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Water and Health to the Convention on
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Watercourses and International Lakes

Working Group on Water and Health

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Item 7 of the provisional agenda

Small-scale water supplies and sanitation

INFORMAL DOCUMENT

**Small-scale water supply and sanitation systems: country activities towards
safe and equitable access in the pan-European region**

– Draft report for feedback by the Working Group on Water and Health –

Improving small-scale water supplies and sanitation is a priority area under the Protocol's 2020-2022 programme of work. The lead Parties in collaboration with the WHO secretariat, analysed information provided by Parties and other States under the fourth reporting cycle under the Protocol and complementary interview, with particular focus on small-scale water supply and sanitation systems. The report aims to support countries in setting targets and developing national policies and strategies to improve small-scale water supply and sanitation, and to identify data gaps and needs regarding rural systems.

The Working Group on Water and Health is requested to review the draft report and provide comments and feedback to Dragana Jovanovic (dragana.jovanovic@batut.org.rs) by **10 June 2022**.

Note: The draft document is for review by the Working Group on Water and Health only and not for wider distribution at this stage.

Small-scale water supply and sanitation systems: country activities towards safe and equitable access in the pan-European region

1 Introduction

Small-scale drinking-water supply and sanitation systems form an essential part of the provision of services in the pan-European region, particularly in rural areas. Approximately 207 million people (23% of the region's population) receive water from supplies serving fewer than 5000 people. However, they often also face a number of challenges, including including to technical challenges also a lack of awareness, regulation and policy attention, limited interinstitutional collaboration and networking, challenges in achieving an ongoing independent surveillance, limited training and capacity of operators, and financial challenges including higher per unit-costs.

In order to improve the data base on small systems, and to increase action for their improvement as well as policy attention, these systems are being continually addressed under the programmes of work of the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (*the Protocol*).

The Protocol on Water and Health

The Protocol is a legally-binding instrument on water and health in the pan-European region.

Its main aim is to protect public health from water-related diseases in the region, and to help governments to improve water, sanitation, hygiene and health conditions across their countries, and to sustain their improved status in the long term. The region covers the countries of the geographic area of Europe, as well as all succession states of the former Soviet Union in Eastern Europe, the Caucasus and Central Asia. The Protocol was adopted in 1999 and entered into force in 2005. The United Nations Economic Commission for Europe (UNECE) and the World Health Organization (WHO) provide the joint secretariat for the Protocol.

It is the first international, legally-binding instrument on water and health. Parties to the Protocol are required to establish national targets to achieve or maintain a high level of protection from water-related diseases. Thematic areas in which targets can be set include for example improving drinking-water supply and sanitation, water resources management, water quality, as well as bathing water quality. They also need to report to the Meeting of the Parties of the Protocol every 3 years, including on status of target achievement and on common indicators on water and health.

The Meeting of the Parties decides every 3 years on a Programme of Work, prioritising the activities, for example on small systems, for the coming years.

The aim of this publication is to support countries in setting targets and developing national policies and strategies to improve small-scale water supply and sanitation, and to identify

data gaps and needs regarding rural systems. Aspects of equitable access were explored by comparing data from urban to rural areas where small systems typically prevail.

The compilation shall furthermore provide insights into the individual countries' action and objectives regarding small systems. The study also aims to highlight the Protocol's role as a framework to address priority issues, such as the safe management of and policy attention to small-scale water supply and sanitation systems. Through the periodic reports required, the Protocol promotes the compilation of information on actions taken at regional and national levels over the past decade. Good practices from information on targets set and activities taken may inspire policy-makers for future action. The publication identifies areas where further action is needed under the Protocol and beyond and where challenges should be addressed as part of improving the small systems' situation and enabling environment. It particularly aims to inspire target setting on small systems by providing examples and good practices from countries within the pan-European region.

Special attention is given to sanitation in this study, as small sanitation systems are often neglected, and access is lower than for drinking-water.

2 Small systems as a priority under the Protocol

How it all began...

Small-scale water supply and sanitation systems have been addressed under the Protocol in its programmes of work since it came into force in 2005. The first workshop under the Protocol on small-scale water supplies in the pan-European region was conducted on 26 and 27 November 2008 in Bad Elster, Germany. A wide range of experts from within the European Region shared their experiences and evidence related to challenges commonly encountered in small-scale water supplies, as well as information on management approaches and good practices. They identified that small-scale water supplies require more attention and initiated this as a specific programme area under the future programmes of work under the Protocol. Participants also agreed on a way forward, including on aspects of:

- public participation
- human resource development
- research needs to strengthen the evidence base, and
- a need for more targeted advocacy materials, including awareness-raising materials.

Spotlight on certain issues...

The work initially focused on specific issues, such as the promotion of the Water Safety Plan (WSP) approach for safe management of small-scale water supply systems and shifted towards paying more attention to small-scale sanitation. Over the years, Parties to the Protocol and other countries increasingly reported on national activities for improving the situation of small-scale systems, and the focus on sanitation, safe management and financing of small-systems increased under the Protocol.

Publications on small-scale water supply and sanitation systems under the Protocol

The workshop in 2008 resulted in a compilation of evidence, country case studies and good practices, the awareness-raising document *Small-scale water supplies in the pan-European region. Background. Challenges. Improvements* (WHO EURO 2011).

The publication *Water safety plan: a field guide to improving drinking-water safety in small communities* (WHO EURO 2014) provides a step-by-step introduction to the WSP approach and a range of ready-to-use templates to assist small-scale water supplies in developing and implementing their own WSPs. The field guide particularly addresses the rural community members responsible for the operation and management of their water supplies, as well as the staff of the local health and water supply offices responsible for safeguarding drinking-water quality and nongovernmental organizations that support drinking-water safety in rural communities.

To improve the evidence-base on small-scale water supplies and to gain a better overview of the status quo throughout the Region, information on those systems was gathered under a survey. Findings are summarised in the publication *Data on the Status of small-scale water supplies in the WHO European Region* (Rickert et.al. 2016) which intends to inform policy-making and the formulation of intervention strategies and to help identify needs for further action under the Protocol.

The publication *Taking policy action to improve small-scale water supply and sanitation systems. Tools and good practices from the pan-European Region* (WHO EURO 2016) aims to support effective policy action and promote good practices for creating an enabling environment in which to improve the situation of small-scale systems. It introduces a variety of tools available to policy-makers and highlights how these can be tailored to the particular circumstances of small-scale systems, supported by case studies showing how countries have acted to improve the situation. It assists policy-makers in formulating specific targets for small-scale systems and in planning concrete actions for their achievement.

Costing and financing of small-scale water supply and sanitation services (WHO EURO 2020) was published to guide national and subnational policy-makers in defining strategies for the sustainable financing of service provision through small-scale water supply and sanitation systems.

Active exchange at sub-regional level...

Sub-regional workshops on improving small-scale water supply and sanitation for better health were conducted in Minsk, Belarus (15-17 March 2017) and in Belgrade, Serbia (10-12 October 2017), and on small-scale water supplies in Dessau, Germany (18–20 June 2018). The objective of these workshops was to facilitate a sub-regional exchange of experiences relating to safe and sustainable small-scale water supply and sanitation systems in rural areas, and to promote good practices to improve the safety and sustainability of such services.

3 Data reviewed

In preparation to the 5th session of the Meeting of the Parties to the Protocol (Belgrade, 19-21 November 2019), countries submitted national summary reports in accordance with the Art 7 of the Protocol. In total, 33 national summary reports were submitted. Reports of this 4th reporting cycle by Parties and other states were analysed to extract information on targets set in relation to small-scale water supply and sanitation systems.

