



**UNITED NATIONS
ECONOMIC COMMISSION
FOR EUROPE**

**WORLD HEALTH
ORGANIZATION
REGIONAL OFFICE FOR EUROPE**

MEETING OF THE PARTIES TO
THE PROTOCOL ON WATER AND HEALTH
TO THE CONVENTION ON THE PROTECTION
AND USE OF TRANSBOUNDARY
WATERCOURSES AND INTERNATIONAL LAKES

Meeting of the Parties
Third session
Oslo, 25-27 November 2013
Item 7 (c) of the provisional agenda

MOP-3/WH/2013/INF.5

INFORMATION PAPER

Small-scale water supplies and sanitation in the pan-European region: policy instruments and programs towards improvement

- Extended outline -

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Introduction

The situation of small-scale water supplies and sanitation systems is a recognized concern in the entire pan-European Region. They typically prevail in rural areas, small towns and peri-urban areas and often face a variety of managerial, operational, technical, staffing and resourcing challenges. These may hinder the provision of safe and sustainable drinking-water and sanitation services and may result in adverse health outcomes and environmental damages. Increasing access to safe drinking-water and sanitation will improve community health and subsequently enhance opportunities for sustainable livelihoods, reduction of poverty and economic development.

There is an increasing recognition of the need for more national and international policy attention to address the challenges related to small-scale systems. The Protocol on Water and Health (hereinafter: the Protocol) addresses this subject as one of its priority programme areas. In 2011, the publication “Small-scale Water Supplies in the pan-European Region” was released under the Protocol as a first step to support a better understanding of the current state of small-scale water supplies and challenges they face.

Scope and aim

This publication responds to the needs expressed by the Parties to the Protocol to further address the challenges related to small-scale water supply and sanitation systems in the pan-European region. It primarily aims at supporting effective policy action towards improving the situation of small-scale systems.

Policy makers can choose from a wide range of regulatory, planning, financial, technical and educational tools and instruments to improve the situation of small-scale water supplies and sanitation systems. This document addresses a range of such tools and instruments applicable at the national, provincial and local level. This is supported by a collection of concrete examples and case studies which proved successful, particularly in the pan-European context. These examples wish to inspire decision makers and practitioners on what improvement actions they may consider on all relevant levels and which they may adapt for their circumstances.

There are strong links between the provision of safe drinking-water and safe sanitation practices in many settings, particularly in rural areas where typically facilities are located very close to each other. This publication addresses these issues together in order to foster close communication and collaboration between those responsible for water and those responsible for sanitation.

Structure

This publication is structured into five sections. Sections A and B of the document help to understand the problem from a broader perspective – they highlight why there are concerns with small systems and why it is worth to address them. Section C emphasises on how one can establish a good foundation for action by conducting a thorough baseline analysis and by developing a strategy and vision of what should be reached through improvement activities. The role and value of the Protocol in this regard is particularly underlined.

The core of this document are sections D and E. They present a range of policy and practical instruments as a “tool box” of options which have been proven successful in various settings to improve the situation in small-scale water supply and sanitation systems.

Target groups

The information provided in this publication may be used on multiple levels by various stakeholders, particularly by:

- Policy makers of all relevant levels (i.e. state, provincial or local) and sectors (e.g. health, water, environment, agriculture, and other), who are responsible for developing policies in this field. These users may be mostly interested in general frameworks and programs as well as a systematic approach

to baseline analysis and target setting, and the programs starting from top down. Necessary inter-institutional and inter-sectoral cooperation should be strongly kept in mind and followed.

- Aid and funding agencies, either international or national, providing financial or technical support for improvement, may want to learn about instruments and programs which proved successful in other countries and compare them with those included in proposals they receive. Non-governmental organizations (NGOs) may also choose from the variety of tools described and use them for action they take and proposals they develop.
- Stakeholders at the local level, such as the operators of small-scale systems and local authorities. They have an important role to play in initiating and implementing improvements through a bottom-up approach.

