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The situation of water, sanitation and hygiene in schools

in the pan-European region

PROTOCOL ON WATER AND HEALTH

By Valentina Grossi, Emanuel Klimschak, Andrea Rechenburg, Enkhtsetseg Shinee and Oliver Schmoll

Abstract

Adequate access to water, hygiene and sanitation (WASH) is every human's and child's right. Ensuring WASH accessibility in schools is encompassed in the 2030 Agenda for Sustainable Development and 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. This publication summarizes the status of WASH in schools in the pan-European region. Available evidence was retrieved from scientific literature, national and international surveys and a desk review of case studies. The data show general progress in WASH policies and targets, but a concurrent lack of translation of this progress into efficient improvement of WASH in schools. Gaps and challenges are found as a result of non-comprehensive standards, inefficient coordination and inadequate surveillance and monitoring indicators. Further, neglected disparities and inequalities are observed through the region. WASH conditions do not reflect policies' aspirations and are not adequate to pupils' needs, affecting their health, well-being and performance at school. The main challenges across the region are related in particular to inadequate cleanliness and provision of consumables, as well as maintenance of sanitation facilities and accessibility to safe drinking-water. Policy-making needs to be supported by evidence-based information, especially on neglected topics such as menstrual hygiene management.

Keywords

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Abbreviations

EECCA	eastern Europe, the Caucasus and central Asia
GLAAS	UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water
HWF	handwashing facility
JMP	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation
MHM	menstrual hygiene management
NGO	nongovernmental organization
RPG	Regional Priority Goal
SDG	Sustainable Development Goal
UNICEF	United Nations Children's Fund
WASH	water, sanitation and hygiene

Scope and objective

This publication summarizes the status of water, sanitation and hygiene (WASH) in schools in the pan-European region and provides a comprehensive insight into the progress made and challenges concerning WASH in schools. It was mandated under the programme of work for 2014–2016 of the Protocol on Water and Health and aspires to serve as a sound evidence basis for informed policy action on WASH in schools.

Methods

Available evidence on the condition of WASH in schools was retrieved from scientific literature and national surveys. Relevant information about policies on WASH in schools and their implementation, as well as national coverage, was collected from international surveys and a desk review of case studies. These included the 2014 UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water report, the 2015 WHO report *School environment: policies and current status* and the 2015 United Nations Children's Fund report *Advancing WASH in schools monitoring*.

Main findings

Policies and regulations on WASH in schools

Most countries have standards in place, but these are diverse and often neglect critical WASH aspects.

National standards and regulations are commonly in place. Countries choose and regulate the essential requirements for ensuring adequate WASH in schools differently, however. Important aspects are not always addressed or regulated in line with international standards on, for example, pupil–toilet ratios and similar.

The legal framework is complex and lacks efficient coordination.

The legal framework is complex and spreads responsibilities among numerous institutions without a clear leading actor, thus compromising accountability, coordination and compliance. Communication and formally established coordination systems between the institutions involved are not always efficient, sometimes lacking a clear key actor with overall responsibility. Leadership on WASH in schools in the education sector is often weak, as WASH in schools is not considered an education intervention.

Policies and targets are set, confirming countries' commitment and reflecting priorities, but full implementation and improvement of WASH in schools is impeded.

Policies and targets on WASH in schools are mostly in place and national targets or programmes for improving WASH in schools have been approved in many countries. Enforcement mechanisms are not always well established, however. Policies and plans are often not fully implemented and financed. Coverage and the WASH aspects considered may vary, with hygiene less prioritized than water and sanitation. Successful implementation is observed associated with active participation of the school community, which fosters improvement in cleanliness and maintenance, promoting healthy behaviours and disease prevention.

Policy-making will not be successful unless critical gaps in surveillance are addressed and monitoring indicators improved.

Data from many countries indicate that surveillance systems and specific surveillance requirements for WASH in schools are often in place. Nevertheless, actual monitoring is not always regular, frequently has limited coverage and often does not actively engage either schools or education authorities. Indicators may be inadequate and/or heterogeneous, affecting data accuracy and comparability, and monitoring is not seen as a tool for informing and implementing policies and improvement interventions. Existing legislation and standards cannot be translated successfully into effective improvement action planning unless the problems and gaps hindering their application are known.

WASH conditions in schools

The reality of WASH in schools does not reflect the aspirations of standards in place and is not adequate to pupils' needs.

WASH in schools presents many challenges, regardless of the economic status of the country and the existence of policies and regulations. The most frequently reported issues relate to inappropriate planning; problems with physical infrastructure; a lack of consumables; poor cleaning and maintenance; and inadequate operation of water supply, sanitation and hygiene services. Pupil perception surveys reveal frequent dissatisfaction due to insufficient cleaning and maintenance, which is not always acknowledged by school management and staff, hindering healthy behaviours and promoting antisocial behaviours, such as vandalism.

- Access to water for drinking and handwashing in schools is often not ensured.

  Water may be absent, intermittent, unsafe and/or hard to access, far away or not allowed in class. Insufficient numbers or inadequate handwashing facilities and overly cold temperatures also hinder handwashing practices.

- Hygiene management and practice are not always adequate in schools.

  Toilets are frequently reported to be dirty, overcrowded and smelly; soap, toilet paper, drying devices and disposal bins to be insufficient. As a consequence, toilet avoidance is common among pupils and a lack of adequate hygiene education means that the practice of healthy behaviours is not promoted.

- Sanitation is not always adequately provided and maintained or accessible.

  Sanitation facilities may be absent or inadequate to pupil numbers and needs. Use of sanitation facilities is hindered by insufficient maintenance and cleanliness, poor building materials, lack of privacy, cold temperatures and poor illumination.

- Disparities and inequalities permeate WASH accessibility in schools.

  Children with disabilities do not have equal access to WASH facilities in schools. Girls' needs, especially during menstruation, are often not considered. Members of minority groups in rural areas or specific regions do not have equal access to WASH facilities in schools and are neglected by policies and funding programmes.

Scientific evidence on impacts of WASH in schools on pupils' health and well-being

Inadequate WASH affects children's health, well-being and cognitive performance.

The studies undertaken, although limited in number, indicate a clear association between children's health and WASH conditions in schools. A significant number of pupils avoid using WASH facilities, with consequences on health, well-being and cognitive performance. Inadequate WASH in schools may result in dehydration, urinary infections and constipation and, in some countries, parasitic infections. The evidence shows that toilet avoidance is fostered not only by insufficient and inadequate facilities but also by a lack of awareness among both teachers and children concerning the importance of WASH and the consequent school policies for drinking and toilet visits. Available studies also reported a beneficial effect of hygiene interventions, with a significant reduction of absenteeism due to infections during and/or after the intervention.

Policy-making needs to be supported by scientific research, especially on neglected topics.

The scientific research and monitoring data from the pan-European region are limited, especially with respect to middle-income countries. Important WASH-related topics like menstrual hygiene management, hygiene education and WASH-related health assessments still lack prioritization. As a consequence, the data available on the association between WASH in schools and related health problems or learning outcomes, as well as on the effectiveness of interventions to support informed policy action, are very limited.

Introduction 1

Access to water, sanitation and hygiene (WASH) is essential for healthy development and growth of children all around the world. Adequate access to WASH is every child's right, as stated in the Convention on the Rights of the Child (United Nations, 1989).

The recently approved 2030 Agenda for Sustainable Development (United Nations, 2015) also encompasses WASH in schools under the Sustainable Development Goals (SDGs) for health and well-being (SDG 3), education (SDG 4) and water and sanitation (SDG 6). The new Agenda explicitly addresses WASH in institutional settings like schools, and calls on countries to:

- reduce the burden of WASH-related diseases (targets 3.3 and 3.9);
- achieve universal and equitable access both to safe and affordable drinking-water (target 6.1) and to adequate and equitable sanitation and hygiene (target 6.2);
- improve the learning environment in schools (target 4.a) for all by 2030.

The Parma Declaration on Environment and Health, adopted at the Fifth Ministerial Conference on Environment and Health (WHO Regional Office for Europe, 2010), addresses health risks to children posed by poor environmental, working and living conditions, including risks posed by the lack of adequate WASH. By signing the Parma Declaration, Member States in the WHO European Region entered into a Commitment to Act on Regional Priority Goal 1 (RPG1), which "strive[s] to provide each child with access to safe water and sanitation in homes, child care centres, kindergartens, schools, health care institutions and public recreational water settings by 2020, and to revitalize hygiene practices".

The Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, adopted at the Third Ministerial Conference on Environment and Health (UNECE & WHO Regional Office for Europe, 2006), is the key regional policy instrument supporting implementation of RPG 1 at the national level. The Protocol's objective is to prevent, control and reduce water-related disease through sustainable water management. The third session of the Meeting of the Parties to the Protocol in 2013 in Oslo, Norway, adopted the 2014–2016 programme of work, which for the first time included a priority area concerned with improving and strengthening WASH in schools. Thanks to the work done under the Protocol, WASH in schools has received increased attention in many countries in the pan-European region.[1]

To support implementation of the 2014–2016 programme of work, the WHO Regional Office for Europe organized a meeting on advancing WASH in schools in Bonn, Germany, in September 2014. This brought together more than 50 participants from health and educational departments of 24 Member States, as well as from the United Nations Children's Fund (UNICEF), leading academic institutions, development aid agencies and nongovernmental and youth organizations. The meeting recommended, inter alia, preparation of a landscape report summarizing the evidence on WASH in schools through a literature review, appraisal of available survey information and identification of best practice case studies in school regulation, surveillance and management.

[1] This publication uses the term "pan-European region" to refer to the Member States in the WHO European Region and Liechtenstein. The WHO European Region comprises 53 countries: Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, the former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Ukraine, United Kingdom and Uzbekistan.

The aim of this publication is thus to provide an insight into the current state of WASH in schools in the pan-European region. Based on a systematic review of available scientific literature, international and national surveys, this report summarizes:

- policies and national regulations, including progress made in establishing and implementing national requirements for WASH in schools, and related challenges;
- available data about access to and functionality of WASH facilities in school settings;
- issues and challenges concerning WASH in schools and its effects on health, well-being and learning and the school environment.

This report complements the publication *Prioritizing pupils' education, health and well-being* (van Maanen et al., 2016) with evidence and examples, in support of Member States' and WHO's deliberations on advancing the agenda for universal access to WASH in schools. It aims to inform future priority activities under the Protocol's programme of work for 2017–2019 and to support the Parties to the Protocol in informed target-setting and the development of efficient and focused strategies. The findings of the report will also be useful for other stakeholders committed to and working on improving WASH in schools as a fundamental objective to protect children's health and to ensure basic human rights.

Methods 2

This publication consists of a systematic review of the data concerning WASH in schools in the pan-European region. In order to present a comprehensive landscape report, "WASH in schools" is defined as WASH in all types of education premises and childcare settings.

An overview of the current situation regarding policies and standards for WASH in schools and the associated political achievements in the region is given in Chapter 3. This is based on analysis of results reported by the following international surveys:

- the 2014 UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) report, which provides analyses of the state of the enabling environment, including governance, monitoring, human resources and financing directed to the WASH sector and the factors influencing progress on the delivery of services, and the raw data used to produce the report (WHO, 2014a; 2014b); this publication considers the information related to the 12 countries in the pan-European region that participated in the 2013–2014 GLAAS reporting cycle;
- the 2014 policy survey on the school environment conducted by the WHO Regional Office for Europe (2015), which assesses national and subnational progress in the implementation of the commitments made in the Parma Declaration, including RPG1 on WASH;
- the survey on WASH in schools coverage estimates published by UNICEF (2015), including national estimates for WASH in primary schools in 19 countries in the pan-European region; this promotes and supports improved monitoring of WASH in schools, focusing on coverage (gathered from 149 countries between 2008 and 2013) and monitoring indicators.

The chapter provides further analysis concerning national standards and policies in place among countries in the pan-European region. Information was retrieved from online governmental databases, journals and relevant surveys (UNICEF Regional Office for CEE/CIS, 2010; UNICEF Georgia, 2012; ONS, 2013); further information was reported by personal communication from country representatives.

Chapter 3 also compiles and evaluates targets on WASH in schools set by the Parties to the Protocol under the provisions of Article 6, as well as the summary reports submitted for the third session of the Meeting of the Parties according to Article 7 (UNECE, 2016). Complementary information on national WASH in schools programmes and plans was collected through country briefs or personal communications from country representatives who participated in the WHO meeting on advancing WASH in schools (Bonn, Germany, September 2014) and the first expert group meeting on WASH in schools (Budapest, Hungary, April 2015).

Chapter 4 provides an in-depth analysis of the conditions of WASH in schools in countries in the pan-European region, based on information available from national surveys undertaken by state institutions, nongovernmental organizations (NGOs) and international agencies. The surveys reviewed were retrieved either from the public domain or via personal communication. Most were in English; surveys in French, German, Italian and Russian were also analysed.

An Internet search was also conducted for each country in the region using Google and Bing search engines to compile further information on national policies, as well as case studies on school regulation, surveillance and management. Complementary information provided at the two WHO meetings of September 2014 and April 2015 was taken into account, especially for countries whose data were not otherwise available.

Chapter 5 presents the findings of a systematic review of the scientific literature, adapted from Jasper et al. (2012), to assess the state of WASH in schools in the pan-European region in terms of prevailing inadequacies and observed effects of impaired or improved access to WASH on pupils' health. Peer-reviewed literature available in the public domain and retrievable from the scientific databases PubMed and ScienceDirect was screened. Articles addressing topics relevant to WASH in schools were selected – namely, those related to handwashing, sanitation and toilet facilities, hygiene education, drinking-water provision, menstrual hygiene and health assessments.

Studies without a school-based component were excluded. Publications that referred to schools, nurseries, day care facilities or kindergartens were considered. Only articles published between 2000 and 2014 in English or German were included in the review.

The primary research was based on general search terms (Table 1), covering all potential associated terms (such as "water well", "water waste" and so on) and health outcomes. This identified 25 482 publications whose title or keywords incorporated a single search term or a combination of terms.

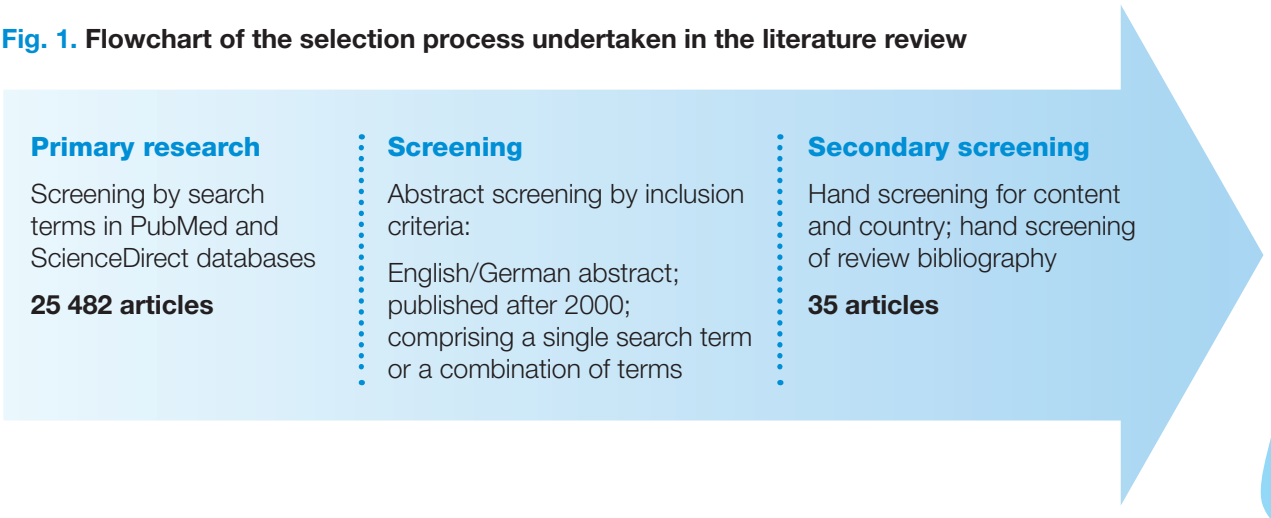
Table 1. Search terms and number of results of the literature review

Search terms	PubMed	ScienceDirect
	By title/abstract	By title/abstract/keywords
school[a] AND water OR sanitation	8 014	827
school[a] AND hygiene	419	599
school health policies AND water OR sanitation	7 197	21
school health policies AND hygiene	0	15
school[a] AND toilet[a]	757	59
school absenteeism AND water OR sanitation	6 771	2
school toilets	19	47
handwash[a] AND school[a]	0	19
hand washing AND school[a]	379	23
handwashing AND school[a]	296	18
Total search results	**23 852**	**1 630**

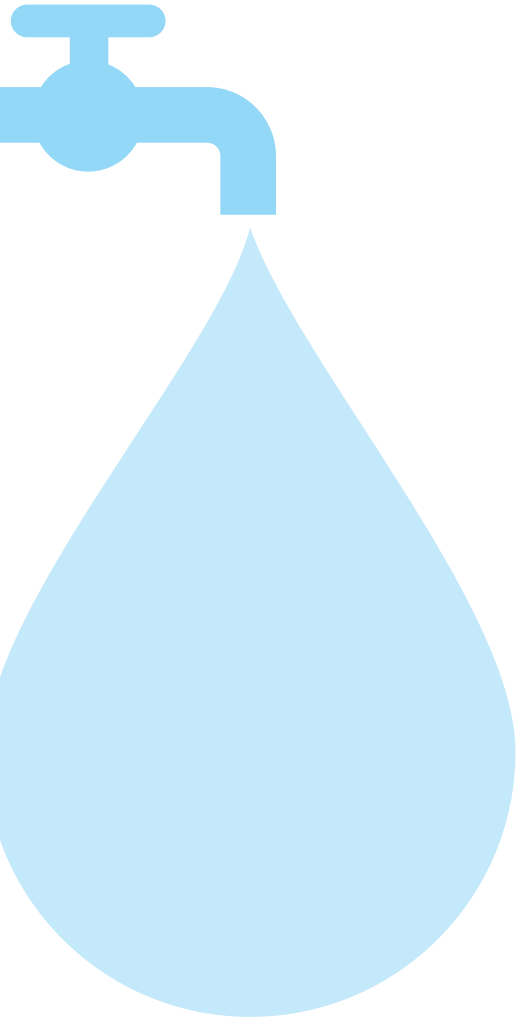
[a] Including additional long-tail keywords that came up during the research and were considered relevant (e.g. schoolchildren, preschool, school facilities and so on).