The Protocol's reporting template includes a section requesting data on common indicators, including on access to drinking-water and sanitation services in urban and rural areas, as well as on drinking-water quality. Data from the reports on common indicators on rural and urban areas were assessed to document data availability on rural areas, disparities between urban and rural areas, as well as overall progress in rural areas.

27 of the 53 countries of the pan-European Region are Parties to the Protocol and therefore need to set targets within 2 years of becoming a Party, supported by the guidelines on the setting of targets, evaluation of progress and reporting under the Protocol on Water and Health. Although small-scale water supply and sanitation systems are not a separate target setting area according to Article 6 (2) of the Protocol, countries have set targets relating to small systems in a number of target setting areas.

23 Parties have set targets under the Protocol (see <https://unece.org/environment-policy/water/protocol-on-water-and-health/targets-set-parties>, status 24 March 2022). Azerbaijan and Finland set or updated targets in 2019, Bosnia and Herzegovina, Czechia and Spain in 2020, and Belarus Germany and Portugal in 2021. Official targets set under the Protocol as well as the respective reported target achievements and activities were reviewed for information on targets in relation to small systems. In some cases, the data reported under the Protocol, including the years for which data was reported, differed between the reporting cycles. No re-validation of data has been carried out for this study, assuming that the Parties reported validated data.

An online survey was conducted to collect more detailed information on targets set by Parties, as well as other activities with respect to small systems. Individual e-mails were sent on December 11, 2020 to 48 countries of the pan-European region, including Parties and non-Parties. The e-mail contained the link to the survey with 12 questions, partly with further sub-questions, depending on the chosen answer. The survey contained a version for Parties and one for non-Parties, and was provided in both English and Russian. The questions focused on targets set under the Protocol and the related measures to reach the targets. The effectiveness of those measures was also inquired. For non-Parties, the terminology was adapted. Feedback was requested by the end of January 2021. Although the survey allowed for anonymous responses, most responding countries included some information that made it possible to identify the responding country. Furthermore, a contact person was requested in the survey, who would be able to participate in in-depth interviews. In total, 20 responses were received (15 from Parties to the Protocol, 5 from non-Parties) to the online-survey. One country that is a Party submitted 2 responses, and only the non-contradictory responses were included in this assessment.

In October and November 2021, 4 in-depth interviews were conducted with representatives of Czechia, England and Wales, Hungary, and Norway with known activities on small systems to gather more detailed country examples. Furthermore, the experiences from the lead-Parties of the Protocol's programme area on small systems, Germany and Serbia, were integrated into the compilation.

Meeting reports of sub-regional meetings on small systems, as well as reports of other Protocol-meetings such as the Working Group on Water and Health, were also reviewed for information on targets and activities on small systems.

4 Results

4.1 Access to and quality of drinking-water and sanitation services in rural areas

Data from the last 2 reporting cycles under the Protocol were also analyzed. In both reporting cycles in 2016 and 2019, Parties were asked to report on access to drinking-water and to sanitation in rural and urban areas.

The reporting template of the Protocol asks for information on access to drinking-water and sanitation in the respective countries. For drinking-water, it asks whether this refers to

- Improved drinking-water sources (as per JMP definition)
- Supplies located on premises
- Supplies available when needed
- Supplies that provide drinking-water free from faecal contamination

For sanitation, it asks whether this refers to

- Improved sanitation facilities (as per JMP definition)
- Facilities not shared with other households
- Facilities from which excreta is safely disposed in situ or treated off site

The definitions applied in the Protocol reporting do therefore not completely match all categories applied under the JMP.

The overall data of the 4th reporting cycle reveal significant improvements as compared to the previous reporting cycle, especially in access to sanitation. However, it is striking that far fewer people have access to sanitation than to drinking-water, especially in rural areas, showing a greater need for action on sanitation.

In the national summary reports from 2019, 23 countries segregated between access to drinking-water in urban and rural areas. The access to drinking-water in urban areas was reported to be ≥ 95 % in all countries that provided data. In rural areas the access was generally lower and below 50 % in the Republic of Moldova, Romania and Ukraine. Overall the data show a substantial progress of access over time.

With respect to access to sanitation, 24 countries segregated between urban and rural areas in the reporting cycle of 2019, with the percentage of access in urban areas being above 80 % except in Albania and Uzbekistan, while access in rural areas was below 80 % in 11 countries, in 2 of which under 30 %. In general, data indicate an increase of access over time.

The following Figure 2 provides segregated data on access to drinking-water and sanitation for the urban and rural population as reported under the Protocol.

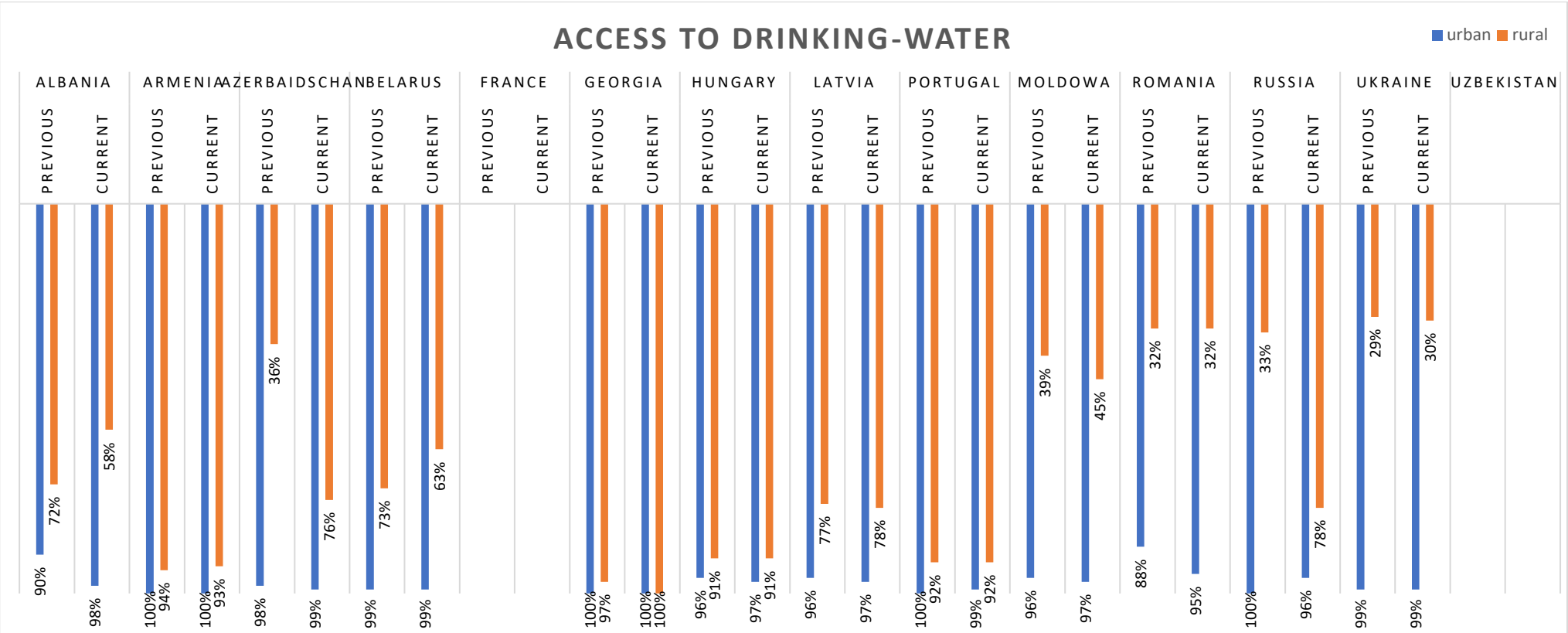


Figure 1: Access to drinking-water for urban and rural population reported under the Protocol in current and previous reporting cycle

