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Water, sanitation and hygiene in schools

INFORMAL DOCUMENT

**Landscape report on situation of water, sanitation and hygiene in schools in the
WHO European Region**

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

To support the implementation of the 2014-2016 programme of work of the Protocol on Water and Health, the WHO Regional Office for Europe organized a regional Member State meeting on advancing water, sanitation and hygiene (WASH) in schools (Bonn, 18-19 September 2014).

The preliminary results of a literature review on WASH in schools in WHO European Region, undertaken by the WHO Collaborating Centre for Health Promoting, Water Management and Risk Communication at the University of Bonn, were presented at this meeting. It was recommended to expand the scope of this work and prepare a “landscape report” summarizing the evidence on the situation of WASH in schools for the Region through a systematic literature review, appraisal of available information from national and international surveys as well as identification of best practice case studies in school regulation, surveillance and management.

The scope, structure and preliminary results of the landscape report were presented at the seventh meeting of the Working Group on Water and Health (26-27 November 2014), as well as the first Expert Group Meeting on WASH in Schools (Budapest, 16-17 April 2015). The report was further updated reflecting the comments and feedback received from the Expert Group and an advanced draft report was presented to the second Expert Group Meeting (Bonn, 8-9 October 2015).

The Working Group on Water and Health is invited to review the draft landscape report and provide comments and feedback to Ms Dovile Adamonyte (adamonyted@ecchbonn.euro.who.int) by 20 November 2015.

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

**LANDSCAPE REPORT
ON THE SITUATION OF WASH IN SCHOOLS
IN THE WHO EUROPEAN REGION**

Prepared under the Protocol on Water and Health

- Advanced draft report -

DRAFT

14 October 2015

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List of Acronyms and Abbreviation

CAAW	Central Asian Alliance for Water
CEHAPE	Children's Environment and Health Action Plan for Europe
CG	Control Group
DIN	German Institute for Standardization (Deutsches Institut für Normung)
DM	Ministerial Decree
DPR	Presidential Decree
EECCA	Eastern Europe, Caucasus and Central Asia
EG	Experimental Group
ENHIS	Environment and Health Information System
FTP	Federal Targeted Programmes
GI	Gastrointestinal Infection
GIZ	German Federal Enterprise for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)
GLAAS	Global Analysis and Assessment of Sanitation and Drinking-Water
GTO	German Toilet Organization
HWF	Hand Washing Facility
ISS	Independent School Standards
MBO	Model Building Code (Musterbauordnung)
MOH	Ministry of Health
MSZE	Hungarian Standards Institution (Magyar Szbvány Testület)
NGO	Non-Governmental Organization
RPG	Regional Priority Goal
SanPin	Sanitary Code of Practice
SES	Sanitary and Epidemiological Services
SOP	Standard Operating Procedures
SPR	School Premises Regulations
UD	Urine Diverting
UNECE	United Nations Economic Commission for Europe
UNICEF	United Nations Children's Fund
URI	Upper Respiratory Infection
VDI	Association of German Engineers (Vereinigung Deutscher Ingenieure)
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

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[to be completed...]

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1. Introduction

The access to water, sanitation and hygiene (WASH) is essential for the proper development and growth of children all around the world. Adequate access to WASH is a children's right, stated in the UN Convention on the Rights of the Child (20th November 1989).

In this context, at the Fifth Ministerial Conference on Environment and Health (Parma, 2010) the Parma Declaration on Environment and Health was adopted. The document addresses all health risks to children and other vulnerable groups posed by poor environmental, working and living conditions, especially focusing on the risk posed by the lack of water and sanitation. By signing the Parma Declaration Member States of the WHO European Region entered into a Commitment to Act on the 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*' (WHO, 2010).

The Protocol on Water and Health, adopted at the Third Ministerial Conference on Environment and Health (London, 1999), is the key regional policy instrument in supporting implementation of RPG 1 at national level. The Protocol's objective is to prevent, control and reduce water-related disease through sustainable water management. At the Third Meeting of the Parties of the Protocol (Oslo, 2013) the 2014-2016 programme of work was adopted and for the first time it includes a priority area concerned with improving and strengthening WASH in schools.

WASH in schools and child care facilities require special attention. Inadequate WASH conditions may cause adverse health outcomes and affect children's learning ability and school attendance. They result in implicit disadvantages for disabled children as well as for adolescent girls and women during menstruation. Furthermore, such inadequate conditions may also pose problems for teachers' work performance. Adequate and safe WASH facilities in schools prevent water-related disease, contribute to a positive and productive learning environment, promote positive hygiene behaviours, provide the opportunity to integrate further essential health interventions and contribute to gender equality.

Thanks to the work done in the WHO European Environment and Health Process, especially under the Protocol on Water, WASH in schools is now on the political agenda of most countries in the WHO European Region. Many countries have established national standards to regulate on water, sanitation facilities and/or hygiene within schools and in 2009 the WHO has published a guideline on standards for WASH in schools. Some countries have updated their national standards to get in line with the WHO guidelines and many have set targets to get standards applied with a larger coverage.

However, the progress in legislation is not yet always reflected in the real conditions that the school population is facing and plans cannot improve those conditions unless it is known what problems and gaps are hindering the application of the standards. The accounted authorities are often missing this information and generally there is a lack of reliable data especially on access and functionality of water and sanitation facilities in the schools. For policy makers, it is therefore a challenge to understand what the priorities for improving WASH are. Where monitoring has been

conducted substantial gaps have emerged in the equal provision of WASH services to children at schools, even in countries with high-income economy and detailed regulations in place. Furthermore, even if problems might be acknowledged it is also essential to recognize affected groups and the potential impact on children.

To support the implementation of the Protocol 2014-2016 programme of work, the WHO Regional Office for Europe organized the Meeting *on advancing WASH in schools* (Bonn, September 2014). The meeting was attended by 50 participants from health and educational departments of 24 Member States, as well as from leading academia, development/support organizations, non-governmental organizations and the United Nations Children's Fund (UNICEF). The meeting recommended, inter alia, preparing a “landscape report” summarizing the evidence on WASH in schools for the WHO European Region through a literature review, appraisal of available survey information on WASH in schools and identification of best practice, case studies in school regulation, surveillance and management. The aim of this report is thus to provide a useful insight into the current state of WASH in schools in the countries within the WHO European region, providing:

- The progress made and the current challenges concerning policies and national regulations;
- A collection of data about access and functionality of water, sanitation and hygiene in the school setting, collected from both scientific literature and national surveys;
- The issues and challenges concerning WASH in Schools and its effect on health and school environment, collected by conducting a literature review;
-

This review will support the Member States' and WHO's efforts in advancing the agenda on WASH in schools in the WHO European Region, including 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. This report is directed to all the countries committed under the Protocol on Water and Health and the Regional Priority Goal 1, as a tool to get inspiration from, as a memorandum on the path taken and on the reasons to keep going towards ensuring WASH to all children.

2. Methods

This Landscape report consists of a systematic review of the data concerning WASH in schools (and other childcare settings) in the WHO European Region. The efforts done to collect and summarize the data from various sources aimed to provide the involved parties and different stake-holders with a tool useful for the discussion and the development of efficient and focused strategies towards universal access to WASH in schools.

With this in mind a general overview on the current situation of WASH in schools and the political commitment in the WHO European Region was developed summarizing the results reported by different international surveys (Chapter 3). Those considered are:

- The Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS): combined data from several different existing sources, including global data on sanitation and drinking-water coverage, donor aid flows, economic and development indicators, health indicator data, and data from regional sector and multi-sector assessments. The data used for this report were published within the GLAAS report 2012 and the GLAAS report 2014.
- The Environment and Health Information System (ENHIS)¹: evidence-based information system, interactive database composed of country-level indicators and regional assessments (fact sheets). The data used were retrieved from the WHO Report on School Environment (WHO, 2015).

Since this landscape report aims to be a tool especially for policy-making and target-setting and –development a further analysis was conducted concerning the standards in place among the countries of the WHO European Region (chapter 3). For this, countries with different socio-economic backgrounds² were considered. The information related to country’s policies and standards refers to current regulations and guidelines mostly considering sanitation in schools. As far as England and Wales, Germany and Italy are concerned the information was retrieved from online governmental databases and dedicated journals. Further information was reported by single country representatives or was retrieved from dedicated surveys (UNICEF, 2012a; UNICEF, 2012e ONS, 2013).

An extended analysis of existing national surveys carried out by national institutions, NGOs, or international agencies (UNICEF, WHO) was conducted, to provide a more in-depth prospect of the conditions of WASH in schools within the different countries of the WHO European Region (chapter 4). Most of materials were of public domain (see Bibliography) and were either available directly in English or have been translated from French, German, Italian and Russian. The landscape report does not encompass all the countries of the WHO European Region as documents published in any other language than the ones mentioned are excluded.

Additionally, an internet research using the search engines “Google” and “Bing” was conducted to compile information on national policies, and case studies in school regulation, surveillance and management specifically for each country of the WHO European Region. Complementary information provided at the WHO *Meeting on advancing water, sanitation and hygiene* (Bonn,

¹Further information on ENHIS: <http://www.euro.who.int/en/data-and-evidence/environment-and-health-information-system-enh-is>

²The socio-economic state of the different countries was set according to the World Bank GDP ranking. For further information: <http://data.worldbank.org/data-catalog/GDP-ranking-table>

September 2014) and WHO *1st Expert group meeting on WaSH in schools* (Budapest, April 2015) was taken into account to provide a more comprehensive scene of the current state of WASH in schools, including countries whose information was not otherwise available.

Finally, a literature research was conducted (chapter 5), screening peer-reviewed literature available in the public domain and retrievable from the scientific databases PubMed and Science Direct. The review aimed at assessing the state of WASH in schools in the WHO European Region: which inadequacies are present in the countries of the WHO Region and what are the observed effects of impaired or improved access to WASH on pupils' health. Peer-reviewed articles addressing relevant topics to WASH in schools were selected, namely those related to hand washing, 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 facility 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 (e.g. water, school) which were combined in such a way, that all the potential associated terms (e.g. water well, water waste, etc.) and health outcomes were covered and a maximum of the papers available on WASH in schools retrieved (table 1). This research identified 25,505 publications, whose title or keywords incorporated a single or a combination of search terms (Table 1). Due to the large amount of results, a secondary screening was conducted, where all article abstracts were screened for the same search terms (Table 1). Global reviews were not further considered but screened for relevant literature. During a tertiary screening, the articles were finally hand-searched for relevant contents and country. By this, articles not related to WASH in schools, like aspects of food hygiene, studies located outside the WHO European Region and duplicates were excluded. For articles with identical data sets, only one was kept. At the end 35 studies fully met the inclusion criteria (Figure 1).