A screening was then conducted of all article abstracts. Global reviews were not further considered but were screened for relevant literature. During a secondary screening, the articles were hand-searched for relevant content and countries to exclude those not related to WASH in schools but primarily covering aspects such as food hygiene, studies located outside the pan-European region and duplicates. Where articles used identical data sets, only one was kept. At the end, 35 studies met all the inclusion criteria (Fig. 1).

Fig. 1. Flowchart of the selection process undertaken in the literature review



The scientific databases used for the literature search cover 5605 (PubMed) and 3608 (ScienceDirect) journals in different languages and provide at a minimum an English title, keywords and abstract. Articles that were only available in a language other than English or German and were not referenced by the two large literature search databases were thus excluded. It is therefore acknowledged that the search method may have excluded relevant scientific literature, especially because WASH in schools literature may have been published in various languages in national journals. Nevertheless, it is assumed that a substantial part of the scientific research of high quality will be published in international journals to increase scientific visibility and recognition. In addition, experts and country representatives who participated in the WHO meetings were asked to provide possible missing literature from national sources. Seven additional articles were added after the initial review, including five peer-reviewed articles in Russian.



3 Policy framework on WASH in schools in the pan-European region

This chapter outlines the current situation concerning policies, plans and targets for WASH in schools adopted in countries in the pan-European region. It summarizes the findings of relevant international surveys – in particular, the 2014 GLAAS survey (WHO, 2014a), the 2014 policy survey on the school environment conducted by the WHO Regional Office for Europe (2015) and the UNICEF survey on WASH in schools coverage estimates (2015). It also presents an overview of national targets that countries set under the Protocol on Water and Health to provide closer insight in the areas and details chosen in different countries of the region. Finally, the chapter provides examples of national policies and legislation from selected countries, including information on adopted mechanisms for sector coordination and surveillance systems in place.

3.1. National policies and standards on WASH in schools

Policies and standards are in place, but they are not always comprehensive and often neglect critical WASH aspects.

According to the information obtained and analysed from 42 countries in the pan-European region, at least 40 report having policies in place that address WASH in schools.[2] Most of these have legally binding requirements, while some have non-statutory guidelines – either in place of or complementing/extending the legal requirements.

Table 2 provides an overview of technical areas commonly covered by national policies in the region, aimed at ensuring children's access to adequate sanitation and hygiene in schools. Different countries consider it essential to regulate different parameters. Positive progress is nonetheless observed: in the majority of countries the policies encompass requirements related to key aspects (such as privacy, adequate illumination and temperature) and specify maximum numbers of pupils per toilet. Further, at least eight countries introduced new policies after the Parma Declaration (WHO Regional Office for Europe, 2010).

Table 3 gives examples of additional standards included in the legislation evaluated from a sample of seven countries. These data show the extent and detail of national requirements for WASH in schools, covering other important aspects like the proximity of handwashing facilities (HWFs) to the toilets or the characteristics of the building materials (such as whether they are easy to clean), which are in line with WHO recommendations (Adams et al., 2009), among others.

Although many countries have policies, analysis of their scope reveals that the main requirements are not always in place in accordance with WHO recommendations (Adams et al., 2009). This is especially the case regarding the number of pupils per toilet, for which the recommendations suggest a ratio of 1:25 toilets to female pupils and 1:50 toilets and urinals to male pupils. This limitation might promote overcrowding of WASH facilities and affect hygiene conditions in schools. Table 4 provides selected examples of ratios of toilets to pupils retrieved from a desk review of related legislation in five countries in the region. It also shows examples of ratios of HWFs to pupils, which are not specified in WHO recommendations but are included in the WASH in schools standards in 20 countries (see Table 2).

[2] The countries with policies in place include the 34 that participated in the WHO school policy survey (WHO Regional Office for Europe, 2015) and six additional countries, for which information was retrieved from briefs by country representatives at the WHO meeting on advancing WASH in schools in Bonn, Germany, in September 2014 or via desk reviews: France, Kyrgyzstan, Republic of Moldova, Russian Federation, Ukraine and Uzbekistan.

Table 2. Requirements for WASH in schools addressed by national policies

Requirement	Countries
Policy specifying minimum parameters	34/34 (100%)
Maximum number of pupils per toilet place	23/34 (68%)
Maximum number of pupils per handwash basin	20/34 (59%)
Adequate light in toilets and washrooms	26/34 (76%)
Comfortable temperature in toilets and washrooms	26/34 (76%)
Privacy standards for toilet cabins	25/34 (74%)
Accessibility for children with disabilities	22/34 (65%)
Policy specifying operation and maintenance	28/34 (82%)
Provision of adequate amount of toilet paper	17/34 (50%)
Provision of soap in handwashing facilities	20/34 (59%)
Provision of adequate amount of water for handwashing	23/34 (68%)
Provision of towels/driers	21/34 (62%)
Minimum cleaning requirements for sanitation facilities	23/34 (68%)
Regular inspection and maintenance of sanitation facilities	17/34 (50%)
Policy on hygiene education	28/34 (82%)
Hygiene education required to be part of school curriculum	19/34 (56%)
Minimum educational requirements specified	16/34 (47%)
Hygiene education addressing gender-specific aspects	11/34 (32%)
Officer responsible for compliance	23/34 (68%)
Regular surveillance	29/34 (85%)
Minimum requirements for inspections	15/34 (44%)
Follow-up inspections required if deficiencies found	26/34 (76%)
New policies introduced after Parma Declaration	8/34 (24%)

Note: reporting countries are Albania, Andorra, Armenia, Austria, Belarus, Belgium, Bosnia and Herzegovina, Croatia, Czechia, Denmark, Estonia, Finland, Georgia, Germany, Hungary, Ireland, Israel, Italy, Latvia, Lithuania, Malta, Montenegro, Norway, Poland, Portugal, Serbia, Slovakia, Slovenia, Spain, Sweden, Tajikistan, the former Yugoslav Republic of Macedonia, Turkey and the United Kingdom.

Source: WHO Regional Office for Europe (2015).

Table 3. Examples of additional parameters specified in the standards for WASH in primary and secondary schools

Parameter	United Kingdom		France	Germany	Hungary	Italy	Russian Federation
	England	Wales					
HWFs close to toilets	✔	✔	✔	✔	✔	•	–
Provision of hot water	✔	✔[a]	•	•	✔	✔	✔
Characteristics of building materials (e.g. easy to clean)	•	✔[a]	✔	✔	•	•	✔
Accessibility (one facility per floor)	•	•	•	✔	✔	✔[b]	✔
Alternatives for areas with no centralized water supply or sewage system	•	•	•	•	•	•	✔

Key: ✔ specified in the legislation analysed; – information not retrievable; • not specified in the legislation analysed.

[a] Regulated in non-statutory guidelines.

[b] Regulated only concerning washrooms for disabled people.

Sources: Department for Education (2012a; 2012b); Department for Education & Welsh Office (1999); Federation Council (2011); Health Officer of the Russian Federation (2008; 2010); Hungarian Standards Institution (2012); Lein (2013); Ministry for Public Works (1968); Ministry for Public Works & Ministry for Public Education (1975); Ministry of Labour (2008); Ministry of Labour, Social Relations and Solidarity (2015); Ministry of Public Education, Youth and Sport (1989); Welsh Government (2012).

Table 4. Examples of fittings to pupils ratios specified in the standards for primary and secondary schools

Country		Toilets to pupils ratio Boys | Girls	Urinals to pupils ratio	HWFs to pupils ratio
France		1:20 | 1:10	1:20	1:3
Germany		1:50[c] | 1:25[c]	1:25[c]	1:60[c]
Hungary		1:40 | 1:10	1:20	–
Italy		1 per class	1 per class	–
United Kingdom	England	1:20 | 1:20	–	1:20[a]
	Wales	1:20 | 1:20	–	–[b]

Key: – information not retrieved.

[a] The number of washbasins can be reduced for pupils aged over 11 years.

[b] For pupils younger than 11 years, washbasins should be in the ratio 1:1 with sanitary fittings; for older pupils washbasins should be in the ratio 2:3 with sanitary fittings.

[c] These figures represent ratios for facilities used during breaks; during lessons one toilet/urinal per gender should be available on each floor.

Sources: Department for Education (2015); Department for Education & Welsh Office (1999); Hungarian Standards Institution (2012); Lein (2013); Ministry for Public Works & Ministry for Public Education (1975); Ministry of Labour, Social Relations and Solidarity (2015).

Other critical aspects are not sufficiently addressed (see Table 2). Requirements for regular inspection and maintenance are not specified in the policies of 17 countries; equality is not ensured by all policies, as 12 countries do not address requirements for facilities used by children with disabilities; and many countries lack requirements for the provision of hygiene consumables like soap (14), drying tools (13) and toilet paper (17). Information related to policies ensuring adequate menstrual hygiene management (MHM) was not retrievable.

Hygiene education is a recognized essential element for empowering children with progressive acquisition of knowledge and skills to adopt responsible hygiene behaviour for themselves and their schools. Hygiene education is included in the policies of more than half of the countries in the pan-European region, but only 19 countries reported that it was integrated into the school curriculum (see Table 2). Of these countries, not all regulate minimum educational requirements and only 11 include gender-specific aspects, like MHM, in hygiene education.

Legal frameworks are complex and efficient coordination is frequently lacking.

Policies and standards may not always specifically address only schools, and the links between relevant documents are not always explicit. Depending on the country context, requirements on WASH in schools can be set by different ministries or departments, including education, health, labour, construction and/or environment (Table 5).

Table 5. Examples of national standards

Country		Legally binding requirements in place	Ministry or department setting requirements
France		Partly[a]	Labour; education
Georgia		Partly[a]	Labour, health and social affairs; education
Germany		Partly[a]	Construction; environment
Hungary		Yes	Environment; human resources
Italy		Yes	Labour; education; infrastructure and transport
Russian Federation		Yes	Health
United Kingdom	England	Partly[a]	Education
	Wales	Yes	Education

[a] Some requirements are legally binding; some are specified in non-statutory guidelines.

Sources: Bauministerkonferenz (2016); Department for Education (2012a; 2012b; 2015); Department for Education & Welsh Office (1999); Environmental Protection Agency (2008); Health Officer of the Russian Federation (2008; 2010); Hungarian Standards Institution (2012); Lein (2013); Ministry for Public Works (1968); Ministry for Public Works & Ministry for Public Education (1975); Ministry of Environment (1997); Ministry of Human Resources (2012); Ministry of Labour (2008); Ministry of Labour, Social Relations and Solidarity (2015); Ministry of Public Education, Youth and Sport (1989); Welsh Government (2012).

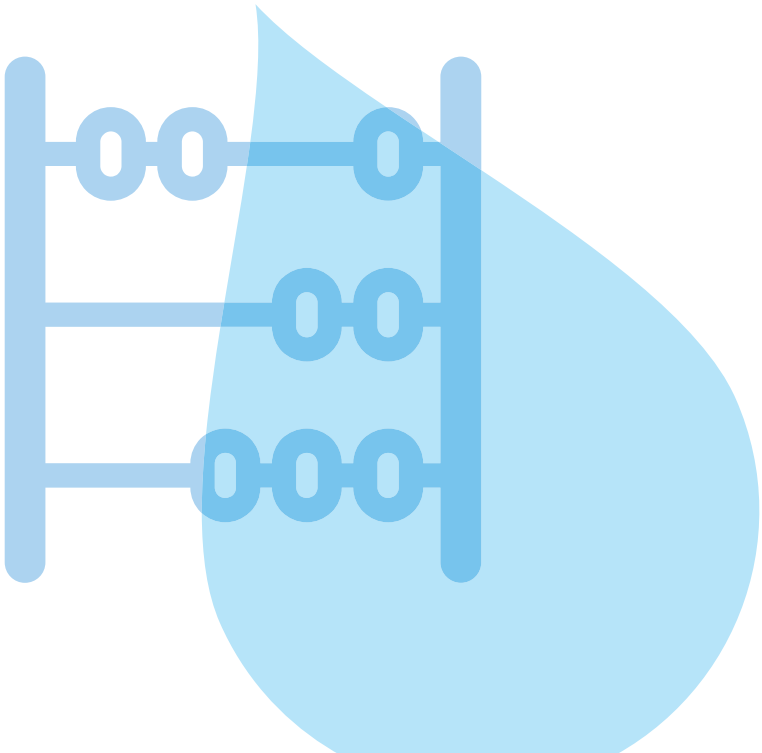
Requirements on WASH in schools are frequently scattered across a number of legal documents: different aspects – such as provisions on sanitation facilities, drinking-water, health surveillance or hygiene promotion – may sit under different jurisdictions. Some countries, including England,

Germany and Italy, have therefore developed complementary advisory documents (Department for Education, 2015; Lein, 2013; ISPESL, 2005), which provide comprehensive references to available legislation and help recipients to understand all their obligations concerning WASH (and other issues) in schools. New comprehensive guidelines have also been developed in Georgia (Box 1).

Box 1. New guidelines for WASH in schools in Georgia

In Georgia hygiene and health in schools are addressed by legislation (Ministry of Labour, Health and Social Affairs, 2001; 2007). Further, comprehensive non-statutory guidelines have recently been developed (Ministry of Education and Science & Educational and Scientific Infrastructure Development Agency, 2013; Ministry of Labour, Health and Social Affairs, 2016). These address all main aspects concerning WASH in schools, including schematic representations of how to arrange sanitation facilities, shower blocks and sanitation facilities for disabled people adequately in the different school categories, as well as requirements for hygiene education and for surveillance of WASH facilities. The 2016 guidelines, which are specific to preschools, were officially approved by the Ministry of Labour, Health and Social Affairs. Approval of the 2013 guidelines, developed by the Ministry of Education and Science and specific to schools, is still pending. To support the guidelines with respect to hygiene education, the manual *Be clean and healthy* was also produced, targeting teachers and pupils of elementary schools (Slovinsky & Dalakishvili, 2013).

The division of roles and responsibilities for different WASH aspects may be spread over different institutions, and the leading body that takes overall responsibility often remains unclear. A coordination system between all concerned stakeholders should be in place to avoid implementation gaps and ensure equal access to WASH for all children. Several countries in the pan-European region reported establishment of a coordination body or mechanism to work on issues related to WASH in schools (Box 2). Such a mechanism might be regulated within national legislation, but it is not always enforced in practice. Other aspects of WASH coordination currently in place might affect its efficiency. For example, joint working groups are not always permanent; or when a coordinating body is established, in some cases its purpose is limited to surveillance only.



Box 2. National coordinating mechanism for WASH in schools

Of the 20 countries taking part in the WHO meeting on advancing WASH in schools in Bonn, Germany, in September 2014, the majority reported that a formal mechanism had been established to coordinate the activities of different stakeholders concerned with WASH in schools. A number of countries (9) reported that coordination was addressed in national legislation; a few (3) reported that a specific body was responsible for coordinating activities. For example, in the former Yugoslav Republic of Macedonia, the National Institute of Public Health coordinates WASH in schools activities undertaken by different government institutions, while the State Sanitary and Health Inspectorate coordinates surveillance activities with the Ministry of Education and Science. Several countries reported that intersectoral coordination was triggered on an ad hoc basis through implementation of the Protocol or participation in the 2013–2014 GLAAS reporting cycle.

Source: Information collected through country briefs from representatives who participated in the meeting.

3.2. Targets for WASH in schools

Targets have been set under the Protocol on Water and Health and reflect country priorities.

According to the provisions of Article 6 of the Protocol, Parties are required to set national priority targets on water, sanitation and health. Nine countries have set targets, or are in the process of setting targets, on WASH in schools, covering five of the 14 target areas (a–n) listed in Article 6, paragraph 2 of the Protocol (UNECE & WHO Regional Office for Europe, 2006). These include:

- 6.2(a) quality of the drinking-water supplied (3 countries);
- 6.2(b) reduction of the scale of outbreaks and incidents of water-related diseases (4 countries);
- 6.2(c) access to drinking-water (6 countries);
- 6.2(d) access to sanitation (7 countries);
- 6.2(f) application of recognized good practice for implementation (1 country).

Further, one country has set a national target covering improved communication to the public and education.

Table 6 sets out the variety and nature of the national targets on WASH in schools set by countries under the provisions of Article 6 of the Protocol. These are sometimes different in scope, as they are aimed to reflect the current challenges and priorities of each country. Some countries focused on the initial steps of assessing the condition of WASH in schools and/or estimating the financial requirements; others planned to act on improving school facilities or hygiene education.

