



STATUS OF SMALL-SCALE WATER SUPPLIES IN THE WHO EUROPEAN REGION

Results of a survey conducted under the Protocol on Water and Health



By Bettina Rickert, Margriet Samwel, Enkhtsetseg Shinee,
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Abstract

Small-scale systems are an important component of water supplies in the WHO European Region. To improve the evidence base on small-scale water supplies and to gain a better overview of the status quo throughout the Region, a survey requesting country-specific information was undertaken in 2012–2013 under the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes. The survey had a high response rate (81%), and this analysis of the results includes responses from 43 of the 53 countries in the WHO European Region.

This report summarizes the findings of the survey, according to which approximately 23% of the population of the Region receive their drinking-water from small-scale systems. The results reveal that comprehensive information on small-scale water supplies is typically not readily available at the national level across the Region, which hampers systematic assessment of the prevailing conditions. Establishing national registers of small-scale water supplies and routine data collection mechanisms would improve the evidence base and thus support the prioritization of improvements. The findings of the assessment are intended to inform policy-making and the formulation of intervention strategies and to help identify further action under the Protocol.

Keywords

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Contents

List of boxes, figures and tables	iii
Acknowledgements.....	iv
1. Introduction.....	1
2. The questionnaire and responding countries	2
3. Methodology	4
4. Results of the assessment	6
4.1. Definitions and categories of small-scale water supplies.....	6
4.2. Public water supply coverage	8
4.3. Prevalence of small-scale water supplies in the WHO European Region.....	9
4.4. Legal and regulatory requirements and responsibilities for the management of small-scale water supplies	12
4.5. Monitoring and inspection requirements for small-scale water supplies	14
4.6. Water quality monitoring in small-scale water supplies	15
4.7. Data on outbreaks specifically related to small-scale supplies	22
5. Summary and conclusions	23
References	26
Annex 1. Questionnaire distributed in June 2012	27

List of boxes, figures and tables

Boxes

Box 1. Overview of questionnaire distribution and responses	3
Box 2. Definitions of small-scale water supplies used in the survey	6
Box 3. Examples of definitions and terms used for small-scale water supplies and types of management provided by selected countries.....	7
Box 4. Examples of reported outbreaks of water-related disease for small-scale water supplies in responding countries.....	22

Figures

Fig. 1. Bases for definitions of small-scale water supplies in responding countries.....	6
Fig. 2. Proportion of population coverage by public supplies in responding countries	8
Fig. 3. Number of small-scale water supplies serving 51–5000 people in responding countries	9
Fig. 4. Number of individual, decentralized and local supplies and supplies serving up to 50 people; number of people receiving water from these supplies in responding countries.....	10
Fig. 5. Raw water sources used in responding countries	11
Fig. 6. Institutions responsible for regulating water supply in responding countries	13
Fig. 7. Frequency of <i>E. coli</i> monitoring in water from three categories of small-scale water supply in responding countries in 2010.....	15
Fig. 8. Proportions of compliance with national standards for <i>E. coli</i> and enterococci in supply sizes >10–100 m ³ /day and >100–400 m ³ /day in responding countries	18

Tables

Table 1. Number and proportion of population receiving water from small-scale supplies serving 51–5000 people in responding countries	9
Table 2. Surveillance requirements for small-scale water supplies in responding countries	14
Table 3. Compliance with national standards for microbiological parameters in small-scale water supplies serving 51–5000 people in responding countries.....	16
Table 4. Compliance with national standards for microbiological parameters for individual, decentralized and local supplies and supplies serving up to 50 people in responding countries	19
Table 5. Compliance with national standards for chemical parameters for individual, decentralized and local supplies and supplies serving up to 50 people in responding countries	20
Table 6. Estimated population served by small-scale water supplies in the WHO European Region.....	23

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1. Introduction

About one third of the population of the WHO European Region lives in rural areas, where small-scale water supplies are typically in use (1). Although many such small-scale systems exist, however, detailed and systematic information on how many there are and where they are prevalent is lacking. No mechanism has been in place to date to facilitate regular systematic collection of information on small-scale water supplies at the regional level.

Small-scale systems include both individual systems and small centralized systems. They share a range of common managerial, financial and institutional challenges and particularities that make them more vulnerable to inadequate management and breakdown and may impair the provision of sustainable services. If they are dysfunctional, this can lead to unsafe services or insufficient quantities of drinking-water, which may have consequences for health (2). Ensuring equitable access to safe and sustainable drinking-water services is crucial to building healthy and resilient communities in rural areas and small towns, as stipulated by the European health policy framework, Health 2020 (3). To meet the aspirations of the 2030 Agenda for Sustainable Development (4) – especially Goal 3 (“ensure healthy lives and promote well-being for all at all ages”) and Goal 6 (“ensure availability and sustainable management of water and sanitation for all”) – due policy attention needs to be paid to the particularities of small-scale systems, ideally building on a sound evidence base.

Increasing policy attention and action to improve the situation of small-scale water and sanitation systems is a priority area under the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, which is jointly supported by the United Nations Economic Commission for Europe and WHO Regional Office for Europe (5). Under the Protocol, a collection of recognized tools available to policy-makers and good practices has been compiled to improve the situation of small-scale systems in a sustainable manner (6).

To further improve the evidence base on small-scale water supplies and to gain a better overview of the status quo throughout the WHO European Region, a survey requesting country-specific information on regulations in place, numbers and types of small-scale water supplies, raw water sources used, operators and organization of such supplies and drinking-water quality was undertaken in 2012–2013. This report summarizes the findings of the survey, which will inform policy-making and the formulation of intervention strategies within the Region and help to identify further joint action under the Protocol on Water and Health.



2. The questionnaire and responding countries

For the purposes of the survey a questionnaire on small-scale water supplies was developed (see Annex 1), divided into five sections:

- section I: legal and regulatory requirements;
- section II: numbers of small-scale water supplies;
- section III: raw water sources used by small-scale water supplies;
- section IV: operators and organization of small-scale water supplies;
- section V: quality of drinking-water provided by small-scale water supplies.

The questionnaire was made available in Russian and English and was sent to health and environment ministries of the 53 Member States in the WHO European Region,¹ national focal points of the Protocol and WHO country offices in June 2012. Other networks were also utilized to reach the target audience for a high response rate. In total, 50 questionnaires were returned from 43 countries between July 2012 and May 2013. Responses were received in English and Russian, and Russian responses were translated into English to facilitate data analysis. Box 1 provides an overview of the questionnaire distribution and responses.

The 43 countries included in the assessment cover a total population of 736 million, representing 82% of the population of the Region. Among the survey respondents, the country with the smallest population was Monaco (35 427 inhabitants); the country with the largest population was the Russian Federation (143 million inhabitants). The population data used to calculate the coverage of the responding countries on particular questions are based on the WHO/UNICEF Joint Monitoring Programme (JMP) data presenting the situation in 2011 (1).

¹ The WHO European Region comprises the following 53 countries: Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, the Netherlands, Norway, Poland, Portugal, the Republic of Moldova, Romania, the Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, the former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Ukraine, the United Kingdom of Great Britain and Northern Ireland and Uzbekistan.

Box 1. Overview of questionnaire distribution and responses

This assessment analysed 47 questionnaires returned from 43 countries: Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, the Netherlands, Norway, Poland, Portugal, the Republic of Moldova, Romania, the Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, the former Yugoslav Republic of Macedonia, Turkey and the United Kingdom. These included:

- 29 questionnaires from 26 European Union (EU) countries;
- 18 questionnaires from 17 non-EU countries.

Several countries returned more than one questionnaire.

- Armenia and Azerbaijan returned two questionnaires each; these were compiled into one questionnaire for each country for the assessment.
- Belgium returned two questionnaires for the regions of Wallonia and Flanders; both were analysed in the assessment.
- Bosnia and Herzegovina returned two questionnaires for the Republika Srpska and the Federation of Bosnia and Herzegovina; both were analysed in the assessment. In addition, one local community returned a questionnaire; this was not representative of the national situation and was therefore not included in the assessment.
- The United Kingdom returned three questionnaires for the regions of England and Wales, of Scotland and of Northern Ireland; all were analysed in the assessment.

The following 10 countries did not return the questionnaire: Albania, Bulgaria, Iceland, Israel, Italy, San Marino, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.



3. Methodology

In the analysis of the returned questionnaires the authors made the following choices and assumptions.

Where several responses were received from different regions for one country (in the cases of Belgium, Bosnia and Herzegovina and the United Kingdom; see also Box 1), they were analysed separately for the purposes of the assessment. Information provided for only one of the regions in any of these countries was considered to represent the situation in the entire country and was hence extrapolated, unless otherwise stated. Armenia and Azerbaijan returned two questionnaires each; these were compiled into one questionnaire for each country. If the two questionnaires from one country contained conflicting answers to a question, however, those responses were not included in the analysis.

Several respondents provided only part of the information requested. As a result, the assessment does not provide a full picture of the situation of all 43 responding countries for all questions.

The results presented in this report are based on the survey responses only; they have not been extrapolated to the number of people the resulting percentage would correspond to for the entire WHO European Region, unless otherwise stated.

It is assumed that information provided by respondents reflects the status at the time the response was given. So, the results presented in this report are for 2012–2013, unless otherwise stated.

The questionnaire provided a range of questions, the answers to which were requested as a mix of free text, tick-boxes and tables. In some questionnaires the respondents did not use the tick-boxes to indicate the answer but instead provided the information in supplementary text. In such cases the authors chose to interpret the data as though the box had been ticked, where possible. When an answer was not provided directly in the related text or table but was available in another section, the authors transferred the information to the relevant section. Where information provided appeared implausible (for example, if total numbers added up to more than 100%), unclear or not relevant within the scope of the survey, it was not further considered in the analysis.

To gather data about the numbers of small-scale water supplies in the Region, the survey's questions were structured around the following supply categories:

- individual supplies/supplies serving up to 50 people;
- supplies serving 51–500 people;
- supplies serving 501–5000 people.

Nevertheless, because of the differing definitions of small-scale water supplies, the questionnaire also enabled countries to provide information according to their defined supply categories or format (if no data could be provided according to the aforementioned categories). As a result, several answers expressed the size of the water supply as either the number of people served or the volume of water produced or distributed per day. In order to compare and plot the results, therefore, the following equivalence estimates were used:

- a supply serving up to 50 people is equivalent to one with a volume of up to 10 m³ per day;
- a supply serving 51–500 people is equivalent to one with a volume of over 10 m³ and up to 100 m³ per day;

- a supply serving 501–5000 people is equivalent to one with a volume of over 100 m³ and up to 1000 m³ per day.