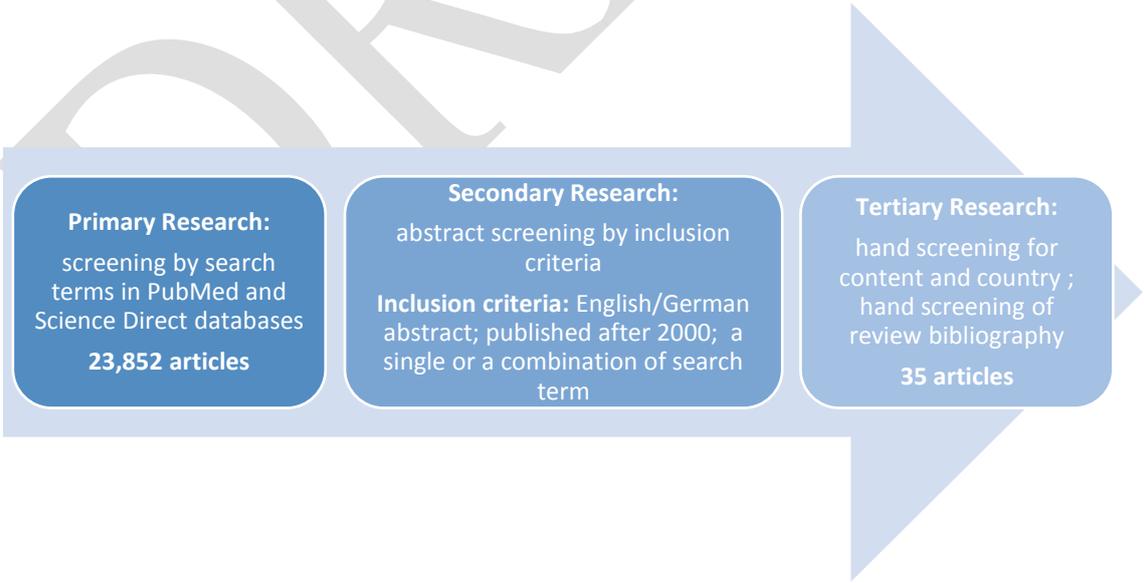


Figure 1: Flow chart of the selection process undertaken in the literature review (chapter 6)

The scientific databases used for the literature search cover 5,605 (PubMed) and 3,608 (Science Direct) journals in different languages and at least an English title, keywords and abstract are provided. Articles, which are only available in a language other than English and German and not

referenced by the two large literature search database, were thus not included. It is acknowledged that this can be a marginal share of relevant scientific literature, especially because WASH in school might be still considered more a mere national issue, despite the international agreements. However, 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 were asked to provide possible missing literature from national sources. A research on peer-reviewed articles in Russian was conducted by the Federal Service for Supervision of Consumer Rights Protection and Human Well-Being. It provided 5 additional articles.

Table 1: Search terms and number of results of the literature research

Search terms	PubMed	ScienceDirect
	Title/Abstract	Title/Abstract/Keywords
schools AND water OR sanitation	8,014	827
school* AND hygiene	419	599
school health policies AND water OR sanitation	7,197	21
school health policies AND hygiene	0	15
school* AND toilet*	757	59
school absenteeism AND water OR sanitation	6,771	2
school toilets	19	47
handwash* AND school*	0	19
hand washing AND school*	0	23
hand washing AND school	379	23
hand washing AND school*	296	18
Total search results = 25,505	23,852	1,653

*including additional long-tail keywords that came up during the research and considered as relevant

3. Policies on WASH in schools in the WHO European Region

This chapter presents the current situation concerning policies, plans and targets for WASH in schools adopted in countries of the WHO European Region. The findings of relevant international surveys are summarized, providing information on the state of policy plans and implementation for WASH in schools, national coverage's, and specific targets set. These surveys include:

- The UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) (section 3.1), covering the 2012 and 2014 reporting cycles; all information related to the countries of the WHO European Region was considered.
- The Environment and Health Policy Questionnaire conducted by the WHO Regional Office for Europe in 2014 (section 3.3), covering the results presented in the WHO Report on School Environment (WHO, 2015).

Many of the plans for the implementation of WASH in schools reported in GLAAS were developed under the Protocol of Water and Health, an important policy tool adopted at the Third Ministerial Conference on Environment and Health (London, 1999). Section 3.2 is dedicated to the targets set under the protocol, to provide a closer insight in the areas and the details of the targets set in different countries of the region.

Finally, examples of national policies and standards are provided (section 3.4). The information consists of various regulations adopted by countries in the WHO European region to ensure WASH access in schools; possible actors involved in ensuring WASH for pupils; and various mechanisms for coordination and/or surveillance currently in place. The reported national legislations were retrieved via a desk review or provided by national representatives at different WHO meetings (Bonn, September 2014; Budapest, April, 2015).

3.1 GLAAS

The GLAAS monitors the efforts and approaches to extend and sustain WASH systems and services. It was established to enhance the evidence base and help identify enablers and bottlenecks to progress in water and sanitation. The GLAAS biennial reports analyze and assess the inputs (i.e. human resources and finance) and the enabling environment (i.e. laws, plans and policies, institutional arrangements and monitoring systems) for WASH services. The data for GLAAS are collected through a questionnaire which also includes a number of questions related to WASH in schools (relevant questions are shown in Annex 1). GLAAS data were also used by UNICEF, together with other country data from UNICEF's regional offices, to compile national estimates for several countries of the WHO European Region. Box 1 summarizes the results.

Four of the 53 countries from the WHO European Region participated in the 2012 GLAAS survey³, i.e. Azerbaijan, Kyrgyzstan, Tajikistan and Uzbekistan (WHO, 2012). According to the published data:

- All four countries reported to have access targets included in national policies or strategies for schools; three countries also monitored the implementation status of the formulated targets.

³Further information on GLAAS 2012: http://www.un.org/waterforlifedecade/pdf/glaas_report_2012_eng.pdf

- Kyrgyzstan, Tajikistan and Uzbekistan reported, by 2011, implementation of hygiene programs in primary and secondary schools at a coverage rate higher than 75% in rural and urban areas, except for Kyrgyzstan having a rate in the range of 25-75% in urban areas.
- Azerbaijan and Kyrgyzstan reported that respectively 68% and 69% of primary schools have access to improved⁴ sanitation facilities in schools; data on access to improved drinking-water sources were not provided by the participating countries.

Box 1: National WASH in Schools coverage estimates

National estimates for WASH in primary schools based on available data and published in the UNICEF report “Advancing Wash In Schools Monitoring” (UNICEF, 2015)

The report responds to the 2012 Call to Action “Raising Even More Clean Hands” (UNICEF, 2012b)⁵ and aims at promoting and supporting improved monitoring of WASH in schools. The document focuses on WASH in schools coverage (gathered from 149 countries between 2008 and 2013) and monitoring indicators. Relevant to this landscape report are the national estimates, which 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 the WHO GLAAS datasets (2009 and 2011). National coverage estimates were reported for 19 countries of the WHO European Region (Table 2). In most countries the reported coverage are generally high (between 85% and 100%). However, the indicator for the coverage data is often not known or not specified. Nevertheless, it may be assumed that the data principally report the existence of any sort of (improved) water supply or (improved) sanitation, as specified for e.g. Bosnia & Herzegovina. Other indicators are:

- Albania, Armenia, Kyrgyzstan: presence of single-sex toilets, important to ensure privacy,
- Albania, Georgia (not for sanitation); functionality of the facilities
- Azerbaijan, Georgia: presence of improved services.

In Albania low water coverage is reported, with respect to functional water supply and functional/single-sex toilets in schools; in Azerbaijan low coverage for water supply (no indicator) and improved sanitation facilities is reported; in the Republic of Moldova and in Tajikistan low coverage level are as well reported for both water supply and sanitation, but the indicator is however not specified. The data reported for Kyrgyzstan show a relatively low percentage of single-sex toilets.

Between 2008 and 2013 an increasing trend relative to water coverage can be observed for Armenia and Ukraine and relative to sanitation coverage in Tajikistan (for some countries a trend could not be observed as the data were insufficient for the regression analysis).

Table 2: National coverage estimates for WASH in Schools [%] (Source: UNICEF, 2015)

	Water coverage 2008	Water coverage 2013	Known indicator	Sanitation coverage 2008	Sanitation coverage 2013	Known indicator
Albania	51	51	•	30*	30	• Functionality • Single-sex toilets
Armenia	84	92		85	86	• Single-sex toilets
Azerbaijan	5*	5		68*	68	• Improved services ¹
Belarus	100	100		100	100	
Bosnia & Herzegovina	100	100	•	100	100	Existence
Bulgaria	100	100		100	100	
Croatia	100	100		100	100	
Georgia	75	75	•	70	70	• Functionality • Improved services
Kazakhstan	85	85		85	85	

⁴ Improved drinking water and improved sanitation/ sanitation facility are defined according to the WHO/UNICEF Joint Monitoring Project “Definitions and Methods”: <http://www.wssinfo.org/definitions-methods/>

⁵ More information on 2012 Call to Action: http://www.unicef.org/wash/schools/washinschools_53108.html

Kyrgyzstan	85	85	53*	53	• Single-sex toilets
Montenegro	95	95	95	95	
Republic of Moldova	51	51	70	70	
Romania	90*	90	90*	90	
Russian Federation	100	100	100	100	
Serbia	95	95	95	95	
Tajikistan	51*	51	17	29	
Turkey	99	99	99	99	
Ukraine	86	100	100	100	
Uzbekistan	100	100	100	100	

*The data were insufficient for a regression analysis; the same value as 2013 is reported for 2008

¹ The indicator reports the presence of improved sanitation, which is defined accordingly to the definition given in the Definitions and Methods from the WHO/UNICEF Joint Monitoring Programme as a facility that ensures “hygienic separation of human excreta from human contact”.

Twelve countries (23%) from the WHO European Region took part in the 2014 GLAAS survey⁶, i.e. Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Lithuania, Republic of Moldova, Tajikistan, The Former Yugoslav TFYR Macedonia, Serbia and Ukraine (WHO, 2014a).

All the surveyed countries have approved national policies regarding WASH in schools, in Georgia it was under development at the time of reporting. Nevertheless, the state of implementation differs between the countries (Table 3). Five countries have already fully implemented plans, including funding and regular revisions, within the approved WASH related policies. Out of these five, TFYR Macedonia has not yet done it with respect to hygiene. At present, most of the other seven countries have partially implemented plans in water and sanitation (n=3) and plans in hygiene (n=4). Three countries, instead, have just formulated a plan for the implementation in the areas sanitation and hygiene. Georgia is the only respondent country that has not yet developed a plan to implement the WASH policies, which were already formally approved (the policy for hygiene was under development at the time of the GLAAS data collection).

Table 3: Responses to GLAAS 2013/2014 country survey: Levels of National Policy and Plan Development and Implementation for WASH in Schools

POLICIES AND PLANS	on Sanitation and on Water in schools	on Hygiene in schools
Plan being fully implemented with funding, and regularly reviewed	Azerbaijan, Belarus, Estonia, Kazakhstan, TFYR 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	Kyrgyzstan, Lithuania, TFYR Macedonia
National policy formally approved and gazetted (formal announcement)	Georgia	
No national policy or policy still under development		Georgia

⁶ Further information on GLAAS 2014:

http://www.who.int/water_sanitation_health/glaas/glaas_report_2014/en and GLAAS 2013/2014 country survey response database: http://www.who.int/water_sanitation_health/glaas/2014/glaas-2013-2014-survey-responses/en/

Targets were specifically formulated for WASH in schools by ten of the twelve countries taking part in the GLAAS 2014 survey (WHO, 2014c). As shown in the table below, most countries have set the universal access to WASH in schools as target coverage⁷, except for Georgia, Tajikistan and Ukraine that have anyway set a target coverage. At present, Azerbaijan has specified a target coverage only for sanitation in schools and Kyrgyzstan a target coverage only for drinking-water in schools (WHO, 2014c). In Serbia and in Tajikistan plans were developed specifically addressing the continuous water supply in the urban areas; in Serbia the water quality compliance is also under focus (WHO, 2014b). In Belarus and Lithuania several plans were approved, but they do not include specific measures for reuse of wastewater septage (WHO, 2014b).