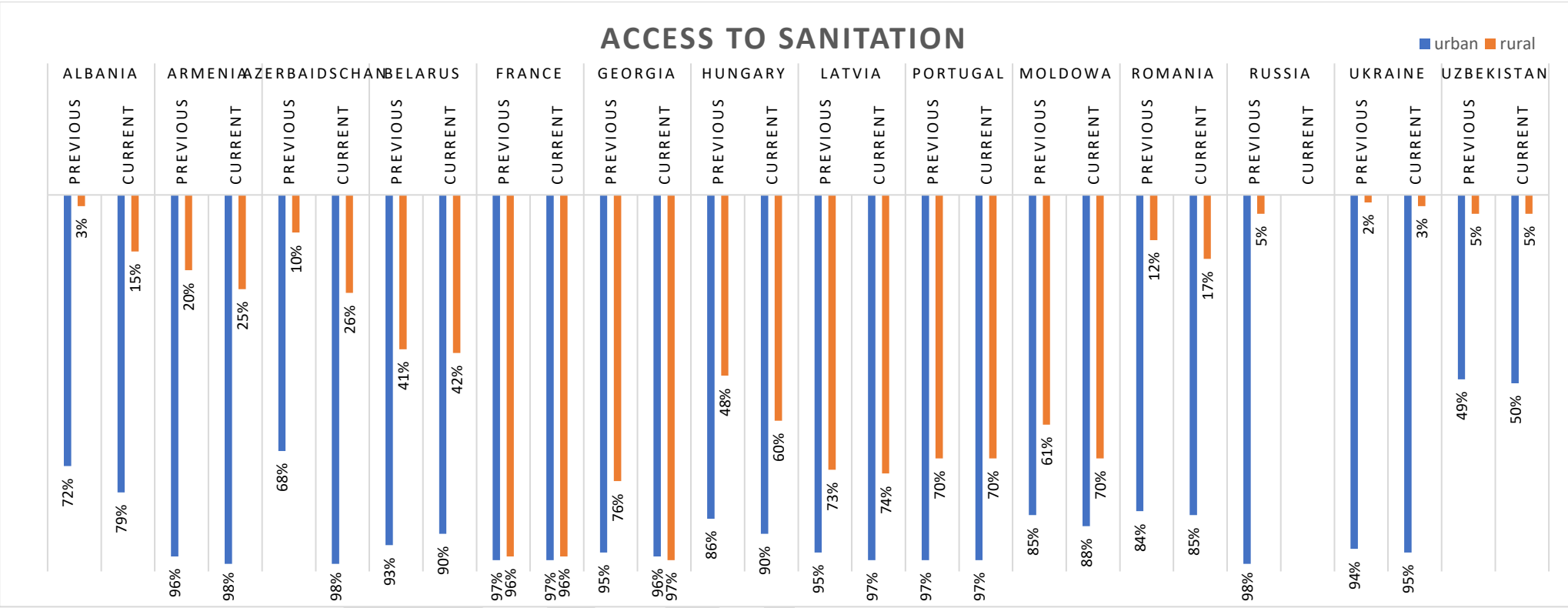


Figure 2: Access to sanitation for urban and rural population reported under the Protocol in current and previous reporting cycle

Error! Reference source not found.Countries with more than 98 % access to drinking-water and sanitation (urban and rural) in both the previous and 2019 reporting cycle are not shown in the diagram but listed:

- Belgium
- Finland
- Germany
- Israel
- Luxembourg (no current year specified)
- Malta
- the Netherlands
- Norway
- Serbia
- Spain (drinking-water only)
- Switzerland

A total of 20 countries reported having national policies or programmes in place addressing specific dimensions of equitable access. 15 of the countries address geographical disparities.

4.1.2 Drinking-water quality

In addition to information on access to drinking-water and sanitation, Parties were asked to differentiate their drinking-water quality data between rural and urban for the first time in 2019.

10 countries and regions provided segregated data on compliance with *E. coli* in drinking-water for urban and rural areas in 2019, 4 only for urban areas¹. The data are showing that the share of non-compliant samples is substantially higher in rural areas as compared to urban areas varying between 0.6 % (Hungary) up to 33 % (Serbia). Brussels region and Lithuania reported 0 % for urban regions, where else the graphic is showing no bar, no data were reported (see Figure 3).

¹ Belgium reported for Brussels and Wallonia

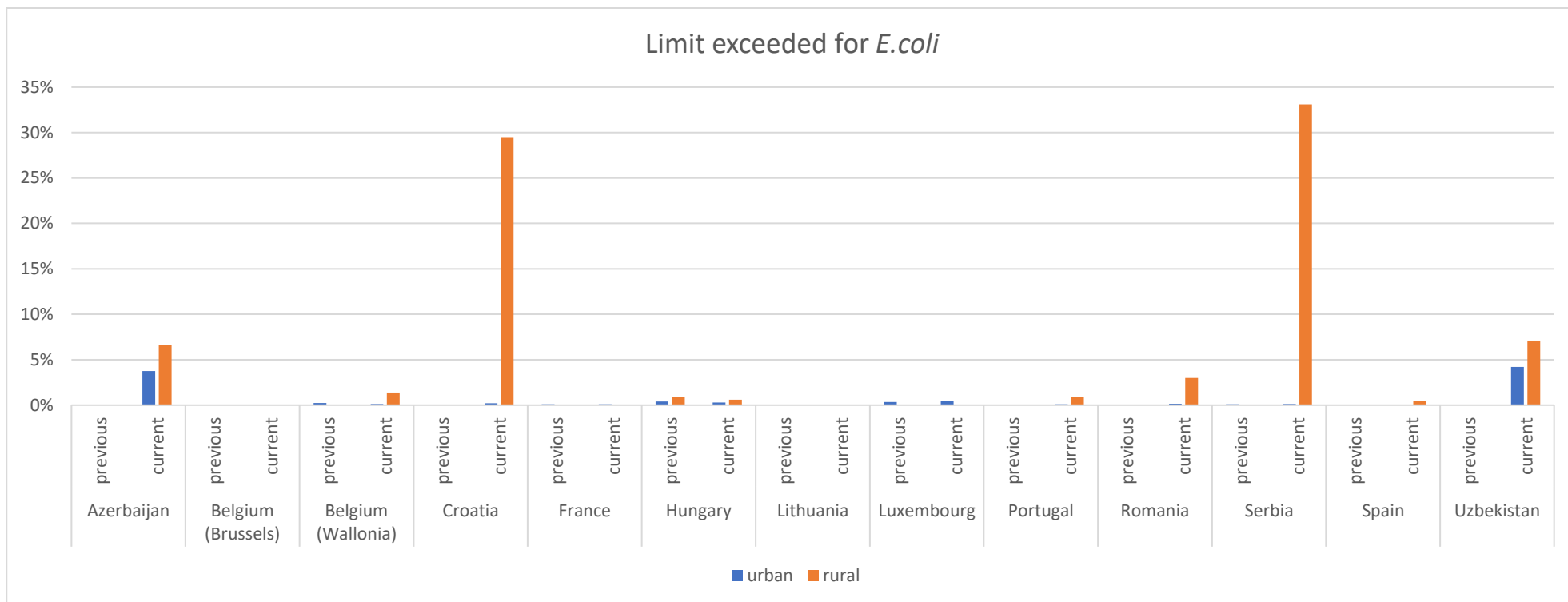


Figure 3: Limit exceeded for *E.coli* in urban vs. rural areas reported under the Protocol in current and previous reporting cycle

For Enterococci, data availability improved from the previous to the current reporting cycle. Whereas only Hungary could provide segregated data for urban and rural areas and 4 countries and regions could provide data for at least the urban areas in the previous cycle already, in the current cycle 5 countries and regions were able to provide data on both urban and rural compliance, and another 4 on urban compliance (see Figure 4).