A. The problem statement: What are the concerns related to small-scale water supply and sanitation systems?

What is a ‘small-scale’ system’?

There is no universal definition of what exactly is a ‘small-scale’ system. Descriptions differ between countries within the pan-European region. Legislation typically defines small systems based on criteria such as number of population served, quantity of water provided, piped or non-piped supply, rural or urban supply, quantity of wastewater treated, number of service connections or the type of technology used. However, the problem is not the size itself – it is the characteristics and challenges that set small systems apart.

What does the term “sanitation” mean?

In accordance with the definition provided in Article 2 of the Protocol, “sanitation” means the collection, transport, treatment and disposal or reuse of human excreta or domestic wastewater, whether through collective systems or by installations serving a single household or undertaking.

Small-scale water supplies are managed by different groups of people and serve different groups of users. Supply types comprise private or individual facilities (i.e. typically supplying one or a small number of premises), community-managed supplies and publicly managed supplies with or without centralised treatment, storage and distribution. A similar situation exists for small-scale sanitation. The technologies range from simple on site systems such as pit latrines to centralised sewerage and wastewater treatment systems. The systems can be operated by organised utilities; however, many are operated by householders with little or no technical knowledge or experience. This publication addresses both household and small public systems for water supply and sanitation.

How many people are served by small systems?

They are many. In 2011, about 266 million people, or 30% of the population of the pan-European region lived in rural areas. Small-scale systems provide the backbone of water and sanitation services in these areas but also in small towns and peri-urban areas.

In 2008, there were about 65 million citizens, or 13% of the population of the European Union (EU) supplied from water supplies serving between 50 and 5,000 people and another 47 million, or 9% of the EU population, supplied regularly with drinking-water from even smaller sources. In addition, millions of people are supplied from these sources occasionally on weekends and holidays. The percentage of the population supplied with drinking-water from small sources in the countries of the Caucasus and Central Asia is presumably even higher as about 56% of the population of this region lives in rural areas.

Most of these people are at the same time served by sanitation systems of the similar scale, if adequate sanitation is not even missing at all. In countries of Central and Eastern Europe, almost 30% of the overall

population live in settlements with less than 2,000 inhabitants, representing over 46 million people, and only around 9% of these are so far connected to centralised wastewater treatment plants.

Rural-urban disparities in access to “improved” drinking-water supply and sanitation in the WHO European Region in 2011

According to the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP), about 89% of the rural population had access to an “improved” sanitation facility that hygienically separates human excreta from human contact.

Around 94% of the rural population had access to an “improved” drinking-water source that, by the nature of its construction, adequately protects the source from outside contamination, particularly faecal matter. In contrast, only 72% of the rural population had access to a piped household water connection located inside the user’s dwelling, plot or yard.

The categories “improved sanitation” and “improved source of drinking-water” describe specific system technologies. However, this categorisation does neither allow conclusions about the safety of water or sanitation services provided nor accessibility.

Although access to “improved” drinking-water sources and sanitation facilities has increased in the past ten years, this progress masks significant disparities within and between countries, between urban and rural areas as well as between high- and low-income groups. For example, in countries of the Caucasus and Central Asia (CCA), 22% of the rural population lives in homes without access to “improved” drinking-water sources, as opposed to only 4% of urban dwellers. Even more significant, 71% of the rural population in CCA lacks access to piped water on premises whereas only 16% of town and city residents are similarly disadvantaged. More than 4.3 million rural dwellers, or 10% of the population in CCA, still use water from rivers, dams, lakes, ponds, streams, canals or irrigation channels as source for drinking-water.

Efforts towards improving access to drinking-water supply and sanitation frequently focus on large systems for water and sanitation services in urban areas, leaving those people that depend on small-scale systems often excluded from the benefits of these improvements.

What are the challenges and barriers?

