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Small-scale water supplies and sanitation

INFORMAL DOCUMENT

Status of small-scale water supplies in the WHO European Region: results of a survey conducted under the Protocol on Water and Health

- Draft report for comment by the Working Group on Water and Health -

The programme of work for 2014-16 stipulates improving the evidence base on the situation of small-scale water supply and sanitation. Under the 2011-2013 programme of work a questionnaire addressing the situation of small-scale water supplies had been developed and disseminated to Parties and other States in 2012. The results of this survey have been analysed and a draft report has been prepared by the lead Parties and organization in cooperation with the secretariat.

The Working Group on Water and Health is requested to review the draft report and submit comments and/or suggestions for amendment to Ms Bettina Rickert (bettina.rickert@uba.de) by **10 December 2014**.

The draft report is for use by the Working Group for Water and Health only and not for wider distribution.

Status of small-scale water supplies in the WHO European Region

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

- Draft report -

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1. Introduction

On average, 30% 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 has not been readily available. No (mandatory) mechanism is currently in place to facilitate regular systematic collection of information on small-scale water supplies at the regional level.

As part of the programme of work for 2011–2013 of the Protocol on Water and Health,² lead Parties of the activity on small-scale water supplies made an effort to fill this gap and improve the evidence base. They developed a questionnaire to request 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 (see Appendix 1). The objective of the survey was not to compare the situation between countries but to gain an overview of the status quo throughout the WHO European Region. The questionnaire was sent to countries across the Region,³ including Parties to the Protocol and other Member States. After the announcement of the survey at the fourth meeting of the Working Group on Water and Health the questionnaire was disseminated by the WHO Regional Office for Europe in June 2012. Completed questionnaires were received from responding countries between July 2012 and May 2013.

The thematic area of small-scale water supplies and sanitation continues to be a priority under the current programme of work for 2014–2016, as adopted at the third session of the Meeting of the Parties.⁴ Planned activities include:

- publication of a good practice document for policy-makers, addressing effective approaches to regulation, safe management and surveillance, which will be informed by the outcomes of this questionnaire assessment;
- pilot projects to perform rapid assessments, resulting in a representative picture of the prevailing conditions of small-scale water supply systems at the national level;
- pilot projects to implement water and sanitation safety plans in rural areas.

¹ Small-scale water supplies in the pan-European region: background, challenges, improvements. Copenhagen: WHO Regional Office for Europe; 2011 (<http://www.euro.who.int/en/health-topics/environment-and-health/water-and-sanitation/publications/2011/small-scale-water-supplies-in-the-pan-european-region.-background.-challenges.-improvements>, accessed 15 October 2014).

² Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes. Geneva: UNECE and WHO Regional Office for Europe; 2006 (<http://www.euro.who.int/en/publications/policy-documents/protocol-on-water-and-health-to-the-1992-convention-on-the-protection-and-use-of-transboundary-watercourses-and-international-lakes>, accessed 15 October 2014).

³ 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.

⁴ Third session of the Meeting of the Parties to the Protocol on Water and Health, 25–27 November 2013 [website]. Geneva: UNECE; 2013 (http://www.unece.org/env/water/3rd_mop_protocol_water_and_health_2013.html, accessed 15 October 2014).

2. The questionnaire and responding countries

The questionnaire on small-scale water supplies was 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.

It provided a range of questions, the answers to which were requested as a mix of free text answers, tick-boxes and tables.

The questionnaire was made available in Russian and English and sent to health and environment ministries of the 53 Member States in the WHO European Region, national focal points of the Protocol and WHO country offices. Other networks were also utilized to reach the target audience for a high response rate. In total, 50 questionnaires were returned (see Box 1).

Box 1. Overview of questionnaire distribution and responses

The questionnaire was distributed to the 53 Member States in the WHO European Region. In total, 43 countries returned 50 questionnaires.

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 purpose of the assessment. If the two questionnaires contained conflicting answers, however, those responses were not included in the analysis.
- 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 Republic of Srpska and the Federation of Bosnia and Herzegovina, both of which 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.

2.1. Methodology

In 2011 the total population of the WHO European Region was 902 million. For the survey of small-scale water supplies in the Region, 47 responses to the questionnaire were assessed from 43 countries with 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 2011.⁵

Where several responses were received from different regions for one country (in the cases of Belgium, Bosnia and Herzegovina and the United Kingdom), they were analysed separately for the purpose 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 hence extrapolated, unless otherwise stated.

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:

1. supplies serving up to 50 people, 51–500 people and 501–5000 people;
2. individual supplies;
3. small-scale water supplies in any format or category (if no data could be provided according to categories 1 or 2).

Nevertheless, because of the differing definitions of small-scale water supplies, the questionnaire enabled countries to provide information according their defined supply categories or format. 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 analyse the results, the information relating to the size of the supply was processed as given by the responder (with a few exceptions). This resulted in sections where the results were presented in a combination of categories, so for the purpose of the assessment the following equivalence estimates were used:

- a supply serving 2001–5000 people is equivalent to one with a volume of over 400 m³ and up to 1000 m³ per day;
- a supply serving 501–2000 people is equivalent to one with a volume of over 100 m³ and up to 400 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 up to 50 people is equivalent to one with a volume of up to 10 m³ per day.

For the questions that offered the option to tick several boxes as answers, graphics with bars for multiple options were used to present the responses.

⁵ WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation [website]. Geneva: World Health Organization and United Nations Children's Fund; 2014 (<http://www.wssinfo.org/data-estimates/tables/>, accessed 15 October 2014).

2.2. Limitations

Several responders 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.

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 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.

Results are based on the responses received in this questionnaire exercise; 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.

3. Results of the assessment

3.1. Definitions and categories of small-scale water supplies

3.1.1. Definitions of small-scale water supplies used in the questionnaire

The term “small-scale water supply” is not legally 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 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 and similar. For the purpose of this questionnaire exercise, the following definitions were used.

“Small-scale water supply”: 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).

“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 usually serve more than one or two premises and may also supply commercial premises (such as hotels, restaurants and food production sites) with drinking-water.

“Individual supply”: a groundwater well, spring source or surface water intake that typically supplies drinking-water to one or two premises. 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.

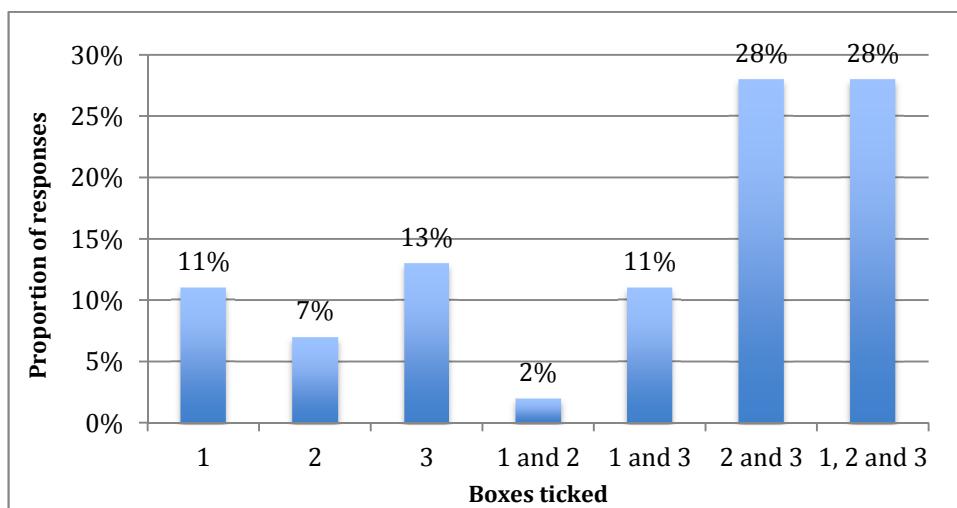
The questionnaires requested that information be given for these categories wherever possible but also provided the option to give other definitions as used in the responding countries.