Where information was provided in a category that only slightly differed from the category used in the questionnaire (such as for supplies serving 50–499 people instead of 51–500), it was interpreted as being the same category.

Where information was given, for example, about the number of people served by individual supplies, rural supplies, decentralized or non-piped supplies or supplies serving up to 50 people, all these types of supply were considered as the same category and the information was merged, unless otherwise stated.



4. Results of the assessment

4.1. Definitions and categories of small-scale water supplies

The term “small-scale water supply” is not defined or understood in a uniform way for the entire WHO European Region but differs from country to country. A definition of small-scale water supplies can be based on criteria such as the size of population served, quantity of water provided, number of households connected, type of management (by communities, public entities or individuals), piped or non-piped distribution, centralized or non-centralized and similar. For the assessment, the definitions provided in Box 2 were used. The questionnaires requested that information be given for these categories wherever possible, but also provided the option to give other definitions as used in the responding countries.

Box 2. Definitions of small-scale water supplies used in the survey

“Small-scale water supply” comprises all drinking-water supplies serving up to 5000 people or supplying less than 1000 m³ water per day. This category includes both individual supplies and small public supplies (see definitions below).

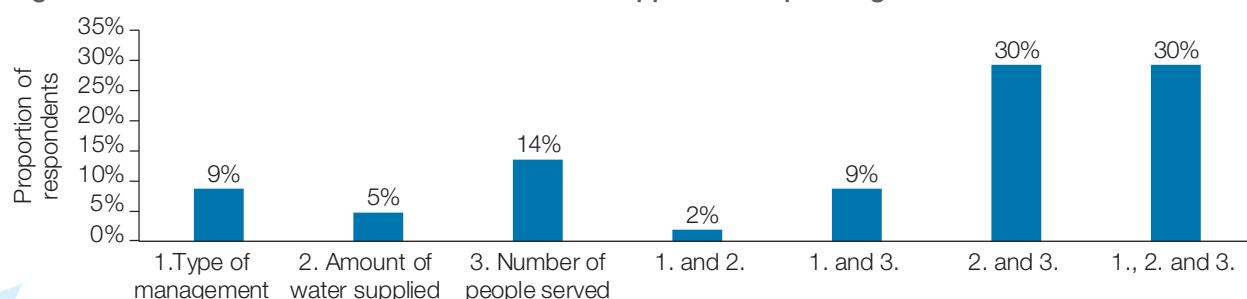
As to a “public supply”, piped drinking-water supplies or non-piped sources (such as public wells or springs) that are managed and operated by a distinct organized public or private entity. This may be a water utility, municipality, village community, association, joint board or cooperative, for example, that is specifically mandated with the task of drinking-water supply as one of its main tasks. Such supplies may also supply commercial premises (such as hotels, restaurants and food production sites) with drinking-water.

“Individual supply” comprises a groundwater well, spring source or surface water intake that typically supplies drinking-water to one or two premises only. Management of the supply is usually the responsibility of one individual who is not a water management professional. Individual supplies may also serve more than one or two premises (for example, in hamlets) and may supply commercial premises (such as hotels, restaurants and food production sites) with drinking-water.

The questionnaire asked respondents how small-scale water supplies were defined in their country, offering the choice of one or more of the following tick-boxes: “by type of management (public/individual supplies)”, “based on the amount of water supplied” and “based on the population served”.

Information on the definition of small-scale water supplies was provided in 43 questionnaires from 39 countries, representing 79% of the population of the WHO European Region. Definitions of small-scale water supplies are based on a combination of the type of management, amount of water supplied and number of people served in 72% of the responding countries (the precise combination differs from country to country). In about one third of the responding countries definitions are based only on one criterion: 14% indicated that the definition was based only on the number of people served, 9% that it was based only on the type of management and 5% that it was based only on the amount of supplied water (see Fig. 1).

Fig. 1. Bases for definitions of small-scale water supplies in responding countries



Several countries provided further details on the definitions used. In general, EU countries consider the supply small-scale when it serves fewer than 5000 people or has a size of up to 1000 m³ per day. A number of other approaches to defining the type of water supply are in use, resulting in other terms and categories for small water supplies (see Box 3).

Box 3. Examples of definitions and terms used for small-scale water supplies and types of management provided by selected countries

In **Belarus** the relevant law classifies supplies as centralized or non-centralized drinking-water supplies rather than referring to the number of people served or the amount of water supplied. “Non-piped drinking-water supplies” refers to a set of devices and structures (such as a dug well, borehole or standpipe) providing certain individuals or groups of consumers with drinking-water.

Belgium (Wallonia) stated that small-scale water supplies are all public supplies delivering less than 1000 m³ per day and serving fewer than 5000 inhabitants, as well as all “individual supplies” delivering more than 10 m³ per day or serving more than 50 inhabitants and drinking-water supplied in the context of a commercial or tourist activity. Consequently, individual supplies feeding one or two private premises are generally not considered water supplies.

In **Bosnia and Herzegovina (Republika Srpska)** small-scale water supplies are categorized as small village/rural/local water resources serving more than five households and supplying less than 5000 population equivalents of drinking-water (population equivalent is 120 litres per day).

Small-scale water supply systems in **Croatia**, known as local water supply systems, include those that deliver water to more than 50 people, are not registered and are not under regular sanitary inspection – these are managed by the residents. Public water supply systems include all those registered and under regular sanitary inspection; some serve fewer than 5000 inhabitants but are nevertheless not considered small-scale water supplies.

In **Ireland**, small-scale water supplies are categorized as follows.

- “Public water supplies” are schemes operated by the Water Services Authority.
- “Public group water schemes” are community-run schemes where the water is provided by the Water Services Authority but responsibility for distribution of the water rests with the group scheme.
- “Private group water schemes” are schemes where the owners of the community-run scheme source and distribute their own water.
- “Small private supplies” is a group of different types of supply comprising industrial water supplies and boreholes serving commercial premises (e.g. hotels) and public buildings (e.g. schools).
- “Exempted supplies” are those serving fewer than 50 people and not supplying water as part of a public or commercial activity. The majority of these are private wells serving individual houses.

In **Montenegro** water supply systems are defined by law in the following categories.

- A public water supply system comprises a set of interconnected technical and sanitary facilities and equipment, constructed for the supply of sanitary safe water to the public and industry in urban settlements.
- A regional water supply system supplies water to two or more settlements in the territory of two or more municipalities.
- A local water supply system supplies water to one or a group of houses or industries.
- A rural water supply system supplies water to a whole or part of rural settlement.

In the **Republic of Moldova** small-scale water supplies are defined as those providing less than 5 m³ per day or serving fewer than 50 people. This category includes departmental water supplies serving small businesses, small rural public water supplies, non-piped or non-centralized water supplies (wells and springs) and separate boreholes without a distribution network.

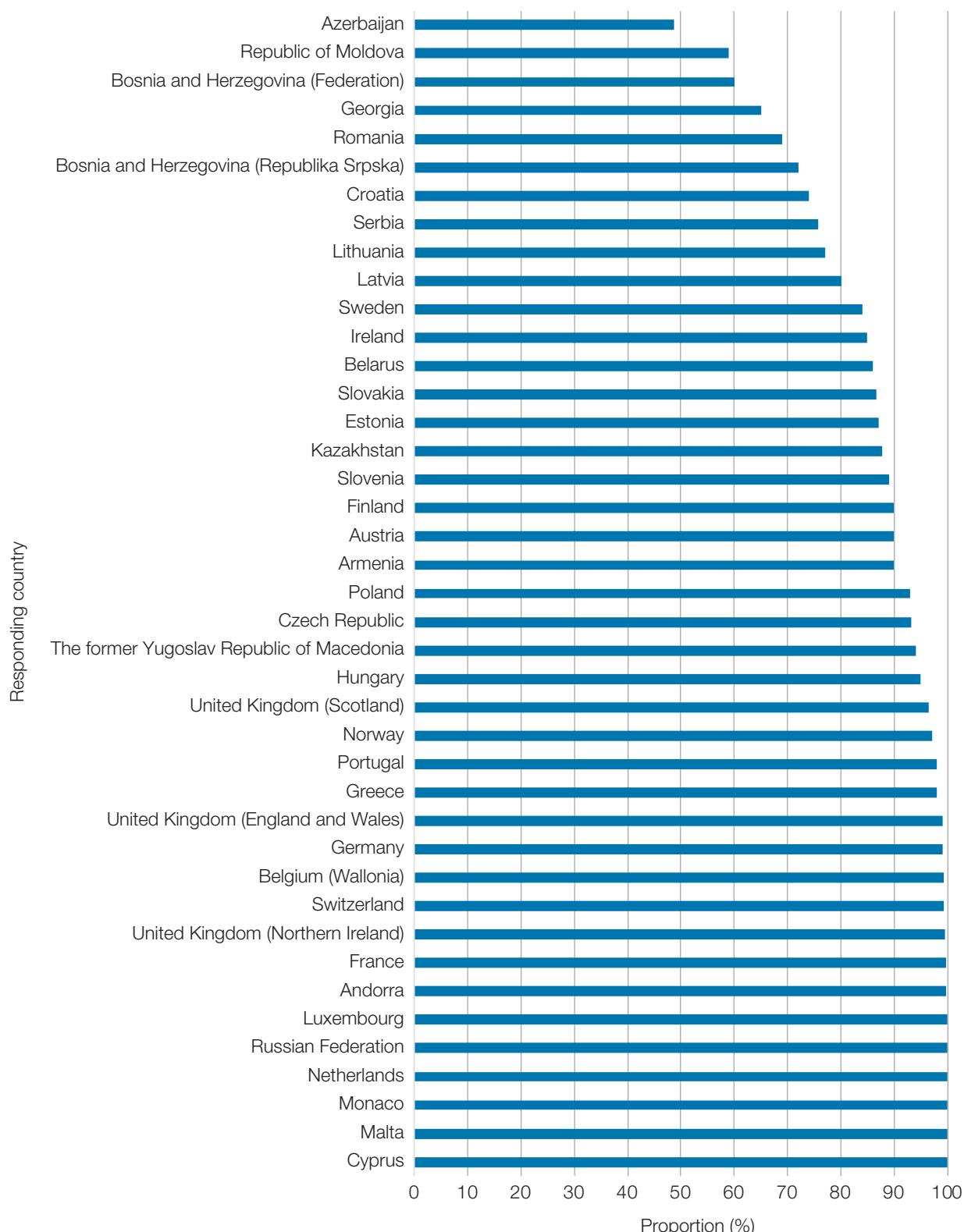
The **Russian Federation** categorizes small-scale water supplies as individual, non-piped and rural water pipes.