Small-scale water supplies and sanitation systems have a number of similar characteristics and face a number of similar challenges. It should be noted, however, that not every characteristic described in the following is necessarily relevant to all small-scale systems, nor are the challenges limited to small-scale water supplies or sanitation systems alone. The most important aspects influencing small-scale systems include:

- Low policy attention to small-scale systems in rural areas results in shortcomings in the enabling environment necessary to support improvement action.
- Small-scale systems are often not regulated or the level of regulation is different in comparison to larger supplies. This includes, for example, requirements on source water protection, operation and management, monitoring and reporting, and personnel capability.
- Frequently, there is a lack of ongoing independent surveillance and there are no requirements or standards on good operation and maintenance practices available.
- The use of treatment technologies is generally limited and, where in place, not necessarily reflecting local conditions and needs.
- Often there is a lack of knowledge on alternative cost-efficient sanitation and wastewater treatment systems, or the regulatory framework hinders the implementation, operation and maintenance of such facilities.
- Often non-water professionals or undertrained individuals who lack specialised knowledge operate the systems. Typically they take care of water and sanitation systems as only one of their several tasks. Due to the larger geographical spread, and sometimes the remoteness and isolation of small systems, operators do not have easy access to information, expert assistance and technical support, or they do not know about the possibility of existing assistance or support mechanisms available.
- Maintenance and repair of infrastructures is frequently limited either due to a lack of knowledge and understanding or lack of sustainable financial resourcing.

- The inaccurate perception of the importance of safe drinking-water supply and sanitation for public health protection may lead to a lack of a sense of responsibility among national, regional and local decision makers, resulting in comparatively little political priority, institutional support and under-resourcing. This in combination with relatively greater capital costs for technical installations, and per-unit costs of materials and construction in small-scale systems results in a lack of financial resources to maintain or upgrade the systems.

How are these challenges mirroring in practice?

The challenges may trace in various ways:

- The use of unimproved sanitation facilities compromises hygienic separation of human excreta from human contact.
- Improper sanitation practices may lead to unsafe disposal of wastewater and excreta into the environment. This may cause environmental degradation, including cross-contamination of local drinking-water sources, and increases the risk of direct exposure to human excreta in or nearby the community.
- Unsafe management of animal excreta and agrochemicals may cause degradation of the water sources, including groundwater often used as a water source for small-scale supplies.
- Small systems are often more vulnerable to breakdown. Failures of drinking-water supply infrastructures may lead to temporary or fairly long-term disruptions of the supply potentially resulting in a lack of access to sufficient amounts of water required for good personal, domestic and food hygiene.
- As shown in the following, available data clearly signal that small-scale water supplies are at higher risk of experiencing failures and water quality incidents compromising the safety of the drinking-water supplied.

Systematic, easily accessible evidence on the degree of water-related disease attributable to small-scale water and sanitation systems is currently not readily available. However, anecdotal evidence suggests that the incidence of water-related disease in rural communities is largely underreported.

In many countries regular water quality surveillance and reporting of small-scale water supplies is inadequate or non-existent. Therefore these lead to a substantial lack of scientific evidence on the “real situation” of prevailing sanitary risks and the quality of water supplied.

Currently available information indicates a clear relationship between the size of a supply and drinking-water quality: in smaller supplies, the risk of non-compliances with limit values is higher. This is exemplarily illustrated by the results of a survey organized by the European Commission in 2008. It revealed that about 40% of small-scale water supplies (i.e. serving 50 to 5,000 persons) show non-compliance with at least one parameter of the EU Drinking Water Directive (98/83/EC), while only less than 5% of the larger supplies (i.e. serving more than 5,000 persons) do not comply.

Exemplary drinking-water quality data for small-scale water supplies in the pan-European region

A rapid assessment of drinking-water quality and prevailing sanitary risk in two districts of rural Georgia (i.e. Dusheti and Marneuli) in 2011 indicated significant microbiological contamination of drinking-water. Non-compliance with the national standards for faecal indicator bacteria, such as *Escherichia coli*, was 68% and 60% in Marneuli and Dusheti, respectively. Overall non-compliance with all microbiological and physico-chemical parameters investigated during the assessment revealed even higher at 80% and 74%, respectively.