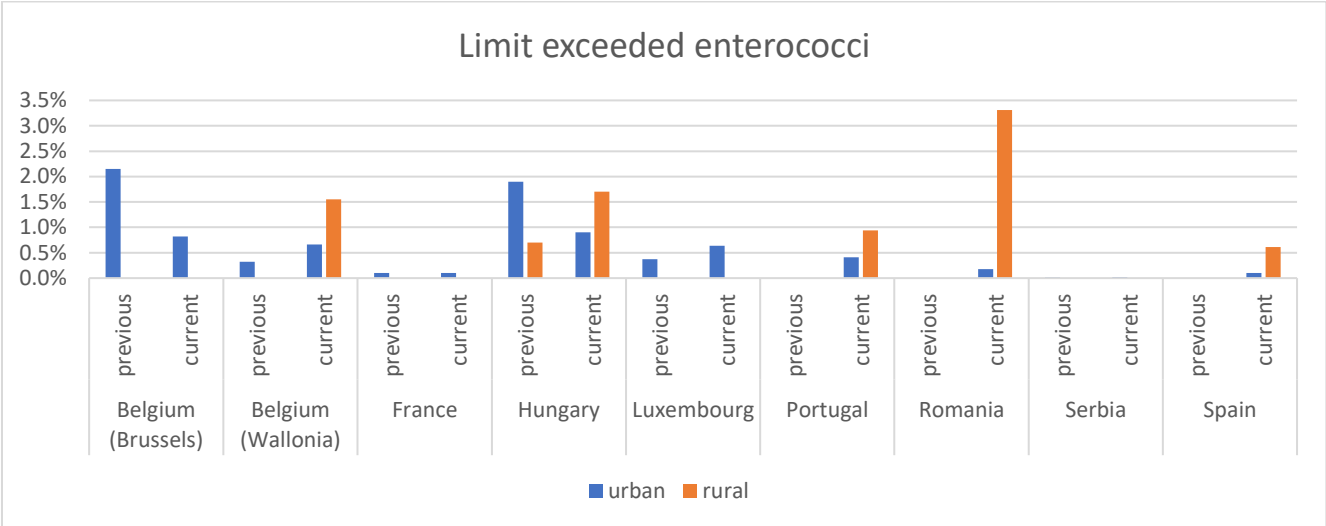


Figure 4: Limit exceeded Enterococci reported in current and previous reporting cycle by the Parties

For countries and regions that reported separately on chemical drinking-water quality in urban and rural areas, compliance rates tended to be higher in urban than in rural areas.

	Arsenic		Fluoride		Lead		Nitrate	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Belarus	100%	100%	99.6%	99.6%	100%	100%	99.5%	99.4%
Belgium (Wallonia)					98.2%	95.5%	99.9%	99.9%
Croatia	93.5%	88.9	100%	100%	100%	100%	100%	98.4
Hungary	96.8%	94.4%	99.7%	99.7%	97.9%	98.7%	99.7%	100%
Portugal	99.0%	97.5%	99.9%	99.8%	99.2%	98.0%	100%	99.8%
Romania	99.0%	95.4%	99.3%	100%	100%	99.6%	99.5%	95.2%
Serbia	99.9%	92.6%					100%	93.6%
Spain	99.9%	98.7%	99.9%	99.3%	99.7%	99.7%		
Uzbekistan	100%	100%	100%	100%	100%	100%	99.2%	99.1%

4.2 Targets set and other activities under the Protocol to improve small systems

4.2.1 Focus of targets and other activities

Access (especially in rural areas) to sanitation is significantly lower than that to drinking-water. There is therefore a greater need for action to improve sanitation in rural areas. However, the majority of activities and targets appears to focus on drinking-water.

Even though access to drinking-water is generally better than to sanitation, there is still a need for action, especially in rural areas.

In the online survey, 14 of 15 countries stated to have set targets under the Protocol specifically on small systems. Twice as many countries focused on drinking-water compared to sanitation (6 vs. 3). 5 of 14 countries reported no focus on either. None of the Parties provided details on why the focus was chosen.

The interviews revealed that there being more action on drinking-water than on sanitation may be due to the following reasons:

- the lower level of access, as action on sanitation would typically have to have a stronger focus on infrastructure improvements which require higher financial input than e.g. action to improve management approaches
- collaboration between institutions working on different thematic areas and continuous information exchange appear somewhat more challenging than during initial target-setting,
- there being less information available on sanitation than on drinking-water
- in cases where the process of implementing the Protocol is lead by the ministry of health or another responsible body working on drinking-water, they may put more emphasis on drinking-water which is in their area of responsibility, rather than on sanitation
- while some kind of drinking-water supply is needed in all settings, this is less so the case for sanitation.

2 Parties indicated in the online survey that their targets focused on small public systems, and 1 Party that they focused on on-site systems. All of these responses related to targets on drinking-water. 10 Parties responded that their targets focused on both – small public and on-site – systems, of which 2 had focused their targets on sanitation, 3 on drinking-water, and the rest had no focus on one of them only. This indicates that most countries addressed both on-site systems, as well as small public services for small drinking-water and sanitation systems. 2 Parties provided additional information on the rationale why they focused on both on-site systems as well as public systems during the interviews. In these countries, the population not connected to public systems was 2-5 %, and some information was available that compliance was lower in small public and in on-site systems than in large systems. This indicated a need to address both types of systems. However, as it was easier to address small public systems directly, targets for on-site systems (where such requirements were more minimal in comparison) rather focused on capacity building for operators.

One of the Parties stated that the new legal requirements in the EU Drinking-water Directive on equitable access were used to establish the population that is served by private wells and to develop an inventory of on-site systems and thus improve the evidence base.

Furthermore, 1 non-Party stated that it was not compulsory for private wells to register, and that they therefore also only have estimates of the number of these systems, while another Party stated that there were insufficient resources to follow up if on-site systems did not register.

5 non-Parties took part in the survey and responded on activities rather than targets on small systems. 3 of the countries reported having established activities on small systems. Also for non-Parties, there is a slight tendency to focus on drinking-water rather than sanitation (3 vs. 2 of 5 non-Parties respectively).

The online survey asked about established measures to reach the targets set. 12 Parties responded to have established such measures and categorised them as follows (multiple answers were possible):

- Increasing awareness/capacity of operators (9)
- Implementing legal/regulatory changes (9)
- Improving evidence base (8)
- Improving management and safety of services (8)
- Improving monitoring and surveillance (8)
- Implementing infrastructure measures to improve access to safe systems (7)
- Improving data management infrastructure (6)
- Supporting institutional collaboration and cooperative arrangements (5)
- Improving the financial situation of small-scale systems (2)
- Introducing strategic planning to enable sustainable operation (2)

In addition to the information provided by Parties, 3 non-Parties also stated that they had established activities on small-scale systems and in 2 of the countries, these activities are run under an overarching strategy.