3.1.2. Definitions of small-scale water supplies used in the WHO European Region

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”. Accordingly, one, two or three boxes were ticked in the responses (see Fig. 1). Information on how small-scale water supplies were defined was provided in 46 questionnaires returned from 42 countries with a total population of 736 million, representing 82% of the population of the WHO European Region.⁶

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 69% 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: 13% indicated that the definition was based only on the number of people served, 11% that it was based only on the type of management and 7% that it was based only on the amount of supplied water (see Fig. 1).

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



Note: tick-box numbers 1, 2 and 3 represent the following criteria used to define small-scale water supplies:

1 = type of management (public/individual supplies)

2 = amount of supplied water

3 = number of people served.

⁶ The country that did not provide information on this question was Monaco, which has a small population; after rounding, therefore, the coverage of responses to this question is the same as that for all responding countries including Monaco.

As well as ticking one or more boxes, many responses provided further details on the definitions used in the respective countries. 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, while in some countries non-commercial supplies serving fewer than 50 people may not even be considered a water supply. 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 2).

Box 2. 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 piped or non-piped drinking-water supplies rather than referring to the number of people served or the amount of water supplied. “Non-piped drinking-water supplies” refer 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.

In Bosnia and Herzegovina (Republic of 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).

Croatia’s response stated: “Small-scale water supply systems, known as local water supply systems in Croatia, include systems that deliver water to more than 50 people, are not registered and are not under regular sanitary inspection. Those systems are managed by the residents. Public water supply systems include all systems that are registered and under regular sanitary inspection; some of them serve fewer than 5000 inhabitants but are not part of small-scale water supplies.”

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 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 supplies.

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.

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.

3.2. 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 43 questionnaires returned from 40 countries with a total population of 606 million, representing 67% of the population of the WHO European Region (see Fig. 2). The respondents indicated that the information provided was based on national statistical data in 72% of responses and on estimates or expert judgements in 28%.

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

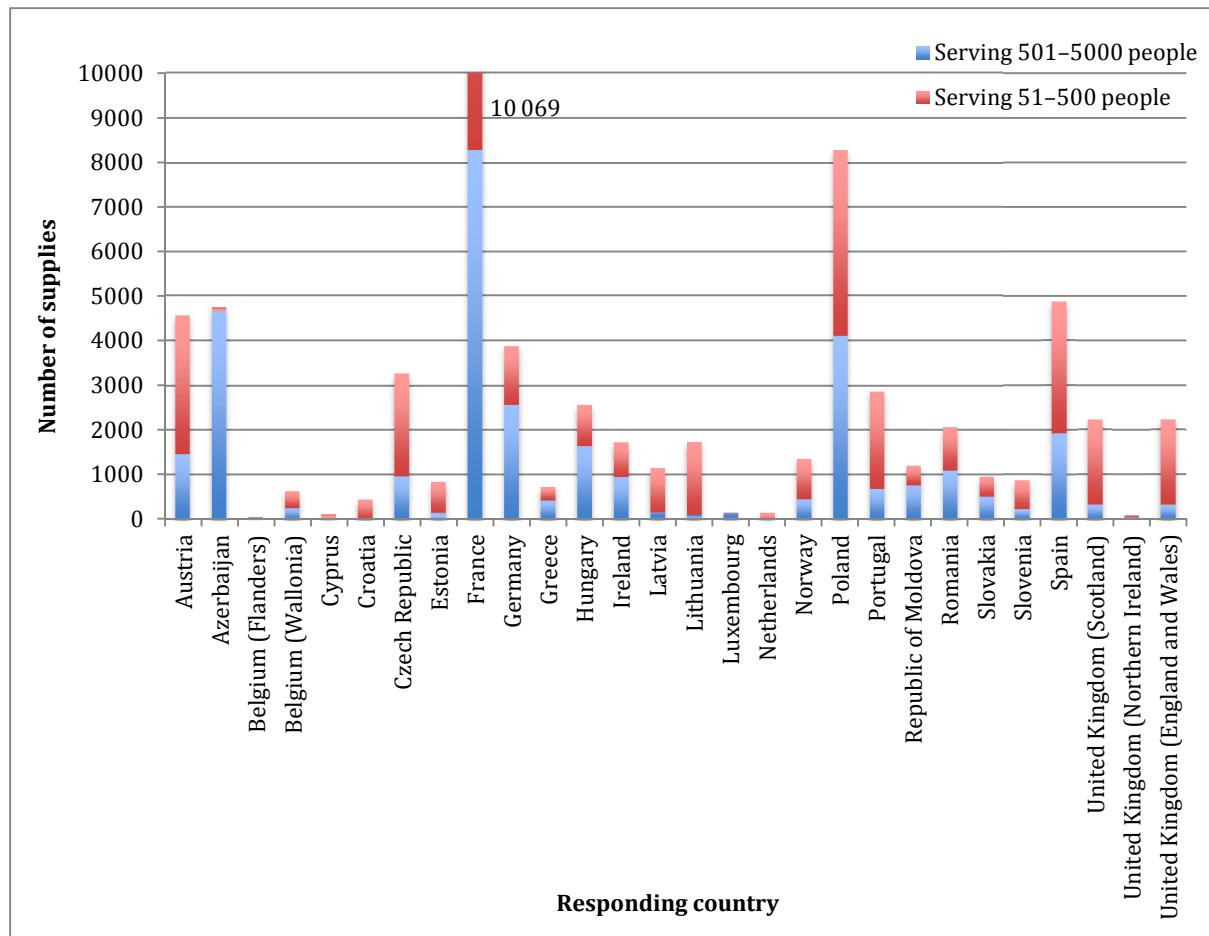


3.3. Prevalence of small-scale water supplies in the WHO European Region

3.3.1. 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 29 questionnaires returned from 26 countries with a total population of 436 million, representing 48% of the population of the WHO European Region (see Fig. 3).

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



The respondents indicated that the information provided was based on national statistical data in 74% of responses and on estimates or expert judgements in 26%.

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, followed by Poland with 4112 and 4176 supplies respectively and Spain with 1927 and 2947 supplies respectively.

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). The Netherlands mentioned that the country's 150 supplies serving 51–500 people are used only for recreational purposes (such as camping).

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

In addition to the number of small-scale water supplies, information was provided on the number of people receiving their drinking-water from these supplies by 28 questionnaires returned from 25 countries with a total population of 420 million, representing 47% of the population of the WHO European Region. The responding countries were Austria, Azerbaijan, Belgium (Flanders and Wallonia), Cyprus, Croatia, the Czech Republic, Estonia, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, the Republic of Moldova, Romania, Slovakia, Slovenia, Spain, the United Kingdom (England and Wales, Northern Ireland and Scotland). The assessment showed that in these 25 countries a total of 65 million people (16% of the combined population) receive water from 72 063 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 28 responses (millions)	Proportion of this population served (%)
Serving 51–500 people	39 827	10	420	2
Serving 501–5000 people	32 236	56		13
Total	72 063	66		16