Table 4: Summary of policy targets for WASH in schools (GLAAS 2014)

Country	Sanitation Targets		Water Targets	
	Coverage Target ¹	Target Year	Coverage Target ¹	Target Year
Azerbaijan	100%	2017	No info	2017
Belarus	100% ²	reached	100%	reached
Estonia	No target	No target	No target	No target
Georgia	70%	Not listed	86%	Not listed
Kazakhstan	Not listed	Not listed	52%	Not listed
Kyrgyzstan	90%	2020	100%	2020
Lithuania	100%	reached	100%	reached
Republic of Moldova	100%	2020	100%	2020
Serbia	100%	2015	100%	2015
Tajikistan	80%	2015	55%	2020
TFYR Macedonia	100%	Not listed	100%	Not listed
Ukraine	20% - 40%	2015; 2020	25% - 30%	Not listed

¹Parameter: facilities unless otherwise stated

²Parameter: provision of centralized sanitation systems/ drinking-water supply systems

While most of the countries report to have a plan to rehabilitate broken or disused public latrines, such as those in schools, the vast majority of countries is unable to implement the plans at a high level, as shown by the fact that even if all 12 countries have policies for sanitation, only half have universal access as target coverage. In Azerbaijan the approved plans aim to ensure drinking-water quality and comprise the construction and reconstruction of water supply facilities, however, there are no specific plans for replacing latrines (WHO, 2014b).

Six of the respondent countries that set specific target coverage for sanitation in schools specified also a due date to reach the target coverage, set between 2015 and 2020 (Table 4). Concerning drinking-water in schools five countries have specified a target year for the set target coverage. Belarus and Lithuania have already reached the universal coverage of schools with water and with sanitation facilities.

⁷ In this document, universal access is intended as 100% provision of facilities for children at school. It is assumed that facilities should equally accessible with no discrimination in gender or social condition.

Hygiene promotion seems not as prioritized as the other aspects of WASH in schools, only six countries have fixed a target coverage and/or due date for the set target (Table 5). The target is specified in almost all countries as universal access. Kazakhstan has set the target coverage as a fixed percentage of 80% of the facilities Target Year is between 2015 and 2017, except for Belarus and Lithuania that reported to have already reached the universal coverage of hygiene promotion. Among those not providing a specific target, at least four countries (Azerbaijan, Kyrgyzstan, Tajikistan and TFYR Macedonia), stated that hygiene promotion is included in the plan for WASH in schools (WHO, 2014b; WHO, 2014c – question A5).

Table 5: Summary of policy targets for hygiene promotion in schools (GLAAS 2014)

Country	Target Coverage ¹	Target Year
Azerbaijan	Not listed	2017
Belarus	100%	reached
Estonia	Not listed	No target year
Georgia	Not listed	Not listed
Kazakhstan	80%	Not listed
Kyrgyzstan	No info	Not listed
Lithuania	100%	reached
Republic of Moldova	100%	2015
Serbia	100%	2015
Tajikistan	Not listed	Not listed
TFYR Macedonia	Not listed	Not listed
Ukraine	Not listed	Not listed

¹Parameter: facilities unless otherwise stated

3.2 National Targets under the Protocol on Water and Health

Under the Protocol on Water and Health, countries have to set defined targets, in order to provide safe drinking-water and adequate sanitation for everyone by a chosen due date⁸. As stated in articles 6 and 7 of the protocol, setting and reviewing the targets and assessing periodically their progress, are considered the essential starting steps for an efficient action to reach the protocol's objectives: the improvement of the water management and consequently the improvement of human health and well-being. Besides advocacy, the targets also stimulate the development of a cooperating framework between all the stakeholders and the establishment of realistic plans to assess and efficiently improve the situation related to WASH. Table 6 lists the countries of the WHO European region that have set targets under the Protocol on Water and Health, stratified by target areas.

Table 6: the target areas for the WASH in schools targets set by the countries under the Protocol for Water and Health

⁸ More information about the Protocol on Water and Health: <http://www.euro.who.int/en/health-topics/environment-and-health/water-and-sanitation/protocol-on-water-and-health>; the official document is retrievable from: http://www.euro.who.int/_data/assets/pdf_file/0007/88603/E89602.pdf?ua=1

Target area	Countries
Target area I: Quality of the drinking-water supplied	Republic of Moldova, Ukraine
Target area II: Reduction of the scale of outbreaks and incidents of water-related diseases	Armenia, Belarus, Kyrgyzstan
Target area III: Access to drinking-water	Armenia, Kyrgyzstan, Republic of Moldova, Tajikistan
Target area IV: Access to sanitation	Armenia, Kyrgyzstan, Republic of Moldova, Tajikistan, Ukraine
Additional national target area: Improved national communication and education	Germany

In countries that have set national targets on WASH in schools and childcare settings under the provisions of the Protocol (reported in Annex 2) the focuses of these targets vary (Table 7). This is because the targets represent a realistic achievable goal set after assessing the specific situation related to WASH in each country.

For example, in Germany, where the facilities are generally present and drinking-water is available, the focus of the targets turned to improvements of infrastructures and children's education. Other countries (mainly low- and middle-income countries) targets focus more on increasing pupils' access to safe drinking-water and sanitation facilities in accordance to the national or international standards. Further information (e.g. indicators and due dates) can be found in Annex 2.

Table 7: WASH in schools targets set by the different countries under the Protocol on Water and Health

Country	Target Areas	Targets
Armenia	II, III, IV	<ul style="list-style-type: none"> Maintain the vaccination of children against rotavirus Improve access to safe drinking-water in educational facilities (from kindergarten to senior school and boarding facilities) Improve sanitation in educational facilities
Belarus	II	<ul style="list-style-type: none"> Introduce the vaccination against hepatitis A among high risk groups in the population, focusing to pre-school and general educational institutions Reduce the morbidity by acute enteric infections related to the drinking-water in the educational institutions
Germany	Additional	<ul style="list-style-type: none"> Improve national communication and education of the general public regarding drinking-water, bathing and swimming, with particular consideration for children's health
Kyrgyzstan	II, III, IV	<ul style="list-style-type: none"> Increase the coverage of the monitoring of water-related diseases Assess the status and required investments for the improvement of water supply systems in schools and preschool institutions Provide improved sanitation facilities for schools and preschool institutions
Republic of Moldova	I, III, IV	<ul style="list-style-type: none"> Achieve compliance with all existing chemical and microbiological drinking-water quality standards in schools Increase access to improved water supply sources for children in schools and pre-school institutions Provide access to improved sanitation systems for children in schools and pre-school institutions
Tajikistan	III, IV	<ul style="list-style-type: none"> Improve water supply and sanitation in secondary schools, child care institutions and medical centres Provide schools and pre-schools with improved sanitation facilities

Ukraine	I, IV	<ul style="list-style-type: none"> Provide children in pre-school and secondary schools with drinking-water of good quality Provide improved sanitation for children in pre-school and secondary education
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Box 2: Further targeted programmes related to Water, Sanitation and Hygiene in schools in countries of the WHO European Region

Targeted programmes to improve WASH in schools*	
Albania	<p>- At national level: National Strategy on Water Supply and Sewerage for 2013 – 2017, approved by Decision of the Council of Ministers No.643 (2011)</p> <p>Scope: to improve the water related legislation and water supply and sewage system coverage</p> <p>- At national level: The Policy of School Health Services; Order of the Minister No. 300 (2012)</p> <p>Scope: to promote health in schools</p>
Armenia	<p>- At national level: WASH-related targeted programme developed by the National Centre for Disease Control and Prevention, under approval</p> <p>Scope: to investigate current WASH situation in schools</p>
Azerbaijan	At national level: Strategic Plan of the Ministry of Health of Azerbaijan for 2014-2020
Bosnia and Herzegovina	Not specified
Croatia	- At national level: The National Educational Standards for Elementary Schools and The National Educational Standards for Pre-schools, Decree No. 63/08 and No. 90/10
Czech Republic	Not specified
Estonia	Not at present ¹
Georgia	<p>- At national level: State program for the Rehabilitation of the Educational Institutions' Infrastructure</p> <p>Scope: to improve the school building infrastructure (with secondary target WASH)</p>
Hungary	Not at present
Kazakhstan	<p>- At national level: National Programme Ak Bulak for 2011-2020, Decree No. 570 (2011)</p> <p>Scope: to ensure the supply of high-quality drinking-water and the access to sanitation facilities to the whole population by establishing proper interaction between the national and local government authorities, and other stakeholders</p>
Kyrgyzstan	<p>- At national level: List of targets in the Millennium Sustainable Development Strategy of Kyrgyzstan, Ordinance No. 128/357 (2013) of the Ministry of Agriculture and Land Reclamation and the Ministry of Health</p> <p>Scope: to ensure access to drinking-water, access to sanitation, decreased scale of outbreaks and cases of water-related diseases</p> <p>- At national level: State Programme on Development of Drinking-water Supply and Sewerage in Settlements of the Kyrgyz Republic 2014-2024.</p> <p>Scope: 1) to half the proportion of people without sustainable access to safe drinking-water and sanitation; 2) to reduce to 50% the morbidity of the population due to poor water quality.</p> <p>- At national level: National Programme for the Optimization of the School Meals Programme, part of the UN World Food Programme's Development Project No. 200176 in collaboration with the Ministry of Education and Science (technical support by the Social and Industrial Food Services Institute of the Russian Federation)</p> <p>Secondary scope: to improve the water and sanitation infrastructure in schools.</p>
Latvia	Not at present
Lithuania	<p>- Programme of Educational Institutions Modernization for 2013-2016, Order No. V-410 (2013) of Minister of Education and Science</p> <p>Scope: to enable the modernization of at least 120 buildings (38,900 school children) of educational establishment, including water and sewage systems renovation.</p>
Montenegro	Not at present

Republic of Moldova	<p>State program On approval of the List of targets and target dates relating to the implementation of the Protocol on Water and Health, Ordinance No. 91/704 (2010) of the Minister of Environment and the Minister of Health.</p> <p>Scope: to ensure children's access to improved water supply in up to 95 % of schools and pre-schools by 2015 and in up to 100 % by 2020; to ensure children's access to improved sanitation facilities in up to 90 % of the establishments by 2015 and up to 100 % of the establishments by 2020</p>
Russian Federation	<ul style="list-style-type: none"> - Several federal targeted programmes (FTP) aiming inter alia, at improving the WASH in schools, e.g. FTP "Clean Water" 2011-2017 FTP "Social Development of Rural Areas for the period up to 2013"; FTP "Sustainable Development of Rural Areas for the period 2014-2017 and up to 2020". - Regional targeted programmes (RTP) established being implemented within the framework of the FTP in nearly all the sub-national entities of the Russian Federation. - A number of executive decisions implemented in recent years to improve the conditions for the upbringing and education of children and to prevent illness among secondary school students. E.g. Sverdlovsk oblast, Decrees on the implementation of the RTP "Developing the network of pre-school children's education establishments in the Sverdlovsk oblast for the period 2010-2014" and RTP "Developing education in the Sverdlovsk oblast" ("Our new school") for the period 2011-2015; Oryol oblast RTP "Construction of warm sanitation facilities in educational establishments of the Oryol oblast for the period 2012-2014".
Serbia	<ul style="list-style-type: none"> - Regional pilot project led by the health sector (2013-2014): Exposure assessment survey in schools using the standardized WHO methodology in Juznobacki Region 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 survey through the implementation of the WHO methodology² in one administrative district; - National Project Delivery of Improved Local Services led by the education sector in 2013 Scope: to replace WASH facilities in schools. 161 inquiries (out of 692 submitted) from primary and secondary schools were approved; in 40 schools in five municipalities all WASH facilities were replaced and 8 septic tanks were remediated - National program adopted by the Serbian Government: Regulation on Determining National Programme of Renewal of Public Facilities within Education Sector Scope: rehabilitation and reconstruction of facilities in pre-schools, primary and secondary schools affected during the heavy floods in May 2014
TFYR Macedonia	Not at present
Ukraine	<ul style="list-style-type: none"> - National Programme 'Drinking-water of Ukraine' for 2006-2020, Ordinance No. 247 (2011) Scope: to allocate funds to improve drinking-water supply and quality in pre-school establishments, schools and health facilities, primarily in rural areas - Local and network WASH project, e.g. 'Safe water and sanitation for the children of Ukraine' Scope: to promote hygiene and to improve children's access to safe water and sanitation by implementing technical solutions

* Information reported at the meeting on advancing water, sanitation and hygiene in schools (Bonn, 18-19 September 2014)¹

¹Funds are available for renovation and improvement initiatives by single schools

²Further information on the WHO standardized methodology can be found in Annex 4

3.3 WHO Environment and Health Policy Questionnaire

The Environment and Health (EH) Policy Questionnaire was developed by WHO to assess the national and sub-national progress in the commitments made in the Parma Declaration and the Regional Priority Goals (RPGs). In particular, section A aims at assessing the condition of WASH in schools, which is part of the RPG 1. RPG 1 intends to ensure public health by improving access to safe water and sanitation and explicitly refers to child health:

'(...) provide each child with access to safe water and sanitation in homes, child care centres, kindergartens, schools, health care institutions and public recreational settings by 2020, and to revitalize hygiene practices.'