Table 6. Examples of WASH in schools targets set under the Protocol

Country	Target area[a]	Targets
Armenia[b]	b, c, d	• Improving access to safe drinking-water in educational facilities (from kindergarten to senior school and boarding facilities) • Improving sanitation in educational facilities
Azerbaijan[b]	a, b, c, d	• Achieving drinking-water in schools of appropriate quality for main chemical and microbiological parameters • Developing a national strategy for prevention and control of soil-transmitted helminthiasis • Provision of improved water sources in preschools and schools • Providing children with access to improved sanitation and conditions for handwashing with soap in preschools and schools
Belarus	b	• Reducing the morbidity by acute enteric infections related to the drinking-water in the educational institutions
Germany	–	• Improving national communication and education of the general public regarding drinking-water, with particular consideration of children's health
Kyrgyzstan[c]	b, c, d	• Improving the monitoring of water-related diseases among children • Assessing the status and required investments for improvement of water supply systems in schools and preschool institutions and developing a rehabilitation programme with provision of sustainable funding sources • Providing improved sanitation facilities for schools and preschool institutions
Republic of Moldova	a, c, d	• Achieving compliance with all existing chemical and microbiological drinking-water quality standards in schools • Increasing access to improved water supply sources for children in schools and preschool institutions • Providing access to improved sanitation systems for children in schools and preschool institutions
Serbia	c, d, f	• Estimating the investment required to improve water supplies in schools and preschool facilities from individual wells or connected to rural water supply system • Estimating the investment required to improve access to sanitary equipment, proper wastewater disposal and regular emptying of septic tanks in schools and preschools • Developing a plan for the improvement of sanitation in schools and preschools • Improving sanitation in schools and preschools • Raising awareness among teachers, school staff and pupils of the hygiene of the sanitation facilities in schools • Improving WASH surveys in schools by introducing new methodology • Raising awareness of adequate water supply and sanitation in schools, especially in those with individual wells
Ukraine	a, d	• Providing children in preschools and secondary schools with drinking-water of good quality • Providing improved sanitation for children in preschools and secondary education facilities in cities, towns and villages

[a] The letters represent the target areas listed under Article 6, paragraph 2 of the Protocol.
[b] The country is in the process of drafting targets, or has drafted national targets that are pending adoption.
[c] The country has set targets but is not a Party to the Protocol yet.

Targets have been set within national programmes to increase access to WASH services, but hygiene is less prioritized.

The 2014 GLAAS survey (WHO, 2014a) investigated WASH coverage targets for schools that countries have set or that are required by national policies. The results indicate countries' commitment to improve accessibility of WASH services in schools in the region (Table 7). This is in line with the progress observed for policies on WASH in schools outlined in section 3.1.

Table 7. Examples of WASH in schools coverage targets set

Participating country	Sanitation targets		Drinking-water targets		Hygiene promotion targets	
	Coverage target (%)[a]	Target year	Coverage target (%)[a]	Target year	Coverage target (%)[a]	Target year
Azerbaijan	100	2017	Not listed	2017	Not listed	2017
Belarus	100	Reached	100	Reached	100	Reached
Georgia	70	Not listed	86	Not listed	Not listed	Not listed
Kazakhstan	27	Not listed	52	Not listed	100	Not listed
Kyrgyzstan	90	2020	100	2020	Not listed	Not listed
Lithuania	100	Reached	100	Reached	100	Reached
Republic of Moldova	100	2020	100	2020	100	2015
Serbia	100	2015	100	2015	100	2015
Tajikistan	80	2015	55	2020	Not listed	Not listed
The former Yugoslav Republic of Macedonia	100	Not listed	100	Not listed	Not listed	Not listed
Ukraine	20–40	2015; 2020	25–30	Not listed	Not listed	Not listed

[a] Indicator: percentage of schools.
Source: WHO (2014b).

Almost all of the 12 countries in the pan-European region that participated in the 2014 GLAAS reporting cycle have set coverage targets for water and sanitation in schools (Table 7); however, fewer than half have set targets for hygiene promotion in schools, which indicates a need to give this higher priority. Seven countries have set a universal access target for sanitation and/or drinking-water and/or hygiene in schools. Some of the reporting countries have already reached the coverage targets set.

3.3. Implementation of policies and targets

The lack of comprehensive implementation plans and funding may impede improvement of WASH in schools.

Despite numerous policies and programmes, the prevailing conditions of WASH in schools do not always match national requirements, as shown by the results of the school surveys recently carried out (see Chapter 4). This divergence indicates that the existence of policies and standards is not

sufficient to ensure access to safe WASH in schools and it confirms the importance of setting targets and strengthening enforcement with funded action plans. As shown in section 3.1, WASH in schools requirements are typically addressed in many separate documents. This might be a critical hindering factor for implementing concrete activities to ensure compliance in schools.

According to the data provided in the 2014 GLAAS survey (WHO, 2014b), once policies are approved by the government, implementation does not always follow directly. Only a few countries (five of the 12 respondents) have progressed further by developing plans for implementation, organizing funding and reviewing the policies after implementation (Table 8). Most of the countries reported starting to develop a plan to implement WASH facilities in schools only recently. According to the 2014 GLAAS report (WHO, 2014a), it seems that a strong limiting factor is the amount of available governmental budget.

Table 8. Stages of development and implementation of national policies and plans for WASH in schools

Policies and plans	Sanitation and drinking-water	Hygiene
Plan being fully implemented with necessary funding and regularly reviewed	Azerbaijan, Belarus, Estonia, Kazakhstan, the former Yugoslav Republic of Macedonia	Azerbaijan, Belarus, Estonia, Kazakhstan
Plan costed and partially implemented, based on approved policy	Republic of Moldova, Serbia, Ukraine	Republic of Moldova, Serbia, Tajikistan, Ukraine
Implementation plan developed, based on approved policy	Kyrgyzstan, Lithuania, Tajikistan	Republic of Moldova, Serbia, Tajikistan, Ukraine
National policy formally approved and gazetted (formal announcement)	Georgia	–
No national policy or policy still under development	–	Georgia

Source: WHO (2014b).

Table 9 provides examples of specific national or subnational programmes and activities on WASH in schools reported by country representatives at the WHO meeting on advancing WASH in schools in Bonn, Germany, in September 2014. Many of the programmes target specific geographical areas and they are usually aimed to improve a particular aspect of WASH in schools, such as water supply and sanitation systems, hygiene education or surveillance, among others.

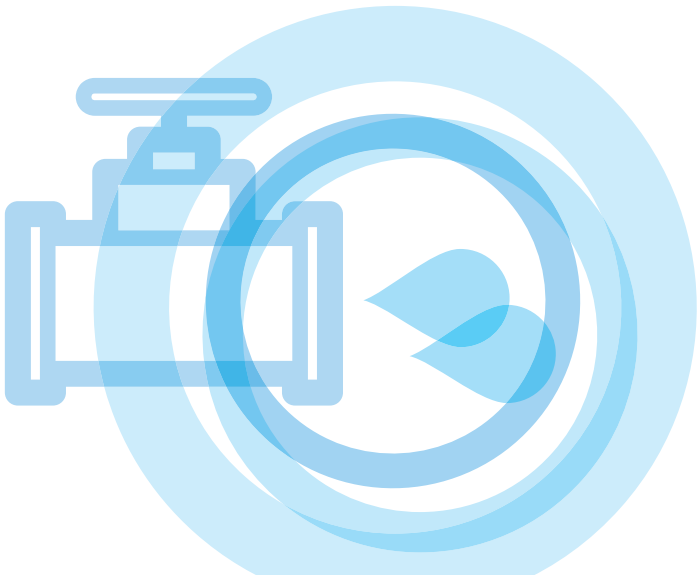


Table 9. Examples of programmes and/or planned activities on WASH in schools

Country	Programme and scope
Armenia	**National** Programme: WASH-related activity developed by the National Centre for Disease Control and Prevention (concluded) Scope: to investigate the current situation on WASH in schools
Serbia	**National** Programme: "Delivery of improved local services", led by the education sector in 2013 Scope: to replace WASH facilities in schools **Regional** Programme: "Exposure assessment survey in schools using the standardized WHO methodology in Južnobački Region" pilot project, led by the health sector (2013–2014) Scope: to assess WASH in schools and other parameters like exposure to mould, indoor air quality and environmental tobacco smoke; to improve methodology for regular national schools surveys through implementation of the WHO methodology in one administrative district
The former Yugoslav Republic of Macedonia	**National** Programme: "Surveillance of WASH in schools", a national public health prevention programme (Official Gazette of the Republic of Macedonia No. 195/2014) Scope: to conduct inspections and drinking-water analysis to identify risk factors and measures to promote healthy school settings and measures to improve pupils' health, with the eventual aim of improving the sanitary–hygienic situation in schools
Turkmenistan	**National** Programme: a number of national programmes, including "Provision of clean water to the population", approved by decrees of the President of Turkmenistan Scope: to build or renovate schools with high-quality drinking-water supplies and improved sanitation facilities; to develop hygiene skills in children
Ukraine	**National** Programme: "Drinking-water of Ukraine" (2006–2020), Ordinance No. 2455-IV (2005) Scope: to allocate funds to improve drinking-water supplies and quality in preschool establishments, schools and health facilities, primarily in rural areas **Regional** Programme: local network WASH projects, such as "Safe water and sanitation for the children of Ukraine" Scope: to promote hygiene and improve children's access to safe water and sanitation by implementing technical solutions

Source: Information collected through country briefs from representatives who participated in the WHO meeting on advancing WASH in schools in Bonn, Germany, in September 2014.

3.4. Surveillance

Policy-making will not be successful unless critical gaps in surveillance are addressed.

The majority of countries in the pan-European region have a surveillance system in place for WASH in schools. A lack of regularity in surveillance has been observed, however, as has a lack of enforcement actions.

According to the results of the WHO policy survey on the school environment (WHO Regional Office for Europe, 2015; see Table 2 in section 3.1) and the information provided by country representatives during the WHO meeting on advancing WASH in schools in Bonn, Germany, in September 2014 (Table 10), surveillance is required by law in at least 35 countries in the region. Of the 34 countries that took part in the WHO survey, minimum requirements for inspections are regulated in 15; if deficiencies are found, follow-up inspections are required in 26 countries (see Table 2). Further, a number of countries regulate surveillance frequency within their legislation, and at least nine require a frequency of one audit a year or more (Table 10).

Table 10. Examples of requirements for frequency of WASH surveillance specified in national legislation

Country	Frequency requirements
Albania	Twice a year
Bosnia and Herzegovina	Four times a year
Czechia	Kindergartens: once every five years Elementary schools: once every two years Additional annual unannounced inspections
Estonia	Once every two years
Hungary	Hygienic surveillance: once a year In-depth survey: each facility group once every 5–7 years[a]
Kyrgyzstan	Once a year
Latvia	Once a year Additional audit monitoring
Lithuania	Once a year
Montenegro	Once a month
Russian Federation	Once a year Additional ad hoc inspections
Serbia	Once a year
The former Yugoslav Republic of Macedonia	Once a month and 15 days before the school year starts
Ukraine	Once a year

[a] The requirements are not within the legislation at present, but are recommended by the Chief Medical Officer and are regularly observed.

Source: Information collected through country briefs from representatives who participated in the WHO meeting on advancing WASH in schools in Bonn, Germany, in September 2014.

Challenges in regularity, coverage and comprehensiveness of surveillance are observed, however, and several countries conduct surveillance only in response to disease outbreaks. In addition, national surveys presented in Chapter 4 sometimes suggest the lack of an efficient implementation system to translate surveillance findings into improvement action. Surveillance outcomes do not in fact always lead to follow-up corrective measures for noncompliant schools, as routine surveillance is sometimes used only to document (non)compliance. The findings are not always evaluated and transmitted into a mandatory reporting system for the relevant authorities and policy-makers to foster implementation. This may therefore affect their ability to keep track of progress and to gain a comprehensive understanding of the situation. This lack of information sharing and communication between the institutions involved is a hindering factor in ensuring the implementation of WASH in schools.

Even though WASH in schools has a recognized effect on pupils' school performance (see Chapter 5), surveillance is often seen as merely an issue of infrastructure (for example, number of toilets) or health (for example, number of infections). The health sector (such as the ministry of health, public health department or local health authority) may be accountable for surveillance. Nevertheless, the education sector rarely has an active role in the monitoring of WASH conditions in schools, except in some countries (including Kyrgyzstan and Scotland), where the ministry of education or the school administration share responsibility for surveillance with the health sector.

The challenges for surveillance could also result from a lack of direct engagement with schools. This is promoted in some countries, however – for example, in Georgia and in Scotland and Wales in the United Kingdom – avoiding the potential challenges related to a lack of or inefficient coordination among the different authorities involved. In Scotland, for example, schools are directly involved in the reporting system; in Georgia and Wales assessment tools are included in national guidelines, allowing schools to actively participate in the implementation process.

Effectiveness of surveillance is affected by heterogeneous and inadequate indicators.

Box 3 presents UNICEF's (2015) estimates of the status of WASH coverage target implementation in primary schools, especially for countries with middle-income economies. Among the 19 reporting countries, in 2013 about three quarters reported water and sanitation coverage of 85% or higher, and 36% of countries reported universal coverage (Box 3). These data are often of questionable accuracy, however, and analysis is challenging as coverage measures are typically heterogeneous. Data sets from different countries or from within the same country may originate from different sources (such as national statistics versus international surveys); they are thus not always comparable owing to the use of different indicators. Further, in some cases coverage indicators are not specified.

Another challenge is the use of indicators that do not completely represent the actual condition of WASH in schools. These include indicators on the mere presence of facilities, with no further details on accessibility or type of services (for example, improved or unimproved services[3]); or on the presence of single-sex facilities, which provides more information related to privacy and accessibility but still does not inform on functionality and type of services.

[3] Improved drinking-water and sanitation/sanitation facilities are defined according to the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) (WHO & UNICEF, 2016a).

Box 3. National WASH in schools coverage estimates

The UNICEF (2015) report *Advancing WASH in schools monitoring* provides national estimates on water and sanitation coverage in schools from 149 countries (gathered between 2008 and 2013), including from 19 countries in the pan-European region (Table 11). All figures are based on linear regression of the available data on WASH in schools coverage (restricted to primary schools), retrieved from the UNICEF country office annual reports and GLAAS datasets from 2009 and 2011.

In most countries reported coverage is generally high (between 85% and 100%), but the indicator used to monitor coverage is often unknown or not specified. Indicators reported by countries include:

- existence of any sort of water supply or sanitation in Bosnia and Herzegovina;
- presence of single-sex toilets (as a measure of privacy) in Albania, Armenia and Kyrgyzstan;
- functionality of facilities in Albania and Georgia (not for sanitation);
- presence of improved services (according to the WHO/UNICEF JMP definitions (WHO & UNICEF, 2016a)) in Azerbaijan and Georgia.

Water and/or sanitation coverage lower than 85% is reported for Albania, Azerbaijan, Georgia, Kyrgyzstan, the Republic of Moldova and Tajikistan in 2013. Between 2008 and 2013 an increasing trend of water coverage can be observed for Armenia and Ukraine, and of sanitation coverage in Armenia and Tajikistan; however, for some countries trends could not be observed as the data were insufficient for the regression analysis.

Table 11. National coverage estimates for WASH in primary schools

Country	Water coverage 2008 (%)	Water coverage 2013 (%)	Known indicator	Sanitation coverage 2008 (%)	Sanitation coverage 2013 (%)	Known indicator
Albania	51	51	Functionality	30[a]	30	Functionality Single-sex toilets
Armenia	84	92	–	85	86	Single-sex toilets
Azerbaijan	5[a]	5	–	68[a]	68	Improved services[b]
Belarus	100	100	–	100	100	–
Bosnia and Herzegovina	100	100	Existence of facility	100	100	Existence of facility
Bulgaria	100	100	–	100	100	–
Croatia	100	100	–	100	100	–
Georgia	75	75	Functionality Improved services	70	70	Improved services[b]
Kazakhstan[c]	85	85	–	85	85	–
Kyrgyzstan	85	85	–	53[a]	53	Single-sex toilets
Montenegro	95	95	–	95	95	–
Republic of Moldova	51	51	–	70	70	–
Romania	90[a]	90	–	90[a]	90	–
Russian Federation	100	100	–	100	100	–
Serbia	95	95	–	95	95	–
Tajikistan	51[a]	51	–	17	29	–
Turkey	99	99	–	99	99	–
Ukraine	86	100	–	100	100	–
Uzbekistan	100	100	–	100	100	–

[a] The data were insufficient for a reliable estimate; the same value is reported for 2013 as for 2008.
[b] The indicator reports the presence of improved sanitation, which the JMP defines as a facility that ensures "hygienic separation of human excreta from human contact".
[c] Coverage targets reported in the 2014 GLAAS report (WHO, 2014a; Table 7) were lower than those reported here.

Source: UNICEF (2015).

In general, inefficient indicators and reporting mechanisms cannot provide policy-makers with meaningful information concerning WASH conditions in schools; this hinders tracking of progress and taking informed policy actions. Efforts have been made to create standardized monitoring tools – for example, with the development of the Education Management Information System (EMIS) (UNICEF, 2011) or with the provision of an assessment checklist within the WHO guidelines for WASH in schools (Adams et al., 2009). Recently, the JMP has been working towards an efficient monitoring system to enable tracking and comparing of progress. This would allow the progressive implementation of WASH in schools targets within the framework of the SDGs. A multiservice ladder has been developed (WHO & UNICEF, 2016b) and clear definitions have been adopted for each service level. The starting level represents basic services, corresponding to the SDG indicator for education target 4.a, measured as:

- the percentage of pre-primary, primary and secondary schools with drinking-water from an improved water source available at the school;
- the percentage of pre-primary, primary and secondary schools with improved sanitation facilities, which are sex-separated and usable;
- the percentage of pre-primary, primary and secondary schools with HWFs which have soap and water available.

The advanced service level of the ladder includes aspects beyond availability of facilities, encompassing quality and acceptability aspects of WASH in schools, which will help to reduce the discrepancies between the observational data and pupils' perspectives (see Chapter 4).

4 WASH conditions in schools: results from national surveys

4.1. Overview of national surveys

Countries in the pan-European region have been making progress towards ensuring WASH in schools, especially in establishing national policies and targets, as outlined in Chapter 3. Effective decision-making and improvement planning relies on accurate information on the prevailing conditions of WASH in school buildings. In line with the political commitment, 18 countries have collected information and/or conducted surveys on WASH in schools in recent years, many with the support of international organizations like UNICEF, WHO and other NGOs (Table 12).