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

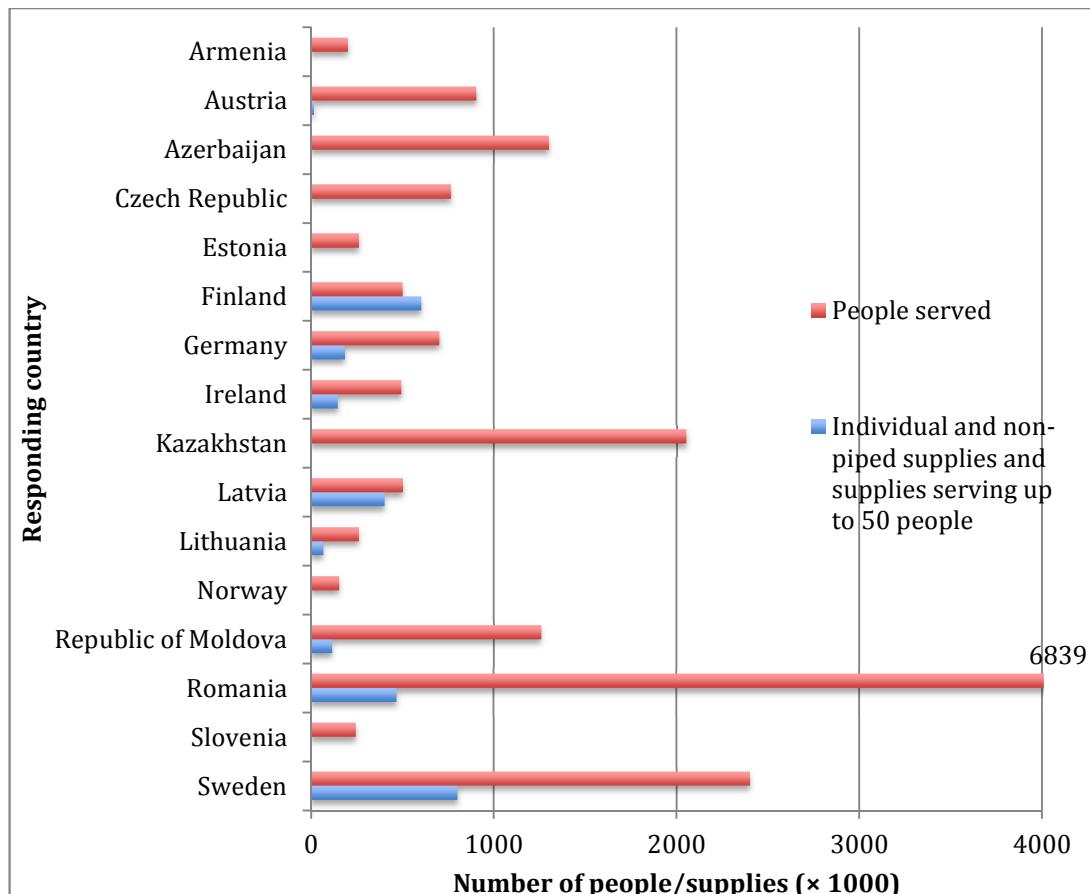
Information about the number of people receiving water from individual and non-piped supplies and supplies serving up to 50 people, as well as the number of such supplies, was provided by 27 questionnaires returned from 25 countries with a total population of 269 million, representing 30% of the population of the WHO European Region. The responding countries were Andorra, Armenia, Austria, Belarus, Belgium (Flanders and Wallonia), Cyprus, the Czech Republic, Denmark, Estonia, Finland, Germany, Ireland, Kazakhstan, Latvia, Lithuania, Luxembourg, Norway, Portugal, the Republic of Moldova, Romania, Slovenia, Slovakia, Spain, Sweden, United Kingdom (Northern Ireland and Scotland⁷).

Among the responding countries, those with the highest numbers of population receiving water from this category of small-scale supplies were Romania with 9 million people and Sweden and Kazakhstan with 2 million people each (see Fig. 4).

⁷ For the purpose of this assessment, the information given on the population served by individual supplies in Northern Ireland and Scotland was considered to represent the population served only in these regions. The England and Wales region of the United Kingdom, with a population of 62 million (figure provided by the returned questionnaire), did not provide information about the number of people served by individual supplies. Therefore, when estimating the proportion of population in the WHO European Region served by individual and/or non-piped supplies, the population of only the Northern Ireland and Scotland regions (7 million according to the returned questionnaires) was used, rather than the population of the entire United Kingdom (62 million according to JMP data, as used throughout this report to estimate the proportion of people served by a specific supply). This may have a significant effect on the estimated percentage.

Luxembourg and Andorra were the countries with the lowest numbers receiving water from this category, at 250 and 20 people respectively.

Fig. 4. Number of individual and non-piped 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. Furthermore, not all responding countries provided information about the number of related supplies.

Based on the information provided by the 25 responding countries, it was estimated that a total of 21 million or 8% of the population is served by these small supplies (individual and non-piped supplies and supplies serving up to 50 people).

The results provided in Sections 3.3.2 and 3.3.3 indicate that approximately 23% of the population of the WHO European Region is served by small-scale water supplies (see Table 2).⁸

⁸ Please note that the questions from which the information in the two sections was derived were answered by different groups of countries.

Table 2. Proportion of people served by small-scale water supplies, including non-piped and individual supplies

Category of small-scale water supplies	Proportion of population served (%)
Water supplies serving 501–5000 people	13
Water supplies serving 51–500 people	2
≤50 people, non-piped, individual supplies	8
Total population of the WHO European Region served by small-scale water supplies	23

3.3.4. Raw water sources used by individual and small-scale water supplies

Information about the raw water sources used by small-scale (and/or all) water supplies was provided by 28 questionnaires returned from 25 countries with a total population of 506 million, representing 56% of the population of the WHO European Region. In two questionnaires from one country, however, the data provided were not consistent and were therefore not processed in this assessment. Of the 25 responding countries, four provided additional information about the raw water sources used for all supplies.

If data were available, the questionnaire asked countries to separate the raw water sources into three supply categories:

- those serving 2001–5000 people
- those serving 501–2000 people (see Fig. 5)
- those serving up to 500 people (see Fig. 6).

Of the questionnaires returned, 12 from 12 countries with a total population of 190 million, representing 21% of the population of the WHO European Region, provided information only about the raw water sources used for all supplies. One country provided information about the number of people served by the different types of raw water sources; as the number of related water supplies was not given, the questionnaire was not included in the related assessment.

Groundwater was the most dominantly used water source for small-scale water supplies (see Figs. 5 and 6). Table 3 presents the data from responding countries whose information did not differentiate between the sizes of supplies. For 12 countries groundwater was the only or main type of water source, while in some countries spring water or surface water were important sources.

Fig. 5. Raw water sources used by small-scale water supplies serving 501–2000 people in responding countries

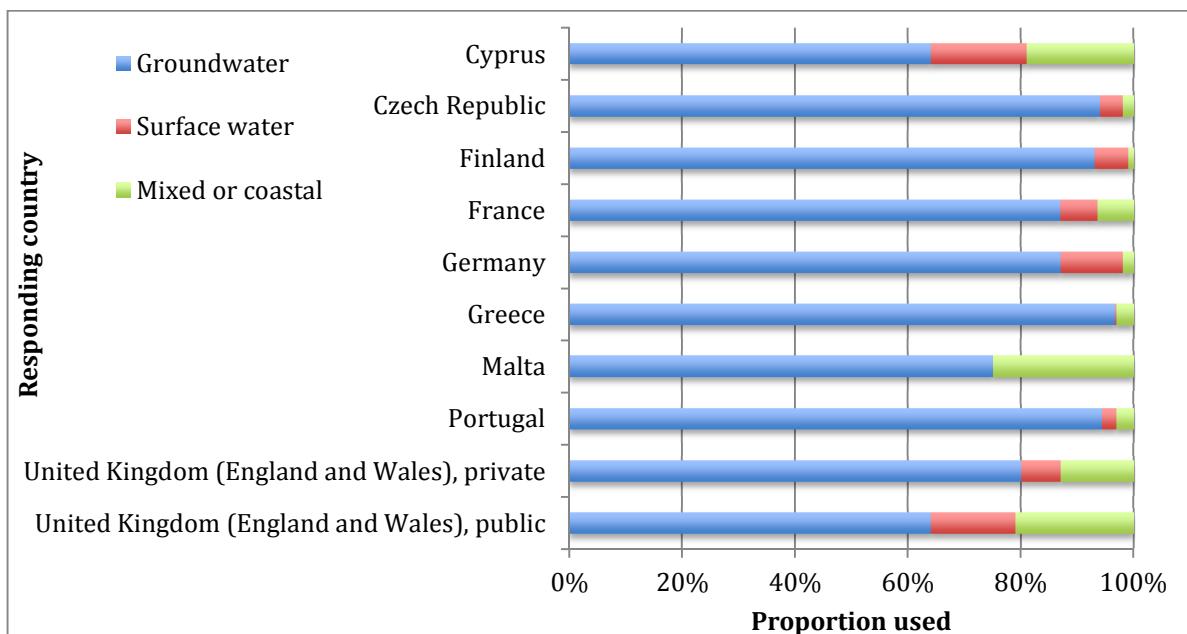
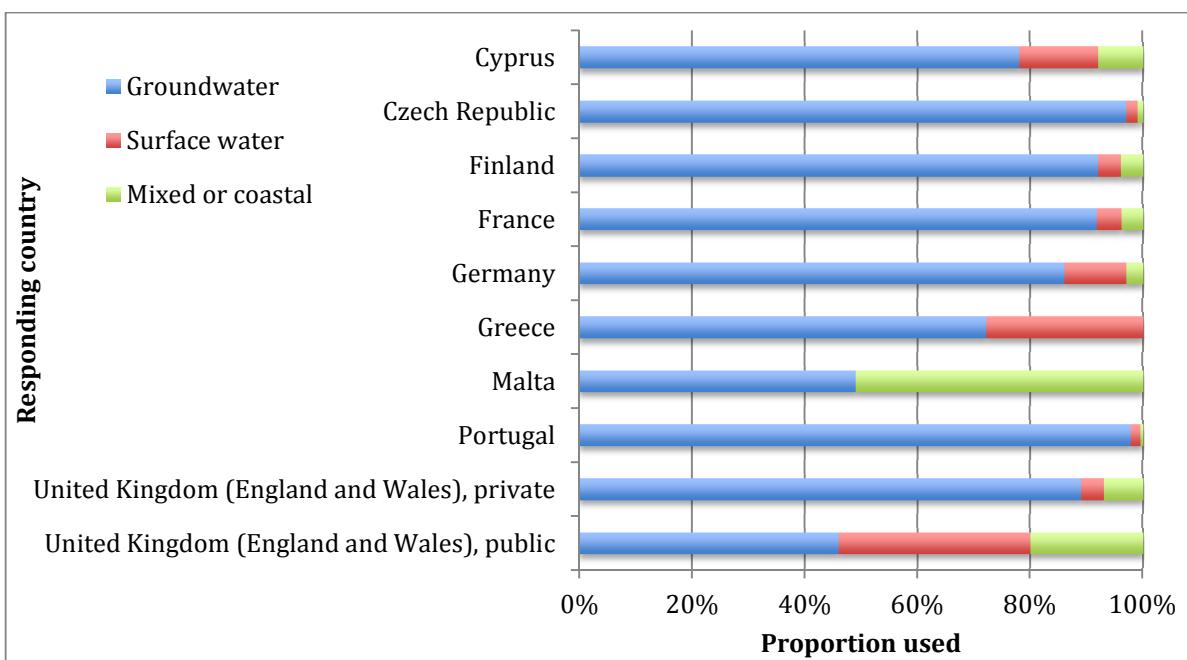