34 of 53 member states⁹ that have adopted the Parma Declaration responded to the questionnaire sections concerning WASH in schools, which addressed policies on the following aspects:

1. quantity and conditions of sanitation and hand washing facilities
2. operation, maintenance and cleanliness of sanitation and hand washing facilities
3. hygiene education
4. personal accountability for the compliance with sanitation and hygiene standards
5. regular surveillance by authorities
6. introduction of new policies after the Parma Conference
7. additional comments and upcoming policy initiatives

The results of the WHO EH policy questionnaire are described in the WHO Report on School Environment (WHO, 2015)¹⁰ and show that most countries in the WHO European regions have policies for WASH in schools. In low-income and middle-income countries policies tend to be even more comprehensive than in high-income countries (Table 8). Besides showing how the Protocol on Water and Health has become an effective national policy instrument, the report highlights where further efforts could be taken to improve and enforce the policies to ensure WASH in schools.

Results of the questionnaire: policy strengths and deficiencies (WHO, 2015)

All responding countries have relevant policies for schools and kindergartens in place and 8 countries have defined new policies for WASH in schools after the Parma Conference. Standards or regulations are legally binding in the majority of the countries (66%-88% depending on the thematic area). Despite, a minority of countries (9%-26% depending on the thematic area) reported to have action programmes or plans available with respect to the RPG 1.

Table 8: Summary of results of the WHO policy questionnaire on WASH in schools - Policies stratified by GNI per capita (WHO, 2015)

Policy GNI per capita based grouping of Member States

⁹ Albania, Armenia, Belarus, Belgium, Bosnia, Croatia, Czech Republic, Denmark, Estonia, Finland, TFYR Macedonia, Georgia, Germany, Hungary, Ireland, Israel, Italy, Latvia, Lithuania, Malta, Montenegro, Norway, Poland, Portugal, Serbia, Slovakia, Slovenia, Spain, Sweden, Tajikistan, Turkey, the UK

¹⁰ More information about the WHO Report on School Environment: <http://www.euro.who.int/en/media-centre/events/events/2015/04/ehp-mid-term-review/publications/the-school-environment-policies-and-current-status>

	High	Upper middle	Low and Lower-middle	All
Policy specifying minimum parameters	21/21 (100%)	8/8 (100%)	5/5 (100%)	34/34 (100%)
Maximum number of pupils per toilet place	15/21 (71%)	5/8 (63%)	3/5 (60%)	23/34 (68%)
Maximum number of pupils per hand wash basin	9/21 (43%)	6/8 (75%)	5/5 (100%)	20/34 (59%)
Adequate light in toilets and washrooms	16/21 (76%)	6/8 (75%)	4/5 (80%)	26/34 (76%)
Comfortable temperature in toilets and washrooms	15/21 (71%)	6/8 (75%)	5/5 (100%)	26/34 (76%)
Privacy standards for toilet cabins	17/21 (81%)	4/8 (50%)	4/5 (80%)	25/34 (74%)
Accessibility for children with disabilities	16/21 (76%)	5/8 (63%)	1/5 (20%)	22/34 (65%)

The results of the questionnaire show that the thematic areas covered by the standards and regulations are diverse (Table 8). Most standards in the participating countries are in line with the WHO recommendations (WHO, 2009): requirements for illumination, room temperature and for operation and maintenance of sanitation facilities in schools are specified by most of the respondent countries (>75%). Accessibility is ensured in the majority of countries by requirements for a maximum of children per toilet seat, cabin or urinal and per hand washing facility. However, these requirements are missing in more than 30% of the member states – the hand washing facility is more often omitted (41%). In some countries toilet seat parameters are much higher than the internationally recommended ones: in Tajikistan a toilet seat is set for a maximum of 70 children, in Albania for a maximum of 120 children. Privacy, a key factor for accessibility, is ensured in most of the countries but not everywhere; requirements for privacy are in fact missing in 26% of the standards, especially in countries located in southern Europe. Another important aspect that is not included in 35% of the countries is the accessibility of sanitation facilities for children with disabilities. Further aspects mentioned but still missing in several countries are the provision of toilet paper (missing in 50% of the countries), provision of soap and water at the hand washing facilities (missing in 41% and 32%, respectively), provision of driers/towels (missing in 38%) and minimum cleaning requirements (missing in 32%).

Regular WASH surveillance is regulated in 85% of the respondent countries and supporting policies were also developed. Nevertheless, 50% of the countries require regular inspections and maintenance of the sanitation facilities, even fewer countries (44%) specify minimum requirements for inspections and in 32% of the countries the school regulations do not specify **the officer** accountable for the compliance with sanitation and hygiene. In most countries (76%) authorities supervise the implementation of corrective actions in case of nonconformity with the standards with follow-up inspections, but it is not clear if the regulations also establish a set of effective sanctions for the noncompliant schools. These shortcomings were addressed as affecting the reliability and the efficiency of the monitoring and/or of correcting mechanism.

The requirements stated in the WHO guidelines (2009) to promote and improve pupils' hygiene practice (e.g. hygiene education) are other important aspects which are not fully covered: 82% of the countries have policies for hygiene education, but only in 56% of the countries hygiene education is part of the curriculum and in 47% minimum educational requirements are in

place. Gender-specific aspects (e.g. menstrual hygiene) receive particularly less attention. They are addressed within the hygiene education in 32% of the countries.

3.4 Examples of National Policies and Standards

As outlined in the previous sections, many countries have already developed policies and standards to ensure WASH in school. However, the key-regulations differ and countries have different approaches to ensure WASH access to all children on the ground. In this section further details are provided on the various regulations within the WHO European Region. The aim is to provide a more detailed insight on the policies to ensure WASH, providing as well some information on the distribution of roles and responsibilities and which agencies are involved in the first place. This section focuses on a selection of sample countries, for which a desk review on available laws and regulation has been done. In the text boxes an overview on different coordination mechanism for WASH in school implementation (Box 3) and surveillance and specific characteristics of different systems for the surveillance of WASH in schools (Box 5) is provided. An important share of information was retrieved from country representatives via personal communication or during the two WHO meetings for the Protocol 2014-2016 programme of work: Bonn, September 2014 and Budapest, April 2015.

Box 3: WASH in schools responsibility-coordination

National coordinating mechanism for WASH in schools: findings from the Meeting on Advancing Water, Sanitation and Hygiene in Schools (Bonn, September 2014)

According to the information collected through country briefs (Annex 3), 85% of the countries reported to have formal mechanism to coordinate the efforts undertaken for WASH in schools by different authorities (Table 9). In 45 % of the responding countries reported laws formally regulate the coordination between the different institutions. 40% of the countries reported the presence of a national coordination body or working group within the government. Of these, two countries have a specific body coordinating institutional activities related to WASH in schools, especially concerning the surveillance: in Albania the Central Inspectorate coordinates and harmonizes the surveillance across the country; in TFYR Macedonia the National Institute of Public Health has the responsibility for general coordination of the institutions involved in WASH in schools, while the State Sanitary and Health Inspectorate (SSHI) is responsible for the coordination of surveillance activities together with the Ministry of Education and Science. Estonia and the Republic of Moldova have instead a national authority for the supervision and coordination of WASH in the whole country: the National Health Board and the National Extraordinary Commission for Public Health, respectively. The Ministry of Health of the Ukraine, reported the presence of an inter-agency working group coordinating the work for the implementation of the Protocol on Water and Health.

Of the 20 countries taking part in the meeting, several countries (40%) stated that the coordination aimed at unifying the work on WASH from different authorities and/or the production of surveys was developed with the support of international programs and initiatives. The Ministries of Health from Lithuania, the Republic of Moldova and Ukraine reported that the collaboration between ministries takes place within cabinet of ministries meetings, which have as main objective the implementation of the Protocol on Water and Health. The Ministry of Health of Serbia reported that the coordination doesn't take place on regular basis, but was triggered ad-hoc through participation in the 2014 GLAAS reporting cycle.

Table 9: Formal mechanisms to coordinate WASH efforts between the involved institutions*

Countries reporting that coordination is	n=9	Albania, Bosnia and Herzegovina, Czech Republic,
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regulated by law:		Kyrgyzstan, Latvia, Lithuania, Russian Federation, TFYR Macedonia, Turkmenistan
Countries reporting a formal inter-ministerial coordination:	n=6	Azerbaijan, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Ukraine
Countries reporting a formal coordination by a national health institution:	n=2	Albania, TFYR Macedonia
Countries reporting no coordination mechanism:	n=5	Armenia, Croatia, Georgia, Hungary, Montenegro

* Information collected during the meeting on advancing water, sanitation and hygiene in schools held in Bonn 18-19 September 2014
¹ in Republic of Moldova the coordination takes place within the National Extraordinary Commission for Public Health

England and Wales

In England, the provision and construction of sanitation facilities in schools is regulated in Part 5 of the Education Regulations (ISS) produced by the Secretary of State for Education (2012a), and by the School Premises (England) Regulations (SPR) 2012 from the Department of Education (2012b). While the former SPR 1999, contained defined minimum Standards based on specified ratios (e.g. from the number of pupils visiting a school), the SPR 2012 is characterized by fewer regulations, which are less prescriptive and allow schools more flexibility. The current version specifies the provision has to be 'suitable', but further definition of the term suitable is not given. The School Premises (England) Regulation 2012 refers specifically to WASH in schools in the following two assertions:

1. *'(...) suitable toilet and washing facilities must be provided for the sole use of pupils.*
2. *Separate toilet facilities for boys and girls aged 8 years or over must be provided except where the toilet facility is provided in a room that can be secured from the inside and that is intended for use by one pupil at a time.'*

Additionally, the ISS 2012 regulates that separate washrooms should be provided for disabled pupils (§23A) and illumination should be ensured (§23E). Further requirements specify the water supplies in schools (§23F): drinking-water facilities should be provided, be readily accessible and located 'in a separate area from the toilet facilities'; any water supply should be clearly marked if suitable for drinking; washing facilities should provide hot (not posing a scalding risk) and cold water. The Department for Education England published the 'Advice on Standards for School Premises' (2015) as a helping tool for the recipients to meet the regulations formulated in SPR 2012 and ISS 2012. The document contains references to the regulations in place and further recommendations, which are geared to the regulation of 1999. The recommendations also regulate that HWFs should be found near the toilets and that the facilities should be accessible and have adequate illumination and ventilation.

Unlike in England, in Wales the former School Premises Regulation (1999) is still valid. This regulation is more precise about the availability of washrooms and the equipment, in relation to number of pupils visiting a school and their age. For instance SPR 1999 defines that *'in every school there shall be a washroom or washrooms for pupils which, taken together, contain a number of sanitary fittings which is as least equal to 'the basic number' being [...]*

- (i) *10 % of the number of pupils at the school who have not attained the age of 5 years, and*
- (ii) *5 % of the number of pupils at the school who have attained that age (...)*

The standards also regulate that schools with children younger than 5 years old should provide at least one shower, bath or deep sink for every 40 pupils. In Wales an additional guidance (2012)

was published by the government for school governing bodies and head-teachers, with a comprehensive description on how to arrange, clean and maintain WASH facilities in schools, including education good practice and assessment tools.