Such data collection exercises are an important step towards appreciating and improving the situation of WASH in schools. A number of the surveys are in fact pilot projects within targeted renovation or improvements plans. This section summarizes selected key findings of national surveys from 15 of these countries – retrieved from the public domain or via personal communication – with the aim of providing an analysis of WASH conditions in schools in the region, highlighting current issues and challenges concerning pupils' access to WASH, monitoring systems and the possible gaps in policies and standards.

Table 12. Countries where a national survey/assessment was carried out by governmental and/or intergovernmental organizations

Surveys/assessments	No. of countries	Countries
At national and/or subnational level	n=18	Albania, Azerbaijan, Bosnia and Herzegovina, Croatia, Estonia, France, Georgia, Hungary, Italy, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Russian Federation, Serbia, the former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine
Conducted with the support of UNICEF or WHO	n=11	WHO-supported pilot surveys: Albania, Estonia, Latvia, Lithuania, Serbia WHO-supported survey: Croatia UNICEF-supported surveys: Georgia, Kyrgyzstan, Republic of Moldova, Turkmenistan, Uzbekistan

Source: Information collected through country briefs from representatives who participated in the WHO meeting on advancing WASH in schools in Bonn, Germany, in September 2014.

Table 13 provides an overview of the methodology and main outcomes of the reviewed surveys. Various surveys were conducted following UNICEF or WHO methodology (UNICEF, 2011; WHO Regional Office for Europe, 2015), which both include three common evaluation tools:

- a questionnaire for face-to-face interviews with school principals/administrators;
- a form for infrastructure and pupil hygiene behaviour observation;
- questionnaires for focus group discussions composed by pupils and teachers.

Surveys using the WHO methodology usually evaluate sanitation and hygiene practices using the following indicators: functionality, adequate operation and maintenance, accessibility, safety, privacy and acceptance/perception. Data are stratified by school location (urban or rural area), gender and/or age category (WHO Regional Office for Europe, 2015).

Table 13. Summary of national surveys of WASH in schools for the pan-European region

Country	Survey details
Albania Croatia Estonia Latvia Lithuania	**Sources** WHO Regional Office for Europe (2015); Croatian National Institute of Public Health (Capak et al., 2015). **Methods and coverage** The surveys were conducted using WHO methodology. The average age of respondent pupils was between 13.1 and 15.7 years, depending on the country. All surveys included a limited number of schools, except in Croatia, as they were part of pilot projects. The survey in Croatia included 203 schools in total. **Results** • School sanitation infrastructure was adequate in general but common problems emerged, especially with respect to maintenance, cleanliness and availability of hygiene consumables. The survey in Croatia revealed generally poor hygienic conditions in the facilities and a lack of soap and toilet paper (Capak et al., 2015). Consumables were also significantly lacking in Albania and Lithuania. Illumination and toilet bins were insufficient in some schools in Albania, Croatia and Lithuania. All countries except Estonia had privacy issues due to the low percentage of lockable doors in toilet cabins. In some Albanian and Croatian schools the facility temperature was inadequate during winter. • No significant rural–urban disparities were revealed by the inspections, except in Lithuania, where consumable provision was higher in urban than in rural schools (67% vs 21% of toilets with toilet paper; 83% vs 21% HWFs with soap). • The pupils' questionnaire showed notable rural–urban disparities with regard to satisfaction, especially in Estonia and Lithuania (which had twofold differences in satisfaction levels). In Albania, Croatia and Estonia the satisfaction level was higher in rural than in urban schools, which could be related to overcrowding in the latter. In Latvia and Lithuania satisfaction levels were higher in urban than in rural schools. • The majority of pupils in all countries were not satisfied with the availability of toilet paper and soap, cleanliness and privacy, and thus avoided using school toilets. The survey in Croatia revealed that 76% of pupils were not satisfied with the school facilities and 55% avoided using them (Capak et al., 2015). In most countries girls were more likely than boys to report using the toilet daily (except in Albania) and being satisfied with privacy in the toilets (except in Croatia). In all countries some pupils reported that water for handwashing was not always present; this was especially of concern in Croatia.
France	**Sources** Observatoire national de la sécurité et de l'accessibilité des établissements d'enseignement (ONS) [National Observatory for Safety and Accessibility of Educational Institutions]: **(a)** ONS (2013); **(b)** ONS (2007). **Methods and coverage** **(a)** A survey was conducted of teachers' and students' questionnaires from 1739 colleges and high schools (18% of all public schools). **(b)** A survey was conducted of teachers' and pupils' questionnaires from 817 primary schools (total number of primary schools = 33 040), including 24 781 children.

Table 13 contd

Country	Survey details
France (contd)	**Results** **(a)** Colleges and high schools • The survey revealed that 28% of pupils never visited the toilet, avoiding use of sanitation facilities and drinking-water, which is only accessible within the toilet areas in half of the schools. Pupils complained about bad smells (32%), damaged infrastructure (19%), lack of privacy (12%) – especially for boys – and lack of consumables (toilet paper (42%), soap (25%) and driers (15%)). Issues with consumables were reported more often by children (in 25–42% of schools) than by school staff (10–18%). Schools provided consumables; however, improper use, lack of maintenance and poor supervision affected their continuous availability. • Pupils' improper behaviour (tobacco smoking, alcohol consumption and drug use), especially among male students, and bullying was felt to affect the environment and accessibility of the sanitary facilities. Aggression inside the toilet area was reported by 21% of schools, especially colleges. • The facilities were cleaned more than once per day in only 37% of schools; in 2% of premises cleaning was not ensured for the whole school day and in 61% the facilities were cleaned once per day. • Overall 10% of schools did not comply with the law as they provided no appropriate facilities and 38% of schools had only one or two appropriate facilities for disabled pupils. **(b)** Primary schools • The survey showed that 48% of pupils visited the toilet only in case of urgent need and 7% never visited it; 14% avoided going because they were afraid of becoming trapped in the toilet cabin, being spied by other children or becoming victims of bullying. Several pupils seemed to present pathologies related to avoidance – acute or chronic constipation (15%) and urinary tract infection (22%) – but verification is needed to confirm this. • According to teachers, the issues were insufficient cleaning frequency – once per day (reported by 15%) – and a lack of WASH facilities on higher floors, impairing accessibility and appropriate supervision. Many aspects of the facilities were not adequate to pupils' needs, from the water temperature to the water pressure, the quality of consumables and lack of adequate equipment for children. Inadequate cleanliness and ventilation, causing bad odours, were reported in 19% and 34% of premises, respectively. • In six schools HWFs were not present inside the facilities. • Pupils complained that 50% of toilet partitions were missing or did not ensure privacy; that in 10% the doors could not be locked; and that in more than 25% of schools there were no separate facilities for pupils and teachers and/or boys and girls. Some schools even reported abnormal use of the school facilities as public toilets. • Toilet brushes, soap and any kind of drying facilities were missing in 56%, 13% and 10% of schools, respectively. Disposal bins in the girls' toilets were missing in 76%. • Children rarely informed their parents about issues with WASH in their schools (only 23% did so) and the topic was not considered relevant within the school council. • Hygiene education was provided in 73% of schools and a few teachers reported significant improvements after raising awareness. There were no facilities for disabled pupils in 40% of schools.

Table 13 contd

Country	Survey details
Georgia	**Sources** **(a)** UNICEF Georgia (2012); **(b)** Educational and Scientific Infrastructure Development Agency & UNICEF Georgia (2013). **Methods and coverage** **(a)** A survey was conducted using UNICEF methodology in 554 preschools in 11 regions. Additional questionnaires were used for observations on the hygiene behaviour of preschool children and caregivers (277). **(b)** A survey was conducted in 600 school buildings using UNICEF methodology. This was a pilot project to support the development of national standards for the introduction of a surveillance system and promotion of hygiene education. **Results** (combined) • An improved water source was available in more than 90% of premises; 56% of preschools and 30% of schools had a centralized water system. The quality, however, was not ensured: water had not been tested even once in 50% of preschools and 10% of schools, no regular monitoring was carried out and there was a general lack of maintenance of the water supply. Water had never been treated in 70–75% of premises because it was considered safe (in 96% of schools), although untested. Some preschools reported intermittent supply, with water available only 2–4 days per week. More than 3% of premises needed water tanks for storage. • Sanitation had high coverage, but 25% of schools and 12% of preschools used unimproved sanitation facilities. A number of schools still disposed of wastewater in the school yard, especially in rural areas. In preschools children mostly used chamber pots, which were not available in 9% of premises. Average pupil–toilet ratios were 25:1 in preschools and 34:1 in schools (54:1 in urban areas). • The surveys reported issues with cleanliness, functionality, ventilation, illumination, privacy and location of the facility; in 35% of schools and 28% of preschools the facility was located outside the building. • HWFs were not adequate and sometimes not present inside the premises (20% of preschools; 41% of schools), nor near the toilets (>30%). In most schools soap (88%) and toilet paper (70%) were missing. • Disabled children had no access to sanitation (80% of preschools; 47% of schools) or HWFs at school (50% of preschools; 80% of schools). The conditions were generally worse in rural areas.
Hungary	**Sources** National Institute of Environmental Health and Health Authorities (unpublished personal communication, 2001–2014). **Methods and coverage** In-depth surveys were conducted in different years in 5000 primary and secondary schools, 4600 kindergartens, 550 nurseries, 225 family day care premises and 205 play centres. The surveys comprehensively assessed the environment, including WASH aspects, and were complementary to the annual routine surveillance of the public health authorities. **Results** • A central sewage system was not available in about 20% of premises. Water supplies were centralized everywhere, but in 13% of schools the chemical quality of drinking-water was not compliant with national standards. • The number of washrooms, HWFs and toilet seats was compliant with national requirements in 92% of schools, 81% of kindergartens and 86% of nurseries.

Table 13 contd

Country	Survey details
Hungary (contd)	**Results** • Toilet paper was missing in 8% of schools and hygiene was inadequate in less than 10%. • Overall improvement was observed, except in the maintenance of the facilities, which remained an issue (30% of schools in 2012). Maintenance was inadequate for washbasins (18% of schools), pedestals for squat toilets (slab),[4] doors, windows and walls, illumination or ventilation (an issue in 7% of nurseries and kindergartens) and corroded pipelines.
Italy	**Sources** Cittadinanzattiva [Active Citizenship] – an independent non-profit organization (2008; 2012; 2013; 2014). **Methods and coverage** Surveys were conducted involving direct observation, comprising 132 schools in 2008, 111 in 2012, 165 in 2013 and 213 in 2014. The sample comprised less than 1% of public schools, but from all regions. **Results** (from 2014 unless otherwise specified) • Consumables were missing, including toilet paper (40% of schools), soap (44%) and paper towels (66%). • In 2012 more than 33% of schools (including primary schools) were cleaned only once a day and in 12% dirt was observed. • In about 30% of schools privacy was not ensured (damaged doors). Drinking-water from taps was always present, but in a few schools it was not used for drinking because of reports of an unacceptable taste. • In 2013 38% of schools had no certificate of compliance with hygiene and health norms (released by local health authorities). Moreover, no significant differences were found when comparing the reports between 2008 and 2014 (for example, toilet paper was lacking in 49% of surveyed schools in 2008, 23% in 2012, 53% in 2013 and 40% in 2014). • Accessibility for disabled people was impeded in one third of schools. • Disaggregated data for architectural barriers and for missing hygiene certificates showed significant regional disparities, with southern regions reporting lower compliance with the standards than northern regions.
Kyrgyzstan	**Sources** Center for Global Safe Water at Emory University & UNICEF (2012). **Methods and coverage** A primary survey was conducted using UNICEF methodology, comprising 30 key informant interviews (also including members of national and local government and experts from international NGOs), visits to 18 and focus group discussions in 22 schools, a desk review of relevant publications and government documents and a bottleneck analysis. **Results** • A piped water supply was missing in 28% of schools (water tanks or transported water were used) and intermittent in 23% (a few days per week in rural areas; a few hours per day in urban areas), and water was from unimproved sources (within 50 metres) in 70% of schools. Data on water availability in schools also suggest that access to WASH in schools is overestimated in official statistics.

[4] According to the WHO/UNICEF JMP classification of improved sanitation, a "pit latrine with slab is a dry pit latrine whereby the pit is fully covered by a slab or platform that is fitted either with a squatting hole or seat" (WHO & UNICEF, 2016a).

Table 13 contd

Country	Survey details
Kyrgyzstan	**Results** • Toilets consisted of reinforced pit latrines outside the premises in all rural schools and in 85% of urban schools, although the cold winter weather reduces the accessibility of outdoor facilities. The toilets adhered to Soviet design standards, with no toilet slab and no privacy (no doors or partitions). • Less than 10% of schools had a functioning connection to the centralized sewerage system and a lack of maintenance – including inefficient or irregular latrine emptying – led to dirt and faecal matter on the ground floor, raising the risk of disease transmission. According to the bottleneck analysis, maintenance of WASH infrastructure was especially impaired by the lack of maintenance mechanisms and clear responsibilities, and by the lack of a formal budget to purchase, maintain or repair WASH infrastructure or for cleaning materials. • Pupils did not use the toilets, except in cases of diarrhoea or menstruation. Girls complained about a lack of water, missing hygiene disposal facilities and a lack of privacy, and reported using the facilities one at a time; this changed the pupil–toilet ratio to 400:1. • HWFs were rarely found and were usually far from the latrines; soap was not available. • Hygiene education was sometimes provided but no national hygiene promotion programme was in place. • Urban–rural and regional disparities were significant, resulting from the mountainous terrain of rural areas and the unequal coverage of policies and funding for maintenance (focused on centralized systems), to the detriment of minority groups. • Results of the bottleneck analysis also showed critical challenges in the monitoring system, which is not practised regularly or evenly.
Republic of Moldova	**Sources** **(a)** UNICEF Regional Office for CEE/CIS (2010); **(b)** National Public Health Centre and territorial centres (unpublished personal communication, 2014 **Methods and coverage** **(a)** All schools, gymnasiums and lyceums in the country (1526 schools) were surveyed in 2009 by analysing water samples and evaluating the school water supply and sanitation systems. To assess hygiene practices one student per school was interviewed in 82 schools. **(b)** 1335 schools (total number of schools after a school reform) and 368 356 pupils were included in a national survey in 2014, conducted to collect more comprehensive information to compared to national statistics (which only collect data from urban areas). **Results** **(a)** 2009 • Water was accessible everywhere (via centralized supply in 69%, wells in 28% and trucked water in 3% of schools) but from unimproved sources in many schools. Water quality was frequently noncompliant with standards for microbiology and nitrates, fluoride and boron. • Other issues were a lack of hygiene consumables (toilet paper in 76% of schools, soap in 75% and drying facilities in >52%); poor functionality (20% of toilets in bad technical condition); and location of HWFs (far from toilets in 76% of schools). • Pupils were not satisfied with the hygiene in 52% of schools and hygiene practices were reported to be followed less regularly at schools (25% in schools against 85% at home). • Rural schools had the lowest compliance for water quality, number and functionality of facilities; in 95% of rural schools (55% of students in the country) toilets consisted of cesspools outside the building.

Table 13 contd

Country	Survey details
Republic of Moldova (contd)	**Results** **(b)** 2014 • Compared to the previous survey, the number of schools with unimproved water supply had decreased (with use of centralized water supply and centralized sewage system in 92% of schools). Water quality had also improved, but 50% of all pupils (39% of schools) were still exposed to water that was noncompliant with microbiological and chemical standards. • Maintenance was inadequate in 21% of schools (vs 24% in 2009). • Rural–urban and regional disparities were still observed. Better conditions for maintenance and provision of hygiene consumables were reported in urban areas, also thanks to higher salaries that allow users (pupils/parents) to provide consumables themselves. • The survey showed that 63% of schools (75% in rural areas vs 27% in urban areas) still had external toilet areas: pit latrines for staff only in day care centres, or for staff and students in schools. In 10% of these schools in-house facilities were present but were either not functional or used by the school staff only. • HWFs were generally present, but were in the washrooms in only 16% of schools and in the canteen in 48%. They were generally used by a limited number of pupils (including some classes in primary schools).
Russian Federation	**Sources** **(a)** Federal Service for Supervision of Consumer Rights Protection and Human Well-Being (unpublished personal communication, 2000–2013); **(b)** Peer-reviewed articles published by other national institutions (Ponomarenko & Cherkashin, 2009; Zulkarnaev et al., 2009; Rapoport et al., 2012). **Methods and coverage** **(a)** Analysis was undertaken of reports of the centralized water and sewage systems service providers in all districts of the Russian Federation. **(b)** Hygienic conditions were assessed in educational institutions in specific areas of the country (full summary in Chapter 6). **Results** **(a)** • About 6% of the schools were not connected to a central sewage system and central water supply (2013). Most districts had 2–3% of schools without central systems, while three districts had a higher number (highest in the Far Eastern Federal District: 18% of schools had no central sewage system and 22% had no central water supply). An improving trend had been observed since 2000. • The disparity can be attributed to the geography of these territories, where a larger number of settlements are hard to reach. It is not clear from the reports, however, whether any alternative improved sanitation or water source was present. **(b)** • Research studies were conducted on a smaller scale; these are not representative of the whole country, but they reveal other challenges not assessed by the national report, including age of the school buildings (where implementation of standards is pending), overcrowding, use of buildings not designed for educational purposes, inadequate sanitation facilities and inadequate hygienic conditions. Rural–urban disparities are also reported.