Serbia has no official definition of small-scale drinking-water supplies but classifies them by type of settlement and water facility. Thus, drinking-water supply systems that supply rural areas are small-scale/local water supplies and those supplying urban areas are central water supply systems.

4.2. Public water supply coverage

Information on the proportion of the population served by public water supplies (including large and small-scale supplies but excluding individual supplies) was provided by 41 questionnaires returned from 38 countries, representing 67% of the population of the WHO European Region. As shown in Fig. 2, the population served by public water supplies ranged between 49% in Azerbaijan to 100% in several responding countries.

Fig. 2. Proportion of population coverage by public supplies in responding countries



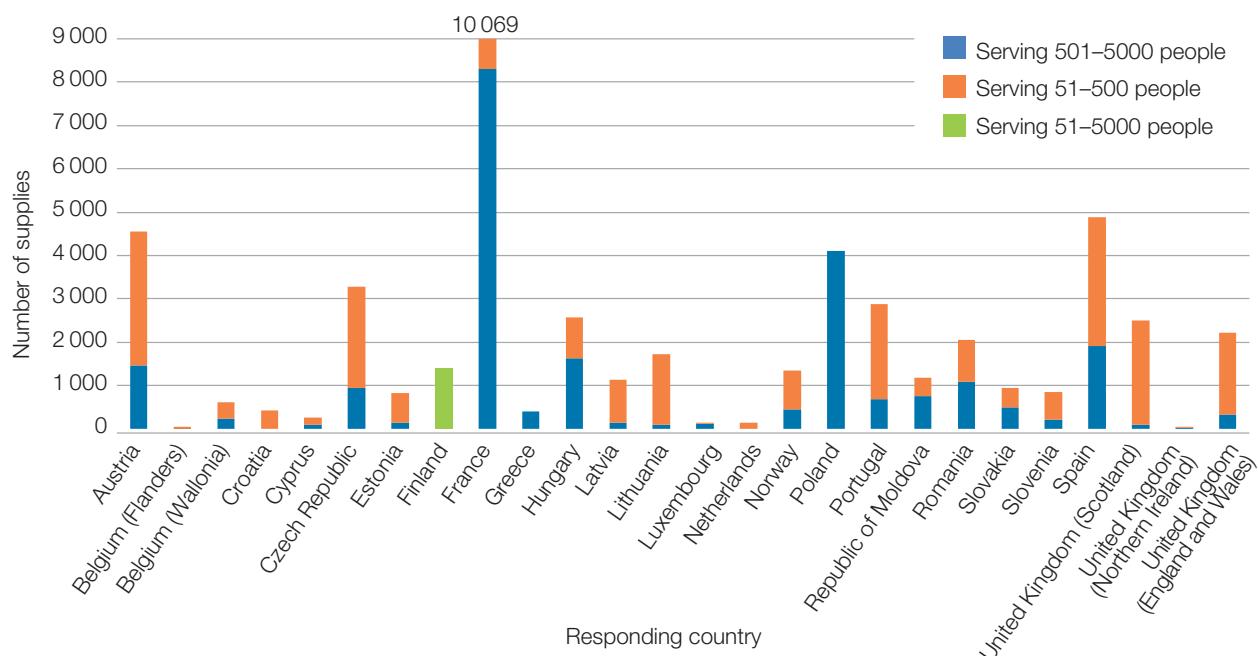
4.3. Prevalence of small-scale water supplies in the WHO European Region

4.3.1. Water supplies serving 51–5000 people

Information about the number of small-scale water supplies serving 51–500 people and/or 501–5000 people was provided by 27 questionnaires returned from 24 countries, representing 38% of the population of the WHO European Region (see Fig. 3).

The highest numbers of small-scale water supplies in these categories were presented by France, with 8294 supplies serving 501–5000 people and 10 069 supplies serving 51–500 people. Malta reported only one small-scale water supply serving 51–500 people and six serving 501–5000 people (these numbers are too low to appear in Fig. 3).

Fig. 3. Number of small-scale water supplies serving 51–5000 people in responding countries



4.3.2. People receiving water from supplies serving 51–5000 people

Information was provided on the number of people receiving their drinking-water from these supplies by 25 questionnaires returned from 22 countries, representing 36% of the population of the WHO European Region.

The assessment showed that in these countries a total of 52 million people (16% of the combined population) received water from 61 855 supplies serving 51–5000 people (see Table 1).

Table 1. Number and proportion of population receiving water from small-scale supplies serving 51–5000 people in responding countries

Water supply category	Total number of supplies	Total number of people served (millions)	Total population of the responding countries (millions)	Proportion of this population served (%)
Serving 501–5000 people	23 902	43	323	13
Serving 51–500 people	37 953	9		3
Total	61 855	52		16

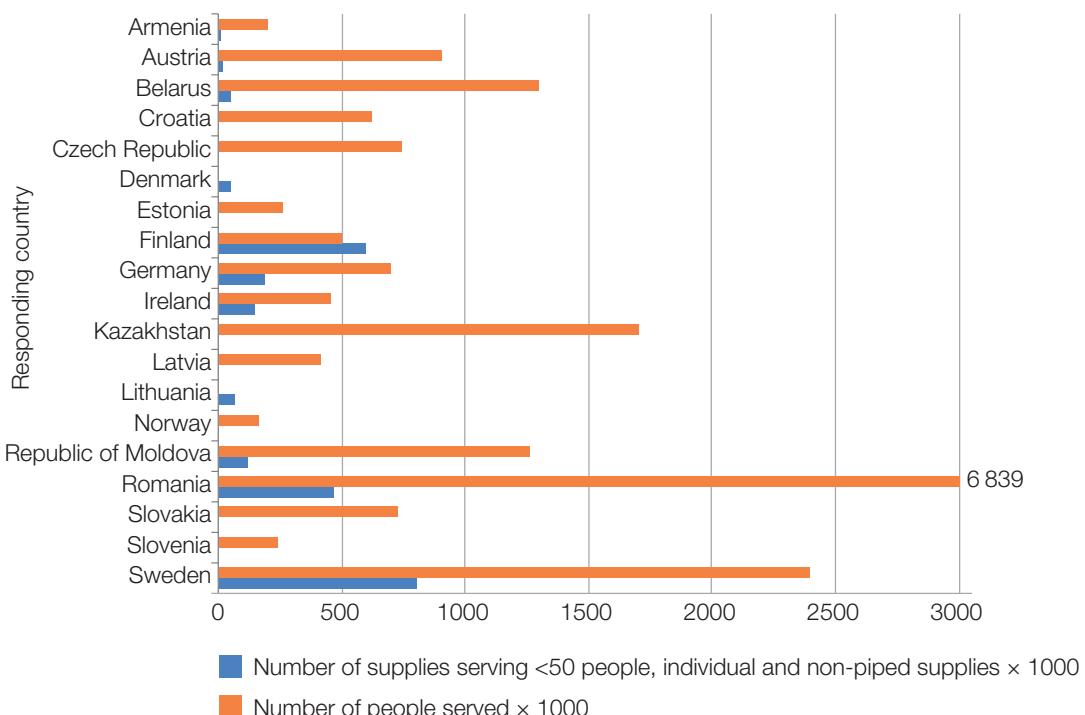
4.3.3. Individual and non-piped supplies and supplies serving up to 50 people

Information about the number of people receiving water from individual and non-piped supplies and supplies serving up to 50 people, and/or the number of such supplies, was provided by 28 questionnaires returned from 27 countries, representing 32% of the population of the WHO European Region.²

Among the responding countries, those with the highest numbers of population receiving water from this category of small-scale supplies were Romania with 7 million people and Kazakhstan and Sweden with approximately 2 million people each (see Fig. 4). Andorra and Luxembourg were the countries with the lowest numbers receiving water from this category, at 20 and 250 people respectively.

It was estimated that a total of 20 million people (7% of the population in the 27 responding countries) were served by individual and non-piped supplies and supplies serving up to 50 people.

Fig. 4. Number of individual, decentralized and local supplies and supplies serving up to 50 people; number of people receiving water from these supplies in responding countries



Note: Only countries reporting more than 150 000 people receiving water from this category of supply are included owing to the scale of data depicted. Furthermore, not all responding countries provided information about the number of related supplies.