In the online survey, one Party indicated that it had not set targets on small systems, but it has set an official target to improve private wells which was interpreted by the authors to be target setting on small systems and therefore considered as such in the assessment of the 4th reporting cycle. In the survey, the Party informed that it is assumed that this issue will receive increased attention in the future, especially in relation to the implementation of the amended EU Drinking Water Directive into national legislation, and it is likely to be part of new national targets.

4.2.2 Challenges and success factors

During the online survey, Parties where the implementation of measures to achieve the targets had not started yet stated that this was due to limited resources, including financial resources (3 responses), political reasons (2), time constraints (1) and organizational reasons (1). 1 Party elaborated that regarding a target for small scale sanitation, a constraint was that large agglomerations had priority for wastewater collection and treatment due to EU obligations.

Furthermore, information on challenges and success factors was gathered during the in-depth interviews.

Limiting factors and challenges reported by Parties included

- identifying realistic targets and moving from the documentation to actual implementation,
- limited resources (both staff resources at the national level as well as resources for implementing additional measures at the local level),
- problems for local operators to obtain information about available subsidy programmes,
- lack of funding for achieving targets relating to small-scale sanitation,

- finding a balance between providing sufficient information to operators, while not making the operational decisions for them,
- lower compliance in areas where the local authorities were less active and did not regularly contact operators,
- increased derogations in compliance which may partly be due to improved monitoring, and
- slowed down progress during the COVID 19 pandemic.

Success factors reported by Parties included

- possibility to analyse more parameters at a lower price due to availability of new technology,
- actively involving operators of small-scale drinking-water and sanitation systems in physical, rather than on-line, seminars and workshops for direct interaction (which is picking up compared to the beginning of the COVID 19 pandemic),
- showing good examples from implantation of approaches within the country, e.g. WSP,
- providing templates and hands-on guidances, e.g. for implementing WSPs, and
- involving local authorities and water supply association in developing guidance and raching small systems (less so for on-site systems, as they are no included in the association).

4.2.3. Country best practice examples

Information on experiences and best practices were gathered from the official reports, the online survey, information shared in regional meetings under the Protocol, as well as from in-depth interviews, and categorised by types of measures.

Focus area increasing awareness and capacity

Most activities with a focus on raising awareness and building capacity focus on drinking-water, and target competencies of operators of small-scale water supplies, including of private wells. To a lesser degree, they also include local authorities and the public. A number of the country activities have a focus on WSPs.

Country	Target / activity	Drinking-water / sanitation	
		DW	SAN
Albania	<ul style="list-style-type: none"> Developed a training programme for small systems' operators 	DW	SAN
Armenia	<ul style="list-style-type: none"> Held a national consultation on small-scale water supply and sanitation systems in 2015, and developed minimum requirements for operators in order to address small-scale water supplies that were not managed by organized entities 	DW	SAN
Austria	<ul style="list-style-type: none"> Has published online booklets for private wells and checklists and templates for small systems' operators 	DW	
Croatia	<ul style="list-style-type: none"> Preparing educative materials on good management practice of small community water supply systems and private wells Training of operators and education of the residents in order to raise awareness on water-related disease 	DW	
Czechia	<ul style="list-style-type: none"> Re-issue or update awareness-raising materials about wells 	DW	
England and Wales	<ul style="list-style-type: none"> Yearly national report on overall risk and compliance trends includes case studies which are used for educating local authorities on improving private wells 	DW	
Finland	<ul style="list-style-type: none"> Operator competency is tested through a series of 30 questions (20 general and 10 specific) chosen at random from a set of approximately 600, with the option to select specialist areas (treatment in waterworks or distribution networks). The certificate of competency, which is valid for five years, has already been granted to more than 52,000 people. The overall positive results are regularly trained staff, improved knowledge among employees and workers paying more attention to their methods 	DW	
Georgia	<ul style="list-style-type: none"> Training local authorities, developing awareness-raising materials and translating WHO materials into Georgian 	DW	
Germany	<ul style="list-style-type: none"> Promoted the use of a practical guide for small-scale systems and of WSP training materials 	DW	

	<ul style="list-style-type: none"> Developed guidance for water operators and local health agencies to support surveillance 		
Hungary	<ul style="list-style-type: none"> Developed simplified guidance for private well owners 	DW	
Ireland	<ul style="list-style-type: none"> Provides a handbook to support the implementation of regulations for all types of small-scale water supply and sanitation systems, as well as checklists, templates and guidance for construction and maintenance of private wells. Furthermore, guidelines on producing WSPs for small supplies and training for local authorities are available on request. 	DW	
Italy	<ul style="list-style-type: none"> Produced awareness-raising booklets for small-scale water supplies 		
Kyrgyzstan	<ul style="list-style-type: none"> A capacity-building workshop on WSP was conducted in 2014, and a national workshop on small-scale water supply and sanitation in 2015 Conducted follow-up workshops at the subnational level Revised the national targets for scaling up WSP implementation in small systems and developed technical standards for village water supplies 	DW	SAN
Lithuania	<ul style="list-style-type: none"> Conducting trainings and mass media campaigns for the majority of small suppliers 	DW	
Luxembourg	<ul style="list-style-type: none"> Produced awareness-raising booklets for small-scale water supply and sanitation systems. 	DW	
North Macedonia	<ul style="list-style-type: none"> Updated sanitary inspection forms in line with WHO recommendations Established some requirements for operators; the national utility association organizes annual trainings for them and is establishing a national training centre. The requirements do not distinguish according to the size of the system 	DW	
Norway	<ul style="list-style-type: none"> Developed guidelines on WSPs for small systems 	DW	
Republic of Moldova	<ul style="list-style-type: none"> Awareness-raising campaigns, training courses for water operators and activities to develop normative documents for small-scale water supply systems were implemented 	DW	
Romania	<ul style="list-style-type: none"> Requires water operators to institute a quality management system Training programmes exist independent of supply size County unemployment centres offer optional training courses. European infrastructure funds are being used for some training Developed WSP guidelines 	DW	
Serbia	<ul style="list-style-type: none"> Raise awareness of the population in rural areas Inform national and local decision makers for improving respective policies and undertaking measures for the better management of SWSS, in order to protect human 	DW	

	<p>health and decrease urban vs. rural inequities with respect to access to safe drinking water.</p> <ul style="list-style-type: none"> • Trying to re-establish a hygienic minimum requirement for everyone who comes in contact with food or water • There are plans to charge private well owners a minimum fee, which will go at least in part to local operator training 		
The United Kingdom	<ul style="list-style-type: none"> • Detailed guidance for owners and local authorities on the operation of private supplies • Risk-assessment tool that local authorities in England and Wales use to monitor small private water supplies. 	DW	
Ukraine	<ul style="list-style-type: none"> • A pilot project had highlighted the clear discrepancy in access between rural and urban areas and the lack of data related to access by vulnerable and marginalized groups. The outcomes had been published in mass media and communicated to governmental agencies to raise awareness and for targeted fundraising 	DW	

Focus area implementing legal/regulatory changes

Country activities on legislation and regulation focused exclusively on drinking-water, particularly WSPs.