Table 13 contd

Country	Survey details
Serbia	**Sources** Institute of Public Health of Serbia (Jevtić & Matić unpublished report on a pilot survey conducted in primary schools of the Južnobački district, according to the WHO methodology, for the school year 2013/2014). **Methods and coverage** A pilot school survey was carried out using WHO methodology, covering 28 schools in the Južnobački district. **Results** • WASH facilities were satisfactory for availability, functionality and pupil–toilet ratios. All schools had a central water supply and most were connected to the central sewage system; the others disposed of wastewater into cesspits. • All schools toilets and some HWFs were gender-separated, but they were not always accessible to disabled pupils. • Most schools (89%) reported repeated cleaning through the day and 11% once a day. Maintenance was reported as satisfactory in most schools and bins were present, although not in each cabin. A hot water supply was partially present. • The student questionnaire revealed a high proportion of dissatisfaction (71%), however, especially related to the cleanliness of toilets and HWFs and to consumable availability (96% reported missing toilet paper). More than 60% of the pupils avoided school toilets. • In 96% of schools hygiene education was part of the curriculum.
United Kingdom (Scotland)	**Sources** Ipsos MORI (2013), commissioned by Scotland's Commissioner for Children and Young People. **Methods and coverage** A survey was undertaken among 2154 young people in 59 secondary schools in Scotland on perception and school policies related to WASH. **Results** • Toilet areas in schools were not appreciated by 27% of pupils – rated as poor or very poor. • The majority of pupils reported issues concerning lockable doors, toilet paper, soap and overall cleanliness. • If pupils had to ask for permission to go to the toilet, 16% of them were rarely allowed to go and 2% reported they were never allowed to. A significant number of pupils also reported feeling uncomfortable (embarrassed, annoyed or worried) when asking for permission (especially girls). • Accordingly, a very high number of pupils avoided using the toilet at school: 10% never used school toilets and 46% tried to avoid using the school toilets, only going if they really had to.
Uzbekistan	**Sources** Center for Global Safe Water at Emory University & UNICEF (2012). **Methods and coverage** A primary survey was undertaken, comprising 13 key stakeholder interviews (mainly with experts from NGOs) and four school visits for structured observation and interviews with school administrators and teachers, as well as a desk review of relevant publications and government documents.

Table 13 contd

Country	Survey details
Uzbekistan (contd)	**Results** • A centralized water supply was reported with high coverage (74% of premises); the second main source of water was water tanks or transported water (16% of premises). Nonetheless, 80% of schools still used potentially unimproved sources such as well-water, spring water or surface water, as piped water was not available daily in many schools. • High coverage of improved sanitation was reported, but the majority of schools had outdoor pit latrines of Soviet design, adjacent for boys and girls, with no slab and no privacy (no doors or partitions). • The needs of disabled children were mostly not considered. The cold winter weather reduces accessibility and causes slippery pavements and overly cold or frozen water. • Dirt and faecal matter were found in 35% of latrines; HWFs were rare (found only in toilet areas inside schools), and seldom equipped with soap. • In 2007, 75% of school-aged children were infected with one or more types of intestinal parasite. • Significant rural–urban and regional disparities were found, with poorer conditions in rural areas and western Aral Sea regions, due to the particular terrain and climate, and to the unequal coverage of policies, monitoring programmes and fund allocation for maintenance (which is focused on centralized systems). • In many primary schools at least one person was in charge of hygiene education, a facultative part of the curriculum. Important topics like MHM, however, were not included as they were considered inappropriate. • Results of a bottleneck analysis showed critical challenges in the lack of monitoring systems and of value given to sanitation and handwashing by teachers and local government officials. • No funding was specifically allocated for WASH in schools, and school-level funds were insufficient to ensure purchase, maintenance or repair of WASH facilities, or for soap supplies.

Additional information was collected from countries where no systematic national survey was conducted or published (Box 4). This confirms and extends the findings of the surveys.

Box 4. Additional information on WASH-related issues in the pan-European region

Additional challenges affecting access to WASH in schools were reported via country briefs from representatives who participated in the WHO meeting on advancing WASH in schools in Bonn, Germany, in September 2014. According to the results of their national assessments, these include:

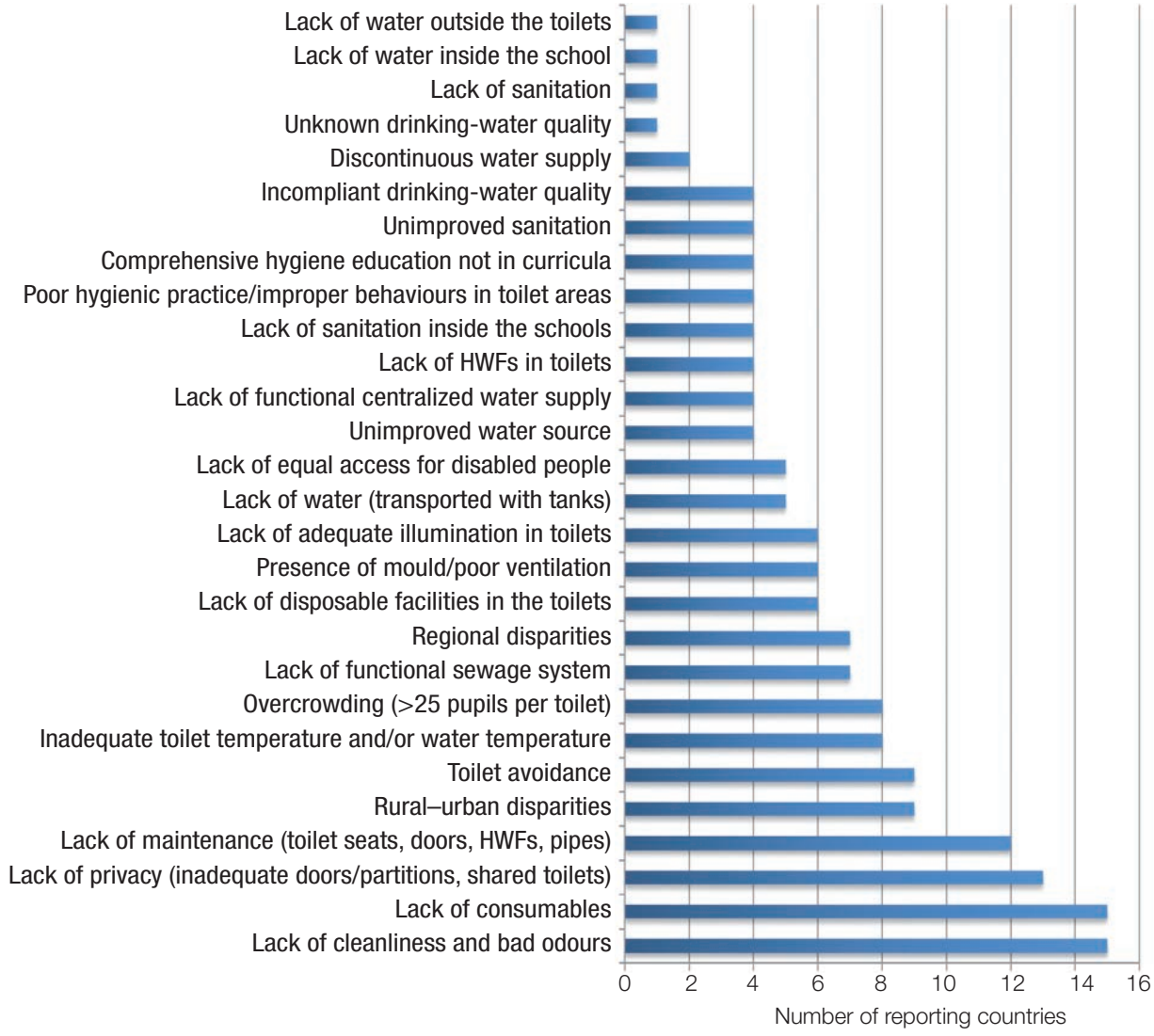
- presence of mould and lack of proper ventilation (Estonia and Latvia);
- lack of an appropriate sewage system (Ukraine);
- use of unsafe water sources in terms of noncompliance with chemical and microbiological standards (the former Yugoslav Republic of Macedonia and Ukraine);
- overcrowding of schools and consequently of WASH facilities (Albania and Latvia);
- insufficient provision of hygiene consumables (Lithuania and Ukraine);
- insufficient maintenance of the sanitary facilities (Latvia);
- impaired WASH accessibility for students in rural areas (the former Yugoslav Republic of Macedonia);
- lack of children's awareness of adequate hygiene behaviours (the former Yugoslav Republic of Macedonia).

4.2. Highlights

According to the analysed surveys (see Table 13 for details and sources), many schools in the pan-European region are not compliant with national standards or with the WHO guidelines (Adams et al., 2009), regardless of their economic status. The issues and challenges identified from the surveys are summarized in Fig. 2 and described more in detail in the following section.

Key factors affecting WASH in schools are inadequate policies, lack of funding and prioritization. The data also show the importance of and need for improved enforcement plans and follow-up actions for noncompliant schools, as old school buildings are not always adapted to recent standards and schools without certificates of compliance with the national standards may still be operating. Finally, the surveys show that the condition of WASH in schools in the region may be affected by inadequate or lacking monitoring.

Fig. 2. Summary of challenges and issues reported in the surveys and assessments



Source: Information retrieved from the reviewed surveys (see Table 13 for details and sources) or reported at the WHO meeting on advancing WASH in schools in Bonn, Germany, in September 2014. The proportion of schools reporting the specific issue may differ significantly between countries; the data are not assumed to be comprehensive of all issues affecting WASH in schools in the region. In one country unimproved sanitation is caused by the misuse of the school facilities as public toilets.

Access to water for drinking and handwashing in schools is often not ensured.

One of the most important issues emerging from the surveys is the lack of access to safe drinking-water. Several countries reported the use of unimproved sources of drinking-water; these were also used as alternative sources in schools connected to a discontinuous centralized water supply, which might function only a few hours per day or a few days per week. There is also evidence that the water is not always compliant with national chemical and microbiological requirements (Fig. 2), posing a risk to pupils' health. Water quality is, however, not always known or tested.

Some schools lack any onsite water supply, and drinking-water is transported in tanks; this was reported in middle-income countries, especially in rural schools or regions where the connection to a functional centralized water supply is not available or feasible. Accessibility may also be impaired in many countries by the presence of drinking-water only outside the school building or only inside the toilet areas.

Surveys also report inadequate numbers, location (not close to toilets) and functionality of HWFs; lack of function of HWFs was reported in some schools in high-income countries as well as middle-income ones.

Hygiene management is not always adequate to pupils' needs.

Even where WASH facilities are in place, a large number of students do not make use of them, regardless of the economic status of the country. Avoidance is also suspected to affect students' fluid intake, as drinking-water is often not available outside the toilet areas; this raises the risk of related pathologies, like constipation or urinary tract infection, observed among some surveyed pupils (ONS, 2007). The data thus suggest the need to assess the association between facility conditions and the prevalence of these pathologies among pupils.

All countries reported unsatisfactory conditions concerning cleanliness and the provision of consumables like toilet paper and soap – primary hygienic tools to prevent transmission of infectious diseases (Fig. 2). The students complained about an absence of consumables and a bad smell in the facilities. Insufficient consumables may be due to limited public funding, limited supervision and, as reported in one survey, improper behaviour of some students: toilet paper may be available but misused. Asocial behaviours may be associated with poor hygienic conditions in schools, as described in more detail in Chapter 5 (Rapoport et al., 2012). Concerning cleanliness, in schools where cleaning is performed once per day or even repeatedly over the day – in accordance with national standards – dirt still accumulates during the school day, suggesting possible issues with the frequency requirements and the quality of the cleaning service.

Survey results show a gap between surveillance and perception at the school level. Assessing pupils' perceptions thus emerged as an essential instrument to identify hidden issues. In many cases these perceptions might not be acknowledged, even by school staff. Further, school policies for pupils' toilet visits may be in conflict with children's needs, presenting a further barrier to ensuring access to WASH in schools. Discrepancies between teachers' and children's perceptions of WASH facilities in schools suggest insufficient communication between these main actors. This may be because WASH needs are still not seen as a priority, as reported explicitly in various surveys. WASH needs are sometimes reported as being taboo; this is also suggested by the lack of a comprehensive hygiene education in school curricula and by the reported discomfort of children who have to request permission to go to the toilet.

Sanitation is not always adequately provided and maintained or accessible.

For several countries, especially in middle-income economies, the national requirements and international standards (Adams et al., 2009) are not met with regard to water waste disposal, as some schools may not be connected to a sewage system and do not provide any other safe collection method.

Surveys also report inadequate numbers, locations and functionality of sanitation facilities and issues with overcrowding, sometimes as a consequence of overcrowded school premises. Sanitation facilities may also be inadequate because of a lack of privacy (Fig. 2) – this was frequently reported by pupils. Privacy is affected by a lack of separated toilets for boys and girls and/or for pupils and teachers, missing or damaged doors, missing or malfunctioning locks for cubicles, missing partitions between latrines or urinals or partition sizes inadequate to the need of pupils who are afraid of being spied on or bullied by other pupils. Lack of privacy, poor illumination and a lack of supervision caused by the distance of the facilities (outside the building or on another floor) also facilitate bullying. Children also reported avoiding going to the toilet because they feared harassment from other students.

Another common issue is the insufficient maintenance of the washrooms – in some countries reported in connection with the use of low-quality equipment or building materials – that greatly affects pupils' access to WASH in schools, even in fully furnished schools (Fig. 2). It is, therefore, important to consider the level of maintenance and the functionality of facilities when assessing the conditions of WASH in schools, as otherwise accessibility might be overestimated.

Disparities and inequalities permeate WASH accessibility in schools.

Equitable access is often a challenge in schools. Despite standards, in most countries accessibility to WASH facilities for disabled people is often not ensured. Access for girls is reported to be impaired, as MHM is often not properly addressed by the lack of privacy, of disposal bins and of adequate hygiene education covering gender-specific aspects (Fig. 2).

Rural–urban and regional disparities are often observed, especially in middle-income countries, where the situation concerning the provision of drinking-water and sanitation facilities is reported to be worse in rural than in urban areas. Interregional disparities are also observed, with worse WASH situations reported more often in regions populated by minority groups. From bottleneck analyses, it emerged that rural areas with peculiar geographical characteristics are sometimes excluded by national policies and renovation programmes focusing only on central systems. This finding suggests the need for national policies to consider decentralized onsite alternatives for rural areas not connected to centralized systems. Rural sanitation facilities in middle-income countries are more often outside the school building, further affecting accessibility, especially in those regions with cold weather. In winter, accessibility is particularly affected by overly low temperatures in the facilities and a lack of warm water, reported by several countries with different income economies (Fig. 2). In some cases water is too cold or frozen, severely hindering handwashing practices and facilitating the spread of infectious diseases. In middle-income countries with pit latrines outside the building, another problem encountered in winter time is the safety of the facilities: the dirt around the latrines may freeze, making the pavements slippery. In urban areas, the factors limiting access to WASH in schools are more often related to lack of consumables, overcrowding and lack of maintenance.

One-shot surveys are important sources of information for assessing WASH in schools and for informed policy-making, but these need to address possible data gaps and improve comparability.

Typically, surveys focus on the level of accessibility, conditions of sanitation and hygiene facilities, availability of essential consumables for proper hygienic behaviour (soap and toilet paper) and availability of water, as well as assessing pupil perceptions and levels of satisfaction. Menstrual hygiene and hygiene knowledge are not often assessed. Overall, the indicators tend to be chosen heterogeneously: comparing a variety of surveys, clear differences in the ability to depict the actual situation are notable. This suggests a need for national and international organizations to set and utilize a number of minimum adequate indicators, with a clear definition of terms to be used (for example, “toilet” vs “toilet seat” vs “WC” vs “washroom”). Such a tool could avoid possible data gaps, facilitate data interpretation and promote the production of comprehensive assessments in all interested countries. For example, privacy within the facilities emerged as a relevant issue affecting WASH accessibility only in the studies that considered it.

Underreporting may be the reason that lack of water outside the toilet areas and intermittent water supplies were less commonly noted. Further, where disparities were not reported, disaggregated data were not considered. Streamlined indicators would also contribute to international dialogue and facilitate comparison, allowing data consolidation and promoting international collaboration and coordination. Sharing adds value to the data collected; more materials may be available within national institutions, but they were not retrievable though the sources considered. The limited number of available surveys may also suggest a lack of surveillance reporting and/or a lack of international information exchange about WASH in schools.

One-shot surveys proved their importance as tools for in-depth assessment, coming with a specific methodology and providing a comprehensive picture of WASH in schools. In fact, the figures reported by one-shot surveys differed significantly from national monitoring that focuses only on the number of facilities or on a single type of service (such as centralized systems), without considering other types of facility, functionality and accessibility. Surveys are also useful to assess the efficiency and cost–effectiveness of policies and plans, showing how local authorities manage building and hygiene programmes responsibly. Moreover, focusing on disaggregated data reveals possible regional and rural–urban disparities, allowing policy gaps to be identified. Finally, surveys involving teachers and pupils can be used as events to promote hygiene in schools, involving and stimulating relevant stakeholders like the school community.

5 Scientific evidence on WASH in schools

5.1. Overview of the reviewed literature

A literature search was conducted for publications focusing on WASH in schools specifically addressing the topics drinking-water consumption at school, hygiene behaviour, condition of water and sanitation facilities, menstrual hygiene and health assessments in the pan-European region. The methodology, as specified in Chapter 2, was adapted from Jasper et al. (2012), whose literature review confirmed the direct link between WASH in schools and pupils' health at the global level. The results provided evidence that a general improvement in WASH in schools has a beneficial effect on pupils' fluid intake and reduces absenteeism rates. School absenteeism was shown to decrease because improved access to WASH reduces the incidence of diarrhoeal and gastrointestinal diseases and the discomfort of girls during menstruation, a significant problem potentially triggering high dropout rates among young women in developing countries.

This literature review yielded 42 articles, all relating to studies conducted in countries in the WHO European Region and meeting the inclusion criteria specified in Chapter 2. Table 14 summarizes the outcomes of the reviewed journal articles.