4.3.4. Raw water sources used

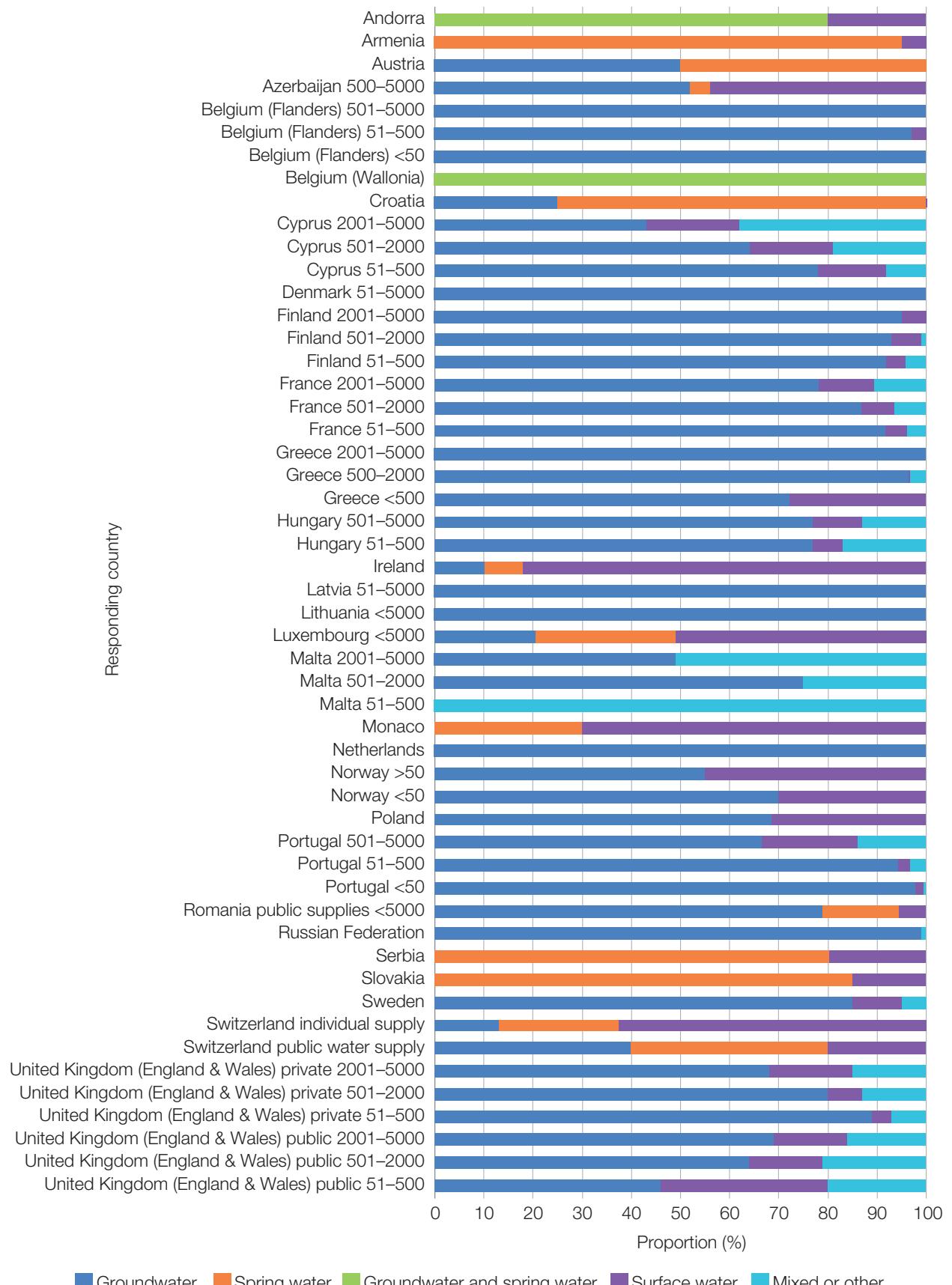
Information about the raw water sources used by small-scale (and/or all) water supplies was provided by 40 questionnaires returned from 37 countries, representing 71% of the population of the WHO European Region.

A wide variety of sources was observed among the countries (see Fig. 5). Groundwater was the most frequently used water source for small-scale water supplies. For 12 countries groundwater was the only or the main type of water source, while in some countries spring water or surface water were important sources.

² For the purposes of this part of the assessment, only the population of the United Kingdom regions Northern Ireland and Scotland was considered, as no information on the number of people served by individual supplies was provided by the England and Wales region.

Those countries that could not provide information about the sources used by small-scale supplies were asked to give information about the raw water sources used by all supplies.

Fig. 5. Raw water sources used in responding countries



4.4. Legal and regulatory requirements and responsibilities for the management of small-scale water supplies

4.4.1. Legal and regulatory requirements for drinking-water supplies

All questionnaires returned from the 43 countries, representing 82% of the population of the WHO European Region, provided information on the legislation and regulations applying to drinking-water supplies. Based on the information received, the regulatory requirements of the countries in the WHO European Region can be divided into two groups. The first group includes countries that are members of the EU, which have developed national legislation based on the EU Drinking Water Directive (7). The second group consists of non-EU members, including countries from the newly independent states,³ which reported several acts and orders, mainly established after 1990.

The EU Drinking Water Directive includes requirements for quality standards and the minimum frequency of sampling and analysing water intended for human consumption. The more drinking-water is distributed, the more sampling and analysis is required. It allows countries to exempt individual supplies providing less than 10 m³ of water per day or serving fewer than 50 people from some monitoring specifications, however, and therefore each country can decide whether or not to include individual supplies in regulations, unless they are used for commercial purposes.

All 29 questionnaires returned from the 26 responding EU countries, representing 49% of the population of the WHO European Region, reported that national legislation on drinking-water supplies exists. Of these 29 responses, two countries (the Czech Republic and Lithuania) listed a law in which drinking-water supply and wastewater management are jointly regulated.

All 18 questionnaires returned from the 17 responding non-EU countries, representing 33% of the population of the WHO European Region, also stated that legislative requirements, standards and “sanitary norms” on water supply were established. Several newly independent states presented laws or decrees addressing the sanitary and epidemiological well-being or hygienic welfare of the population.

4.4.2. Institutions responsible for regulating water supply

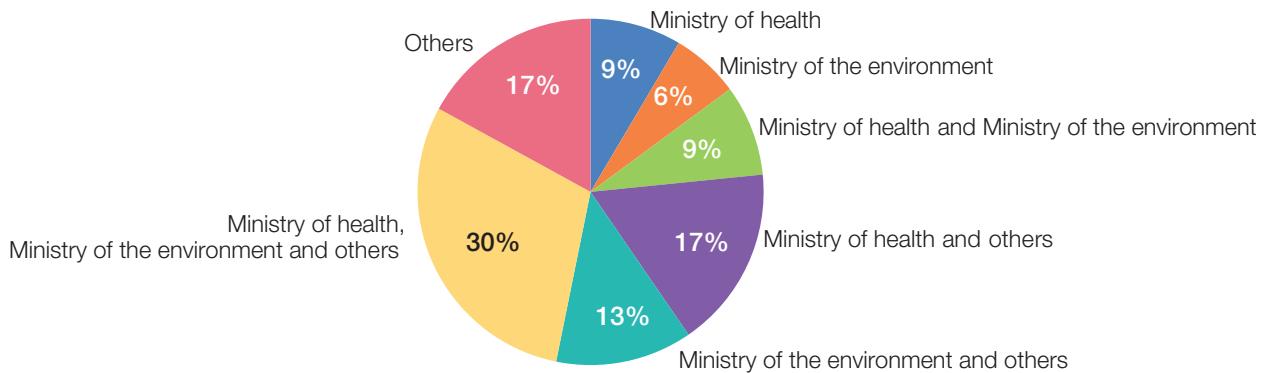
All questionnaires returned from the 43 responding countries, representing 82% of the population of the WHO European Region, provided information on the institutions responsible for regulating water supply. The responses indicated a broad diversity of responsible institutions.

While the majority of responding countries indicated that responsibilities were shared by several institutions, 19% of responses indicated that one institution had exclusive responsibility. Of the 47 responses, four indicated that the ministry of health alone and three indicated that the ministry of the environment alone was responsible for regulating the water supply. In 64% of the responses the ministry of health and in 57% the ministry of the environment had either shared or sole responsibility for regulating the water supply (see Fig. 6).

The questionnaires also mentioned a wide diversity of other stakeholders as legal actors (shown as “others” in Fig. 6). The next most frequently mentioned institution was the ministry of agriculture, in 28% of responding countries. Others included the State Committee for Water Management of the Ministry of Territorial Administration (Armenia), regional governments and the Ministry of Municipalities and Living Conditions (Belgium), the National Food Agency, governed by the Ministry of Rural Affairs (Sweden), and the Federal Ministry of Economics and Technology (Germany).

³ The newly independent states are Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Fig. 6. Institutions responsible for regulating water supply in responding countries



4.4.3. Legal and regulatory requirements for small-scale water supplies

On the question of how far legal and regulatory requirements apply to small-scale water supplies (individual and public supplies), information was provided by 45 questionnaires returned from 41 countries, representing 73% of the population of the WHO European Region.

Of the 45 responses:

- 87% indicated that all legal and regulatory requirements apply to public small-scale water supplies;
- 39% explicitly mentioned exemptions for supplies serving up to 50 people, mostly stating that this only refers to those not used for commercial purposes, or that separate legal requirements are in place for these supplies;
- 36% indicated that the legal and regulatory requirements for drinking-water also apply to individual water supplies, with some countries indicating that this only applies to individual supplies producing water for commercial activities;
- 18% indicated that none of the legal and regulatory requirements apply to individual supplies;
- only one country indicated that none of the requirements apply to public small-scale supplies.

4.4.4. Additional non-statutory guidance

Information on additional non-statutory guidance for small-scale water supplies was provided by 43 questionnaires from 39 countries, representing 71% of the population of the WHO European Region. Some of the non-statutory guidance addressed small-scale systems specifically, often addressing practical issues. Examples include:

- requirements for monitoring parameters;
- handbooks on providing reference standards;
- sanitary rules for wells, catchments and springs used for non-piped domestic and drinking-water supply;
- qualifications requirements for well-drillers;
- guidance documents for the preparation of rural water strategic plans and for treatment for group water schemes;
- information booklets and training for the efficient operation of small water supplies.

4.4.5. Source water protection measures

In 43 questionnaires returned from 40 countries, representing 73% of the population of the WHO European Region, information was provided on requirements for protection of water sources in small-scale water supply catchment areas. In many responses the information provided was rather general and referred to EU regulations (such as the EU Water Framework Directive (8)).

Regulations on source water protection measures in small-scale water supply catchment areas were reported to be in place in 86% of the responses; six countries (14%) indicated that no such regulations were available.

4.4.6. Requirements for qualifications and training programmes for operators

On the question of minimum qualifications or competence requirements for operators of small-scale public water supplies, information was provided by 42 questionnaires returned from 39 countries, representing 72% of the population of the WHO European Region.

Of the 42 questionnaires assessed, 52% of the responses indicated that minimum qualifications or competences were required for operators of small-scale public supplies and 48% indicated that no qualifications were required.

The questionnaire also asked whether any relevant qualifications or training programmes were available for operators of small public supplies. Of the 42 questionnaires assessed, 50% of the responses indicated that training programmes were available and 43% that this was not the case.

Of the 19 responses that indicated no minimum qualification or competence requirements for operators of small-scale supplies were in place, 42% mentioned that training programmes for operators were available.

4.5. Monitoring and inspection requirements for small-scale water supplies

Information about monitoring and inspection requirements for small-scale water supplies was provided by 44 questionnaires from 40 countries, representing 80% of the population of the WHO European Region. This included requirements for regular independent surveillance, including monitoring of drinking-water quality and/or sanitary inspections by mandated public health offices, and requirements for regular self-checking by operators.