Fig. 6. Raw water sources used by small-scale water supplies serving ≤500 people in responding countries



Hungary was not presented in Figs. 5 and 6 because an additional type of source – karstic water (underground water reservoirs created in limestone areas) – was used for small-scale water supplies in the country. Of the supplies serving 501–5000 and 51–500 people, surface water was used in 10% and 6% respectively, karstic water in 13% and 17% respectively and groundwater in 77% of the combined categories.

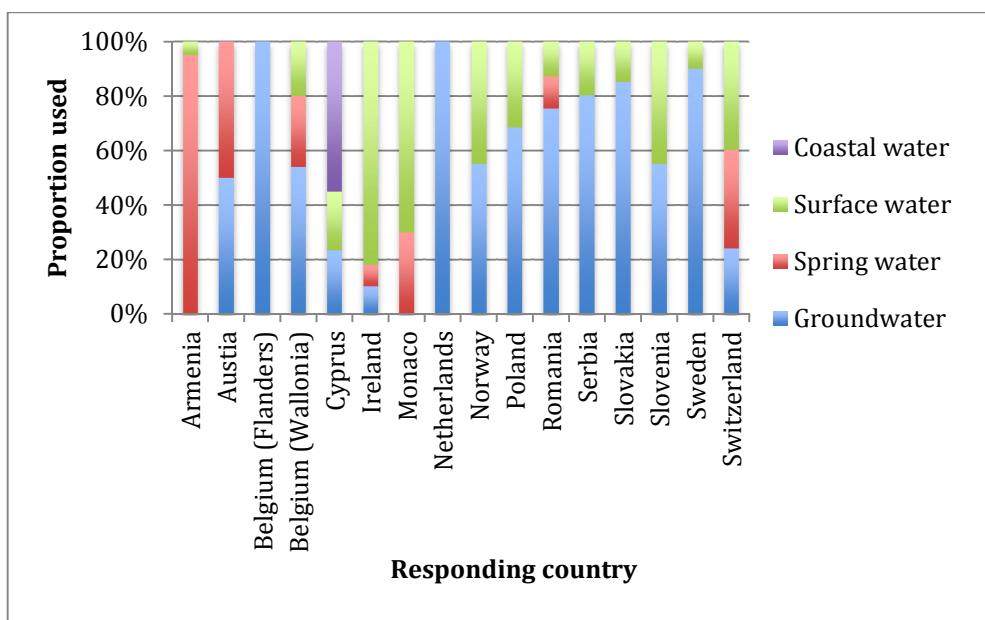
Table 3. Raw water sources used for all small-scale water supplies in responding countries

Responding country	Groundwater	Spring water	Surface water
Belgium (Flanders), Denmark, Latvia, Lithuania, Netherlands	100%	—	—
Belarus, France, Republic of Moldova, Russian Federation	90–99%	—	1–10% ^a
Serbia, Slovakia, Sweden	80–90%	—	10–20%
Croatia	25%	75%	—
Romania	79%	16%	5%
Luxembourg	21%	28%	51%
Azerbaijan	52%	—	48%
Ireland	10%	8%	82%
Andorra	80%	—	20%

^a With the exception of the Republic of Moldova, which uses groundwater for 98% of small-scale supplies and spring water and/or artesian wells for the remainder.

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. A wide variety of sources was observed among the 15 responding countries. Armenia used mainly spring water, Ireland and Monaco predominantly surface water and several countries mainly groundwater (see Fig. 7).

Fig. 7. Raw water sources used for all water supplies in responding countries



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

Article 4, paragraph 5 of the Protocol on Water and Health reads: “Parties shall take all appropriate action to create legal, administrative and economic frameworks which

are stable and enabling and within which the public, private and voluntary sectors can each make its contribution to improving water management for the purpose of preventing, controlling and reducing water-related disease". Furthermore, countries in general have binding national laws and regulations related to the provision of safe water intended for human consumption. Accordingly, the section of the questionnaire on legislation and regulation applying to drinking-water supplies was completed by all responding countries.

3.4.1. Legal and regulatory requirements for drinking-water supplies

All questionnaires returned from the 43 countries with a population of 736 million, 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 European Drinking-water Directive.⁹ The second group consists of non-EU members, predominantly countries from the newly independent states (NIS),¹⁰ which reported several acts and orders, mainly established after 1990.

The Drinking-water Directive includes requirements for quality standards and the minimum frequency of sampling and analysing water intended for human consumption supplied from a distribution network or tanker or used in food production. The more drinking-water is distributed, the more sampling and analysis is required.

- If the volume of water distributed is equal to or less than 100 m³ per day, the frequency and number of samples can be decided nationally by countries.
- Supplies distributing or producing within a supply zone over 100 m³ and up to 1000 m³ per day (and/or serving 501–5000 people) should monitor four samples per year.
- Supplies producing higher volumes than 1000 m³ per day (and/or serving more than 5000 people) are required to monitor three further samples for each additional 1000 m³ per day (or part thereof) of the total volume produced.

The Drinking-water Directive is binding for EU countries, which are obliged to include it in national legislation. It allows countries to exempt individual supplies providing less than 10 m³ of water per day or serving fewer than 50 people, however, and therefore each country can decide whether or not to include individual supplies in legal regulations. All 29 questionnaires returned from the 26 responding EU countries with a population of 444 million, representing 49% of the population of the WHO European Region, reported that the requirements of the Drinking-water Directive were included in national legislation. Of these 29 responses, 13 indicated the existence of explicit regulations regarding drinking-water protection zones, and two countries listed a law in which drinking-water supply and wastewater management are jointly regulated. Some EU countries referred to the European Water Framework

⁹ Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption. OJEC. 1998, L 330/32 (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1998:330:0032:0054:EN:PDF>, accessed 20 October 2014).