Box A: Internal school policy for pupils' surveillance

In 2012 a survey was conducted by the campaign group Big Brother Watch on surveillance of pupils in secondary schools and academies in the UK¹¹. The results of the survey, published in the report "Class of 1984", show how UK schools have independently developed a particular method for improving surveillance in the WASH facilities (BBW, 2012). Out of 2,000 schools taking part in the survey, 207 schools in England and Wales have installed closed-circuit cameras in toilets or changing rooms. The results of the report were discussed by many relevant journals in the UK, especially concerning privacy issues. Nevertheless, the use of cameras is extensively regulated and has to comply with the statutory legislation, including the Data Protection Act 1998, the Human Rights Act 1998 and the Regulation of Investigatory Powers Act 2000.

France

In France, general requirements for WASH in schools are provided at national level by the Labour Code (2015), concerning the health and the security at work for the users and the personnel inside the school buildings. Specific regulations for WASH facilities in schools are developed by each municipality individually, following the Guidance created by the Ministry of Education, Youth and Sports (1989).

According to the Labor Code the school must accommodate children in the best conditions of security, hygiene and well-being. Moreover, article R232-2-5 of the Code and the Ministerial Guidance specify that hygienic facilities should provide one toilet and one urinal per 20 men and two toilets per 20 women. The sanitary facilities should be illuminated, ventilated, in a perfect state of cleanliness and provided with toilet paper. One hand washing facility should be present for every three people, equipped with soap and a drying device. In the ministerial guidance a minimum of 1 drinking-water fountain per 20 pupils is specified. The labour code also regulates that materials used for floors and walls should be smooth, waterproof, rotproof, and resistant to frequent cleaning, while the minimum surface size of the sanitation facilities is specified in the guidance.

Equal access to sanitary facilities for disabled people is ensured by the Decree No. 2005-102 (2005), which requires one special facility per every 10 regular facilities, with well-defined sizes for spaces and sanitary fittings.

Two circulars published in the Official Bulletin of National Education by the Ministry of Education are particular concerning hygiene promotion (France, 1998; France, 2011). The documents specify that health is an integral part of the education provided in school and health education should not only be carried out by the teachers, but as well by active participation of families and with the collaboration of all actors involved in health.

Health education should include prevention, general and oral hygiene education and hand washing habits should be promoted in children's living environment by ensuring accessibility of

¹¹ Further information on the survey: <https://www.bigbrotherwatch.org.uk/2012/09/the-class-of-1984/>

water points, liquid soap, disposable towels or blowers, provision of hydro-alcoholic solutions and educational activities appropriate to the age of children.

Other regulations covering health in schools are the Code of Public Health (*Code de la santé publique*), the Code of Housing Construction (*Code de la construction de l'Habitation* - CCH) and the Départemental (provincial) Health Regulations (*Règlement Sanitaire Départemental Type* - RSDT).

Box 4: National school curricula and WASH in school

Besides France, other countries have introduced WASH in the school curricula at national level. The examples here reported show how WASH is implemented in school education program in different countries within the WHO European Region. These examples are not meant to represent exhaustively in number and practice all the curricula approved in the WHO European Region.

In France health and hygiene education are part of the school curricula as stated in the two circulars on school sanitation, published in the Official Bulletin of National Education by Ministry of Education (France, 1998; France, 2011). The circulars contain practical advice for providing pupils with hygiene education, for example ‘accompany younger students in acquiring proper hand washing methods’, or ‘implementation of screening and education activities in oral health among primary school pupils and college’.

In Georgia the new standards for WASH in schools developed by the Ministry of Education and Science and the Educational and Scientific Infrastructure Development Agency in collaboration with UNICEF (Georgia, 2013), include a section on health education. To support the standards concerning hygiene education, the manual “Be Clean and Healthy” was produced, targeting teachers and pupils of elementary schools (Georgia, 2013b).

In Italy, the National Guidelines for Personalized Study Plans in Primary School approved by DL no. 59 (19/02/04) regulate that primary schools should provide health education, which also includes topics like personal hygiene and disease prevention. Further specifications on WASH are not present, except for oral hygiene.

In TFYR Macedonia education on WASH in schools is addressed by the Law 44/1995 Policy on Hygiene education in schools, implemented with the secondary school educational programs, which regulates the performance of hygiene education in all primary and secondary schools, through the implementation of specific curricula (e.g. “Life Skills”). Primary school also implemented specific educational programs, the “Green package” and “Green package junior” prepared by the Regional Environmental Centre (REC) in collaboration with the Ministry of Education and Science in 2011. The program packages focus on hygiene topics like risks associated with consumption of unsafe drinking water and food, and improper disposal of wastewater

Georgia

In Georgia, defined regulations for WASH in schools are present at national level, especially regarding routine surveillance. Law No. 308/N (2001), issued by the Ministry of Labor, Health and Social Affairs, describes the hygiene requirements for general educational institutions. However, routine surveillance is not practiced as the national institution responsible for the monitoring (i.e. the State Sanitary Supervision Centers) was abolished in 2007. At present, no formalized coordination mechanism is in place between the different institutions and ministries involved

(Annex 3). The state has not developed any implementation plan for the promotion of student hygiene yet, but a step forward has been done with the production of teacher guidelines, in collaboration with UNICEF (see below).

Since 2013 national standards are in place to regulate WASH in schools in Georgia. They were developed by the Ministry of Education and Science of Georgia and the Educational and Scientific Infrastructure Development Agency of Georgia, in collaboration with UNICEF. The standards distinguish different types of schools, categorized as:

- A. *'Schools located in cities, municipal centres, large villages or any other place where central water and sewage systems are installed.'*
- B. *'Schools located in high mountainous regions, small villages or any other place where central water and sewage systems are still not installed.'*
 - *School buildings, where indoor toilets can be set up according to the standard requirements.*
 - *School buildings, where indoor toilets cannot be set up according to existing layout.'*

For example, schools of category A should provide hot water, not exceeding 60°C, in several facilities within the premises; while category B schools should provide water for personal hygiene (not necessarily hot). Drinking-water sources at the schools should be protected from contamination and regularly assessed for safety parameters, whereas rainwater from tanks should not be used for drinking or hand washing. If water needs to be stored it should be protected from contaminations applying hygienic methods. The parameters for water safety are laid out in the regulations adopted by the Minister of Labour, Health and Social Affairs of Georgia (2007).

The standards are detailed and comprehensive of all main aspects concerned with WASH in schools, including schematic representation on how to adequately arrange sanitation facilities, shower blocks, sanitation facilities for disabled people, etc., in the different school categories. Here summarized are some particular requirements, for further details can be found in the original text (2013), available in English:

- *Requirements for the water supply*

Drinking-water supply is extensively regulated, including the location of drinking-water points within the premises and the methodology to calculate the basic water quantity needed in schools.

- *Requirements for sanitation and hygiene conditions*

For the toilet facilities standards on ventilation, illumination and specific sizes and arrangements are provided together with the following pupils-toilet ratios for pupils' facilities: Schools of category A: one flushing toilet per 25 girls; one flushing toilet per 30 boys and 1 urinal per 80 boys (not needed in primary schools); one hand washing facility per 30 schoolchildren. For disabled children, 1 sanitation facility on each floor should be present. For category B schools the same ratios are applied, but the toilet type can be a squatting toilet or pit latrine.

Outdoor sanitation facilities are considered for schools of category B and they must be at a defined distance from the school spaces (including playground) - at least 20m and no more than 100m and 30m from the water supply. Moreover, outdoor toilets must have a waterproof septic tank and a ventilation pipe with insect nets.

Hygienic requirements are as well detailed. In particular, it is stated that soap (liquid soap preferable) and hand drying material should be accessible at each washing basin, and that pathways to toilets should be paved.

- *Requirements for cleaning and waste management*

Cleaning and waste removal should be performed on a daily basis. Specific cleaning (e.g. cleaning of the water reservoirs) should be recorded in special log.

- *Strategies for developing hygiene habits and the principles of hygiene education*

Besides the inclusion of specific topics in the school curriculum, regular practical training should be conducted, in particular with respect to hand washing, proper use of water and sanitation facilities, rules for using and maintaining these facilities.

To support the standards concerning hygiene education, the manual “Be clean and Healthy” was produced, targeting teachers and pupils of elementary grades of Public Schools (Georgia, 2013b).

Requirements for the supervision of the health of school children, for water and sanitation surveillance in school and for indicators for progress assessment at local and the national level are also specified.

WASH in preschools is regulated in the National Hygiene Standards and Norms for Preschools (Law 308/N). The set of standards regulates mainly sanitation and hygiene. Toilets should be provided separately for children and caregivers and for children above 5 years of age the toilets should be separated by gender, each equipped with 4 toilets and 4 hand washing basin, regardless of the number of children using the facilities. Hot water should be available for children’s hygiene and cleaning (floors, toys, etc.). Concerning the hand washing basin for 4-6 years old children, a specific height of 0.5m is defined. For each child the school should provide a chamber pot, which should be cleaned after every use and boys and girls of less than 5 years should be taken to the toilet separately. The hygiene measures are also specified: for each child there should be separate towels and bed linens, which should be washed at least once in a week; the toilets should be cleaned with hot water and soap or any other detergent twice a day. No specification for other hygiene consumables such as soap or toilet paper is given. The standards also state that school should be connected to an operational central sewage system or have an onsite sanitation system with local cleaning device. Water consumption within the premises is also regulated and it should be 75litres per day for full-day preschools and 100 litres for 24 hours operating preschools respectively.

Germany

In Germany, the legally binding legislation that encloses WASH in schools is the building code. Due to the federal structure of the country each Federal State has its own building code. To foster standardization, the Ministerial Conference of the Ministries involved in construction established a model building code (MBO)(2002). The MBO gives no specifications on the construction of sanitation facilities. It regulates that constructions for specific population groups like children, elderly or disabled persons have to be present and maintained to enable access and usage of the facilities without the need of any help (MBO § 55).

Precise standards on the construction and equipment of sanitation facilities in schools and pre-schools were issued by the German Institute for Standardization (DIN – Deutsches Institut für Normung) and the Association of German Engineers (VDI – Vereinigung Deutscher Ingenieure) (VDI, 2011). The VDI standards regulate for example that washrooms for employees have to be separated from the washrooms meant for children. The standards specify the aspects to be considered while planning and building WASH infrastructure, which include: minimum number of sanitary objects; adequate dimensioned movement areas; functional, practical and visually attractive equipment; hygiene and safety requirements; robustness and protection from robbery; water and energy savings; and economical installation.

Generally, the recommended equipment of sanitation facilities in nurseries, kindergartens and schools is one washbasin per maximum 6 pupils and one toilet seat per maximum 10 pupils. According to the type of educational institution, different other requirements are in place:

- The wash- and toilet rooms in day nurseries shall be usable by girls and boys. A sanitation room and a potty-chair room are recommended.
- In kindergartens toilet rooms should be separated by sex, but the washrooms not necessarily need to.
- Sanitation facilities for school children should be separated by sex. Additional to the toilets, one urinal per ten boys should be available.