The requirements reported were diverse (see Table 2). Of the 44 responses, 43% reported that both regular drinking-water quality monitoring and/or inspections by mandated surveillance agencies and self-checking by operators were required, and 11% reported both requirements only for certain categories of small-scale water supply. Only self-checking by operators was required in 14% of the responses and 5% indicated that neither independent drinking-water monitoring and/or inspection nor self-checking by operators was required.

Table 2. Surveillance requirements for small-scale water supplies in responding countries

Surveillance requirements in small systems		Proportion (%)
Regular independent drinking-water quality monitoring and/or sanitary inspection	Regular self-checking by operators	
Yes	Yes	43
Yes (only for certain categories of small-scale water supply)	Yes (only for certain categories of small-scale water supply)	11
Yes	No	14
No	Yes	11
Yes (only for certain categories of small-scale water supply)	Yes	11
Yes	Yes (only for certain categories of small-scale water supply)	5
No	No	5

Of the responses indicating that independent surveillance was conducted, 32 provided information on payment of the costs of monitoring and/or sanitary inspection. In 48% of these, the authority paid such costs; in 33% the operator paid; and in 18% the authority and the operator shared payment.

4.6. Water quality monitoring in small-scale water supplies

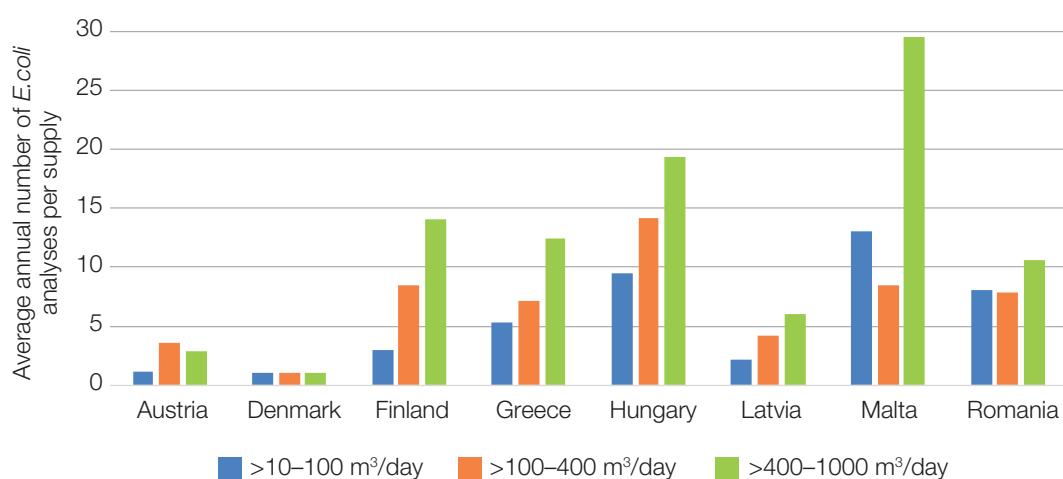
Information on drinking-water quality was provided by 38 questionnaires from 36 countries, representing 70% of the population of the WHO European Region. Since they were required to report on small-scale water supplies to the European Commission in 2012, most EU countries were able to provide information (derived mainly from 2010) about the frequency of analyses, the parameters analysed and the level of compliance with national standards per supply category for public small-scale water supplies serving up to 5000 people. Other, particularly non-EU, responses provided water quality data using other supply categories and years, ranging from 2008 to 2012.

The information provided shows that, at least at the national level, sufficient data are not typically available to facilitate easy comparison of parameters and compliance with national standards in different sizes of water supply throughout the WHO European Region.

Of the 38 questionnaires, 37 indicated either the number of supplies analysed or the number of analyses conducted, or gave information on both. In eight responses information was provided about the number of supplies analysed and the number of *Escherichia coli* (*E. coli*) analyses for three categories of supply. Of these countries, Austria had the highest number of analysed supplies, with 4560, and Malta had the lowest number of analysed supplies, with seven. Other analysed parameters were also presented but less consistently, so this assessment report only provides information on sampling frequency for *E. coli*.

Based on the number of supplies analysed and the number of *E. coli* analyses reported, average annual *E. coli* monitoring frequencies were estimated for eight countries and for three categories of supply. The frequency of analysis of *E. coli* differed from country to country and for the three categories of supply. Although there were exceptions, it was generally observed that the smaller the size of the supply, the fewer analyses were conducted (see Fig. 7).

Fig. 7. Frequency of *E. coli* monitoring in water from three categories of small-scale water supply in responding countries in 2010



Note: In Greece the smallest size category is defined not as >10–100 m³/day but as 0–100 m³/day.

4.6.1. Water quality of supplies delivering over 10 m³ and up to 1000 m³ per day or serving 51–5000 people

Owing to the different classifications and/or definitions of small-scale supplies used in the WHO European Region, the information in this section concerns mainly EU countries presenting information about the water quality of different categories of small-scale water supplies.

As outlined in section 4.1, several non-EU countries classify small-scale water supplies as, for example, non-piped (non-centralized), rural or local supplies. Hence, only limited information was available from these countries about the water quality of a particular size of centralized small-scale water supply.

4.6.1.1. Compliance for microbiological parameters

Information regarding the occurrence of *E. coli* was often combined with information about the occurrence of enterococci, and the levels of compliance with national standards for both indicators were mostly more or less the same for the specified size of supply. Overall, information provided on compliance with national standards on microbiological parameters in small-scale water supply sizes serving 51–5000 people, or a subcategory thereof, ranged from 40% to 100%.

Of the 18 countries and regions shown in Fig. 8, the level of compliance with national standards for *E. coli* and/or enterococci was less than 90% for the relevant supply category in only four countries. In the remaining cases, the level was between 90% and 100%.

Because of differing or unknown supply sizes, diverse information received from other countries about the level of microbiological compliance with national standards could not be included in Fig. 8 and is therefore summarized in Table 3. Although not all countries listed in Table 3 strictly reported on supplies serving 51–5000 people, for the purpose of this analysis it has been assumed that the types of supply reported were likely to fall within this category, even though the upper and lower boundaries may not be fully met.

Table 3. Compliance with national standards for microbiological parameters in small-scale water supplies serving 51–5000 people in responding countries

Country	Number of people served or type of supply	Parameter	Year	Level of compliance (%)	Number of supplies	Number of analyses
Water supplies serving up to 5000 people						
Azerbaijan	501–5000	<i>E. coli</i>	2010	90	2207	2873
Croatia	51–5000	Faecal coliforms	2008	68	443	538
		Total coliforms	2008	40	443	538
Luxembourg	<5000 people	<i>E. coli</i>	2010	100	135	846
Poland ^a	501–5000	<i>E. coli</i>	2011	100	4063	8126
		Enterococci	2011			
Water supplies with other definitions						
Andorra	No information about size of supplies	<i>E. coli</i>	2011	99	14	209
		Sulfur-reducing bacteria	2011	100	14	209

Table 3 continued

Country	Number of people served or type of supply	Parameter	Year	Level of compliance (%)	Number of supplies	Number of analyses
Ireland	Private group water schemes	<i>E. coli</i>	2010	96	484	1777
		Enterococci	2010	98	261	340
		Coliform bacteria	2010	88	484	1768
		Colony count at 22° C	2010	92	149	176
		Enterococci	2010	99	135	871
Norway	>50 people	<i>E. coli</i>	2011	99	1481	44 740
		Enterococci	2011	99	1330	15 367
Republic of Moldova	Rural public water supplies	<i>E. coli</i>	2011	96		
		Enterococci	2011	97	762	No data
		Total coliforms	2011	96		
Serbia	Local public water supplies	Microbiological quality	2011	80	2090	19 480
The former Yugoslav Republic of Macedonia	No information about size of supplies	<i>E. coli</i>	2011–2012	84	No data	433
		Enterococci	2011–2012	95	No data	434

^a Results of the level of compliance of the two parameters are not available separately.

4.6.1.2. Compliance for chemical parameters

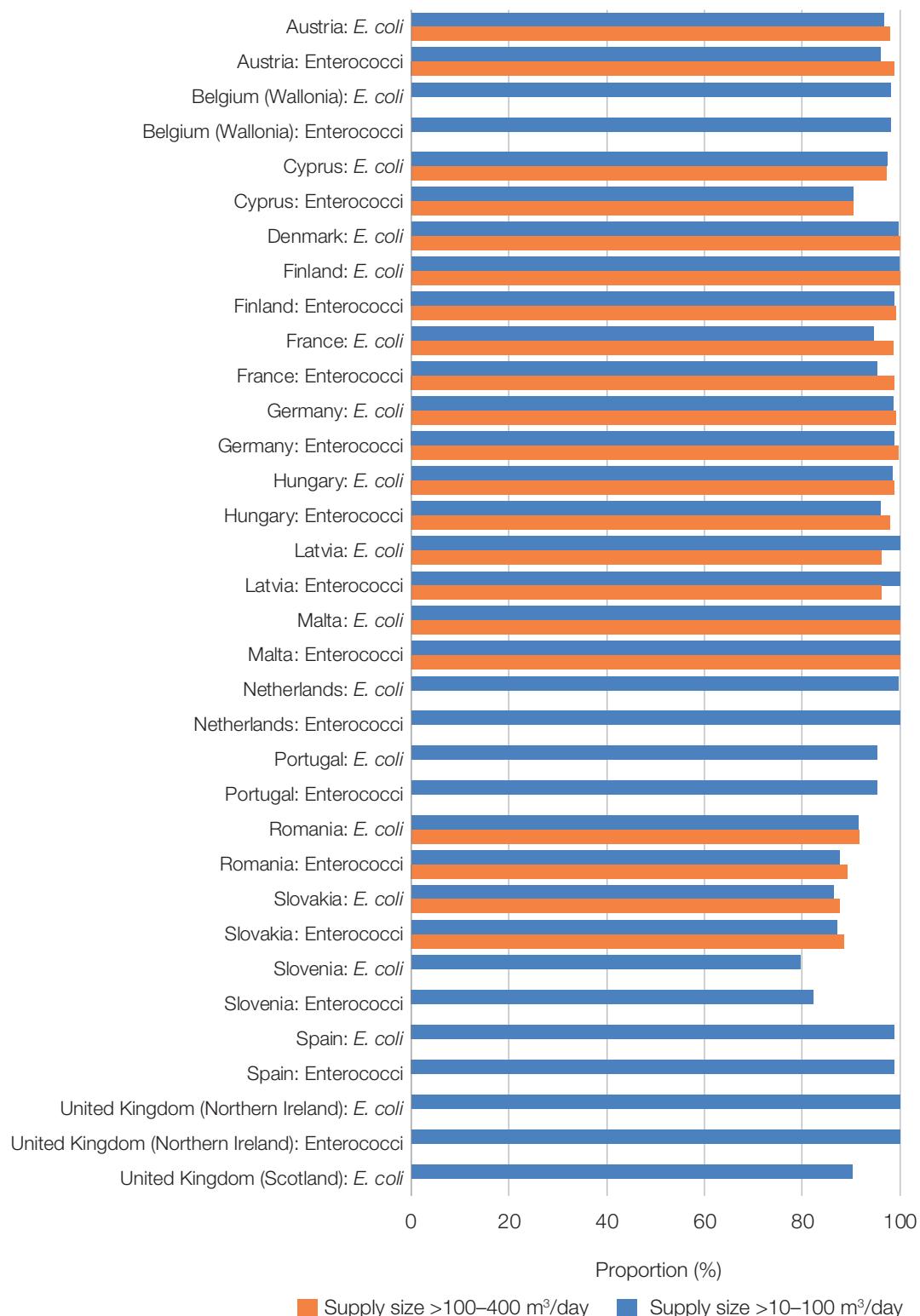
Information on compliance with national standards for chemical parameters was primarily reported for arsenic, fluoride, iron, nitrate and manganese. The number and types of parameter and the categories for which they were reported, however, differed significantly between countries and were abundant. As a result, no comprehensive European Region-wide overview of the situation regarding compliance with national standards for chemical parameters or comparison of compliance levels in small and larger systems could be drawn from the data provided.