Country	Target / activity	Drinking-water / sanitation	
Czechia	<ul style="list-style-type: none"> • New ordinances for health protection and hygiene requirements for drinking-water include mandatory risk assessment, its evaluation and a specific programme of monitoring (also for small-scale water supply and sanitation systems) 	DW	
Republic of Moldova	<ul style="list-style-type: none"> • Standards for design and operation of small systems were developed, regional service centres for small service providers set up, minimum qualification requirements for operators defined, tariffs set and maintenance and repair of small systems budgeted for 	DW	
Serbia	<ul style="list-style-type: none"> • Establish legal requirements to implement WSPs 	DW	
Tajikistan	<ul style="list-style-type: none"> • Projects on WSP and enhanced drinking-water quality monitoring were conducted in rural areas, amongst others leading to the publication of guidance on WSP in rural supplies and an uptake of the approach in legislation 	DW	

Focus area improving evidence base

Establishing a register of private wells, partly also other drinking-water supplies in rural areas, is one focus of the activities that aim to improve the evidence base. Another is improving testing in small drinking-water supplies and communicating results. In two countries, registers of small sanitation systems should also be developed.

Country	Target / activity	Drinking-water / sanitation	
Albania	<ul style="list-style-type: none"> List of private wells 	DW	
Austria	<ul style="list-style-type: none"> Small suppliers are obliged to present the results of water samples once a year to relevant authorities, to construct and maintain the water system according to technical standards, to inform the people supplied about water quality and to attend training for small supply providers 	DW	
Bosnia and Herzegovina	<ul style="list-style-type: none"> Baseline analysis of rural WSS focus on drinking-water quality Register of small supplies to improve monitoring and control of drinking-water and health 	DW	
Croatia	<ul style="list-style-type: none"> Reducing number of small-scale non-registered water supply systems (for systems providing water for more than 50 inhabitants) 	DW	
Estonia	<ul style="list-style-type: none"> Established register of individual supplies 	DW	
Finland	<ul style="list-style-type: none"> Since 2006 regular tests have also been required to prove competency concerning water treatment technology from source to distribution, monitoring, legislation and water hygiene. The tests are obligatory for supplies providing more than 10m³/day or serving more than 50 people, but are voluntary for smaller supplies 	DW	
Georgia	<ul style="list-style-type: none"> Conducted a situation assessment of small-scale water supplies in rural areas 	DW	
Germany	<ul style="list-style-type: none"> Publishing regular reports and consumer information on drinking-water quality in water supply zones that deliver > 10 m³/d or supply > 50 PE.Has taken action to improve the evidence base related to the status of private wells Improving the safety of small drinking-water supplies and improve access to information and reporting. 	DW	
Italy	<ul style="list-style-type: none"> Register of large and small supplies 	DW	
Lithuania	<ul style="list-style-type: none"> Testing of water from dug wells used by pregnant women and infants Testing of water from all dug wells and to provide to the public in the flood area with all necessary information on water-borne infectious diseases and appropriate prevention measures in case of flood 	DW	

Montenegro	<ul style="list-style-type: none"> Conducting analysis of water supply in rural areas, taking into account the health safety of drinking water and hygienic conditions. 	DW	
North Macedonia	<ul style="list-style-type: none"> Carried out the registration and geographic information system mapping of small systems 	DW	SAN
Norway	<ul style="list-style-type: none"> Established an inventory of small systems Has an online platform for both registering and reporting (although reporting is not compulsory as for bigger systems) 	DW	SAN
Portugal	<ul style="list-style-type: none"> Annual evaluation of the quality of service provided to users by performing an assessment of the indicators, which allows to verify the effectiveness of the measurements. 	DW	
Romania	<ul style="list-style-type: none"> Established a registry of private and public wells 	DW	
Serbia	<ul style="list-style-type: none"> Baseline analysis of drinking water supply systems in rural areas 	DW	

Focus area improving management and safety of services

Scaling up the application of WSPs, including support through tools, is a main aspect of activities that focus on improving the safe management of services, while two countries also focus on improving the management of small sanitation. Further activities focus on improving compliance in small-scale drinking-water and sanitation systems.

Country	Target / activity	Drinking-water / sanitation	
Albania	<ul style="list-style-type: none"> Drafted a roadmap for WSP implementation and adopted national WSP guidelines for small-scale systems and piloted their application as a basis for scaling-up. 	DW	
Belarus	<ul style="list-style-type: none"> Implemented a project to pilot risk assessment of small systems in a large province. 	DW	
Bulgaria	<ul style="list-style-type: none"> Projects were conducted to promote the WSP approach in rural settings, in particular in schools. 	DW	
Croatia	<ul style="list-style-type: none"> Developing WSP for small community water supply systems 	DW	
Czechia	<ul style="list-style-type: none"> Conducted cost-benefit analysis for implementing WSP which found that costs, including for small systems, were feasible. There were also no complaints from operators regarding high costs, and many of them reported appreciating the approach due to better system understanding and a thorough basis for improvements and investments. 	DW	
France	<ul style="list-style-type: none"> Called for the same level of service provision for small and large supplies and the promotion of water safety plan and sanitation safety plan approaches 	DW	SAN

Hungary	<ul style="list-style-type: none"> • WSP in small supplies (including the development of an online tool and guidance on auditing) • Proposed (not yet adopted) targets address template for WSP and risk management in single household 	DW	
Luxembourg	<ul style="list-style-type: none"> • Local governments had been given greater responsibility for ensuring the provision of safe drinking water services. An online water safety plan tool was developed and piloted, including for all supplies serving small communities 	DW	
Norway	<ul style="list-style-type: none"> • Developing national guidelines for preparing for climate change, as the droughts in 2018 and 2019 were mainly affecting small systems (with challenges such as limited staff and financial resources, and no option to connect to main systems) • Working on adaptation of water safety plan for small supply systems in Norway 	DW	SAN
England and Wales	<ul style="list-style-type: none"> • Requirement to risk-assess private supplies and review after max. 5 years • Tool for risk-assessment available, which is currently converted from an excel-based to a webbased tool. 		

Improving quality			
Belarus	<ul style="list-style-type: none"> • Proportion of drinking-water samples which fail to meet the microbiological parameters of safety in rural areas does not exceed 10% • Proportion of samples which fail to meet the health-related chemical parameters does not exceed 12% in the whole country; 25% in rural areas 	DW	
Czechia	<ul style="list-style-type: none"> • Reduce the number of instances of non-compliance with drinking water quality limit values for supplies serving < 5,000 inhabitants up to 1% to 3%. • Continuously improve drinking-water quality from public drinking-water supplies and process and approve risk assessments (WSP) for the public drinking-water supply system (as part of the operation rules). Targets are set for all water mains for public use, not just small-scale water supplies. • Ensure high-quality and adequate wastewater treatment in small agglomerations with < 2,000 inhabitants where public sewers exist 	DW	SAN
Hungary	<ul style="list-style-type: none"> • Reducing microbiological non-compliance in small water supplies (< 5,000 PE). 	DW	

Focus area improving monitoring and surveillance

Activities on improving monitoring and surveillance of small systems appear to focus on both drinking-water and sanitation, partly also related reporting.

Country	Target / activity	Drinking-water / sanitation	
Croatia	<ul style="list-style-type: none"> Started monitoring small community-managed supplies after acceding the EU Establish supervision and control over small-scale (local and individual) water supply systems Establish supervision over individual sanitation systems is planned through the establishment of water "monitors" 	DW	SAN
France	<ul style="list-style-type: none"> Had undertaken sanitary surveillance regardless of population size served 		
Montenegro	<ul style="list-style-type: none"> Strengthening surveillance of small systems 	DW	SAN
Romania	<ul style="list-style-type: none"> Strengthened the surveillance and reporting of water quality-related incidents. 	DW	
Serbia	<ul style="list-style-type: none"> Conducted a rapid assessment of drinking water quality in rural areas. Data was gathered on more than 1,100 small water supplies. Increase sanitary surveillance of drinking water supply systems in rural areas 	DW	

Focus area implementing infrastructure measures to improve access to safe systems

Half of the activities to improve access to safe systems focus on both small-scale drinking-water and sanitation systems, showing the strongest focus on action to improve sanitation.