In schools, washrooms should be available on every storey of a building. The regulation provides different requirements depending on the accessibility of the washing rooms: for teaching hours and for breaks. For the first, on each floor there should be minimum of one urinal, one toilet and one washbasin for the boys' facility; two toilets and a washbasin for the girls' facility (proportion pupil/toilet is not specified). For washrooms to be used during the breaks, one toilet should be available per 25 girls and one washbasin per 60 girls. For boys, one toilet per 50 pupils, one urinal per 25 pupils, and one washbasin per 60 pupils should be available. These toilets should be directly accessible from the schoolyard. Further recommendations address building conditions, such as partitioning walls for privacy, indoor temperatures and building materials, which should not pose a risk and should provide a smooth, easy to clean, surface. For equitable access one washing room for disabled people should be available on each floor. The standard DIN 18024 gives detailed recommendations of the construction of sanitation rooms for disabled people.

References to WASH in schools are also present in other federal regulations: the Infection Prevention Act (2001) includes legally binding regulations on drinking-water supplies and water quality in schools; the "Guidelines for Indoor Air Hygiene in School Buildings" (2008) published by the Federal Environment Agency specify the cleaning regimes and that a soap dispenser and a disposable towel system should be installed close to the sink. Additionally, the DIN 1946-6 (2009) regulates the aeration (measured as exhaust volume flows). It is also legally binding as there is no other regulatory law in place.

A comprehensive overview of all requirements related to WASH in schools can be found in the guidance "Advice on the design of building services for kindergartens and schools" produced by the VDI (Lein, 2013). The document contains all laws and guidelines which are associated with the construction of schools and kindergartens at national level.

Hungary

In Hungary there is no single specific legal document to ensure WASH in schools, but various aspects related to WASH in schools are mentioned in different Decrees and regulations. The Government Decree 253/1997 (Hungary, 1997), for example, regulates the general provision of WASH facilities and the specific requirements for kindergartens. According to the Decree, drinking-water must be available in all buildings. The mandatory number of toilets is defined by the number of people using the facilities and the requirements are stricter than what is suggested in the WHO guidelines (2009).

The Hungarian Standard series (Hungary, 2012a) regulates in detail the design of educational buildings (Part 1: Kindergartens, Part 2: Primary schools, Part 3: Secondary schools, Part 4: Multipurpose educational facilities, Part 5: Schools for students with special requirements, Part 6: Student houses). These standards became legally binding with the Ministerial Decree 20/2012 of the Ministry of Human Resources, which also incorporates hygiene education in schools.

According to the specified requirements, in kindergartens should be one washroom per two childcare rooms. The number of seats was defined as 1 per 8 children. The water consumption is defined as 35 l/day per child, 50-70 l/day per staff and additional 50-80 l/day per capita if there is a kitchen. Hot water must be provided in toilets, changing rooms, sport facilities and kitchens. Centrally mixed hot water should serve all taps available to children to prevent scalding.

The standards for primary and secondary schools state that schools have to be equipped with one facility per gender on every level of a building. One toilet seat is needed per 10 female pupils; one seat and two urinals are needed per 40 male pupils. Additional facilities are required for faculty and staff as well as for sport facilities. The water consumption is defined as 30 l/day per child, requirements for staff and kitchen and provisioning of hot water are same as for kindergartens. Similar requirements are given for secondary schools. For disabled pupils, all facilities should be accessible in special schools for disabled people and one toilet should be accessible on every level in normal schools. The regulation states also that ventilation and illumination should be ensured in the facilities in all schools and pre-schools.

Other national Decrees regulate also that schools should provide specific equipment for cleaning and maintenance of the facilities, and that these, together with provision hygiene consumables, should be ensured by the municipality (Hungary, 2012b; Hungary, 2012c). Details on cleaning frequency are not specified in any of these laws.

Italy

Box B: regional programmes and EU funding for renovation of school infrastructures in Italy

As member of the European Community Italy obtained a consistent European Regional Development Fund (ERDF) for both periods 2007-2013 and 2014-2020. The fund is part of the EU Structural Funds, a financial tool for reducing disparities in income, wealth and opportunities Italy has implemented the fund as a resource for national and regional operation programmes. One of these programmes is named Learning Environments (Ambienti per l'apprendimento) and targets schools and preschools in the southern part of the country, aiming at renovating the infrastructures and improving the accessibility of the services. According to the monitoring report (INDIRE, 2015), one of the most requested interventions in the working period 2007-2013 was the renovation of the sanitation facilities, with 1,070 requests and 723 approved projects, only in the four involved regions.

In Italy references to water and sanitation in schools and pre-schools are present in different national Decrees and guidelines concerning the organization and construction of schools: Ministerial Decree (MD) 29/75 (Italy, 1975); Presidential Decree (PRD) 1518/67 (Italy, 1967); Guidelines of the Ministry of Education, University and Research (Italy, 2013), and occupational safety (legislative Decree DL 81/08). As stated in the presidential Decree PRD 1518/67 and Law (L) 833/1978, the regulation concerning the organization and construction of WASH facilities is developed concurrently at national and regional level. At national level the characteristic of the hygienic facilities are described, whereas the detailed regulation (cleaning frequency, consumables provision, etc.) are developed individually by each region. Concerning childcare institutions for children up to 3 years of age, regional standards are in place and a manual was produced by the national Institute for Prevention and Security at Work (ISPESL, 2005), which covers the general regulations for pre-schools and recommendation on the hygiene measures for the caregivers, e.g. hand washing practice, use of disposable products as paper towels, nylon gloves, and cleaning measures.

There is a cooperation between the Ministry of Health and the Ministry of Education on health topics at school, but at regional level no official coordination mechanism seems to be present. Due to this, WASH related maintenance, surveillance and hygiene promotion is not homogeneously regulated across different regions. The only actual national WASH-related program focuses on oral hygiene and targets mainly kindergartens ('i-Denti-kit').

The characteristics of the WASH facilities in schools and pre-schools are mainly regulated in the MD 29/75, approved by the Ministry for Public Works and the Ministry for Education. In particular the Decree regulates that three toilet seats have to be available for each class in the kindergarten and one toilet seat for each class in other kinds of schools (no specification is found about the pupil number). With the exclusion of kindergartens, the toilets must be separated per sex, have 2.10-2.30 m high dividing walls and doors that can be locked; in all schools they have to be protected from direct sunlight. The washroom has to be properly aerated and illuminated.

Detailed instructions were produced to guarantee equal access for disabled people (Italy, 1968). These instructions prescribe the arrangement of a facility with well-defined size, sanitary fittings (toilet, handrails and washbasin) and facility distribution.

According to the DL 81/08 the school principle should nominate the persons accountable for prevention and protection, for safety of "employees" (pupils in this case) and the doctor responsible for surveillance (Italy, 2008). The surveillance of hygiene and sanitary measures is duty of the local health authority and surveillance of functionality is duty of the local municipality. Penalties are envisaged for the school principles that do not ensure a safe and healthy environment for the pupils. The Decree also covers the topic of hygiene education, which states that schools are accountable for the promotion and dissemination of the culture of health and safety at work, by implementing specific education school activity and interdisciplinary training to different school subjects (§11).

Russian Federation

In the Russian Federation various Sanitary Codes of Practice (SanPiN) regulate water and sanitation in all educational institutions, including preschools and all other school types, in

particular SanPiN No. 2.4.5.2409-08 (2008) and No. 2.4.2.2821-10 (2010). The latter regulates in particular the drinking water regime at school: adequate drinking water supply should be ensured and can be organized in the form of fixed drinking fountain (comprehensive vertical water jet, the height of which must be at least 10 cm, delimited by a round bowl) or a bottled water dispenser, especially in rural areas where centralized water supply is not available. Pupils should have free access to drinking-water at any time during their stay in the building. If drinking-water is provided in form of water dispensers, adequate common or individual (labelled) clean containers should be provided as well – appropriate materials being glass, porcelain in the dining room, and disposable cups. Bins should be provided for the collection of used disposable materials. Additionally, it is regulated that water tanks should be replaced when necessary, at least once every 2 weeks.

Continuous hot and cold water should be provided in pre-school and schools, including showers, washrooms, girls hygiene cabins, and facilities for cleaning equipment. In villages where there is no central water supply schools and preschools should still ensure a continuous cold water supply in toilets. The supplied water should always meet the hygiene requirements for quality and safety of drinking-water. The quality of the water provided from the bottled drinking water dispensers needs to be controlled by the water vendor, but documents proving its origin and quality should be available in the schools and preschools making use of it.

Other federal laws on WASH in schools that can be applied to schools are: No. 52-FZ (1999), which regulates the responsibilities and the norms for sanitary and epidemiological welfare, including provision of sanitary and hygiene education; and No. 416-FZ (2011), concerning water supply. According to the latter, schools and preschools must be equipped with a central system for drinking-water, sewage and drainage. Inside schools and preschools, the sewage system should be found in separated areas, far from dining areas and other spaces, and have a separate discharging pipe connected to the outer sewage system. In rural areas with no central sewage system, educational organizations should be equipped with decentred sewage systems, i.e. ventilated improved pit latrine, comprehensive of a system for the local treatment.

Box 5: WASH surveillance

Surveillance for WASH in schools is present in several countries within the WHO European Region. However, surveillance does not always mean that an established mechanism for routine monitoring of all aspects related to WASH in schools exists. According to the information collected during the WHO 1st Expert group meeting on WaSH in schools (Budapest, April 2015), routine surveillance is in place in:

- Azerbaijan - accountable institution: Ministry of Health;
- Czech Republic - accountable institution: Ministry of Health;
- Hungary - accountable institution: public health department;
- Republic of Moldova - accountable institution: public health department;
- Scotland - accountable institution: health authority and school administrators;
- Kyrgyzstan - accountable institutions: Ministry of Health and Ministry of Education.

Concerning the indicator inventory comprised in the routine surveillance, information was retrieved only for the Czech Republic, where the capacity of the facilities is monitored, but as well the basic hygienic requirements and the presence of consumables are monitored (Budapest meeting, April 2015). However, surveillance does not always involve a reporting mechanism, as it might be in place for compliance purpose only (e.g. Hungary). In Kyrgyzstan an electronic monitoring system for the

number of pupil and existence of water supply in schools is under implementation with the support of UNICEF (Budapest meeting, April 2015). Nevertheless, even where surveillance might be efficient, there might be a lack of measures to implement in case of school incompliance, especially because of the limited financial resources (e.g. Republic of Moldova). In other countries, like Croatia and Georgia, in case of sporadic outbreaks with high incidence surveillance is in place (Budapest meeting, April 2015).

Concerning specific requirements for surveillance, 19 out of the 20 countries participating to the Meeting on Advancing Water, Sanitation and Hygiene in Schools reported to have established legal requirements (Table 10). In 45% of the countries the surveillance should be done annually, or more often (Table 11). The highest frequency is required in Montenegro and in TFYR Macedonia, where monthly inspections should be carried.

Five countries (25%) – Georgia, Kyrgyzstan, Latvia, the Republic of Moldova and Turkmenistan – reported to have produced surveys in collaboration with UN projects, especially with the support of UNICEF. These pilot projects aimed not only at improving the facilities, but as well at improving the legislation, that sometimes is insufficient and does not efficiently regulate WASH in school.

Table 10: National Legislation defining the specific requirements for WASH surveillance*

Countries reporting legislation which specifies requirements for surveillance:	n=19	Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia Lithuania, Montenegro, Republic of Moldova, Russian Federation, Serbia, TFYR Macedonia, Turkmenistan, Ukraine
Countries with no specific requirements:	n=4	Croatia, Germany ¹ , Italy ¹ , UK ¹

* Information retrieved via desk review or reported at the WHO meetings (Bonn, 18-19 September 2014; Budapest, 16-17 April 2015)

¹ non-statutory guidelines might be present, but the national legislation related to surveillance in schools does not specifically address WASH.