An overview follows of the 25 respondents reporting the level of compliance with national standards for chemical parameters for supplies with a size over 10 m³ and up to 1000 m³ per day. For this overview, however, it should be noted that the number of analysed and reported chemical parameters ranged from 3 to over 100, the number of analysed samples from 1 to over 10 000 and the number of supplies monitored from 1 to more than 4000. Of these 25 responses:

- 24% reported a level of compliance between 95% and 100% for all analysed parameters in all size categories;
- 20% reported a level of compliance of less than 95% but more than 90% for one or more chemical parameters in one or more of the size categories;
- 56% reported a level of compliance of less than 90% for one or more chemical parameters in one or more of the size categories.

According to the information provided, chemical parameters with a level of compliance with national standards of less than 90% included:

Fig. 8. Proportions of compliance with national standards for *E. coli* and enterococci in supply sizes >10–100 m³/day and >100–400 m³/day in responding countries



Note: the data presented in this figure originate from 2009, 2010 or 2011, depending on the country; the year of the data from Romania was not specified.

- ammonium, nitrate and/or nitrite in Croatia, Denmark, Estonia, Hungary, Latvia, Romania and Slovenia;
- fluoride in Estonia and Slovenia;
- arsenic in Hungary;
- manganese and/or iron in Croatia, Denmark, Estonia, Hungary, Latvia, Romania, Slovakia and the United Kingdom (Northern Ireland);
- sodium in Malta.

4.6.2. Compliance for individual, decentralized and local supplies and supplies serving up to 50 people

Information about the quality of individual, decentralized and local supplies and supplies serving up to 50 people was provided by nine questionnaires returned from eight countries (see Tables 4 and 5), representing 18% of the population of the WHO European Region.

4.6.2.1. Compliance for microbiological parameters

The parameters and types of supply presented reflect the information and terms given by the respective countries as far as possible. Spain reported the highest levels of compliance with national standards for *E. coli* and enterococci (98% each); for other countries the levels of compliance with national standards for microbiological indicators ranged from 58% to 96%.

Table 4. Compliance with national standards for microbiological parameters for individual, decentralized and local supplies and supplies serving up to 50 people in responding countries

Country	Parameter	Year	Type of supply	Number of supplies analysed	Level of compliance (%)
Belarus	Microbiological analysis	2011	Non-centralized supplies	No data	90
Bosnia and Herzegovina (Republika Srpska)	Microbiological parameter	2010	Local supplies	1876	73
Ireland	<i>E. coli</i>	2010	Small private supplies	972	95
	Enterococci	2010		467	93
	Coliform bacteria	2010		974	76
Portugal	<i>E. coli</i>	2011	<50 people	1012	95
	Enterococi	2011		1011	95
	Coliform bacteria	2011		1012	90
Republic of Moldova	<i>E. coli</i>	2011	Non-piped water supplies		90
	Enterococci	2011		No information	92
	Total coliform	2011			86
Romania	<i>E. coli</i>	2010	Public and individual wells	6030	69
	Enterococci	2010		5988	65
	Coliform bacteria	2010		5462	60

Table 4 continued

Country	Parameter	Year	Type of supply	Number of supplies analysed	Level of compliance (%)
Russian Federation	Microbiological indicators	2010	Non-piped rural supplies	99 645	77
Spain	<i>E. coli</i>	2010	≤ 50 people	793	98
	Enterococci	2010		295	98
United Kingdom (Northern Ireland)	<i>E. coli</i>	2010	<50 people	56	80
	Enterococci	2010		56	82
United Kingdom (Scotland)	<i>E. coli</i>	2011	<50 people	1302	78
	Coliform bacteria	2011		1307	58

4.6.2.2. Compliance for chemical parameters

The information available on the levels of compliance with national standards for chemical parameters in water supplies serving up to 50 people, local, non-piped and decentralized supplies or wells is summarized in Table 5. The parameters shown in the table represent a selection of the reported parameters in order to facilitate comparability as far as possible.

Table 5. Compliance with national standards for chemical parameters for individual, decentralized and local supplies and supplies serving up to 50 people in responding countries

Country	Parameter	Year	Type of supply	Number of supplies analysed	Level of compliance (%)
Belarus	Arsenic	2011	Non-centralized water supplies	132	96
	Fluoride	2011		442	99
	Iron	2011		2508	95
	Manganese	2011		1588	98
	Nitrate	2011		18 039	75
Bosnia and Herzegovina (Republika Srpska)	Physicochemical parameter	2010	Local supplies	1876	95
Ireland	Arsenic	2010	Small private supplies	113	98
	Fluoride	2010		37	100
	Iron	2010		701	94
	Manganese	2010		437	87
	Nitrate	2010		644	99
	Trihalomethanes (total)	2010		11	83

Table 5 continued

Country	Parameter	Year	Type of supply	Number of supplies analysed	Level of compliance (%)
Romania	Ammonium	2010	Public and individual wells	5195	89
	Arsenic	2010		118	87
	Iron	2010		1496	93
	Manganese	2010		647	93
	Nitrate	2010		6698	69
Portugal	Arsenic	2011	<50 people	854	97
	Fluoride	2011		807	100
	Iron	2011		927	92
	Manganese	2011		1012	93
	Nitrate	2011		1011	99
Russian Federation	Sanitary and chemical indicators	2010	Non-piped rural supplies	99 645	73
Spain	Arsenic	2010	<50 people	294	97
	Fluoride	2010		298	100
	Iron	2010		453	99
	Manganese	2010		319	99
	Nitrate	2010		322	96
United Kingdom (Northern Ireland)	Arsenic	2010	<50 people	35	100
	Fluoride	2010		35	100
	Iron	2010		35	97
	Manganese	2010		35	74
	Nitrate	2010		35	100
	Trihalomethane	2010		35	100
United Kingdom (Scotland)	Aluminium	2011	<50 people	91	91
	Iron	2011		661	88
	Lead	2011		1034	93
	Manganese	2011		640	91
	Trihalomethane	2011		10	100

4.6.3. Requirements for reporting drinking-water quality

On the question of the regular reporting required at the national level on drinking-water quality for small-scale water supplies, information was provided by 45 questionnaires returned from 41 countries, representing 81% of the population of the WHO European Region.

Of these, 35 questionnaires from 32 countries indicated that regular reporting was required for small-scale water supplies and 10 questionnaires from 10 countries indicated that there was no obligation to report the drinking-water quality of small-scale water supplies. One country answered that reporting is practised at the communal level (among clusters of villages with common administration), and another answered that mechanisms for reporting were established but that the data were not made public.

Several responses mentioned that they fulfilled the reporting obligations of the EU Drinking Water Directive. According to the Directive, these reports “shall include, as a minimum, all individual supplies of water exceeding 1000 m³ a day as an average or serving more than 5000 people”, and “each Member State shall publish a report every three years on the quality of water intended for human consumption with the objective of informing consumers”. The EU also required additional reports in 2010 and 2012 on small-scale water supplies serving more than 500 people.

4.7. Data on outbreaks specifically related to small-scale supplies

On the question of epidemiological data indicating outbreaks specifically related to small-scale water supplies, information was provided by 43 questionnaires returned from 39 countries, representing 80% of the population of the WHO European Region. Of these, 53% indicated that epidemiological data exist on outbreaks of water-related diseases specifically related to small-scale water supplies, while 47% indicated that no such information exists.

In general, only limited information was provided about the numbers and types of water-related disease outbreaks registered (or reported) in small-scale water supply areas. Box 4 provides examples of outbreaks reported by countries in the survey.

Box 4. Examples of reported outbreaks of water-related disease for small-scale water supplies in responding countries

In **Croatia**, between 2000 and 2011, four waterborne outbreaks related to small-scale water supplies were reported to the National Institute of Public Health. In total, 305 people were affected by these outbreaks with norovirus, rotavirus, *Shigella* and *Aeromonas* as the causative agents.

In the **Czech Republic**, in the period 1995–2005, 27 outbreaks from drinking-water with 1489 cases were reported. Four outbreaks were reported from public supplies serving between 63 and 6000 people with a total number of 365 cases; nine outbreaks were reported from private wells. Disease outcomes reported included viral hepatitis A, shigellosis, salmonellosis and tularemia.

In **Estonia**, no outbreaks in small-scale water supplies were reported between 1996 and 2012.

In **Hungary**, one outbreak was identified in 2008, in which 600 cases were detected in a community of about 3000 inhabitants. Drinking-water was supplied by a public provider and norovirus was identified as the etiological agent.

In **Latvia**, one outbreak was reported with 28 illnesses related to an incident in a small-scale water supply. Rotavirus was detected as causative agent.