Country	Target / activity	Drinking-water / sanitation	
Belarus	<ul style="list-style-type: none"> Level of the population's access to the centralized water supply: 98.0% - for the population of regional and district centers and cities of regional subordination and urban settlements; 83.5% - for the population of agro- towns Reaching 32.5 % of the rural population's access to the centralized and local sewerage systems 	DW	SAN
Croatia	<ul style="list-style-type: none"> Growth of percentage of access to public water supply system from present average 75% to average 85% to 90%, including small local systems presently unsupervised Inclusion of local water supply systems into public water supply systems to increase access to safe drinking water. 	DW	

Czechia	<ul style="list-style-type: none"> Ensure that inhabitants of areas with low population density can connect to the public mains with financial support from the state, although this measure will not have a significant impact on the total number of supplied inhabitants. 	DW	
Estonia	<ul style="list-style-type: none"> Increasing of the total number of persons who are supplied with safe drinking water and to ensure appropriate sewage collection and treatment for all the residents 	DW	SAN
Hungary	<ul style="list-style-type: none"> Development of wastewater treatment in agglomerations below 2,000 PE Proposed (not yet adopted) targets address development of wastewater treatment in agglomerations < 2,000 PE and the development of methodology provide the entire population using public supplies with drinking water from safely managed services 	DW	SAN
Serbia	<ul style="list-style-type: none"> Increase connections to centralized water supply systems in rural areas 	DW	

Focus area improving the financial situation of small-scale systems

Only one reported activity focuses on improving the financial situation of both drinking-water and sanitation systems.

Country	Target / activity	Drinking-water / sanitation	
North Macedonia	<ul style="list-style-type: none"> Allocated funds to the improvement of small-scale systems and rural development 	DW	SAN

Most activities with a focus on raising awareness and building capacity focus on drinking-water, and target competencies of operators of small-scale water supplies, including of private wells. To a lesser degree, they also include local authorities and the public.

Country activities on legislation and regulation focused exclusively on drinking-water.

Establishing a register of private wells, partly also other drinking-water supplies in rural areas, is one focus of the activities that aim to improve the evidence base. Another is improving testing in small drinking-water supplies and communicating results. In two countries, registers of small sanitation systems should also be developed.

Scaling up the application of WSPs, including support through tools, is a main aspect of activities that focus on improving the safe management of services, while two countries also focus on improving the management of small sanitation. Further activities focus on improving compliance in

Country	Target / activity	Drinking-water / sanitation		Focus area(s)							
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation
Austria	Has published online booklets for private wells and checklists and templates for small systems' operators	X		X							
	Small suppliers are obliged to present the results of water samples once a year to relevant authorities, to construct and maintain the water system according to technical standards, to inform the people supplied about water quality and to attend training for small supply providers	X				X					
Belarus	Implemented a project to pilot risk assessment of small systems in a large province.	X				X					
	Proportion of drinking-water samples which fail to meet the microbiological parameters of safety in rural areas does not exceed 10%	X						X			
	Proportion of samples which fail to meet the health-related chemical parameters does not exceed 12% in the whole country; 25% in rural areas										
	Level of the population's access to the centralized water supply: 98.0% - for the population of regional and district centers and cities of regional subordination and urban settlements; 83.5% - for the population of agro- towns	X	X							X	

Country	Target / activity	Drinking-water / sanitation		Focus area(s)							
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation
	Reducing number of small-scale non-registered water supply systems (for systems providing water for more than 50 inhabitants)	X				X					
	Developing WSP for small community water supply systems	X					X				
	Started monitoring small community-managed supplies after acceding the EU	X	X						X		
	Establish supervision and control over small-scale (local and individual) water supply systems										
	Establish supervision over individual sanitation systems is planned through the establishment of water "monitors"										
	Growth of percentage of access to public water supply system from present average 75% to average 85% to 90%, including small local systems presently unsupervised	X								X	
	Inclusion of local water supply systems into public water supply systems to increase access to safe drinking water.										
Czechia	Re-issue or update awareness-raising materials about wells	X		X							
	New ordinances for health protection and hygiene requirements for drinking-water include mandatory risk	X			X						

Country	Target / activity	Drinking-water / sanitation		Focus area(s)									
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation		
	assessment, its evaluation and a specific programme of monitoring (also for small-scale water supply and sanitation systems)												
	Conducted cost-benefit analysis for implementing WSP which found that costs, including for small systems, were feasible. There were also no complaints from operators regarding high costs, and many of them reported appreciating the approach due to better system understanding and a thorough basis for improvements and investments.	X						X					
	Reduce the number of instances of non-compliance with drinking water quality limit values for supplies serving < 5,000 inhabitants up to 1% to 3%. Continuously improve drinking-water quality from public drinking-water supplies and process and approve risk assessments (WSP) for the public drinking-water supply system (as part of the operation rules). Targets are set for all water mains for public use, not just small-scale water supplies.	X	X						X				

Country	Target / activity	Drinking-water / sanitation		Focus area(s)							
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation
	from a set of approximately 600, with the option to select specialist areas (treatment in waterworks or distribution networks). The certificate of competency, which is valid for five years, has already been granted to more than 52,000 people. The overall positive results are regularly trained staff, improved knowledge among employees and workers paying more attention to their methods										
	Since 2006 regular tests have also been required to prove competency concerning water treatment technology from source to distribution, monitoring, legislation and water hygiene. The tests are obligatory for supplies providing more than 10m ³ /day or serving more than 50 people, but are voluntary for smaller supplies	X				X					
Finland	Requiring WSP for small supplies	X					X				
France	Called for the same level of service provision for small and large supplies and the promotion of water safety plan and sanitation safety plan approaches	X	X				X				
	Had undertaken sanitary surveillance regardless of population size served								X		
Georgia	Training local authorities, developing awareness-raising materials and translating WHO materials into Georgian	X		X							

Country	Target / activity	Drinking-water / sanitation		Focus area(s)							
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation
	Conducted a situation assessment of small-scale water supplies in rural areas	X				X					
Germany	Promoted the use of a practical guide for small-scale systems and of WSP training materials	X		X							
	Developed guidance for water operators and local health agencies to support surveillance										
	Publishing regular reports and consumer information on drinking-water quality in water supply zones that deliver > 10 m ³ /d or supply > 50 PE. Has taken action to improve the evidence base related to the status of private wells Improving the safety of small drinking-water supplies and improve access to information and reporting.	X				X					
Hungary	Developed simplified guidance for private well owners	X		X							
	WSP in small supplies (including the development of an online tool and guidance on auditing)	X					X				

Country	Target / activity	Drinking-water / sanitation		Focus area(s)							
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation
	Proposed (not yet adopted) targets address template for WSP and risk management in single household										
	Reducing microbiological non-compliance in small water supplies (< 5,000 PE).	X						X			
	Development of wastewater treatment in agglomerations below 2,000 PE Proposed (not yet adopted) targets address development of wastewater treatment in agglomerations < 2,000 PE and the development of methodology provide the entire population using public supplies with drinking water from safely managed services	X	X							X	
Ireland	Provides a handbook to support the implementation of regulations for all types of small-scale water supply and sanitation systems, as well as checklists, templates and guidance for construction and maintenance of private wells. Furthermore, guidelines on producing WSPs for small supplies and training for local authorities are available on request.	X		X			X				