Table 11: National requirements for WASH surveillance specified by law with respect to frequency*

Country	Frequency Requirements
Albania	Twice a year
Armenia	No info
Azerbaijan	No info
Bosnia And Herzegovina	Four times a year
Czech Republic	Kindergartens: once in 5 years Elementary schools: once in 2 years Additional annual unannounced inspections
Estonia	Once in 2 years
Georgia	No info
Hungary	Hygienic surveillance: once a year In-depth survey: each facility group once in 5-7 year ¹
Kazakhstan	No info
Kyrgyzstan	Once a year
Latvia	Once a year Additional audit monitoring
Lithuania	Once a year
Montenegro	Once a month
Republic of Moldova	No info
Russian Federation	Once a year Additional <i>ad hoc</i> inspections
Serbia	Every year
TFYR Macedonia	Once a month and 15 days before the school year start

Turkmenistan	<i>No info</i>
Ukraine	Every year

*Information reported at the meeting on advancing water, sanitation and hygiene in schools (Bonn, 18-19 September 2014)
^{1T}he requirements are not within the legislation at present, but they are recommendation of the Chief Medical Officer and are regularly observed

DRAFT

3.5 Conclusions

The information obtained from international policy surveys such as the 2012 and 2014 GLAAS reporting cycles and the 2014 WHO Environment and Health Policy Questionnaire confirm a general progress towards the goals set in the Parma Declaration. All countries included in these surveys recognize the importance of WASH in schools, as shown by the fact that the majority of countries has established policies and regulations (section 3.1 and 3.2) and by the commitment to increase coverage as seen in the national targets reported in GLAAS (section 3.1) and under the Protocol on Water and Health (section 3.2). The results of the GLAAS surveys and the UNICEF estimates also show that in the recent years the condition of WASH in schools and the progress done to improve it has been monitored in many countries of the WHO European Region, especially in those with low- and upper-middle income economy (section 3.1). Among the reporting countries, several have reached high or universal coverage (higher than 85%) for water and sanitation in schools (Box 1); five countries have reached also high or universal coverage (higher than 75%) for hygiene promotion in schools. However, the analysis is sometimes challenging as not all data set can be easily compared. This is due to the fact that coverage indicators are not always specified and, if reported, they are highly heterogeneous. Moreover, some countries use single monitoring indicators, which do not thoroughly represent the actual condition of WASH in schools, i.e. mere presence of facilities with no further details on accessibility or type of services (improved or unimproved service), 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.

According to the WHO Report on School Environment, which presents the results of the WHO Environment and Health (EH) Policy Questionnaire, the countries reporting action programs for WASH in schools (RPG 1) are between 3 and 9, depending on the thematic areas considered. Overall, as described in chapter 3 Policies on WASH in schools in the WHO European Region, at least 16 countries (30%) reported to have set specific targets and/or developed targeted programmes for improving coverage of WASH in schools at national or regional level¹². The GLAAS 2014 findings confirm that ten countries established specific coverage targets for WASH in schools and aim to have them implemented by a target year that is between 2015 and 2020, except for Belarus and Lithuania which have already reached the set target of universal coverage. Other countries whose target is the universal access of sanitation and/or water and/or hygiene in schools are: Azerbaijan, Republic of Moldova, Serbia and TFYR Macedonia. The approved targets and plans do not always consider the replacements of non-functional services or the reuse of wastewater septage. Hygiene promotion is included in policies and plans of several countries, but it seems not as prioritized, as few countries set specific targets. Only five countries have already fully implemented the targeted policies, with a funding and revision system.

¹²The countries reporting to have set a specific target or a targeted programme for WASH in schools are: Albania, Armenia, Azerbaijan, Belarus, Croatia, Georgia, Germany, Italy, Kazakhstan, Kyrgyzstan, Lithuania, Republic of Moldova, Russian Federation, Serbia, Tajikistan, TFYR Macedonia, and Ukraine.

Many of the plans reported in GLAAS for the implementation of WASH in schools were developed under the Protocol of Water and Health. Only Armenia and Germany, who have set targets under the Protocol, were not included in the GLAAS survey. Three more countries – Albania, Croatia and Russian Federation – are currently working on improving WASH in schools and adopted specific targeted programmes for WASH in schools (Box 2). Four countries - Estonia, Hungary, Latvia and Montenegro –have no national target or targeted program for WASH in schools set at present (Box 2).

Though targets often aim at similar outcomes, WASH in schools is differently regulated and requirements are developed by different agencies depending on the country. The data collected by the 2014 WHO EH Policy Questionnaire indicate that 34 countries have policies for WASH in schools and preschools. The majority of the countries have legally binding policies and some have non-legally-binding guidelines that replace or extend the requirements included in the policies. Looking at selected examples (Section 3.4), only Georgia has a single national regulation in place comprehensively addressing all WASH related aspects including education and monitoring. Here, two separated standards were approved the Ministry of Education and Science of Georgia and the Educational and Scientific Infrastructure Development Agency of Georgia respectively for schools and pre-schools. General regulation for hygiene and health at schools are also included in a law approved by Ministry of Labor, Health and Social Affairs. For the other mentioned countries different regulations and manuals focus either on the configuration of sanitation facilities, or on other aspects like the provision of drinking-water, the air quality, the sanitary surveillance, or the hygiene promotion. Often the legal framework is relatively complex and the link between the related regulations is not explicit. In Germany and in England an advisory document was produced (DFE, 2013; Lein, 2013), which provides references to the available regulations and help recipients to understand all their obligations concerning WASH and other issues in schools. In Italy a similar document was produced specifically for kindergartens (ISPESL, 2005).

WASH in schools comprises several aspects of the school environment eventually affecting children's health and performances. As described, different actors are involved in the production of programs and regulations for improving and implementing WASH services in schools. The division of roles and responsibility is spread over different institutions and the leading institution taking the overall responsibility remains often unclear. To avoid policy gaps and efficiently ensure equal access to WASH for all children a coordination system between those actors should be in place. According to the information provided by the 20 participating countries at the WHO Bonn Meeting many countries in the WHO European Region have a coordination body in place to work on WASH in schools issues (Box 2). Some countries reported to have legislations that regulate such coordination; others reported to have national health institutes that take care of the coordination, especially as surveillance is concerned. Different examples are presented in Scotland and Georgia, where the mechanism of monitoring is promoted directly in schools, avoiding the potential challenges related to lack or inefficient coordination among different involved authorities. In Scotland schools are directly involved in the reporting system for issues with WASH in schools; in Georgia and Wales, assessment tools are included in the national regulations allowing schools to actively participate in the implementation process. Furthermore a, shared responsibility for the

school surveillance on WASH was reported between Ministry of Health and Ministry of Education or between school administrators and health authority respectively by Kyrgyzstan and Scotland (Box 5). Apparently, UN directed initiatives as GLAAS and the Protocol on Water and Health have promoted the establishment of coordination mechanism, as reported by Lithuania, Republic of Moldova, Ukraine and Serbia.

Concerning requirements for WASH facilities arrangement and organization, the reported examples of national policies (section 3.4) are in line with the results of the 2014 WHO Environment and Health Policy Questionnaire (section 3.3): standards for sanitation and hygiene facilities in schools are commonly in place in the WHO European Region. Nevertheless, different countries consider different parameters as essential (Table 13 gives an overview on the regulations evaluated in section 3.4). The majority of the countries address key factors such as privacy, maximal number of pupils per toilet, cleanliness and maintenance of the facilities (section 3.3). However, not all standards in place are in accordance with the WHO recommendation (2009), especially with respect to number of pupils per toilet. In many countries the standards are also missing requirements for HWFs and references for minimum cleaning requirements. In several countries, the lack of references to the provision of hygiene consumables like soap is particularly significant. These limitations of the current regulations might promote overcrowding of the WASH facilities and severely affect the hygienic conditions in the schools. Another important factor that is not taken into account by the regulations of several countries (35% of the WHO EH Policy Questionnaire respondent countries) is equality, because the standards do not ensure accessibility to sanitation facilities for disabled children. Information related to parameter and standards for menstrual hygiene management (MHM) were not retrieved.

Water, sanitation and hygiene are recognized children's rights and hygiene education is thus an important area for empowering children's with progressive acquisition of knowledge and awareness of the importance of these rights, providing skills for adopting responsible hygiene behaviour for themselves and their school. Hygiene education is included in the policies of more than half of the countries in the WHO European Region, but only 19 countries reported in the WHO EH Policy Questionnaire to have hygiene education integrated into the school curriculum. Of these countries, not all regulate minimum educational requirements and only 11 include gender-specific aspects, like MHM, in the hygiene education. Examples of policies for hygiene education are reported in Box 4. The considered countries regulate the topics of hygiene specifically related to WASH for primary schools only, at exception of TFYR Macedonia.

Besides the abundance of regulations, the actual prevailing conditions in schools do not always match the national requirements, as shown by different school surveys recently carried out by UNICEF and WHO and other national organizations (chapter 4). This divergence indicates that an existing legal framework is not sufficient to ensure access to WASH in schools and it confirms the importance of setting targets and implementing policies with funded action plans. The complex distribution of the requirements in the legislation might as well be a hindering factor for the compliance of schools to them.

According to data from GLAAS and the WHO EH Policy Questionnaire, after policy approval only few countries have progressed further by developing plans for implementation, organizing funding and subsequently reviewing their policies. Most of them have started to develop a plan to

implement the WASH facilities in schools only recently. According to the GLAAS report, it seems that a strong limiting factor is the amount of available governmental budget.

Additional limiting factors that emerged from the 2014 WHO EH Policy Questionnaire are an insufficient monitoring system and enforcement mechanism. According to the questionnaire outcomes, the majority of the countries have a surveillance system already in place, but there is a lack of regular surveillance and the accountability requirements and/or efficient sanctions for incompliant schools are often also missing. The lack of an enforcement mechanism for the incompliant schools is affecting schools even when the surveillance is efficient and it might mostly be due to limited financial resources (Box 5). The data collected during the Meeting *on Advancing Water, Sanitation and Hygiene in Schools* (Bonn, 18-19 September 2014) (Box 5) seem to be in contrast with the data of the policy questionnaire. 19 countries reported to have regulations that specify the legal requirements for the surveillance of the WASH facilities in schools and 45% of the reporting countries have a surveillance frequency of once every year, or more often, specified. However, not all countries provided further details on the requirements and surveillance does not always consist in an established mechanism for routine monitoring of all aspects related to WASH in schools. Furthermore, in several countries WASH in schools is more seen as an infrastructural or a mere health issue and the Ministry of Education or school authorities have no role in the monitoring assigned. Exceptions to this are countries like Kyrgyzstan and Scotland, where the Ministry of Education is responsible in the first place or shares the responsibility (Box 5).

Routine surveillance (Box 5) is not always considered as a tool for the implementation of the standards and it used to document compliance only. Often it does not present clear or comprehensive indicators and the findings are not mandatory transmitted into a reporting system for the authorities and the policy-makers, which cannot keep track of the progress nor have a comprehensive understanding of the actual situation. This is an additional hindering factor in ensuring the implementation of WASH in schools, as shown for Italy in chapter 4, where survey data show an unchanged situation in a time period of 4-6 years

Another challenge is the appropriateness of the surveillance. For example, the data presented by UNICEF surveys were not always comparable with the data presented in the national statistics (e.g. chapter 4, Kyrgyzstan), mostly due to the usage of different indicators during the monitoring exercise. The challenges of choosing adequate monitoring indicators have also emerged in the GLAAS reports (section 3.1), in the UNICEF national estimates (Box 1), as previously mentioned, and in the WHO *1st Expert group meeting on WaSH in schools* (Budapest, April 2015) (Box 5). Several countries' monitoring data have no reference to the indicator used or report only the presence of any type of facility. The presence of a facility is however insufficient to assess the accessibility of the facility, as it provides no indication on functionality or other aspects that might affect accessibility or the perception of it (e.g. privacy). Inefficient indicators cannot provide policy-makers with meaningful information concerning the WASH condition in schools, hindering the revision process and the planning of implementation programs. Additional useful indicators in place for example in the Czech Republic are: capacity of the facilities, basic hygienic requirements and presence of consumables.