In **Lithuania**, over the five years prior to the survey, three *Shigella* outbreaks were reported with 12 affected people, possibly linked to small-scale water supplies.

In the **Republic of Moldova**, no outbreaks of water-related diseases were registered in 2009–2012. The latest outbreak was registered in 2007 in the village of Tomai in the Chadyr-Lunga district, with 188 cases of dysentery due to contaminated water.

In **Sweden**, the Swedish Institute for Communicable Disease Control produced a report on waterborne outbreaks for 1992–2011. Outbreaks related to both large and small-scale, public and private water supplies were included. In total 29% of the outbreaks (n=23) were related to supplies <10 m³ (private, single households).

5. Summary and conclusions

Many small-scale water supplies exist in the WHO European Region, particularly in rural areas. To improve the evidence base on small-scale water supplies and to gain a better overview of the status quo throughout the Region, a survey requesting country-specific information was undertaken in 2012–2013 under the Protocol on Water and Health. The outcomes of the assessment are intended to inform policy-making and the formulation of intervention strategies within the Region and to help identify further action under the Protocol.

The assessment covered 43 of the 53 countries in the WHO European Region, representing 82% of the total population of the Region. Despite the high response rate, in several answers the requested information was provided only partly or insufficiently. This is a reflection of the often limited availability or reliability of data at the national level, which depends on adequate registration and monitoring of small-scale water supplies, among others. In particular, information about individual/non-piped supplies or supplies serving up to 50 people was often not available.

Two main approaches were used in defining small-scale water supplies in the WHO European Region. The majority of the newly independent states differentiated between piped and non-piped, centralized and decentralized, and local and urban supplies. EU countries, on the other hand, typically based their definition of small-scale water supplies on the amount of water supplied or the number of people served.

Small-scale systems, including individual supplies, are an important pillar of the water supplies in the WHO European Region. Approximately 23% of the population of the Region, or an estimated 207 million people, receive their water from such systems (Table 6). This is a significant proportion of the population of the Region, which should enjoy the same right to access to safe water services as those receiving drinking-water from larger supplies.

Table 6. Estimated population served by small-scale water supplies in the WHO European Region

Category of small-scale water supply	Proportion of population served by small-scale systems according to survey responses (%)	Estimated population of the Region served (millions)
Population served by individual and non-piped supplies or supplies serving ≤50 people ($\leq 10 \text{ m}^3/\text{day}$)	7	63
Population served by supplies serving 51–5000 people ($> 10\text{--}1000 \text{ m}^3/\text{day}$)	16	144
Total	23	207

Note: the estimated population number is based on extrapolation from the survey findings on the assumption that the proportion of the population served by small-scale systems is applicable to the entire population of the Region.

In the majority of countries, existing legislation and regulations on drinking-water typically also applied to small-scale public water supplies, as indicated by 87% of the questionnaires returned. With

respect to individual water supplies, however, this was only the case in 36% of the responses, and in some cases only for those supplies producing water for commercial activity.

In 19% of the responses responsibility for regulating water supplies lay with a single institution. Co-ordination with other sectors is crucial in order to ensure consideration of prevailing issues relevant to safe management of small-scale water supplies, such as sanitation or agriculture. National legislation and regulations should consider small-scale water supplies and enable their particularities to be addressed. This might include, for example, specific provisions for individual supplies, monitoring and surveillance requirements and/or operator qualification requirements.

No minimum qualifications or competences were required for operators of small public supplies according to 48% of the responses. This supports the hypothesis that small-scale systems are often operated by non-professionals who may require external support and guidance on how to operate the systems safely.

A combination of independent surveillance for small-scale water supplies by responsible authorities and self-checking by operators was required in less than half of the responding countries and regions. However, 5% of the responses indicated that neither independent surveillance nor self-checking of the drinking-water quality and sanitary conditions of the supplies was required; 11% indicated that only self-checking by the operators was required.

These findings indicate that only limited information is available to responsible authorities on the supplies for which no such legal obligation exists, and that water quality monitoring activities and possibilities may be limited in many rural regions, particularly in those where individual, local, rural or non-piped supplies prevail. This is also confirmed by the fact that many questionnaires contained only incomplete or no information about the level of compliance with national standards for drinking-water quality.

Information provided on compliance with national standards on microbiological parameters in small-scale water supply sizes serving 51–5000 people, or a subcategory thereof, ranged from 40% to 100%. For individual, decentralized and local supplies and supplies serving up to 50 people, compliance rates with microbiological standards ranged between 58% and 95% among responding countries, depending on supply types and parameters investigated. For chemical parameters, compliance rates lower than 90% in supplies serving 51–5000 people include ammonium, manganese, iron and nitrate/nitrite for a broad range of countries, whereas for arsenic, fluoride and sodium only one or two countries reported such levels of noncompliance.

The results of the survey reveal that comprehensive information on small-scale water supplies is typically not readily available at the national level across the Region, which hampers systematic assessment of the prevailing conditions. Establishing routine data collection mechanisms for small-scale water supplies would improve the evidence base and thus support prioritizing improvements – for example, focusing attention on the supplies showing the highest levels of noncompliance.

Where one is not yet in place, establishing a national register of small-scale water supplies could be a first step to improving the evidence base. Conducting a nationally representative rapid assessment of small-scale water supplies provides a snapshot of prevailing sanitary risk factors and water quality parameters of concern, the results of which can inform targeted intervention strategies and programmes. Such systematic assessments also support baseline analysis and target setting under the provisions of article 7 of the Protocol on Water and Health (5).

Targets aiming to improve the situation of small-scale water supplies may include, but are not limited to:

- issuing or updating enforceable legislation and regulations to address small-scale water supplies specifically;
- specifying qualification or training requirements for operators of small-scale water supplies, and providing them with external support and guidance;
- introducing a risk-based approach in surveillance of small-scale water supplies to allow for resource-effective water quality monitoring and inspection activities reflecting prevailing conditions and priorities; and
- promoting safe management of small-scale water supplies, including establishing the WHO-recommended water safety plan approach (9).

Detailed information on how such action can be taken, as well as examples of how countries from the Region have taken measures towards improving small-scale systems, can be found in the publication *Taking policy action to improve small-scale water supply and sanitation systems* (6).



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Annex 1. Questionnaire distributed in June 2012

Background

The overall aim of this survey is to improve the evidence base on the current status of small-scale water supplies (SSWS) in the pan-European region. This survey is part of the Work Programme 2011–2013 of the Protocol on Water and Health (http://www.unece.org/fileadmin/DAM/env/documents/2010/wat/MP_WH/wh/ECE.MP.WH.4.Add.1_submitted.pdf). Through systematic data collection, this questionnaire shall improve current knowledge on the number and status of small-scale water supplies, including data on drinking water quality and regulatory information. Addressees of the survey are countries from within the entire pan-European region which are Parties to the Protocol but also non-Parties. The objective of the survey is NOT to compare the situation in single countries against a defined ideal state but to get an overview of the status quo throughout the region.

As contribution to the previous Programme of Work 2007–2009 of the Protocol, the Federal Environment Agency (UBA), WHO Collaborating Centre for Research on Drinking Water Hygiene, Germany, hosted a workshop on Water Safety in Small Scale Water Supplies in the European Region: Common Challenges and Needs (Bad Elster, 26–27 November 2008). Based on the workshop recommendations and outcomes, UBA together with WHO and UNECE developed the awareness-raising document *Small-scale water supplies in the pan-European region: Background, challenges, improvements* (<http://www.euro.who.int/en/health-topics/environment-and-health/water-and-sanitation/publications/2011/small-scale-water-supplies-in-the-pan-european-region.-background.-challenges.-improvements>). As part of this document, data on the current evidence base was collected. Whereas data were provided from numerous countries, however, they proved to be not systematic and not easy to be compared.

At this stage, there is no established (mandatory) mechanism within the pan-European region which facilitates systematic collection of information on small-scale water supplies. For successfully rolling-out this exercise, we therefore rely on you as the focal point of a Party to the Protocol or representative of a WHO country office, on your input and cooperation, and we are grateful for your support of this exercise.

The results of this questionnaire will be used and published within the context of the Protocol on Water and Health. They will notably feed into a policy guidance document on small-scale water supplies in the pan-European region which is currently being developed as part of the Protocol's Programme of Work. Participation in this survey implies agreement with the making public of the information provided by the questionnaire in a consolidated format, its usage and analysis for the preparation of the policy guidance document.

Completing this questionnaire is an exercise likely requiring intersectoral collaboration in the countries, particularly between national and regional authorities, as well as between authorities of the health and environmental sector. You are therefore invited to consult with your respective colleagues to fill in the information.

The following sections of the questionnaire include questions for which the answers can be included in the cells/tick boxes in the respective sections, as well as open questions asking for explanatory text. Please feel free to use additional pages for answering the questions, if required. You are wel-

come to type the information into the electronic file. For each of the sections II – V, please indicate when requested in the tick boxes whether national data on this area is available.

In case you have data available for your country which does not relate to the categories requested in this questionnaire, or only for parts of your country (e.g. from studies targeted at a limited area or a limited number of supply categories etc.) please do not hesitate to provide this information separately and specify the kind of supplies and conditions this information refers to.

Definitions

For the purpose of this questionnaire, the following definitions apply.

- **Small-scale water supply (SSWS)** means all drinking-water supplies serving less than 5,000 persons or supplying less than 1,000 m³ water per day; this category includes both “individual supplies” and small “public supplies” (as per definitions below).
- **Public water supply** means piped drinking-water supplies or non-piped sources (e.g. public wells or springs) which are managed and operated by a distinct “organized” public or private entity, such as water utilities, municipalities, village communities, associations, joint boards or cooperatives, for example, and which are specifically mandated with the task of drinking-water supply as one of their main tasks and which typically employ staff that has a minimum level of professional training. Typically such supplies serve more than 1–2 premises. They may also supply commercial premises (e.g. hotels, restaurants, food production) with drinking-water.
- **Individual supply** means groundwater well or spring source or surface water intake supplying drinking-water to typically 1–2 premises. The supply is typically managed by one individual in his/her own responsibility who is not a water professional. Individual supplies may also serve more than 1–2 premises (e.g. in hamlets). They may also supply commercial premises (e.g. hotels, restaurants, food production) with drinking-water.

Please note that the definitions above are intended to guide understanding and completion of this questionnaire. However, we do appreciate the fact that definitions of small-scale water supplies may vary significantly in the different countries. Therefore you are welcome to specify precise definitions of small-scale water supplies applicable in your country in section I C below.