Table 14. Summary of scope and outcomes of the reviewed literature

Original title	Article details
	Drinking-water consumption
Drinking-water in schools	**Sources** Brander (2003) (United Kingdom). **Scope** To evaluate the effects of the "Water is cool in school" campaign. **Outcome** • The campaign increased awareness of the importance of drinking-water. • Fluid intake was highly dependent on availability and the quality of facilities in schools, as well as schools' internal rules related to drinking of water; these could be improved by implementing the appropriate legislation.
A survey of drinking and toilet facilities in local state schools	**Sources** Croghan (2002) (United Kingdom). **Scope** To measure accessibility, availability and cleanliness of toilets, HWFs and drinking-water. **Outcome** • A significant number of the schools failed to ensure accessible drinking-water facilities suitable for children's needs. • In 34% of schools drinking-water was available only inside the toilet areas and in 3% of schools no drinking-water facilities were available at all. • Children were not allowed to bring any drinks to school in 55% of schools and in most of the schools pupils were not allowed to keep a water bottle on their desks.
Effects of drinking supplementary water at school on cognitive performance in children	**Sources** Fadda et al. (2012) (Italy). **Scope** To investigate the effects of the amount of fluid intake during the school day on cognitive performance and subjective state.

Table 14 contd

Original title	Article details
	Drinking-water consumption
Effects of drinking supplementary water at school on cognitive performance in children	**Outcome** • Among the surveyed children 84% were in a state of mild dehydration at the beginning of the school day. • Increased drinking-water intake among pupils showed a positive effect on short-term memory.
A study of drinking facilities in schools	**Sources** Haines & Rogers (2000) (United Kingdom). **Scope** To assess the provision of drinking-water in schools in the United Kingdom. **Outcome** • Pupils' fluid intake at school was insufficient. • Most schools (about 70%) provided water for all children at lunchtimes. • During lessons, the majority of schools allowed pupils to visit the toilets but only half allowed them to drink water. • In most schools drinking-water was available from taps or fountains in the toilet areas. Cases of bullying discouraged the children from using them.
Fluid for thought: availability of drinks in primary and secondary schools in Cardiff, UK	**Sources** Hunter et al. (2004) (United Kingdom). **Scope** To assess the provision of drinking-water fountains and other drinks in schools. **Outcome** • More than half of the schools were equipped at least with one drinking-water facility. • Pupils were allowed to leave the rooms during the lessons to drink in 68% of primary schools; this was not allowed in any of the secondary schools. • Vending machines with soft drinks were found in most of the secondary schools, very rarely in primary schools.
A study of the association between children's access to drinking-water in primary schools and their fluid intake: can water be "cool" in school?	**Sources** Kaushik et al. (2007) (United Kingdom). **Scope** To investigate the relationship between water availability in the classroom, children's fluid intake and the frequency of toilet visits. **Outcome** • Pupils' fluid intake was observed as higher in schools with free access to water during lessons (sufficient intake by 53% of pupils), compared to schools with limited or no access (sufficient by 20% of pupils). • Children consuming a sufficient amount of water did not visit the toilet more frequently than others. In general, 35% of all children did not use the toilet facilities at school. • Drinking-water consumption improved if water bottles were allowed on the desk, reducing pupils' consumption of soft drinks.

Table 14 contd

Original title	Article details
	Drinking-water consumption
Does the provision of cooled filtered water in secondary school cafeterias increase water drinking and decrease the purchase of soft drinks?	**Sources** Loughridge & Barratt (2005) (United Kingdom). **Scope** To assess the impact of an intervention including health promotion and/or the free provision of cooled filtered water in the school canteen. **Outcome** • Pupils rated the provision of water in their schools as poor, as it needed to be purchased. • Higher fluid intake was observed in schools where both health promotion activities and water provision took place, with a constant increase during the study. An increase was observed also with provision of water facilities only. • The consumption rate of soft drinks remained relatively stable, with a slight decreasing trend for the schools with free water provision.
An exploration of factors that influence the regular consumption of water by Irish primary schoolchildren	**Sources** Molloy et al. (2008) (Ireland). **Scope** To explore the knowledge of teachers about the consumption and effects of water on their students and the barriers that hinder children from having access to drinking-water during school lessons. **Outcome** • The interviewed teachers were not aware of the children's need for fluid intake and its effects on health and concentration: this knowledge gap seems to have had a negative impact on the children's consumption of fluids, as most teachers did not allow drinking during lessons. • Teachers reported fearing mess and disturbance during lessons. They also perceived a lack of accessible drinking-water fountains and water taps.
Promotion and provision of drinking-water in schools for overweight prevention: randomized, controlled cluster trial	**Sources** Muckelbauer et al. (2009) (Germany). **Scope** To assess the impact of combined measures of environmental and educational interventions promoting drinking-water consumption in the prevention of obesity in pupils. **Outcome** • Pupils in schools where the intervention took place increased their water intake and a remarkable reduction (31%) in the risk of obesity was concurrently observed.
Feasibility and impact of placing water coolers on sales of sugar-sweetened beverages in Dutch secondary school canteens	**Sources** Visscher et al. (2010) (Netherlands). **Scope** To explore the effects of the installation of water coolers on soft drinks sales. **Outcome** • The placing of water coolers as a solitary intervention was found not to be effective in influencing the students' behaviour by promoting more drinking of water and less of sugar-sweetened soft drink.

Table 14 contd

Original title	Article details
	Hygiene practice
The impact of common infections on school absenteeism during an academic year	**Sources** Azor-Martinez et al. (2014) (Spain). **Scope** To investigate the potential of reducing the absenteeism rate using a hand sanitizer as well as soap. **Outcome** • The rate of absenteeism due to upper respiratory infections and gastrointestinal infections was significant lower in the experimental group using an additional hand sanitizer after handwashing than in the control group.
Hygiene tips for kids	**Sources** Gebel et al. (2008) (Germany). **Scope** To describe a hygiene education programme designed for school and kindergarten settings. **Outcome** • Positive effects were observed in children's hygiene behaviour that led to reduced incidence of infectious diseases in preschools, kindergartens and primary schools. • Communication between public health authorities, teachers and parents also improved information dissemination and epidemiological surveillance.
What are school children in Europe being taught about hygiene and antibiotic use?	**Sources** Lecky et al. (2011) (European Union). **Scope** To assess the educational structures and the school curricula in six European countries for implementation of teaching resources specific to hygiene and antibiotic use. **Outcome** • The majority of the schools provided education on hand hygiene practices from a young age, but the steps of handwashing practice were not part of the curriculum in primary schools. • The curricula in all evaluated countries covered the topic of human health and hygiene.
Alcohol-based hand-disinfection reduced children's absence from Swedish day care centers	**Sources** Lennell et al. (2008) (Sweden). **Scope** To investigate the potential of reducing the absenteeism rate using an alcohol-based hand sanitizer in addition to regular handwashing in day care centres. **Outcome** • The practice of additional hand disinfection introduced among children and caregivers significantly decreased children's absenteeism due to infections.

Table 14 contd

Original title	Article details
	Hygiene practice
Mandatory hand washing in elementary schools reduces absenteeism due to infectious illness among pupils: a pilot intervention study	**Sources** Nandrup-Bus (2009) (Denmark). **Scope** To investigate the effect of mandatory handwashing on school absenteeism caused by infectious diseases. **Outcome** • Pupils washing their hands three times a day resulted in fewer absence periods due to infections in comparison to the control group, which received no instructions.
Impact of an educational intervention upon the hand hygiene compliance of children	**Sources** Randle et al. (2013) (United Kingdom). **Scope** To develop measures to improve hand hygiene practice among children. **Outcome** • An interactive teaching intervention led to improved and increased handwashing practice, sustained for more than one year. • Children developed knowledge about cross-transmission of infections and became motivated to encourage others.
Can a handwashing intervention make a difference? Results from a randomized controlled trial in Jerusalem preschools	**Sources** Rosen et al. (2006) (Israel). **Scope** To assess the impact of hygiene programmes – specifically whether they are conducive to promoting handwashing and reducing absenteeism. **Outcome** • The number of children washing their hands almost tripled; the absenteeism rate, however, was not observed to be affected.
Formative research on the feasibility of hygiene interventions for influenza control in UK primary schools	**Sources** Schmidt et al. (2009) (United Kingdom). **Scope** To detect the current need for enhanced hand hygiene interventions and spot barriers that may hinder their implementation. **Outcome** • In all schools personal hygiene was part of the curriculum, but information on the importance of infection prevention was limited. • Hindering factors for handwashing implementation were identified, such as insufficient liquid soap, time constraints and the focus on other health issues addressed in the education programme (such as sex education). • Acceptance of interventions for improving handwashing increased in the case of temporary major perceived health threats like an influenza pandemic.

Table 14 contd

Original title	Article details
	Hygiene practice
Hand hygiene compliance and environmental determinants in child day care centers: an observational study	**Sources** Zomer et al. (2013a) (Netherlands). **Scope** To evaluate caregivers' compliance with hand hygiene guidelines in day care centres and to identify environmental determinants of behaviours related to hand hygiene. **Outcome** • In the 122 preschools analysed overall compliance was 42%. • Factors significantly associated with the hand hygiene behaviour were number and type of towels available in the facilities; paper towels were a positive factor for increasing compliance with the guidelines.
Sociocognitive determinants of observed and self-reported compliance to hand hygiene guidelines in child day care centers	**Sources** Zomer et al. (2013b) (Netherlands). **Scope** To evaluate caregivers' compliance with hand hygiene guidelines in day care centres and to identify sociocognitive determinants of behaviours related to hand hygiene. **Outcome** • Factors significantly associated with hand hygiene behaviour were knowledge of the guidelines and perceived disease severity. • Factors associated with self-reported hand hygiene compliance were also guideline awareness, perceived importance, perceived behavioural control (ease), habit and children at home.
A hand hygiene intervention to decrease infections among children attending day care centers: design of a cluster randomized controlled trial	**Sources** Zomer et al. (2013c) (Netherlands). **Scope** To evaluate the effectiveness of a hygiene intervention aimed at improving caregivers' and children's compliance with hand hygiene guidelines. **Outcome** • The article set out a study protocol to carry out a cluster randomized control study, with an intervention consisting of four components: o provision of hygiene products (dispensers and refills for paper towels, soap, alcohol-based hand sanitizer and hand cream); o training on national guidelines; o training sessions to set improvement activities; o reminders and cues to action (posters/stickers).

Table 14 contd

Original title	Article details
	Condition of WASH facilities
Standards in school toilets – a questionnaire survey	**Sources** Barnes & Maddocks (2002) (United Kingdom). **Scope** To assess the children's perceptions of school toilet facilities and the effects on their habits in using the facilities. **Outcome** • Of 87 children from 65 schools, 40% would never use the toilets in their schools to defecate and 29% avoided urinating (4% never doing it). • Avoidance was related to the facility condition: lack of cleanliness, paper and lockable facilities and bullying were the issues most reported by pupils.
A survey of drinking and toilet facilities in local state schools	**Sources** Croghan (2002) (United Kingdom). **Scope** To measure accessibility, availability and cleanliness of toilets, HWFs and drinking-water. **Outcome** • A significant number of schools failed to provide facilities suitable for children's needs. The most frequently reported issues were lack of soap for each basin (40%), lack of cleanliness (21%), lack of lockable doors (16%) and bad odours (11 %). In 34% of the school no specific toilet was available for disabled students. In 22% the toilet–pupil ratio was too low. • During lessons 92% of the pupils were allowed to use the toilets but 13% of the toilets were locked. The majority of the schools were cleaned once per day (88%) and the toilets become insanitary by the end of the school day.
Standards in school toilets: do extra resources make a difference?	**Sources** Fujiwara-Pichler et al. (2006) (United Kingdom). **Scope** To assess the state of WASH in schools after consistent improvements in south Wales schools and reported in the study by Barnes & Maddocks (2002). **Outcome** • Increased availability of the facilities alone was not enough to improve school toilet standards. Only a slight improvement in pupils' perception was reported, which was poor, especially concerning cleanliness, handwashing/drying facilities and toilet paper availability. • More children (39%) than in the study before the intervention (29%) avoided the school toilets for urinating. 25% of pupils also reported problems with constipation.
School hygiene today: problems known for a century are still relevant	**Sources** Heudorf & Exner (2008) (Germany). **Scope** To compare current with past problems concerning school hygiene. **Outcome** • The main problems identified were poor indoor air quality, insufficient cleaning of sanitation rooms, broken lavatories and vandalism. • Complaints about these issues had not changed much through the years, and nor had awareness of school hygiene in general.

Table 14 contd

Original title	Article details
	Condition of WASH facilities
Hygiene in schools – also an important responsibility of the public health service	**Sources** Heudorf et al. (2011) (Germany). **Scope** To assess the compliance of schools with the national norms on standard operating procedures for hygiene in schools, and the compliance of public health departments with their obligation to monitor hygiene in schools. **Outcome** • Of 180 schools, only 80 were able to present their required standard operating procedures. • About 30% of the school washbasins lacked liquid soap and disposable towels. • In a second assessment an overall improvement was observed owing to a concurrent influenza pandemic. • Bins were observed in most facilities (94%).
Better loos for schools	**Sources** Jones & Wilson (2007) (United Kingdom). **Scope** To assess the current state of toilets in Glasgow schools. **Outcome** • The results of the children's questionnaires used in the study showed that overall the condition of toilet facilities was insufficient. • The most reported issues were lack of a lockable toilet door (50% of pupils), insufficient toilet paper (59%) and lack of soap and hand drying towels (44%). • Pupils also complained about the lack of supervision in the toilet and bad odours. • Additional negative comments were about non-functioning toilets, lack of cleanliness, bullying and the fact that pupils had to ask for toilet paper.
Perceptions of school toilets as a cause for irregular toilet habits among schoolchildren aged 6 to 16 years	**Sources** Lundblad & Hellström (2005) (Sweden). **Scope** To explore pupils' perceptions of school toilets and the impact on their habits in using them. **Outcome** • Unhealthy toilet habits were adopted by many children during school time, especially because of the precarious situation of school toilets. • The most reported issues with the facilities were insufficient cleanliness (72% of pupils) and bad odours (58%). • Consumables were often missing, including toilet paper (60% of facilities), paper towels (67%) and soap (75%). • During lessons 59% of pupils were not always allowed to visit the toilet and when allowed, 17% needed to ask for the toilet key. • Among all pupils 15% never used the toilets: 16% would never urinate and 63% would never defecate at school. Negative attitudes and habits increased with age.

Table 14 contd

Original title	Article details
	Condition of WASH facilities
Experiences of children treating functional bladder disturbances on schooldays	**Sources** Lundblad et al. (2007) (Sweden). **Scope** To investigate experiences of children treating functional bladder disturbances on schooldays. **Outcome** • Children with functional bladder disturbances were aware that they should go to the toilet two or three times during school day. This was sometimes in conflict with the school rules for visiting the toilet facilities: the majority of pupils had to ask permission to the teacher and they were not always allowed to go immediately after asking. In some cases the teachers decided not to allow the child. • Additional challenges were posed by the conditions of the toilet facilities, described as small, smelly, dirty and unpleasant. Privacy was also hindered by non-functioning door locks.
Children's experiences of attitudes and rules for going to the toilet in school	**Sources** Lundblad et al. (2010) (Sweden). **Scope** To investigate the significance of school rules for toilet visits for children's experience and toilet habits. **Outcome** • A conflict was observed between the rules for maintaining order in the classroom and the pupils' physical needs. • Pupils avoided going to the toilet because there was not enough time and they felt ashamed when asking for permission. • Toilet needs were seen as a private matter: revealing them in front of the class was experienced as a violation of integrity.
Hygienic characteristics of children's educational establishments	**Sources** Ponomarenko & Cherkashin (2009) (Russian Federation). **Scope** To identify significant factors for assessing hygienic conditions in schools. **Outcome** • Four key factors were identified as particularly influencing the condition of WASH in schools: school location, school building, sanitary-technical infrastructure and the education process.
Hygienic evaluation of educational conditions and health status in junior pupils from rural schools	**Sources** Rapoport et al. (2012) (Russian Federation). **Scope** To evaluate the hygienic conditions and health status of pupils in junior schools (pupils aged 8–10 years) in the rural areas of Vyazma, Smolensk Oblast and Central Federal District. **Outcome** • One fourth of the rural schools were in need of repairs; buildings not meant to be schools were also used. • The main problems identified were a lack of centralized sewage system and water supply and poor hygienic conditions. • A correlation between the hygienic state of the school, disobedience and asocial behaviour was observed.

Table 14 contd

Original title	Article details
	Condition of WASH facilities
Improving school sanitation in a sustainable way for a better health of schoolchildren in the EECCA [eastern Europe, the Caucasus and central Asia] and in the new EU Member States	**Sources** Samwel & Gabizon (2009) (Romania and Ukraine). **Scope** To assess the effects of the introduction of dry urine-diverting school toilets in schools in Romania and Ukraine. **Outcome** • Dry urine-diverting toilets could be located indoors and contributed to greater comfort and safety for the children. The urine-diverting system prevents bad odours and flies, functioning without water. • Pupils reported that the new devices were easy to use (65%) and pleasant (29%).
Children's experiences of school toilets present a risk to their physical and psychological health	**Sources** Vernon et al. (2003) (Sweden and United Kingdom). **Scope** To investigate problems with school toilets described by parents and children. **Outcome** • High toilet avoidance was observed: 62% of boys and 35% of girls in British schools and 28% of boys and girls in Swedish schools avoided using the toilets to defecate. • Issues reported by 83% of children (United Kingdom) and 77% (Sweden) were presence of dirt and bad odour in school toilets. • Children also reported inadequate privacy and issues with intimidation and bullying.
Integrated assessment of the learning environment in educational institutions of various types	**Sources** Zulkarnaev et al. (2009) (Russian Federation). **Scope** To assess the condition of WASH in general schools in Ufa, Republic of Bashkortostan, Volga Federal District. **Outcome** • Most of the schools surveyed were old and did not comply with the national norms for hygiene and hygiene facilities. • The hygienic situation was reported as generally bad and "moderately hazardous". Even some new schools did not meet the sanitary standards.
	MHM
A survey of drinking and toilet facilities in local state schools	**Sources** Croghan (2002) (United Kingdom). **Scope** To measure accessibility, availability and cleanliness of toilets, HWFs and drinking-water. **Outcome** • Sanitary bins were available in all female toilets in the secondary schools, but only in 49% of the primary schools, which could be a problem because many girls start menstruating before entering secondary school.