Country	Target / activity	Drinking-water / sanitation		Focus area(s)							
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation
	Will require group schemes to have mapped protection zones	X					X				
	A number of financial tools are available to support small supplies	X									X
Italy	Produced awareness-raising booklets for small-scale water supplies	X		X			X				
	Register of large and small supplies	X				X					
	Requiring WSP for small supplies	X					X				
Kyrgyzstan	A capacity-building workshop on WSP was conducted in 2014, and a national workshop on small-scale water supply and sanitation in 2015 Conducted follow-up workshops at the subnational level Revised the national targets for scaling up WSP implementation in small systems and developed technical standards for village water supplies	X	X	X			X				
Lithuania	Conducting trainings and mass media campaigns for the majority of small suppliers	X		X							
	Testing of water from dug wells used by pregnant women and infants	X				X					

Country	Target / activity	Drinking-water / sanitation		Focus area(s)								
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation	
Portugal	Annual evaluation of the quality of service provided to users by performing an assessment of the indicators, which allows to verify the effectiveness of the measurements.	X				X						
Republic of Moldova	Awareness-raising campaigns, training courses for water operators and activities to develop normative documents for small-scale water supply systems were implemented	X		X								
	Standards for design and operation of small systems were developed, regional service centres for small service providers set up, minimum qualification requirements for operators defined, tariffs set and maintenance and repair of small systems budgeted for	X			X							
Romania	Requires water operators to institute a quality management system Training programmes exist independent of supply size County unemployment centres offer optional training courses. European infrastructure funds are being used for some training Developed WSP guidelines	X		X			X					

Country	Target / activity	Drinking-water / sanitation		Focus area(s)							
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation
	Establish legal requirements to implement WSPs	X			X		X				
	Baseline analysis of drinking water supply systems in rural areas	X				X					
	Conducted a rapid assessment of drinking water quality in rural areas. Data was gathered on more than 1,100 small water supplies. Increase sanitary surveillance of drinking water supply systems in rural areas	X							X		
	Increase connections to centralized water supply systems in rural areas	X								X	
Sweden	Has a register of very small supplies which includes analysis results as well as further data on the wells, and guidance in easy-to-understand language	X		X		X					
Tajikistan	Projects on WSP and enhanced drinking-water quality monitoring were conducted in rural areas, amongst others leading to the publication of guidance on WSP in rural supplies and an uptake of the approach in legislation	X			X		X				
The United Kingdom	Detailed guidance for owners and local authorities on the operation of private supplies	X		X			X				

Country	Target / activity	Drinking-water / sanitation		Focus area(s)							
		Drinking-water	Sanitation	awareness and capacity	legal/regulatory changes	improve evidence base	improve management and safety	improve quality	improve monitoring and surveillance	improve access to safe systems	improve financial situation
	<p>Risk-assessment tool that local authorities in England and Wales use to monitor small private water supplies.</p> <p>Northern Ireland developed a web-based application for risk assessment of private water supplies</p>										
Ukraine	<p>A pilot project had highlighted the clear discrepancy in access between rural and urban areas and the lack of data related to access by vulnerable and marginalized groups. The outcomes had been published in mass media and communicated to governmental agencies to raise awareness and for targeted fundraising</p>	X		X							

5 Discussion and conclusions

Regarding drinking-water quality, most countries did not provide segregated data on urban and rural in the reporting under the Protocol, which may result in hiding inequities in exposure to contaminated water. In the few cases where segregated data were provided, it showed that rural areas continue to have water of a lower quality. Compiling more complete data sets, including disaggregated data, in the future could improve the evidence base on rural areas and provide a more solid data base for specifying areas for improvement and taking respective action.

In rural areas, access to drinking-water services appears to be higher than to sanitation services. Especially in the case of sanitation, there is a lack of comprehensive data on numbers and on safety. A first step for countries towards a basic data situation can be the registration of small systems. Increasing action on an improved evidence base by countries would be valuable in providing a better database for taking targeted action.

The number of activities and targets on small systems taken by countries in the pan-European Region shows the importance to improve these systems as well as their enabling environment. In addition to the official targets set by Parties to the Protocol, countries also reported numerous additional activities on this topic.

As access to safe sanitation in rural areas is significantly lower than for drinking-water, more action would be desirable as a result to support rural sanitation. However, countries report many more targets and activities to support small-scale drinking-water systems than sanitation systems. For example, a number of countries are developing registers for small water supplies, including private wells, but only very few for sanitation, and none has reported developing a register for on-site sanitation systems. Furthermore, none of the regulatory targets for small systems focuses on sanitation, and most activities on safe management address drinking-water supplies only. This may partly be due to the area of competence of those active under the Protocol and leading the target setting process, however, countries are encouraged to consider increasing the activities and targets for small-scale sanitation systems, including improvement of the evidence base as a first step to taking action. The targets and activities by Parties and other countries also show limited integrated action that addresses both drinking-water and sanitation at the same time. This would however be particularly beneficial for the systems in rural areas and could be strengthened in future target setting and action plans.

Targets and activities focus on both small public as well as on-site systems. The targets for the types of systems typically differ, with a focus on awareness raising and registers for systems relating to on-site systems, and a broader range of activities for small public systems.

It is a positive development that many countries in the pan-European region take action to improve the situation of small systems. For example, safe management of small systems, particularly the application of the WSP approach, stands out as one of the most prominent cross-cutting topics that countries are focusing on not only in increasing the application of risk management approaches, but also in creating an enabling environment through capacity building and regulatory frameworks. Furthermore, many activities focus on strengthening the evidence base of small water supply systems, which could later become the basis for taking future action for improvement.

The Protocol is a good tool to gather information on action taken to improve the situation of small-scale water supply and sanitation systems. It provides a platform for countries to

exchange experiences during workshops and through regular reporting on targets set and the status of the systems. Small-scale water supply and sanitation systems have been a priority area under the Protocol from the start, and a number of sub-regional and national activities support the importance of this issue. Under this programme area of the Protocol, tools are developed and best practices collected to inspire further action in the countries of the region.

In order to scale up improvements for small-scale sanitation in rural areas, countries are encouraged to consider increasing the activities and targets for small-scale systems, particularly small-scale sanitation, to take inspiration from the examples of action already taken, and to continue their work towards availability of safe services for all living in rural areas.

6 Literature

WHO Regional Office for Europe: Meeting reort subregional workshop on improving small-scale water supply and sanitation for better health. 15-17 March 2017 Minsk, Belarus

WHO Regional Office for Europe: Meeting reort subregional workshop on improving small-scale water supply and sanitation for better health. 10-12 October 2017 Belgrade, Serbia

WHO Regional Office for Europe: Meeting reort subregional workshop on improving small-scale water supplies for better health in European Union countries. 10-20 June 2018 Dessau, Germany

Small-scale water supplies in the pan-European region. Background. Challenges. Improvements (WHO EURO 2011).

Water safety plan: a field guide to improving drinking-water safety in small communities (WHO EURO 2014)

Status of small-scale water supplies in the WHO European Region (Rickert et.al. 2016)

Taking policy action to improve small-scale water supply and sanitation systems. Tools and good practices from the pan-European Region (WHO EURO 2016)

Costing and financing of small-scale water supply and sanitation services (WHO EURO 2020)

Guidelines on the setting of targets, evaluation of progress and reporting under the Protocol on Water and Health (WHO EURO and UNECE 2010)