Regulatory data from Scotland for 2011 indicate a clear gradient in non-compliance with microbiological standards between different supply categories. Supplies serving less than 50 persons showed comparative high average non-compliance rates at 42% and 22% for coliform bacteria and *Escherichia coli*, respectively. In contrary, for supplies serving between 500 and 5,000 inhabitants, the non-compliance rates for these two parameters were just 2% and 1%, respectively.

[Note: More data from different countries will be included here from the analysis of the 2012/2013 questionnaire.]

Unsafe drinking-water, inadequate sanitation and excreta management as well as poor hygiene due to a lack of water available may result in higher incidence of water-related disease, primarily diarrhoeal illness from bacterial, viral or protozoan pathogens.

The WHO estimates that diarrhoeal diseases alone are the 3rd and 5th leading cause of death in low income countries and low-middle income countries, respectively. For children under the age of five years, diarrhoea is a leading cause of malnutrition and the 2nd leading cause of death globally. It is estimated that 88% of cases of diarrhoeal disease can be attributed to unsafe water supply, inadequate sanitation and poor hygiene.

A clear example of health risk relating to unsafe sanitation is the infection caused by soil-transmitted helminths (commonly called intestinal worms). They continue to be a significant health burden due to poor human excreta disposal practices. The WHO estimates that in the European Region more than four million children are in need of deworming.

Notably, the effects of unsafe and unreliable water and sanitation services go far beyond health, leading to missed opportunities. Poor sanitation facilities at school may prevent especially girls from attending school and lead to unequal learning opportunities; extensive collection times for fetching small amounts drinking-water from distant sources may reduce the time available for learning or generating family incomes; limited availability of water may hinder market gardening and animal husbandry and therefore income generation; health-care costs incurring for treating children suffering of water-related diarrhoea may put undue demands on family earnings.

B. The encouragement statement: Why should we specifically address small-scale water supply and sanitation systems?

Improving the situation of small-scale systems is worth targeted policy efforts:

- Policies contribute to creating healthy and resilient communities. Whether people are healthy or not is determined, *inter alia*, by their physical environment and circumstances. The provision of adequate sanitation and safe drinking-water in sufficient quantities allowing for good personal and domestic hygiene are key determinants of public health. Good individual, family and community health in rural areas, small towns and peri-urban areas enhances opportunities for sustainable livelihoods, reduction of poverty and economic development. Safe sanitation practices, including adequate wastewater treatment, safe disposal or reuse of excreta and wastewater, contribute to a clean environment.
- Policies can better gender equality. Women and girls are typically the ones who collect water from sources and handle water in homes. They will benefit from improvements in community water supply and more convenient access to local water and sanitation services through reduced physical burden (lifting and carrying water), time savings (working days gained) and increased school attendance.
- Policy interventions are effective. Diarrhoeal disease can be effectively prevented through provision of safe management of drinking-water and sanitation services. For example, recent studies from Iceland clearly demonstrate the positive effects of water safety plan (WSP) implementation which is legally required since 1995. The study revealed substantial reductions in noncompliance and water quality incidents and, most importantly, a significant decrease in incidence of diarrhoeal disease. The population receiving drinking-water from a supply with a WSP in place was 14% less likely to develop clinical cases of diarrhoea.
- Policy action towards improvement is cost-effective. There is clear evidence that financial benefits outweigh the investments in improvements in small-scale systems. For example, it has been estimated for the pan-European region that an investment of US\$ 1 results in a mean return ranging from US\$ 2 to US\$ 21 whereas “investment” encompasses costs of improvement interventions aiming at reducing acute diarrhoeal illness and “return” includes the value of preventable disease measured by direct and indirect costs of illness prevented by these interventions.

Reducing inequities in access

The recognition of the human right to safe drinking-water and sanitation by the United Nations General Assembly resolution 64/292 and the Human Rights Council resolution 15/9 is a major milestone for mankind and provides a solid legal framework for governments. The progressive realisation of this right requires ensuring equitable access to safe drinking-water and adequate sanitation for all, including isolated rural populations as well as poor, vulnerable and marginalized community members.