I. Regulations

I.A What legislation and regulations apply in your country to drinking-water supplies (e.g. regarding quality of drinking-water, surveillance, management, protection of drinking-water resources)? Please name the specific legislation or regulation.

I.B Which institution(s) are responsible for regulating water supply in your country?

- Ministry of health Ministry of environment Other

Please specify "Other". Please specify the responsibilities of the different institutions, and approach of coordination between them.

I.C How are small-scale drinking water supplies defined in your country (several of the following tick boxes may apply)?

- By type of management (public / individual supplies)
- Based on the amount of water supplied
- Based on the population served

Please specify details and give the definitions for small-scale water supply categories.

I.D Please specify in how far legal and regulatory requirements (see I.A) also apply to small-scale water supplies (i.e. individual or public water supplies)?

- All requirements apply to public small-scale water supplies
- All requirements apply to individual supplies
- None of the requirements apply to public small-scale water supplies
- None of the requirements apply to individual supplies
- The following requirements do NOT apply to small-scale water supplies (*please specify*):

I.E In addition to legislation and regulations, what other, non-statutory guidance is in place in your country relevant to drinking-water supply (e.g. technical standards, codes of good practice)? Please name the specific guidance materials.

I.F Is regular independent drinking-water quality monitoring and/or sanitary inspection required for small-scale water supplies (e.g. by mandated public health offices)?

Yes No Only for certain categories of SSWS

Please specify below for which categories monitoring/inspection is required.

Please specify requirements per supply category in terms of

- a) Water quality parameters to be monitored and monitoring frequency
- b) Sanitary inspections¹ and their frequency
- c) Authority responsible for the surveillance

Who pays for the surveillance?

Authority Operator

I.G Is regular self-checking by operators of small-scale water supplies required?

Yes No Only for certain categories of SSWS

Please specify below for which categories self-checking is required.

Please specify requirements per supply category in terms of

- a) Water quality parameters to be monitored and monitoring frequency
- b) Sanitary inspections required and their frequency

I.H Is regular reporting on drinking-water quality required for small-scale water supplies at the national level?

Yes No

¹ Sanitary inspections are visual assessments of the infrastructure and environment surrounding a water supply. They assess risk to water safety by taking into account the condition, devices, and practices in the water supply system that pose an actual or potential danger to the health and well-being of the consumers. Sanitary inspections are complementary to water quality analysis.

If yes, please specify for what supply categories reporting is required, and for which parameters.

I.I Are there any regulations for source water protection measures in small-scale water supply catchments?

Yes No

If yes, please specify and include which bodies are responsible for the enforcement.

I.J Do epidemiological data exist indicating outbreaks specifically related to small-scale water supplies?

Yes No

If yes, please provide details on epidemiological data and/or outbreaks.

I.K Is there active coordination and cooperation between the institutions responsible for small-scale water supplies and those responsible for sanitation at national and/or local level?

Yes No

If yes, please specify which institutions are involved, and how this coordination/cooperation mechanism operates.

II. Information on numbers of small-scale water supplies in your country

II.A Information on number of small-scale water supplies (preferred format)

Is data on small-scale water supplies available for your country?

Statistical data or expert estimates available No information available

If data for the suggested supply categories below is not available in your country, please go to sections II.B and II.C.

Supply category	Total number of supplies	Total number of persons served
501–5,000 persons		
51–500 persons		
< 50 persons		

What is the basis for the figures given in the table above?

Statistical data Estimates/expert judgment

II.B Information on number of individual supplies

Are data on individual supplies available for your country?

Statistical data or expert estimates available No information available

If data are available, are numbers of individual supplies already included in the figures given in the table in section II.A?

Yes No

In case data are not included in the table in section II A, please include figures in the following table.

Supply category	Total number of supplies	Total number of persons served
Individual supplies		

What is the basis for the figures given in the table above?

Statistical data Estimates/expert judgment

- II.C In case you cannot provide data according to the format given in the Tables in sections II.A and II.B above, please provide information on number of small-scale water supplies in any format/category available in your country.**

Supply category	Total number of supplies	Total number of persons served
Other category 1:		
Other category 2:		
Other category 3:		

What is the basis for the figures given in the table above?

- Statistical data Estimates/expert judgement

- II.D What percentage of the total population of your country is covered by public water supplies (including large AND small-scale water supplies, excluding individual supplies)?**

Total population of your country: _____

Percentage of population served
by public water supplies (%): _____

What is the basis for the percentage given above?

- Statistical data Estimates/expert judgement

III. Information on raw water sources used by small-scale water supplies in your country

III.A Information on raw water sources used by small-scale water supplies

Is data for small supplies available for your country?

- Statistical data or expert estimates available No information available

If no information is available, please go to section III.B. If data is available, please complete the following table, using the "supply categories" established in sections II.A or II.C, respectively.

Water source	Supply category	Proportion of supplies (%) ²	Proportion of persons served (%) ³
Groundwater ⁴			
Spring water ⁵			
Surface water (incl. lakes, rivers, reservoirs)			
Other (<i>please specify</i>)			

What is the basis for the figures given in the table above?

- Statistical data Estimates/expert judgement

III.B If no data can be provided in section III.A, please give information on raw water sources used by all water supplies.

Water source	Proportion of supplies (%)	Proportion of persons served (%)
Groundwater ⁶		
Spring water ⁷		
Surface water (incl. lakes, rivers, reservoirs)		
Others (<i>please specify</i>)		
Others (<i>please specify</i>)		

² Proportion of total number of supplies given in tables in sections II.A or II.C, respectively.

³ Proportion of total number of persons served given in tables in sections II.A or II.C, respectively.

⁴ Water contained beneath the surface in rocks and soil and that accumulates underground in aquifers, typically abstracted through dug wells, boreholes and tubewells.

⁵ Springs are places where water that has been filtered through soil and rock reappears from underground.

⁶ Water contained beneath the surface in rocks and soil and that accumulates underground in aquifers, typically abstracted through dug wells, boreholes and tubewells.

⁷ Springs are places where water that has been filtered through soil and rock reappears from underground.

What is the basis for the figures given in the table above?

- Statistical data Estimates/expert judgement

IV. Information on operators and organization of small-scale water supplies in your country

IV.A Qualification

- i. Are there any minimum qualification or competence requirements for operators of small public water supplies?

- Yes No

If yes, please specify.

If yes, please estimate the proportion of small public water supplies that are managed and operated by qualified personnel meeting the minimum requirements:

Proportion of supplies (%): _____

Proportion of population served
by these supplies: _____

- ii. Are there any relevant qualification or training programmes for operators of small public water supplies?

- Yes No

If yes, please specify.

IV.B Please give an estimate of the percentage of small public water supplies in your country managed and operated by a public or private entity (such as water utilities, municipalities, associations, joint boards, cooperatives).

- Statistical data or expert estimates available No information available

Proportion of supplies (%): _____

Proportion of population served
by these supplies: _____

What is the basis for the figures given above?

Statistical data Estimates/expert judgement

V. Information on the quality of drinking-water provided by small-scale water supplies in your country

The table below is an optimum format for quality data requested, and we are aware that country data will not always be available in this format and level of detail. So, please feel free to provide data in any alternative format. For example, you may provide summary data for several years or several categories of supply sizes, estimates of data ranges for parameters (minimum, maximum, average value) etc. We appreciate any information we get!

For each parameter, please specify the year given data refers to, the size category of supplies sampled (please specify [persons supplied] or [m^3/day]), the total number of supplies in this category which were sampled, the number of analyses, national standard values and the level of compliance with parametric values applicable in your country.

Please report at least on parameters that are of major concern in your country. Further parameters may be added to the table below.

In case you do not have any quality data for small-scale water supplies, please indicate this.

Statistical data or expert estimates available
 No information available

Parameter	Reference year(s)	Supply size category ⁸	Number of supplies ⁹	Number of analyses ¹⁰	National standard value ¹¹	Level of compliance with national standard in supply size category (%) ¹²	Level of compliance with national standard for all water supplies in country (%)
<i>Escherichia coli</i> ¹³							
Enterococci							

⁸ Please specify for which supply size category the given data set was collected. Please also specify supply size category by persons supplied or volumes served per day (m^3/day).

⁹ Please specify the number of supplies subject to this data set. Do NOT provide the total number of supplies of this category present in your country, unless all supplies are covered by the data set.

¹⁰ Please provide the total number of samples analyzed within this data set. This figure may differ from the figure given for 'number of supplies'.

¹¹ Please give the national standard value for the parameter that compliance was compared against. Please also give the unit of the value.

¹² Please provide the percentage of samples analyzed which meet the national standard value given for the respective parameter.

¹³ If another faecal indicator is applied for identification of faecal contamination (e.g. thermotolerant coliforms, faecal coliforms), please specify. Please then also provide the respective national standard value and level of compliance with this value.

Parameter	Reference year(s)	Supply size category ⁸	Number of supplies ⁹	Number of analyses ¹⁰	National standard value ¹¹	Level of compliance with national standard in supply size category (%) ¹²	Level of compliance with national standard for <u>all</u> water supplies in country (%)
Fluoride (F)							
Nitrate (NO ₃)							
Arsenic (As)							
Iron (Fe)							
Manganese (Mn)							
Other (please specify):							
Other (please specify):							
Other (please specify):							

What is the basis for the figures given in the table above?

Statistical data Estimates/expert judgement

VI. Additional information

If you wish, please include any additional information you would like to communicate with respect to small-scale water supplies in your country, including, for example,

- particular challenges with respect to the implementation of the existing regulations;
- success stories with respect to institutional coordination towards improving small-scale water supplies;
- currently planned changes of legislation;

- national or regional programmes;
- national or regional priorities for improving the situation of small-scale water supplies.

Small-scale systems are an important component of water supplies in the WHO European Region, particularly in rural areas, where such systems are typically in use. To improve the evidence base on small-scale water supplies and to gain a better overview of the status quo throughout the Region, a survey requesting country-specific information was undertaken in 2012–2013 under the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes.

This report represents the first overview of small-scale water supplies in the Region. It summarizes the results of the survey, which underline the relevance of addressing the challenges and particularities of small-scale water supplies. These findings will inform policy-making and the formulation of intervention strategies within the Region and help to identify further joint action under the Protocol.



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