Table 14 contd

Original title	Article details
	MHM
Sanitary towel provision and disposal in primary schools	**Sources** Jones & Finlay (2001) (United Kingdom). **Scope** To gain insight into the arrangements for MHM in primary schools. **Outcome** • Tools for MHM for girls in primary school were inadequate. • Even though sanitary towels were available in 90 % of schools, girls often had to ask the teacher for them, and in more than half of the schools disposal facilities were not present in the washrooms or in individual toilet cubicles. • In the majority of school without disposal facilities, the girls used the teachers' toilets.
Better loos for schools	**Sources** Jones & Wilson (2007) (United Kingdom). **Scope** To assess the current state of toilets in Glasgow schools. **Outcome** • Schools did not ensure adequate MHM, as they did not provide girls with sanitary bins in the toilets (reported by about 50% of girls).
	Health assessments
A little known problem in schoolgirls: urinary tract infection and voiding disorders in young girls	**Sources** Averous (2004) (France). **Scope** To discuss causes and consequences of urinary tract infection and voiding disorders among young girls. **Outcome** • Urinary tract disorders originate early in age, often due to retention habits triggered by school inadequate facilities and school policies for toilet visits. • The study indicated that prevention entails empowering school staff and parents to teach proper voiding; understanding pupils' needs without discriminating affected girls; and ensuring accessible, clean and private facilities.
Sanitary-epidemiological characteristics of preschool institutions	**Sources** Grebniak & Agarkova (2000) (Ukraine). **Scope** To assess sanitation hygiene (pinworm) in preschool establishments (kindergarten) in Donetsk, Ukraine, testing different locations inside the premises for the occurrence of parasite eggs. **Outcome** • Sanitation hygiene in preschools was not always adequate. • Worm eggs were found in 2% of all restrooms, especially on door handles, toilet tanks and partitions. • Between 1994 and 1998, 5–6% of children were reported to be infected by pinworms (*Enterobius vermicularis*), but it was estimated that the incidence could be 10–15 times higher.

Table 14 contd

Original title	Article details
	Health assessments
Factors associated with childhood constipation	**Sources** Inan et al. (2007) (Turkey). **Scope** To evaluate factors associated with constipation among schoolchildren aged 7–12 years. **Outcome** • Besides nutrition, sport and family health history, not using school toilets increases the risk for constipation among children. • The constipation burden among children may be underestimated, as even though parental concern was high, the rate for medical consultation was low (sought in 23% of cases).
Approaches to the evaluation of the level of sanitary-epidemiological well-being of educational establishment for children and adolescents	**Sources** Kuchma & Milushkina (2004) (Russian Federation). **Scope** To develop an assessment methodology for sanitary and epidemiological conditions in schools. **Outcome** • There was a significant correlation between pupils' well-being and sanitary and epidemiological safety. • The WASH-related parameters investigated – water availability, quality of water and system of waste disposal – were not among those mostly affecting children's physical development.
Prevalence and risk factors of helminths and intestinal protozoa infections among children from primary schools in western Tajikistan	**Sources** Matthys et al. (2011) (Tajikistan). **Scope** To assess the status on helminths and intestinal protozoa infections in Tajikistan. **Outcome** • A third of all schoolchildren were infected with helminths. • A spatial heterogeneity in the prevalence was noticed. • Every second child classified their drinking-water sources as unimproved.
National intestinal helminth survey among schoolchildren in Tajikistan: prevalence, risk factors and perceptions	**Sources** Sherkhonov et al. (2013) (Tajikistan). **Scope** To assess the prevalence of intestinal helminth infections among schoolchildren, identify risk factors for infection and explore the knowledge on intestinal helminth infections. **Outcome** • Of all children surveyed, 54% were infected with at least one helminth species. • Location (administrative districts) and handwashing practices were significant predictors for infection with certain intestinal helminth species. • Pupils' awareness was significantly variable among different districts.

Table 14 contd

Original title	Article details
	Health assessments
Demographic and parasitic infection status of schoolchildren and sanitary conditions of schools in Sanliurfa, Turkey	**Sources** Ulukanligil & Seyrek (2003) (Turkey). **Scope** To investigate the demographic distribution of absenteeism rates and the reasons for absenteeism among children visiting schools in a shanty town, rural area and apartment area. **Outcome** • High prevalence of helminthic infections was observed, affecting 52–77% of children, with highest prevalence in the shanty town. • The school in the shanty town was the most disadvantaged and had the greatest unequal gender distribution. • The sanitary conditions of latrines and water supply in the schools located in the rural area and especially in the shanty town were poor. • Water shortages and lack of soap also hindered handwashing and the development of hygienic habits. • In the case of water shortages, school toilets were closed, forcing children to defecate in the surrounding environment.

5.2. Highlights

Scientific research is needed, especially on neglected topics.

In the pan-European region little research has been carried out in the field of WASH in schools, compared to international research activities in the last 10 years. Most of the articles retrieved via the literature search related to WASH facilities (pupils' perceptions and facility conditions), drinking-water (mainly on pupils' fluid intake) and hygiene practices (handwashing and infection incidence). The educational institutions under greatest focus in the analysed literature were primary schools; less research was available on preschools and secondary schools. Very little was found for MHM and health assessments in schools. Studies in high-income countries were more likely to address questions related to usage and perception of existing infrastructure. Studies in middle-income countries were more likely to address health problems resulting from a lack of infrastructure. Except for one study on constipation, no quantitative data were found with respect to the association between WASH in schools and related health problems, and only one article covered the effect of WASH on school performance.

Most of the published studies were conducted in the United Kingdom; many in Sweden, Germany and the Netherlands. Four studies conducted in the Russian Federation were also retrieved – three on the condition of water and sanitation and one on health assessments in schools. According to the results of the literature review, only a limited number of countries are focused on the topic and the literature available in English seems in general very limited for EECCA and for middle-income countries. Among these countries, studies were retrieved for Romania, Tajikistan, Turkey and Ukraine.

Access to drinking-water is not always assured, negatively affecting pupils' hydration and eventually their cognitive performance.

The literature review identified 10 articles related to drinking-water in schools. All were conducted in high-income economies, including six in the United Kingdom. Most studies were concerned about adequate fluid intake at school and how to promote it. Children in Italy and the United Kingdom were found to be dehydrated, as the level of fluid intake was reportedly low (Fadda et al., 2012; Kaushik et al., 2007). Dehydration was associated with negative effects on cognitive performance, especially short-term memory, and with continence problems.

Two distinct factors were shown to have a key influence on children's fluid intake. The first is awareness among teachers and students of the importance of adequate fluid intake and consequent school policies for drinking and toilet visits (Croghan, 2002; Haines & Rogers, 2000; Hunter et al., 2004; Kaushik et al., 2007; Molloy et al., 2008). Molloy et al. (2008) showed that teachers might not always be aware of adequate fluid intake for children and of its effects on health and concentration. In a significant number of schools, especially in secondary schools, pupils are not allowed either to visit the toilet or to drink in class, or even to bring drinks from home; this has significant consequences for fluid intake levels (Croghan, 2002; Haines & Rogers, 2000; Hunter et al., 2004). The positive effects of school policies encouraging water consumption were shown by Kaushik et al. (2007): free access to water during lessons (i.e. allowing the use of water bottles) significantly increased pupils' fluid intake, without affecting the toilet visit rate.

The second factor relates to the state of the school facilities: poor conditions and low numbers of available drinking-water facilities negatively affect pupils' fluid intake at school (Brander, 2003; Croghan, 2002; Haines & Rogers, 2000; Loughridge & Barratt, 2005). A significant number of schools did not provide adequate facilities for children's needs, especially with regard to promoting drinking-water (Croghan, 2002; Haines & Rogers, 2000; Hunter et al., 2004). The positive effect of provision of more drinking-water facilities was shown by Muckelbauer et al. (2009).

Awareness of and school rules for promotion of water intake and availability of drinking-water facilities are equally important factors, which need to be implemented concurrently for efficient improvement of WASH in schools (Brander, 2003; Visscher et al., 2010). Finally, improvement interventions to achieve higher water consumption were also found useful in reducing the risk of obesity, as children were less prone to soft drink consumption (Loughridge & Barratt 2005; Muckelbauer et al., 2009).

Hindering factors may affect good hygiene practice in schools, which can be improved sustainably with targeted interventions, significantly reducing pupil absenteeism.

The topic of hygiene behaviour was addressed in 13 articles found in the literature review. All studies took place in high-income countries in the pan-European region. The majority dealt with the effects of handwashing practices at school and their improvement, with seven articles assessing the impact of handwashing interventions in schools on the incidence of common children's diseases – including the common cold and gastroenteritis – and on absenteeism rates.

Five of the seven studies reported a beneficial effect of hygiene interventions, with a significant reduction of absenteeism due to infections during and/or after the intervention (Azor-Martinez et al., 2014; Gebel et al., 2008; Lennell et al., 2008; Nandrup-Bus, 2009; Randle et al., 2013). The successful interventions consisted of:

- provision of additional hand sanitizers (Azor-Martinez et al., 2014; Lennell et al., 2008);
- implementation of a targeted hygiene programme in schools (Gebel et al., 2008), which also improved communication on hygiene matters between the different stakeholders involved;

- implementation of a mandatory handwashing policy (Nandrup-Bus, 2009); and
- more sophisticated methods like an ultraviolet-light yo-yo to let pupils understand how to practise better handwashing by themselves (Randle et al., 2013).

One study showed how comprehensive interventions, providing training and information materials together with hygiene tools, were ineffective with respect to the absenteeism rate, but nevertheless succeeded in efficiently improving children's handwashing behaviours (Rosen et al., 2006). Results of a global review were in line with these results and underlined the link between provision of handwashing materials and handwashing behaviour in schools, with beneficial effects on pupils' health (Jasper et al., 2012).

According to the literature analysed, even countries where regulations for hygiene education are in place may still face challenges to implement best hygiene practice. The study of Lecky et al. (2011) highlighted the fact that six European countries include hand hygiene in the school curriculum, but none of these cover the details of adequate handwashing practices. Moreover, hygiene activities were not best implemented when there were neither specific stimuli nor awareness promotion. The implementation was observed to have better acceptance rate when a major perceived public health threat was occurring, such as a wave of influenza (Schmidt et al., 2009). Studies conducted in the Netherlands by Zomer et al. (2013a; 2013b) showed that hygiene practices in preschools were inadequate even where national guidelines are in place. Low compliance was observed for various practical situations. Factors identified as affecting compliance were concrete impairments, such as a lack of consumables (especially paper towels) in the facilities, lack of awareness or knowledge of the national guidelines and insufficient personal awareness of the importance of hand hygiene and the severity of associated diseases (Zomer et al., 2013a; 2013b).

WASH facilities are not always favourable for pupils' needs and dignity, and do not comply with standards.

The literature review identified 13 articles that addressed water and sanitation facilities in schools. Seven of these focused especially on students' perceptions of toilet and sanitation facilities in their schools.

The situation emerging from the studies showed that accessibility of facilities was not yet adequate to ensure the health of the pupils, especially those with wetting problems. A significant number of children – increasing with age – avoided going to the toilet at school, especially to defecate. The reasons for this were mainly related to inadequate facilities and school policies (Barnes & Maddocks, 2002; Fujiwara-Pichler et al., 2006; Jones & Wilson, 2007; Lundblad & Hellström, 2005; Lundblad et al., 2007; 2010; Vernon et al., 2003). Pupils' habit of avoiding toilets was associated by scientists with higher risks of developing intestinal problems, functional bladder disturbances (like incontinence or constipation) and urinary infections (Barnes & Maddocks, 2002; Croghan, 2002; Jones & Wilson, 2007; Lundblad & Hellström, 2005). It could also contribute to low fluid intake if drinking-water was only available in toilet areas or if pupils avoided drinking because they did not want to visit the toilets (Jones & Wilson, 2007). Further, Rapoport et al. (2012) observed a correlation between the hygienic state of the school and pupil disobedience and asocial behaviours. One study conducted outside the region also suggested that school infrastructural conditions, including WASH facilities, might have an effect on school performance (Jasper et al., 2012). Because of the lack of significant improvements in WASH in schools over the time, Heudorf & Exner (2008) suggest that there is an urgent need to pay attention to maintaining high hygienic standards in schools, together with ensuring robust and simple WASH infrastructure.

Pupils' comments and researchers' observations identified several problems related to poor maintenance of school facilities – especially of HWFs, unhygienic toilets with dirt and unpleasant

smells and a lack of hygiene consumables (such as toilet paper, soap and hand drying towels) (Barnes & Maddocks, 2002; Croghan, 2002; Heudorf et al., 2011; Jones & Wilson, 2007; Lundblad & Hellström, 2005; Rapoport et al., 2012; Zulkarnaev et al., 2009). The lack of toilets for disabled pupils was also highlighted by Croghan (2002). All hindering factors seemed equally important to pupils, as shown by Fujiwara-Pichler et al. (2006): inadequate cleanliness and lack of consumables were found to hinder pupils' access to WASH significantly in several schools, even after a renovation of the toilet facilities. The results reported by Croghan (2002) also show, however, that maintaining cleanliness can be a challenge: when cleaning is done once per day facilities get dirty by the end of the day, especially if they are overcrowded (with insufficient pupil–toilet ratios).

Moreover, several studies showed that a significant number of schools did not comply with their legal obligations, suggesting poor enforcement of WASH in schools (Heudorf et al., 2011; Ponomarenko & Cherkashin, 2009; Rapoport et al., 2012; Zulkarnaev et al., 2009). Compliance was especially affected by school location (with rural areas having worse results), age and original purpose of the school building, type of sanitary-technical infrastructure and the education process provided at school. According to Heudorf et al. (2011), factors needed to increase compliance are availability of consulting services, more frequent control visits by the responsible authorities and an increase in perceived importance of hygiene practice, such as during an ongoing major perceived public health threat, as also observed by Schmidt et al. (2009).

Another aspect affecting pupils' access to WASH in school was the school policy for going to the toilet. Pupils were not always allowed to go to the toilet during lessons (Croghan, 2002; Lundblad & Hellström, 2005; Lundblad et al., 2007; 2010), even if they were affected by bladder disturbances (Lundblad et al., 2007). Some avoided going to the toilet because they did not want to make their private toilet need public in front of the class when asking for permission (Lundblad et al., 2010). Even in schools where pupils were allowed to go during lessons, toilets could be locked and pupils had explicitly to ask for the key to use them (Croghan, 2002; Lundblad & Hellström, 2005). Pupils also avoided going to the toilets because they felt insecure, as toilets were not supervised (Jones & Wilson, 2007) and bullying episodes were reported in most of the studies. This was made worse by the lack of privacy, as not all facilities were lockable (Barnes & Maddocks, 2002; Jones & Wilson, 2007; Lundblad et al., 2007).

Other issues that emerged about WASH facilities in school concerned the implementation of central water supplies and centralized sewage system (Ponomarenko & Cherkashin, 2009; Rapoport et al., 2012; Zulkarnaev et al., 2009). Nevertheless, the study of Samwel & Gabizon (2009) described the positive effects of the introduction of dry urine-diverting toilets, which may be useful in areas where implementation of a central sewage system is not feasible. These facilities can be installed inside the school buildings, improving pupils' access to WASH in schools, and could consequently improve pupils' learning performance.

Accessibility of menstrual hygiene products is not ensured in primary schools.

Three scientific articles revealed by the literature review dealt with menstrual hygiene in schools. Only the study by Jones & Finlay (2001) specifically targeted the topic of MHM. The study results showed that even though most primary schools provided sanitary towels, MHM was still not adequate. In many schools girls had explicitly to ask an adult to be provided with a sanitary towel, and disposal facilities were not present in the toilet cubicles or even in the washrooms. Two other studies addressing the condition of toilet facilities in schools in general confirmed the need of disposal facilities in primary schools (Croghan, 2002; Jones & Wilson, 2007). Results from a global review also underlined the importance of ensuring privacy and providing adequate materials for MHM in schools, as girls might otherwise avoid school during menstruation (Jasper et al., 2012).

Inadequate WASH affects pupils' health.

Seven studies investigated the state of health of schoolchildren in the pan-European region. One was conducted in France (Averous, 2004), one in the Russian Federation (Kuchma & Milushkina, 2004), two in Tajikistan (Matthys et al., 2011; Sherkhonov et al., 2011), two in Turkey (Inan et al., 2007; Ulukanligil & Seyrek, 2003) and one in Ukraine (Grebniak & Agarkova, 2000). Two studies were on dysfunctions of the bladder or the bowel among children and their risk factors. Five studies focused on infection with intestinal parasites among schoolchildren; in three of these, at least one third of all participating children were infected.

According to the studies there is a clear association between children's health and WASH in schools. In one study, specific WASH factors were not among the factors most affecting schoolchildren's health, but an association was not explicitly excluded (Kuchma & Milushkina, 2004). In others, the high infection incidence was associated with poor WASH due to unimproved and contaminated water sources, bad sanitation conditions (with helminth-contaminated surfaces) and lack of hygiene education (Grebniak & Agarkova, 2000; Matthys et al., 2011; Sherkhonov et al., 2011). A global literature review presented similar results and also linked the use of inadequate toilets with symptoms like diarrhoea and vomiting, or even with a higher probability of developing hepatitis A (Jasper et al., 2012).