¹⁰ The NIS are Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Directive,¹¹ which obliges EU countries to achieve good qualitative and quantitative status of all water bodies, including surface and groundwater, within a set deadline.

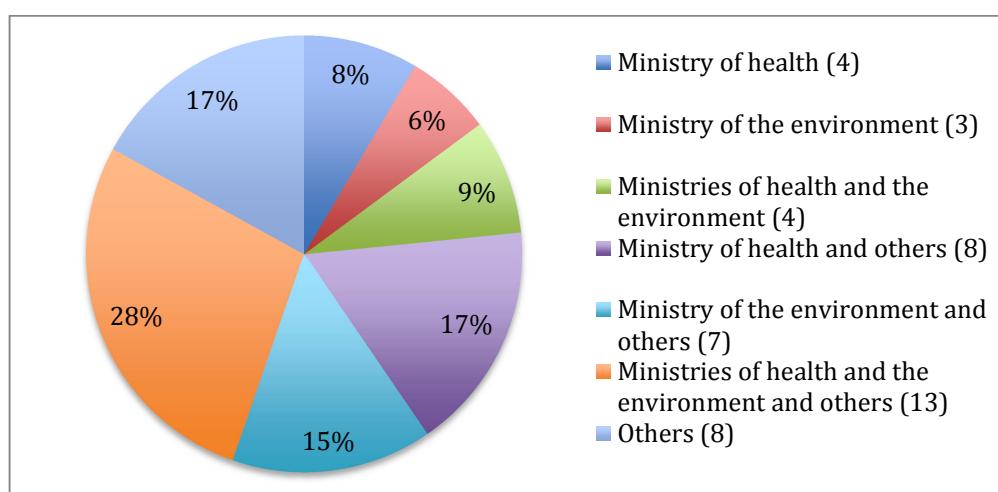
All 18 questionnaires returned from the 17 responding non-EU countries also stated that legislative requirements, standards and “sanitary norms” on water supply were established. Several NIS countries presented laws or decrees addressing the sanitary and epidemiological well-being or hygienic welfare of the population. Nine of the 18 non-EU countries mentioned regulations, ordinances, decrees or rule books on the establishment of drinking-water protection zones, sanitary norms and sanitary protection of water bodies or for setting sanitary measures.

3.4.2. Institutions responsible for regulating water supply

The responses indicated a broad diversity of institutions responsible for regulating the water supply. While the majority of responding countries indicated that responsibilities were shared by several institutions, some indicated that one institution had exclusive responsibility. Of the 47 responses, four questionnaires indicated that the ministry of health alone and three questionnaires indicated that the ministry of the environment alone was responsible for regulating the water supply (thus, in 14% of responses responsibility lay exclusively with one institution).

In 29 cases (61%) the ministry of health and in 27 cases (57%) the ministry of the environment had either shared or sole responsibility for regulating the water supply (see Fig. 8). The next most frequently mentioned institution was the ministry of agriculture, in 13 cases (28%).

Fig. 8. Institutions responsible for regulating water supply in responding countries



The questionnaires also mentioned a wide diversity of other stakeholders as legal actors regulating the relationship between the water supplier and consumer (shown as “others” in Fig. 8). These included the ministry of agriculture, the State Committee for Water Management of the Ministry of Territorial Administration (Armenia), national and regional governments and the Ministry of Municipalities and Living Conditions

¹¹ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. OJEC 2000, L 327 (<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>, accessed 20 October 2014).

(Belgium) and the National Food Agency, governed by the Ministry of Rural Affairs, and the Federal Ministry of Economics and Technology (Germany).

3.4.3. 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 with a total population of 663 million, representing 74% of the population of the WHO European Region. Countries responded by ticking one or more of the five related boxes and/or by providing free text. Several countries ticked two or three boxes. One country's response did not refer to small-scale water supplies but mentioned that legal and regulatory requirements apply only to piped water. Information from this questionnaire is not included in the data below.

Of the 45 questionnaires:

- 42 (93%) returned from 38 countries indicated that all legal and regulatory requirements apply to public small-scale water supplies;
- 20 (44%) returned from 18 countries (all EU countries with one exception) mentioned explicitly that supplies serving up to 50 people that are not used for commercial purposes are exempted from regulatory requirements;
- 12 (27%) returned from 10 countries (including eight EU countries) indicated that the legal and regulatory requirements for drinking-water also apply to individual water supplies;
- seven (16%) indicated that none of the legal and regulatory requirements apply to individual supplies;
- only one indicated that none of the requirements apply to public small-scale supplies.

3.4.4. Additional non-statutory guidance

Information on additional non-statutory guidance for small-scale water supplies was provided by 44 questionnaires from 40 countries with a total population of 479 million, representing 53% of the population of the WHO European Region; some of it addressed small-scale systems specifically. The additional guidance often addressed 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.

3.4.5. Source water protection measures

In 46 questionnaires returned from 42 countries with a total population of 736 million, representing 100% of the population of the WHO European Region,¹² 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 European Water Framework Directive or regulations on good agricultural practices in the Drinking-water Directive) or only to centralized piped water. On the question “Are there any regulations for source protection measures in small-scale water supply catchments?”, however, 38 respondents ticked the “yes” box, six ticked the “no” box and two did not tick a box.

Regulations on water protection measures in small-scale water supply catchment areas were reported to be in place in 38 questionnaires (83%) from 35 countries; six responses from six countries (13%) indicated that no regulations were available for source water protection measures in small-scale water supplies catchments. In two questionnaires (4%) information about general regulations for water protection was provided but the relevance to small-scale water supplies was not clear, as neither the “yes” nor “no” box was ticked.

3.4.6. Requirements for qualifications and training programmes for operators of small-scale public water supplies

On the question of minimum qualifications or competence requirements for operators of small-scale public water supplies, information was provided by 44 questionnaires returned from 40 countries with a total population of 658 million, representing 73% of the population of the WHO European Region. Of these, one stated that no information was available, so 43 questionnaires from 39 countries were assessed for this section.

Of the 43 questionnaires assessed, 21 (49%) returned from 20 countries indicated by ticking the “yes” box that minimum qualifications or competences were required for operators of small-scale public supplies and 21 (49%) returned from 20 countries indicated that no qualification was required. In one questionnaire (2%) no box was ticked, and the text answer provided could not be considered a yes or no answer.

The questionnaire also asked whether any relevant qualifications or training programmes were available for operators of small public supplies. Both questions could be answered by ticking the “yes” or “no” box and additional information could be provided in free text. Of the 43 questionnaires assessed, 20 (47%) returned from 19 countries ticked the “yes” box and 18 (42%) from 18 countries ticked the “no” box. In five (11%) questionnaires no box was ticked and in three of these the text answer provided could not be considered a yes or no answer.

Of the 21 responses that indicated no minimum qualification or competence requirement for operators of small-scale supplies are in place, 11 (52%) mentioned that training programmes for operators were available.

¹² The country that did not provide information on this question was Monaco, which has a small population; after rounding, therefore, the coverage of responses to this question is the same as that for all responding countries including Monaco.

3.5. Surveillance requirements for small-scale water supplies

Information about requirements for regular independent monitoring of drinking-water quality and/or sanitary inspections of small-scale water supplies was provided by 46 questionnaires from 42 countries with a population of 726 million, representing 81% of the population of the WHO European Region. This included monitoring mandated by public health offices and requirements for regular self-checking by operators. The question could be answered by ticking a box with the options “yes”, “no” or “only for certain categories of small-scale water supply”.

The requirements reported were diverse (see Table 4). Of the 46 responses, 41% reported that both regular drinking-water monitoring and/or inspections and self-checking by operators were required and 15% reported requirements only for certain categories of small-scale water supply. Only self-checking by operators was required in 11% of the responses and 7% indicated that neither independent drinking-water monitoring and/or inspection nor self-checking operators was required.

