences of human rights strategies and programmes. Several countries recognize the right to water in national legislation.

- Belarus follows the approach of progressive realization and has provisions on quality and quantity. No provisions have been made for continuity as intermittent supply is not an issue.
- In Kyrgyzstan and Tajikistan the right to water is recognized but practical implementation is lacking. Government initiatives to scale up implementation and NGO activities that promote the right to water are in place in both countries.
- In Armenia and Cameroon the right to water is not recognized in legislation, but the Armenian and Cameroonian NGOs represented at the meeting are conducting advocacy and awareness-raising campaigns for the right to water in their countries and areas.

Session 7: practical relevance and future of the SCWSMN

The seventh session was conceptualized as an occasion for participants to inform WHO's work on small-scale supplies, activities under the Protocol on Water and Health and networking activities. The main achievements of the SCWSMN from 2005–2014 were discussed, including:

- regular exchange of experiences;
- development of the WSP step-by-step manual for small community supplies;
- initiating the update of volume 3 of the WHO guidelines for drinking-water quality;
- development of the contents of WHO risk assessment tool for small-scale supplies.

After 10 years of the Network's operation a new phase is envisaged; this will be driven by a strategic approach based on Member States' needs. The discussion was guided by the following questions.

- What are the priority themes with respect to small-scale supplies for both Member States and other stakeholders?
- What is the role of networking when addressing these themes?

Participants' responses to these questions can be summarized in four categories.

- **Advocacy:** it was considered critical to highlight the importance of small-scale water supply systems for health to decision-makers at the international and national levels.
- **Guidance and support:** integration of drinking-water and sanitation aspects at the small community level was felt to be a priority. Participants also identified as important aspects of the WHO guidelines for drinking-water quality with a particular focus on small-scale supplies, especially:
 - support for WSP implementation;
 - surveillance of small-scale supplies (including selection and prioritization of water quality parameters, determination of adequate monitoring frequencies and sanitary inspections);
 - risk assessment;
 - regulatory aspects.
- **Research:** valuable topics for future study included the relationship between drinking-water quality and health effects among those served by small-scale supplies, integrating water quality with health surveillance data, possibilities for integrating water and sanitation activities and methods to measure outcomes and progress.

- Networking: future activities should more actively involve WHO regional offices and country offices. A strong need for further exchange between stakeholders in the field of small-scale water supply systems within and beyond the Region was highlighted. Possibilities of involving operators of small-scale supplies directly in networking activities (such as on WSP implementation) and intensified collaboration with other networks such as the Rural Water Supply Network – especially on topics such as tariffs, affordability, construction norms, operation and maintenance and regulatory questions – should be explored. Use of Internet platforms for knowledge-sharing should also be investigated further.

4. Conclusions and recommendations

The meeting's conclusions can be summarized as follows.

- The meeting helped to identify possibilities for collaboration, mutual support and knowledge exchange between EECCA countries.
- A need for further exchange between stakeholders in the field of small community water supply systems within and beyond the WHO European Region, as well as better advocacy for the topic, was identified. The meeting recommended technical follow-up meetings on several aspects – in particular, sanitary inspections, risk-based surveillance and risk assessment tools in the context of safe management approaches.
- The meeting provided feedback and input for the update of volume 3 of the WHO guidelines for drinking-water quality. Meeting participants stressed the importance of further work and guidance in the area of risk-based surveillance and sanitary inspections that support WSP implementation.
- While the EECCA region still has limited experience with WSPs in small-scale supply systems beyond pilot projects, WSP implementation is seen as a viable option to improve the situation of such systems and scale-up is recommended.
- The meeting recommended increasing the availability of WHO guidance materials in Russian to foster implementation efforts in the EECCA region.
- The meeting highlighted numerous aspects and examples that can be used as a source of inspiration for setting specific targets to improve small-scale water supply and sanitation systems under the Protocol on Water and Health, such as equitable access, safe management approaches and compliance with microbial and chemical parameters in small-scale water supplies.

The meeting provided a great opportunity for networking, exchanging information and creating new partnerships. Participants were encouraged to share information during follow-up to the meeting; their contributions will be used as input for WHO's work and activities under the Protocol on Water and Health.

Annex 1. Programme

26 June 2014

Topic	Speakers
Session 1: introduction Session chairs: Marat Kaliev and Nina Vashneva Rapporteur: Nataliya Nikiforova	
Welcome and opening remarks	Oskon Moldokulov, Head of WHO Country Office, Kyrgyzstan Marat Kaliev, Deputy Minister of Health of Kyrgyzstan
Opening presentation: small community supplies in the WHO European Region	Oliver Schmoll
The Small Community Water Supply Management Network (SCWSMN): background, updates, overview of meeting agenda and objectives	Eva Barrenberg
Priority activities under the Protocol on Water and Health	Dragana Jovanovic
Outcomes of the questionnaire on small-scale water supplies in the WHO European Region	Magriet Samwel
Session 2: WHO guidelines for drinking-water quality, volume 3 – applicability and needs Session chair: Rick Johnston Rapporteur: Nataliya Korol	
Developments of the WHO guidelines for drinking-water quality, volume 3	Sophie Boisson
Session 3: sanitary inspections of small-scale supplies Session chair: David Sheehan Rapporteur: Tahmina Alimamedova	
The role of sanitary inspections in drinking-water quality surveillance	Oliver Schmoll
Sanitary inspections – the WHO global monitoring perspective	Rick Johnston
Sanitary inspections – practical experiences from England and Wales	Shaun Jones
Roundtable discussion: country examples of guidance on and application of sanitary inspections	Moderator: David Sheehan
Session 4: water safety plans (WSPs) and health promotion Session chair: Luis Simas Rapporteur: Robyn Grey-Gardner	
Health promotion in the context of WSPs	Eva Barrenberg
The importance of community participation in managing small community water supplies	Fon Nsoh
Developing a water and sanitation safety plan in a rural community	Margriet Samwel
Discussion and wrap-up of day 1	Moderator: Luis Simas

27 June 2014

Topic	Speakers
Session 5: risk assessment and field testing of water quality	
Session chair: Nargiza Khodjeva Rapporteur: Emma Anakhasyan	
A decision tree for risk-based monitoring	Ana Maria de Roda Husman
Overview of available field testing tools	Harold van den Berg
Experience of rapid assessment of drinking-water quality in Georgia	Nana Gabriadze
WHO risk assessment tool: updates and overview	Eva Barrenberg
Discussion	Moderator: Nargiza Khodjeva
Session 6: policy goals versus practical realities faced by small community water supplies	
Session chair: Nazokat Isaeva Rapporteur: Margriet Samwel	
Progress on water and sanitation in the WHO European Region: highlights for the eastern Europe, Caucasus and central Asia region	Enkhtsetseg Shinee
Global progress on access to water and sanitation and update post-2015 discussion – a focus on equity	Rick Johnston
Multiple barriers: the realities of implementing good policy for water supplies in remote Australian communities	Robyn Grey-Gardner
Using the human rights-based approach when working with small community supplies	Stef Smits
Roundtable discussion on challenges, opportunities and practical solutions at the small community level	Moderator: Nazokat Isaeva
Session 7: practical relevance and future of the SCWSMN	
Session chair: Enkhtsetseg Shinee Rapporteur: Harold van den Berg	
Roundtable discussion on future priorities of SCWSMN	Eva Barrenberg
Wrap-up and closure of meeting	Oliver Schmoll

Annex 2. List of participants

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