Bowel and bladder dysfunctions among children were described as a social and psychological handicap for children, leading to school failure, and were of high concern for parents, even though medical consultation was not commonly sought (Averous, 2004; Inan et al., 2007). The literature review confirmed that children's habit of keeping the bladder full for too long is a major risk factor for urinary tract disorders and constipation, and this habit often originates at school as a result of inadequate facilities and policies for toilet visits that do not respect children's needs (Averous, 2004; Inan et al., 2007). Younger pupils and girls face the highest risk. Parents and school staff should be thus informed and empowered:

- to provide adequate education on healthy voiding;
- to understand children's needs without discriminating against vulnerable pupils; and
- to facilitate access to school toilets, which should be clean and accessible and respect privacy (Averous, 2004).

6 Conclusions and recommendations

6.1. Conclusions

The 2010 Parma Declaration on Environment and Health (WHO Regional Office for Europe, 2010) was an important step in defining regional policy goals for better WASH conditions in schools and other childcare settings. Since its adoption, this has triggered approval and revision of national policies, regulations and standards on WASH in schools in several countries across the pan-European region. The Protocol on Water and Health (UNECE & WHO Regional Office for Europe, 2006) is the primary policy instrument for implementing the WASH-related Parma commitments. Numerous countries in the region, including Parties to the Protocol have prioritized and established national targets towards improving WASH in schools. National surveys have been conducted with the aim of establishing a national baseline and/or assessing current problems and possible policy and monitoring gaps.

The progress achieved thus far, however, is still insufficient to guarantee universal access to safe WASH for all pupils in the region. One-shot surveys and scientific studies point to significant gaps in providing access to adequate WASH facilities; general discomfort felt by pupils; and associated problems with hygiene practices and toilet avoidance and their negative effects on health, well-being and learning.

Maintaining and improving WASH conditions in schools is important for provision of safe learning environments and achieving positive education and health outcomes for children, as well as providing economic and environmental benefits. The main issues that emerged from the analysis of available evidence for the pan-European region are summarized in the following sections.

Policies and targets are set, confirming countries' commitment and reflecting priorities, but full implementation and improvement of WASH in schools is impeded.

International surveys show general progress towards the goals set by the Parma Declaration. The majority of the countries in the pan-European region (at least 38) have established policies on WASH in schools, and many have set targets or established targeted programmes for their implementation. A number of countries reported that an intersectoral coordination mechanism is also in place. The current situation presents challenges and gaps, however, hindering efficient enforcement.

- Policies in place still lack specific requirements to ensure basic access to WASH in schools, as specified by the WHO guidelines.[5] These include, but are not limited to, adequate pupil–toilet ratios; requirements for HWFs; provision of hygiene consumables like soap and toilet paper; minimum requirements for cleaning; facility requirements for pupils with disabilities; and comprehensive hygiene education integrated in school curricula, including proper hygiene practice and MHM. According to national surveys, current national policies do not always consider the onsite water and sanitation solutions as alternatives to centralized systems, thus excluding rural areas with particular geographical and climatic characteristics from realization of safe WASH and access to financing.
- The progress in legislation has not always been translated into action in schools. Targeted programmes for WASH are often not fully implemented or financed and do not always have national coverage. Hygiene promotion is frequently less prioritized than water and sanitation. Additionally, coordination is not always enforced or enduring.

[5] Even though the WHO publication *Water, sanitation and hygiene standards for schools in low-cost settings* (Adams et al., 2009) was designed to be used by schools in low- and medium-resource countries, the standards have also been demonstrated to provide useful recommendations for the school sector in high-resource countries.

- The legal framework on WASH in schools is often complex. Policies and standards may not always specifically address only schools: requirements may be scattered across legal domains approved by different institutions. The links between relevant documents are not always explicit. Some exceptions were observed, as four countries developed comprehensive advisory documents or comprehensive guidelines integrating all WASH components.
- The division of roles and responsibilities on WASH in schools is often spread over several different institutions, sometimes without a clear lead actor with overall responsibility, including for coordination with all concerned departments. In particular, the leadership of the education sector in the provision and surveillance of WASH in schools as a compressive education intervention is still limited.
- School communities are not always involved in WASH in school implementation. Examples from different countries highlight the value of participation of school staff, as well as of parents and pupils in order to raise awareness and implement improvements at the school level – for example, in relation to cleanliness and maintenance of facilities and availability of consumables. School participation in addressing WASH is reported to lead to increased accessibility and use of sanitation facilities, as it can lead to improved maintenance –consequently improving pupils' perceptions – and improved school rules for accessibility to drinking-water and visiting the toilets. Conversely, providing only improved infrastructure does not significantly promote healthy behaviours among pupils.

Policy-making will not be successful unless critical gaps in surveillance are addressed and monitoring indicators improved.

A number of countries in the pan-European region monitor WASH coverage in schools. The majority (at least 35 countries) regulate surveillance of WASH in schools in respective policies and many reported that these include minimum inspection frequencies and requirements for follow-up in cases of noncompliance. Nevertheless, challenges and gaps that may affect surveillance efficiency have been identified.

- Surveillance frequency and coverage requirements vary significantly. Policies do not always specify minimum requirements for inspections. They are frequently merely targeted at presence of infrastructure (for example, number of toilets) or health (for example, number of infections) but do not require a comprehensive assessment of WASH accessibility in schools. Further, surveillance activities do not usually consider pupils' perceptions and perspectives and thus lack a reality check by the actual users of the facilities.
- Monitoring indicators are heterogeneous and do not always cover important aspects such as type and functionality of the facility or water quality. Heterogeneous indicators also hinder comparability and data evaluation.
- Intersectoral coordination is not always reflected in surveillance. The health sector may be accountable for surveillance, while the ministry of education or school authorities rarely have an active role. This arrangement may hamper the education/school sector's ownership of the findings and ability to identify improvement needs.
- National implementation systems are often observed to be inefficient in translating surveillance findings into improvement action. Data evaluation and effective reporting systems between the institutions involved are not conducted efficiently, often owing to the fact that surveillance is not seen as a tool to inform improvement interventions aimed at meeting national standards. This is also confirmed by survey findings, which show that school realities often do not match the ambitions laid out in policies and demonstrate a lack of significant improvements.

- Incomplete understanding of the actual condition of WASH in schools is also caused by the lack of data disaggregated by rural and urban areas and by different regions. Such disaggregation facilitates detailed analysis to identify inequalities that may not be highlighted by the overall information.

The reality of WASH in schools does not reflect the aspirations of standards in place and is not adequate to pupils' needs.

Findings from both national surveys (Chapter 4) and the scientific literature (Chapter 5) show that WASH in schools is frequently impaired in the region. Issues may vary, but they prevail in all countries assessed, regardless of their economic status and irrespective of the specific policies in place on WASH in schools. Many of the problems reported relate to inappropriate planning, poor maintenance and cleanliness. The following list presents challenges related to availability and accessibility of safe WASH in schools, as described in the literature.

Access to water for drinking and handwashing in schools is often not ensured.

- In several countries the centralized water supply is not available in all schools. Even where it is available, in some schools it is discontinuous, functioning only a few hours per day or a few days per week.
- Some schools lack any onsite water supply. In these settings, drinking-water is transported to school premises in tanks.
- In a few countries a number of schools were not subject to regular assessment of the drinking-water quality. In some countries not all schools comply with the national standards, reporting the use of unimproved water sources – either at all times or only when the centralized water supply is not functioning.
- Access to drinking-water in schools may also be impaired, as observed in some schools, by a lack of water facilities inside the school building. Where they are present inside, drinking-water points are often available only inside the toilet facilities.
- HWFs are reported to be inadequate, insufficient in number and/or not close to the toilets in many countries.
- In the winter season some schools report that water is too cold or frozen, hindering handwashing practice.
- School rules do not always allow children to drink water during lessons.

Hygiene management and practice are not always adequate in schools.

- Insufficient cleanliness and bad odours are a challenge in many schools across the region. In washrooms that are cleaned once a day, dirt accumulates during the school day; this especially becomes a problem when facilities are overcrowded.
- Basic consumables like soap, toilet paper and drying devices – important provisions for hygiene and disease prevention – are frequently reported to be insufficient.
- Disposal facilities are often missing in the toilet areas or cubicles, impairing girls' MHM in particular.
- Poor ventilation and mould in washrooms is reported in several countries.
- Poor hand hygiene practices by schoolchildren and caretakers are sometimes observed. The lack of comprehensive hygiene education and promotion in curricula may contribute to this situation.

- Hygiene education is not always included in school curricula; when it is, it is not always comprehensive of important topics like MHM and details of handwashing practice.
- Pupils and school staff are not always aware of the importance of WASH and correct hygiene practice.

Sanitation is not always adequately provided and maintained or accessible.

- Access to basic sanitation in schools is not fully ensured in all countries. Some schools do not provide any sort of sanitation, others provide unimproved sanitation and/or sanitation facilities only outside the schools, which are hard to access, especially during the cold season.
- In almost all countries a lack of maintenance was reported, especially concerning toilet seats, doors, HWFs and plumbing. In some circumstances, the choice of poor materials for the construction and equipment of the facilities is a challenge.
- Access to sanitation facilities is also significantly impaired by the lack of privacy, especially if toilets are shared between boys and girls or between pupils and teachers. Further, a lack of functioning lockable facilities, doors and partitions and inappropriate partition sizes are reported to be inadequate to children's needs.
- In many schools the number of facilities is insufficient and does not meet national or international standards. Consequent overcrowding hinders accessibility and raises issues for cleanliness and maintenance.
- The illumination in toilets is reported to be inadequate in several countries; this is reported to favour improper behaviours, such as bullying or vandalism.
- In some countries the room temperature in the toilets is often inadequate, especially in winter.

Disparities and inequalities permeate WASH accessibility in schools.

- Rural–urban and regional disparities are observed in all countries where disaggregated data are available.
- Facilities accessible by disabled people are still not sufficiently available in many schools, even though most countries have respective policies in place.
- WASH facilities in schools are reported to be unfit for adequate MHM. School rules for toilet visits may also affect girls' access to WASH facilities in schools in particular, and therefore their dignity and well-being.

Pupils' perceptions show how the challenging situation frequently leads to dissatisfaction with WASH facilities in schools, mostly due to the lack of maintenance and cleanliness. In surveys pupils especially complained about bad smells; a lack of consumables, such as soap and toilet paper; a lack of privacy and supervision of the facilities and consequent bullying episodes. These problems are not always acknowledged by teachers. Such dissatisfaction is not always addressed and may promote antisocial behaviours and vandalism, which may further limit access to WASH in schools.

Inadequate WASH affects children's health, well-being and cognitive performance.

WASH conditions in schools and pupils' health and learning outcomes have been proven to be linked. A significant number of pupils avoid using WASH facilities because of their poor conditions and accessibility, with consequences for health and cognitive performance. Examples of related health issues are voiding disorders, urinary tract infections and constipation.

Schoolgirls' health and well-being might be especially affected by impaired accessibility to WASH facilities, as girls are more frequently affected by urinary infections and because schools do not

always provide essential education and sanitary tools for proper MHM, such as water in toilet facilities, sanitary pads, sanitary disposal facilities and privacy in the facilities.

Even when the facilities are used, pupils' health may also be affected by insufficient hygiene habits, especially with regard to handwashing: consumables are frequently reported to be unavailable and hygiene education, even if included in school curricula, is not always comprehensive in terms of attaining daily skills. Both aspects have been proven essential to improve hygiene practice in schools and significantly reduce absenteeism due to gastrointestinal or respiratory infections.

Children in schools are also reported to be dehydrated due to low fluid intake, which is associated with impaired accessibility to drinking-water. Further, a high rate of infections due to intestinal parasites was observed in some countries, which was found to be associated with inadequate WASH in schools.

The scientific evidence shows that toilet avoidance and low fluid intake are fostered not only by insufficient and inadequate WASH facilities but also by a lack of awareness among both teachers and children concerning the importance of WASH and, consequently, inappropriate school rules with respect to drinking and toilet visits.

Policy-making needs to be supported by scientific research, especially on neglected topics.

Research findings play an important role in policy-making choices. Research on WASH in schools is limited in the pan-European region, compared to other regions. High-quality evidence is insufficient owing to a lack of prioritization of WASH in schools in research. Important WASH-related topics that deserve more attention, based on the findings of this study, include MHM, hygiene education and teachers' knowledge, as well as the association between inadequate WASH and learning and/or health outcomes (such as urinary tract infections or incontinence). Demand and support for scientific work are essential to promote evidence-based knowledge, which is vital to improve understanding of ways to ensure pupils' health and well-being through adequate WASH in schools.

6.2. Recommendations

The challenges identified in this study point to specific areas requiring further attention in order to guarantee children's rights to water and sanitation, to health and to education. This publication promotes the following concrete recommendations.

Policies to ensure accessible WASH for good health and learning in schools should be improved.

- National regulations need to be comprehensive of all aspects related to WASH in schools. Where this is not the case they can be improved by reviewing them in accordance with the WHO guidelines (Adams et al., 2009) and establishing how far adaptations are advisable, with due consideration of national circumstances and conditions. This review may include an analysis of thematic coverage of regulations related to WASH in schools (such as water quality and quantity, water facilities and access to water, hygiene education, MHM, sanitation facilities, access of disabled students and similar), as well as respective requirements for regular surveillance.
- Increased effort is necessary to close prevailing gaps in rural areas by developing comprehensive policies and programmes with realistic and achievable targets to ensure equal accessibility to WASH facilities in schools – for example, by considering and promoting decentralized alternatives where centralized water supply and sewerage systems are not feasible.

- Regulations or advisory documents that comprehensively present all requirements related to WASH in schools are helpful to advocate and clarify the duties of different stakeholders and to facilitate enforcement. Formal statutory systems are also needed to ensure follow-up action by responsible institutions and authorities in cases of noncompliance.

Efficient surveillance is essential for policy enforcement and informed improvement planning.

- Routine surveillance of WASH facilities in schools is vital to understand the prevailing conditions and inform stakeholders about improvement needs and actions. To be beneficial, minimum requirements for ongoing surveillance efforts (including coverage, frequency and indicators) need to be established. In particular, meaningful and harmonized indicators that cover all WASH aspects beyond available WASH infrastructures are needed.
- In countries where routine surveillance is already in place, monitoring and inspection schemes may be improved by aligning them with monitoring indicators for WASH in schools, as proposed by the WHO/UNICEF JMP in the context of SDG target 4a. When included in surveillance schemes, children's perceptions provide a comprehensive picture of the situation, showing subtle factors that limit accessibility.
- Efficient monitoring, specifically of functionality and water quality, linked to an efficient enforcement mechanism, is needed to improve school compliance with standards for WASH in schools and to ensure good health, well-being and learning for pupils. If evaluated and conveyed in a reliable reporting system, surveillance results can help decision-makers to identify improvement needs, target funding and engage accountable stakeholders. Surveillance data are also useful to monitor the progress of ongoing implementation plans and to identify gaps.
- Besides regular surveillance, one-shot surveys have proved to be a useful complementary tool. They provide a comprehensive picture and allow policy-makers to evaluate the progress of improvement programmes. Such studies can also help to identify gaps in the nature and scale of prevailing conditions that may not be identified by irregular or superficial surveillance.

The gap between policy ambitions and reality in schools should be addressed.

- A formal coordination mechanism is essential to inform and harmonize actions among the various authorities and stakeholders that share responsibility in WASH in schools at the national level. Stronger cooperation between the ministry responsible for education and the other sectors involved is needed to ensure access to safe WASH. This may be achieved by strengthening existing or establishing new coordination mechanisms, with clear distribution of responsibilities.
- The active involvement of schools is essential to achieve safe WASH. Initiatives for collaboration between responsible authorities, schools, parents and children have proved successful. School administration has a key role in ensuring cleanliness and maintenance, as well as in making sure that WASH facilities are properly inspected and supervised. Better communication between schools and authorities, together with clear assignment of responsibilities and provision of adequate tools for non-expert school staff (such as information materials, monitoring tools and training) are necessary to promote collaboration and facilitate compliance of schools with the standards.
- Long-term improvements and school compliance require resources for ongoing maintenance in terms of human resource and financial planning by the education sector, to ensure functionality and accessibility of WASH facilities in schools.
- In schools, toilets and hygiene can no longer be taboo. Awareness promotion and increased knowledge – among both teachers and pupils – are complementary key factors, together with

adequate, functional and accessible WASH facilities, in reducing absenteeism and fostering healthy behaviours. Adequate hygiene education as an integral element in curricula, including hands-on training on good hygiene practice and provision of information on hydration, MHM and proper voiding, is essential to empower children with knowledge about their rights and responsibilities and to promote disease prevention.

- Pupils' dissatisfaction – especially related to inadequate cleanliness, privacy and internal supervision – and the unhealthy behaviours observed among pupils (such as low fluid intake and toilet avoidance) suggest a need to review and improve existing school rules and procedures to ensure accessibility to drinking-water and sanitation facilities in schools that meet children's needs, including those of girls during menstruation.

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Adequate access to water, hygiene and sanitation (WASH) is every human's and child's right. Ensuring WASH accessibility in schools is encompassed in the 2030 Agenda for Sustainable Development – under the Sustainable Development Goals (SDGs) for health and well-being (SDG 3), education (SDG 4) and water and sanitation (SDG 6) – and 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. This publication summarizes the status of WASH in schools in the pan-European region and provides comprehensive insight into the progress made and challenges involved.

Improving WASH in schools has proved its importance to support policy-making for ensuring children's health, well-being and cognitive performance. This report provides evidence and examples in support of Member States' deliberations on advancing the agenda for universal access to WASH in schools. It aims to inform future priority activities under the Protocol's programme of work for 2017–2019 and to support the Parties to the Protocol in informed target-setting and the development of efficient and focused strategies. The findings of the report will also be useful for other stakeholders committed to and working on improving WASH in schools as a fundamental objective to protect children's health and to ensure basic human rights.

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