Table 4. Surveillance requirements for small-scale water supplies in responding countries

Surveillance requirements in small systems		Number of questionnaires	Proportion (%)
Regular independent drinking-water quality monitoring and/or sanitary inspection	Regular self-checking by operators		
Yes	Yes	19	41
Yes (only for certain categories of small-scale water supply)	Yes (only for certain categories of small-scale water supply)	7	15
Yes	No	6	13
No	Yes	5	11
Yes (only for certain categories of small-scale water supply)	Yes	4	9
Yes	Yes (only for certain categories of small-scale water supply)	2	4
No	No	3	7

Of the responses, 55% stated that the authorities pay for the costs of monitoring and/or sanitary inspection; the other 45% stated that the operator pays.

4. Water quality monitoring in small-scale water supplies

Information on drinking-water quality was provided by 40 questionnaires from 36 countries with a population of 633 million, representing 70% of the population of the WHO European Region, whereas specific information about the quality of small-scale water supplies was not available in one questionnaire from one country.

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 non-EU responses provided water quality data using other supply categories. The respondents indicated that the information provided was based on national statistical data in 89% of responses and on estimates or expert judgements in 11%.

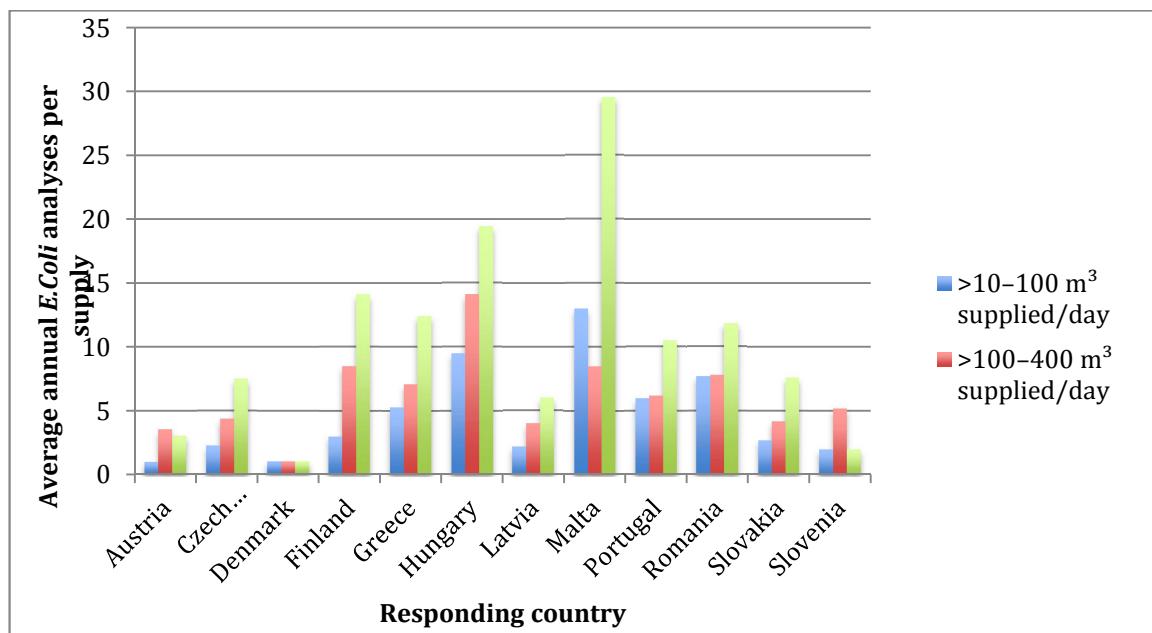
The information provided shows that, at least at the national level, sufficient data are not typically available to facilitate easy comparison of parameters and compliance in different sizes of water supply throughout the WHO European Region.

Of the 40 questionnaires, 37 indicated either the number of supplies analysed or the number of analyses conducted, or gave information on both. In 12 responses information was provided about the number of each of the three categories of supply and the number of *Escherichia coli* (*E. coli*) analyses. Other analysed parameters were also presented but less consistently, which is why information on sampling frequency is only given for *E. coli*.

Based on the number of supplies analysed and the number of *E. coli* analyses reported, average annual *E. coli* monitoring was estimated for 12 countries and for three categories of supply. Portugal had the highest number of analysed supplies: 1012 supplying over 10 m³ and up to 100 m³ per day; 2190 supplying over 100 m³ and up to 400 m³ per day; and 680 supplying over 400 m³ and up to 1000 m³ per day. Malta was the country with the lowest number of supplies, at one, two and four respectively.

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. 9).

Fig. 9. Frequency of *E. coli* monitoring in water from three categories of small-scale water supply in responding countries



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

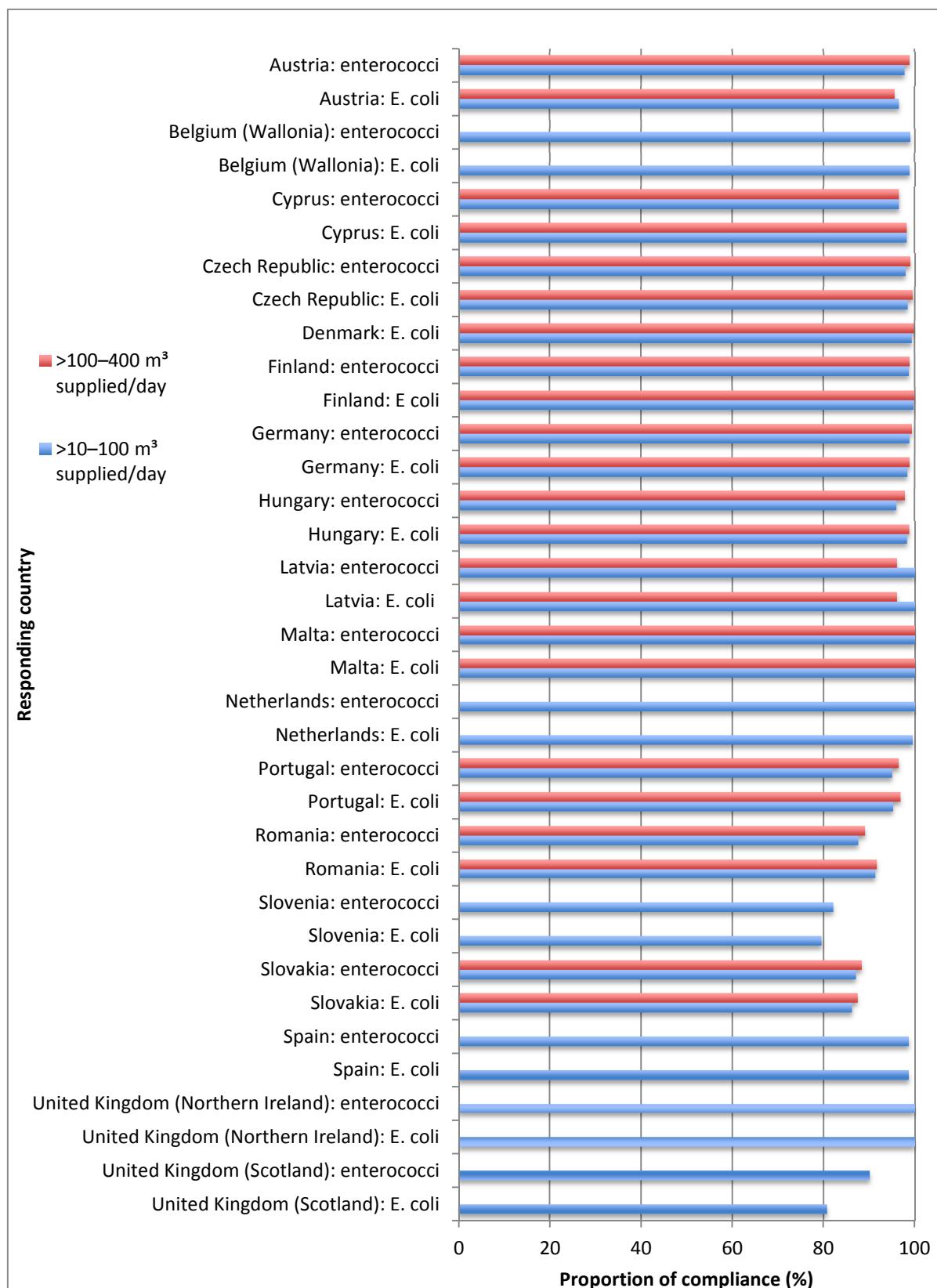
Owing to the different classification and/or definitions of small-scale supplies used in the WHO European Region, the information in this section concerns mainly EU countries presenting information about the water quality of different categories of small-scale water supplies.