In the pan-European region, there are significant disparities among and within countries in achieving equitable access. Recent analyses of the JMP on the distribution of access to different types of water supply and sanitation technologies for different economic levels of the society revealed, for example, that piped water in households and use of improved sanitation facilities are typically enjoyed by the richest quintiles of the population, depriving the poor of the enjoyment of the highest health benefits associated with the use of such basic services.

Small-scale water supplies and decentralized sanitation are particularly concerned with the geographical differences, which need to address disparities in physical access but also price disparities. For example, if calculated on full cost recovery, the tariffs for wastewater collection and treatment in rural areas are higher than in urban areas. Therefore, improving the situation of small-scale systems can contribute to achieving equitable access, livelihoods and rural development.

In Western Europe, the main emerging issue is affordability for certain groups, facing the increases in costs. These costs are related to achieving environmental requirements linked to quality of treated wastewater and full cost-recovery. In the Eastern part of the pan-European region, physical access to improved water and sanitation remains a major challenge and affordability considerations are more acute.

It is the responsibility of national and regional decision makers to set the stage for and implement long-term strategies towards improving the situation of small-scale water supply and sanitation. Establishing a firm rationale for improvement and defining an explicit policy with clear goals and short-, mid- and long-term targets is inevitable to secure commitment of stakeholders at all levels and provides the point of departure for concrete programming of activities and resource allocation. In order to develop effective policies, one should

- Have a clear vision and strategy towards improving the situation;
- Ensure political will and resources for change as otherwise improvement may be difficult to reach;
- Address water supply and sanitation in one integrated and coherent management framework;
- Establish a baseline of the national situation of small-scale water supply and sanitation systems to analyse and assess improvement needs and strategies;
- Identify which instruments will be most effective to reach the goals set and how they need to be adapted to prevailing national, provincial or local conditions;
- Not be too ambitious but follow a step-by-step improvement approach reflecting prevailing conditions, priorities and available resources – for most people it is more incentive to see little improvement soon rather than a larger solution in a far future. Both short-term and long-term targets should therefore be established.

The provisions of the Protocol on Water and Health, as addressed in detail the following section, provide a strong framework for developing targets towards improving the situation of small-scale water supplies and sanitation which are tailored to the countries' needs, priorities and available resources.

What are the benefits and drawbacks of particular instruments? Should specific standards be developed? How can surveillance systems be put in place to effectively support communities managing small-scale systems? These are just some of the questions that policy makers need to consider when developing a 'small-scale systems'-focused approach that addresses their specific particularities.

While action for improvements may also be taken at the system level (for example, through implementing WSP), it is crucial that such local initiative is embedded in an overall enabling environment. Engagements at the national and/or provincial level, such as specifically addressing small-scale systems in legislation, securing institutional technical backstopping to local communities and/or targeting financial support are very powerful to bring about change at a larger scale and to leverage commitment, also by those locally responsible for implementation.

Responsibilities of decision makers at different levels with respect to drinking-water supply and sanitation vary greatly in different settings, particularly the split between the regional and the local level. However, the responsibilities will in many cases typically include the following:

- National and/or regional level:
 - Surveillance of health status and trends;
 - Establishing policies, legislation, norms and standards for drinking-water, sanitation and hygiene, including programming of improvement interventions at subsidiary levels;
 - Allocation of financial resources enabling the implementation of established policies and programs;
 - Harmonising approaches and representing health concerns in policies of different sectors;
 - Providing guidance and capacity building to local entities (e.g. local government);
 - Reflecting feedback from the local level in future frameworks.
- Regional and/or local level:
 - Direct action for implementing and enforcing policies and requirements defined at the national level, including setting up the required institutional structures;
 - Responsible for safe operation and managing water resources, water supply and sanitation systems and their surveillance;
 - Giving specific guidance to communities and/or operators of small systems;
 - Mirroring experience from implementation at the local level to the regional and national level in order to support feasible approaches and improvements based on lessons learned and success stories.