As presented in Section 3.1.2 several non-EU countries classify small-scale water supplies as, for example, non-piped, 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.

4.1.1. Compliance for microbiological indicators

Information regarding the occurrence of *E. coli* was often combined with information about the occurrence of enterococci, whereupon the levels of compliance for both indicators were mostly more or less the same for the specified size of supply. From the available information, levels of compliance with national standards for *E. coli* and enterococci (in all responding countries parametric value number was 0/100 ml) are presented as proportions for one or two supply categories: over 10 m³ and up to 100 m³, and over 100 m³ and up to 400 m³ per day. Of the 18 countries and regions presented, the level of compliance with national standards for *E. coli* and/or enterococci was less than 90% for the presented supply category in four (22%) questionnaires. In the remainder, the level of compliance for *E. coli* and/or enterococci was between 90% and 100% for both supply categories (see Fig. 10).

Fig. 10. Compliance with national standards for *E. coli* and enterococci in responding countries



Because of differing or unknown supply sizes, diverse information received from other countries about the level of microbiological compliance could not be included in Fig. 10 and is therefore summarized in Table 5.

Table 5. Compliance for microbiological parameters in small-scale water supplies serving more than 50 people in responding countries

Country	Number of people served	Parameter	Year	Level of compliance (%)	Number of supplies	Number of analyses
Azerbaijan	501–5000	<i>E. coli</i>	2009	93	2255	2349
			2010	90	2207	2873
Croatia	51–5000	Faecal coliforms	2008	68	443	538
		Total coliforms	2008	40	443	538
Ireland	Private group water schemes ^a	Coliform bacteria	2010	88	484	1768
		Colony count	2010	92	149	176
The former Yugoslav Republic of Macedonia	No information about size of supplies	<i>E. coli</i>	2011–2012	84	No data	433
		Enterococci		95	No data	434
Poland ^b	501–5000	<i>E. coli</i>	2011	100	4101	8202
		Enterococci	2011		4063	8126
Norway	>50	<i>E. coli</i>	2011	98	1481	44 740
		Enterococci	2011	99	1330	15 367

^a schemes in which the owners – usually representatives of the local community – source and distribute their own water.

^b results of the level of compliance of the two parameters are not separately available.

4.1.2. Compliance of chemical parameters in small-scale water supplies

Information on the chemical compliance for small-scale water supplies of the three supply categories over 10 m³ and up to 100 m³, over 100 m³ and up to 400 m³ and over 400 m³ and up to 1 000 m³ per day (as used for reporting to the EU), or a category within the supply size over 10 m³ and up to 1000 m³ per day was received mainly from EU countries. In general, the chemical parameters reported were 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 overview of the situation regarding compliance with chemical parameters or comparison of compliance levels in small and larger systems could be drawn from the data provided.

An overview follows of the 27 respondents reporting the level of compliance for chemical parameters with the national standard value for supplies with a size over 10 m³ and up to 1000 m³ per day, whereas the results provided of the different categories within a size over 10 m³ and up to 1000 m³ per day are summarised and considered as one category. 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 the returned questionnaires, 27 provided the level of compliance of chemical parameters for supplies over 10 m³ and up to 1000 m³:

- 12 (44%) reported a level of compliance between 95% and 100% for the analysed parameter;
- 15 (56%) reported a level of compliance of less than 95% for one or more chemical parameters;
- 13 (48%) reported a level of compliance of less than 90% for one or more chemical parameters.

According to the information provided, the following chemical parameters with a level of compliance of less than 90% were observed:

- nitrogen-containing chemicals such as ammonium, nitrate and/or nitrite in the Czech Republic, Croatia, Denmark, Estonia, Hungary, Latvia, Norway, Romania and Slovenia;
- fluoride in Estonia, Latvia and Slovenia;
- arsenic in Hungary;
- manganese and/or iron in Belgium (Flanders), the Czech Republic, Croatia, Estonia, Hungary, Latvia, Romania, Slovakia and the United Kingdom (Northern Ireland);
- sodium in Belgium (Flanders) and Malta;
- boron in Belgium (Flanders);
- trihalomethanes in the United Kingdom (both Northern Ireland and Scotland).

4.2. 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 10 questionnaires returned from nine countries (see Tables 6 and 7) with a population of 244 million, representing 27% of the population of the WHO European Region. The parameters and types of supply presented reflect the information and terms given by the respective countries as far as possible (including translations from Russian to English). Spain reported the highest levels of compliance for *E. coli* and enterococci; for other countries the levels of compliance for microbiological indicators ranged from 58% to 90%.

Table 6. Compliance for microbiological parameters in supplies serving up to 50 people, non-piped, decentralized and local supplies, public and individual wells and rural utilities in responding countries

Country	Parameter	Type of supply	Number of supplies analysed	Level of compliance (%)
Belarus	Microbiological indicators	Non-piped supplies	No data	90
Bosnia and Herzegovina (Republic of Srpska)	Microbiological parameter	Local supplies	1876	73
Ireland	<i>E. coli</i>	Small private supplies	972	95
	Enterococci		467	93
	Coliform bacteria		974	76
Republic of Moldova	Total Coliform	Wells and decentralized supplies	no info	86
	<i>E. coli</i>			90
	Total Coliform	Child care	no info	96
	<i>E. coli</i>			95
Romania	Coliform bacteria	Public and individual wells	5462	60
	<i>E. coli</i>		6030	69
	Enterococci		5988	65
Portugal	Coliform bacteria	≤50 people	1012	90
	<i>E. coli</i>			95
	Enterococci		1011	95
Russian Federation	Microbiological indicators	Non-piped rural supplies	99 645	77
Spain	<i>E. coli</i>	≤50 people	793	98
	Enterococci		295	98
United Kingdom (Northern Ireland)	<i>E. coli</i>	≤50 people	56	80
	Enterococci			82
United Kingdom (Scotland)	Coliform bacteria	≤50 people	1307	58
	<i>E. coli</i>		1302	78

The information available on the levels of compliance with national standards for physicochemical parameters in water supplies serving up to 50 people, local, non-piped and decentralized supplies or wells is summarized in Table 7; the parameters are presented as reported by the respective countries.

Table 7. Compliance for physicochemical parameters in supplies serving up to 50 people, decentralized and local individual supplies and rural utilities in responding countries

Country	Parameter	Type of supply	Number of supplies analysed	Level of compliance (%)
Belarus	Fluoride	Decentralized supplies	442	99
	Arsenic		132	75
	Manganese		1588	98
	Iron		2508	95
	Nitrate		18 039	75
Bosnia and Herzegovina (Republic of Srpska)	Physicochemical parameter	Local supplies	1876	95
Ireland	Nitrate	Small private supplies	644	99
	Fluoride		37	100
	Arsenic		113	98
	Iron		701	94
	Manganese		437	87
	Trihalomethanes (total) ^a		11	83
Romania	Nitrate	Public and individual wells	6698	69
	Arsenic		118	87
	Manganese		647	93
	Ammonium		9195	89
Portugal	Fluoride	≤50 people	807	100
	Nitrate		1011	99
	Arsenic		854	97
	Iron		927	92
	Manganese		1012	93
Russian Federation	Sanitary and chemical indicators	Non-piped rural supplies	99 645	73
Spain	Fluoride	≤50 people	298	100
	Nitrate		322	96
	Arsenic		294	97
	Iron		453	99

Country	Parameter	Type of supply	Number of supplies analysed	Level of compliance (%)
	Manganese		319	99
United Kingdom (Northern Ireland)	Manganese	≤ 50 people	35	74
	Fluoride			100
	Nitrate			100
	Arsenic			100
	Iron			97
	MCPCA (herbicide)			100
	Trihalomethane			100
United Kingdom (Scotland)	Aluminium	≤ 50 people	91	91
	Iron		661	88
	Manganese		640	91
	Lead		1034	93

^a With two exceptions, Ireland provided the level of compliance with all chemical parameters of the Drinking-water Directive, Annex 1, Parts B and C.

4.3. 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 46 questionnaires returned from 42 countries with a total population of 736 million, representing 82% of the population of the WHO European Region.

Of these, 34 questionnaires from 31 countries indicated by ticking the relevant box 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 in free text 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.

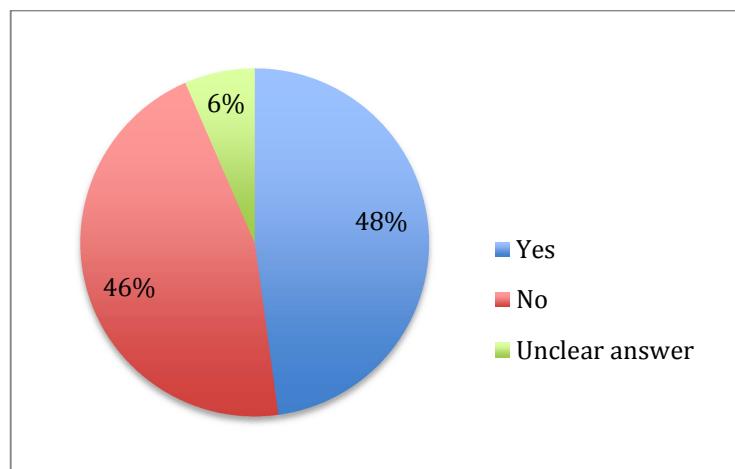
4.4. Data on outbreaks specifically related to small-scale supplies

On the question of whether epidemiological data indicating outbreaks specifically related to small-scale water-supplies exist, information was provided by 46

questionnaires returned from 42 countries with a total population of 736 million, representing 82% of the population of the WHO European Region.

Of these, 22 responses from 21 countries indicated by ticking the relevant box that epidemiological data exist on outbreaks of water-related diseases specifically related to small-scale water supplies, while 21 responses from 19 countries indicated that no such information exists (see Fig. 11). In three returned questionnaires none of the boxes was ticked and, although free text was provided, the answers were not clear.

Fig. 11. Epidemiological data indicating outbreaks specifically related to small-scale water supplies in responding countries



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. Free text information was provided in 30 responses, of which eight indicated that the epidemiological data are collected by national health institutions.

5. Summary and conclusions

The assessment covered 43 of the 53 countries in the WHO European Region, covering 736 million people or 82% of the total population of the Region (902 million). In several responses the requested information was provided not at all, only partly or insufficiently for the purpose of the assessment. Only the questions concerning legal and regulatory requirements for drinking-water supplies and institutional responsibilities for regulating water supply were answered sufficiently for assessment in all responses. The availability or reliability of data at the national level, which particularly depend on adequate registration and monitoring for small-scale water supplies, was often rather poor. In particular, information about private supplies or supplies serving up to 50 people, drinking-water quality and epidemiological data was often not available. Establishing national registers of small-scale water supplies of different sizes could be a first step to improving the evidence base where such information is not yet readily available at the national level.

Two main definitions of small-scale water supplies are in use in the WHO European Region. The majority of countries of the former Soviet Union differentiate between piped and non-piped, centralized and decentralized or local and urban supplies. In

general, supplies are defined according to the type of management. EU countries, on the other hand, base 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 receive their water from such systems.

Regulations on drinking-water typically also apply to small-scale public water supplies, as indicated by 93% of the questionnaires returned. With respect to individual water supplies, however, this was only the case in 27% of the responses. Although requirements specified in regulations and laws do not have to be exactly the same for all systems but should rather take into account their particularities, they should also consider small-scale systems in order to improve their situation. In 14% of the responses, responsibility for regulating water supply lies with a single institution. Particularly in such cases, coordination with other related bodies is crucial in order to ensure consideration of prevailing issues, such as sanitation or agriculture.

Of the responses, 7% indicated that for small-scale water supplies 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. This indicates a likelihood that only limited information is available to the responsible authorities on the supplies for which no such legal obligation exists.

No minimum qualifications or competences are required for operators of small public supplies according to 49% of the responses. This supports the theory that small-scale systems are often operated by non-professionals who may require external support and guidance on how to operate the systems safely.

Many of the questionnaires contained only incomplete or no information about the level of compliance with national standards for drinking-water quality of small-scale water supplies. This indicates that, at least at the national level, insufficient data are typically available to facilitate easy comparison of parameters, as well as of compliance in different sizes of water supplies throughout the Region. Standardized data collection for different supply sizes would improve the evidence base and support prioritizing action – for example, focusing attention on the supply sizes showing the highest levels of noncompliance. Conducting risk assessments and/or rapid assessments of drinking-water quality and sanitary conditions could be a first step to identify parameters of concern, followed by water safety plans, in order to minimize the risks identified. Limited information is also available on epidemiological data related to small-scale water supplies.

Table 8 summarizes the data provided by the questionnaire responses and extrapolates the information showing what population would be affected by the respective situation in case conditions were comparable for the rest of the Region in the countries which did not respond.

Table 8. Population served by small-scale water supplies

Category	Proportion of population from questionnaires received (%)	Numbers of population from questionnaires received (millions)	Numbers of population if extrapolated to entire Region (millions)
Total population	82	736	902
Population served by individual and non-piped supplies or supplies serving ≤50 people ($\leq 10 \text{ m}^3/\text{day}$)	8	20	72
Population served by supplies serving 51–5000 people ($>10\text{--}1000 \text{ m}^3/\text{day}$)	15	65	135
Population served by supplies serving ≤5000 people ($\leq 1000 \text{ m}^3/\text{day}$), including individual and non-piped supplies	23	85	207

According to the results of this assessment, an estimated number of approximately 200 million people in the WHO European Region are served by small-scale water supplies, and approximately 100 million people are supplied by drinking-water systems that are managed by operators without a background including specific education or competence checks. In addition, in many rural regions – in particular, those with supplies serving up to 50 people or local, rural or non-piped supplies – monitoring activities and/or possibilities are apparently very limited (of the 47 returned questionnaires only 10 provided information about the water quality). In many countries, legislation and regulations on water supply and water quality are in place, but national programmes might intensify feasible and workable measures to improve the situation of the most neglected supplies.

Appendix 1

**Questionnaire as distributed
in June 2012**

Protocol on Water and Health

**Questionnaire on Small-scale Water Supplies
in the pan-European Region**

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 (details see www.unece.org/env/documents/2010/wat/MP_WH/wh/ece_mp_wh_2010_L1_E.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" (available online at www.euro.who.int/_data/assets/pdf_file/0018/140355/e94968.pdf). As part of this document, data on the current evidence base was collected. Whereas data was provided from numerous countries, however, it 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 inter-sectoral 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 welcome 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): 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: 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: 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

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.

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

Yes No

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

Is data on individual supplies available for your country?

Statistical data or expert estimates available No information available

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

Yes No

In case data is 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 judgment

- 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 judgment

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 (please specify)			

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

Statistical data

Estimates / expert judgment

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.

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>)		

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

Statistical data

Estimates / expert judgment

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.

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 judgment

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.

Therefore, 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 (%)
Escherichia coli ¹³							
Enterococci							
Fluoride (F)							
Nitrate (NO_3)							

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 all water supplies in country (%)
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 judgment

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.

VII. General information

Country concerned	
Name of contact person	
E-mail address	
Telephone number	
Organization	
Position within organization	

Signature

Please return a signed copy of the questionnaire by mail and a scanned electronic copy by e-mail at the latest by 31 August 2012 to:

Bettina Rickert

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Federal Environment Agency (Umweltbundesamt - UBA)

Section II 3.1: General Aspects of Drinking-Water Hygiene

WHO Collaborating Centre for Research on Drinking-Water Hygiene

Heinrich-Heine-Strasse 12

08645 Bad Elster, Germany

If you have any questions, please do not hesitate to get in contact.

Thank you very much in advance for your input and support!