Universal accessibility to WASH in schools, which guarantees equality for all children in the WHO European Region, could likely be achieved through the strict implementation of the available policies, the establishment of targets with universal coverage, and the development of an

efficient mechanism for monitoring, with comprehensive indicators and reporting system, and establishing a correcting mechanism for the non-compliant events.

Table 12: Parameters for WASH in schools included in the examples of national regulation considered in section 3.4

	England	Wales	France	Georgia	Germany	Hungary	Italy	Russian Federation
Water Consumption	•	•	•	✓	•	✓	•	✓
Privacy (toilets separated per gender and/or wall height)	✓	✓	•	✓	✓	✓	✓	•
Proportion pupils-toilet	✓ ¹	✓ ²	✓	✓	✓	✓	✓ ²	–
HWF close to the toilet	✓	✓	✓	✓	✓	✓	•	–
Proportion pupils-HWF	•	✓ ¹	✓	✓	✓	✓	•	–
Proper ventilation and illumination	✓	✓	✓	✓	✓	✓	✓	–
Consumables provision (soap and/or drying tools)	•	✓ ¹	✓	✓	✓	✓	•	–
Provision of hot water	✓	✓ ¹	•	✓	•	✓	•	✓
Characteristic of building materials	•	✓ ¹	✓	✓	✓	•	•	–
Maintenance	•	✓ ¹	✓	✓	✓	•	•	–
Accessibility (one facility per floor)	•	•	•	✓	✓	✓	• ³	–
Access for disabled people	✓ ¹	✓ ¹	✓	✓	✓	✓	✓	–
Alternatives for areas with no centralized systems	•	•	•	✓	•	•	•	✓

• Not specified in the analyzed regulation

✓ specified in the analyzed regulation

– Information not retrieved

¹ The parameter is regulated in non-statutory guidance

² Not in accordance with the WHO criteria, in Wales the proportion is given as a percentage and therefore the non-compliance occur only in case of schools with >500 students

³ Regulated only concerning the washrooms for disabled people

4. Key Highlights of National Surveys

One challenge for the improvement of WASH conditions in schools is the data gap regarding the prevailing conditions in school buildings. Lack of baseline information may hinder awareness raising and understanding of the importance of WASH in schools for the protection of children's health, the need for providing an enabling learning environment and impair the development of improvement programming by governments. This section summarises selected key findings of national one-shot surveys, with the aim to provide a comprehensive analysis of the condition of WASH in schools in the WHO European region. The summaries report the main current issues concerning pupils' access to WASH, but also the challenges concerning monitoring systems and possible gaps in policies and regulations. Table 14 provides an overview of countries for which pilot or full scale surveys could be identified. Full summaries are provided for the surveys conducted in France, Georgia, Italy, Kyrgyzstan, Republic of Moldova, Russian Federation, Scotland, Serbia and Uzbekistan. The reported data were publicly available or were directly provided by experts and country representatives at the WHO *Meeting on advancing water, sanitation and hygiene* (Bonn, September 2014) and WHO *1st Expert group meeting on WaSH in schools* (Budapest, April 2015). The surveys were either carried out by the responsible national institutions, by NGOs, or were supported by international organizations such as UNICEF or WHO. Typically, the surveys focussed on the level of accessibility and conditions of sanitation and hygiene facilities, availability of essential consumables for a proper hygienic behaviour (soap and toilet paper), availability of water, as well as assess pupils' perceptions and level of satisfaction.

Table 13: Countries where a national survey/assessment was carried out by governmental and/or intergovernmental organizations

Countries where surveys/assessments have been conducted at national and/or sub-national level:	n=18	Albania, Azerbaijan, Bosnia and Herzegovina, France, Hungary, Italy, Croatia, Estonia, Georgia, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, TFYR Macedonia, Russian Federation, Serbia, Turkmenistan, Ukraine
Countries where surveys/assessments have been conducted with the support of UNICEF or WHO:	n=10	WHO-supported pilot surveys: Albania, Estonia, Latvia, Lithuania, Serbia WHO-supported survey: Croatia UNICEF-supported survey: Georgia, Kyrgyzstan, Republic of Moldova, Turkmenistan
Countries reporting no available survey:	n=3	Armenia, Czech Republic, Montenegro

* Information reported at the Meeting on advancing water, sanitation and hygiene in schools (Bonn, 18-19 September 2014)

4.1 Low-Middle Income Countries

Georgia

In 2012 UNICEF Georgia produced a report on the situation of WASH in preschools (2012c), including the results of a quantitative survey conducted in 554 preschools and a quantitative survey conducted in all schools of 11 regions and with a response rate of 95%.

According to the report, water provision in preschools faces several challenges. 94% of the sampled preschools have access to improved water sources (97% if including water supply from

neighbouring dwelling), and 56% of the premises have a centralized water supply. Moreover, water quality is not overall ensured: only 50% of premises reported to have had their water inspected at least once, no regular monitoring is carried out and there is a general lack of maintenance of the water supply. In 75% of the schools water has never been treated, because it is considered safe (in 96% of schools), although it has not been tested. Additionally, some preschools reported the water supply to be limited to 2-4 days per week, mainly because of a non-functional water supply or freezing pipes. The intermittent water supply was reported with a significant difference between rural (8%) and urban (2%) preschools. Some preschools have water supplied on less than two days per week. Less than 50% of preschools reported to have an alternative improved water source, if the main supply is temporarily not functional.

However, a rural-urban disparity is present as the majority of preschools in rural areas have no centralized water supply and more than 3% have no water supply at all. While some regions have 100% coverage for improved water sources, schools with unimproved water sources were found in the regions of Samegrelo, Guria, Shida Kartli, Imereti, and Kvemo Kartli, and 1% of the preschools in Racha-Lechkhumi, Imereti, and Kakheti regions, still have no water source in the preschool or nearby. Regional disparities are also found concerning water system functionality (lower in Racha-Lechkhumi, Kvemo Kartli and Mtskheta-Mtianeti).

Sanitation in preschools has generally a high coverage, with 98% of urban preschools and 80% of rural preschools having improved sanitation facilities, with an average student to toilet ratio of 1:25. In 2% of the rural preschools, there no sanitation infrastructure available and in all others at least an unimproved sanitation facility is present, e.g. pit latrines without slab or hanging toilets (less common). Regional disparities are found concerning sanitation, with unimproved sanitation in preschools higher than 22% in Racha-Lechkhumi and Mtskheta-Mtianeti. Overall, the current facilities have to cope with several challenges: cleanliness is inadequate; in 12% of the preschools the toilets were non-functional at the time of observations; toilets were located outside the building in 3% of urban preschools and 38% of rural preschool, where some facilities are located far from the premises (up to 60 metres away); 2% of the preschools had sanitation facilities shared with other unspecified institutions. These facilities seem not to be used by children, who use instead chamber pots in 75% of urban preschools and 67% of rural preschools. The survey also reported that in 9% of rural preschools chamber pots were not available and children had to use the toilet, which are generally not adequate for younger children.

Even if the number of children with disabilities enrolled in preschools has risen across urban preschools (and decreased in rural preschools), many premises still impede accessibility for disabled children to water and sanitation. 80% of the preschools have toilet facilities that are not suitable for disabled children and in less than 50% of premises children with physical disabilities cannot access water on their own. Moreover, hand washing facilities were accessible to disabled children in 65% of preschools.

The survey also included hygiene practice observation, with girls' hand washing practice being slightly more frequent than boys. HWF with water are available in more than 80% of premises overall, 76% in rural premises and 73% in areas where ethnic minorities are found, independently from the presence of functioning water systems. If no tap is available standalone facilities or buckets are used for hand washing.

Only 30% of preschools indicated that caregivers were formally trained on hygiene education as part of training on teaching methodology, but preschoolers have a sound knowledge of hand washing techniques.

In 2013, the Ministry of Education and Science of Georgia and UNICEF Georgia conducted a survey (UNICEF, 2013a) to evaluate the WASH situation in school buildings. The survey was the starting point for a project that aims to develop national standards for general educational institutions to support the introduction of a surveillance system and promote hygiene education. The data presented in the report - obtained from 600 schools – highlight the following challenges faced by the students: poor hygienic standards, inequality and impeded sanitation. Alike in preschools, the situation is worse in villages in the rural areas, where most of the ethnic minorities are found. Nevertheless, also in urban areas WASH in schools present significant issues, especially regarding cleanliness and water supply.

Only 30% of the schools (15% in rural areas and 60% in urban areas), have a centralized water supply with piped water inside the building. Also, 10% of the schools (12% rural schools and 4% of urban schools) used unimproved water sources, posing a risk for pupils' health. 6% of the rural schools (4% of all schools) did not have water inside or close to the building. Water quality was not ensured in most schools: in 90% of the schools water has not been tested and in 70% of the schools water has never been treated.

The existing facilities provide, on average, one toilet per 35 pupils, one toilet per 29 pupils in the rural areas and one toilet per 54 pupils in the urban areas. In 50% of the schools (30% in the urban areas and 60% in the rural areas), the washrooms are shared by students and teachers. The separation of the toilets per gender is common, only small village schools with about 200 pupils still have shared toilets only. The number and characteristics of hand washing facilities was a concern: most of the schools are far from reaching international standards. The data were significantly different based on the location of the schools, as the rural areas have generally worse conditions.

In 41% of the schools there are no HWFs inside the building and the percentage does not significantly change in the schools supplied with piped water. Moreover, 10 % of the schools have no HWF at all; in more than 30 % of the schools (46% of rural schools) the HWF is not adjacent or nearby the sanitation facility. Hygienic material (soap and towels) was absent in the majority of the schools (88% overall; 96% in the capital city) and toilet paper was missing in 70% of schools. Accessibility for disabled people is another challenge: in 47% of the examined schools (39% in rural areas, 68% in the urban areas) disabled children cannot access the sanitation facilities and in 80 % there is no access to HWFs.

Access to sanitation is further reduced by the lack of ventilation, the lack of privacy as doors are usually missing, lack of illumination (in 37% of urban schools, and 80% in rural schools) and by the poor maintenance: out of the total number of toilets, 88% of toilets are well functioning in the urban schools, 77% in the rural schools; out of the total number of HWFs 77% are well functioning in the urban schools, 82% in rural schools. The cleanliness is also insufficient: toilets were found clean in 60% of the urban schools and in 45% of the rural schools and HWFs were found clean in 66% of the urban schools and in 69% of the rural schools.

Liquid waste disposal cannot be properly managed: a functional sewage system is present in 81% of the schools in urban areas and in only 31% of the schools in rural areas. Still 9 % of urban schools and 48 % of rural schools dispose the waste water in the yards.

As observed, the situation within the country is highly variable, depending on the school setting (urban or rural) and region. Compared to the rest of the country, the best conditions are found in the capital city (i.e. a smaller percentage of schools violating the international standards), whereas specific regions, such as Samtske-Javakheti and Kvemo Kartli in the south and Mtskheta-Mtianeti in the north-east, show the worst conditions.

Kyrgyzstan

Box C: Key-actors and instruments for ensuring WASH in schools in Kyrgyzstan

In Kyrgyzstan, the Ministry of Health and the Ministry of Rural Water Supply together with local governments are responsible for the provision of WASH in schools. The local government mainly directs the waste management, ensures drinking-water and the maintenance of infrastructures. School administrators are, instead, responsible for the hygiene in school grounds and are accountable for non-compliance to hygienic standards via fines to school budgets and salaries. Nevertheless, no national legislation formally regulates the distribution of responsibilities and there is no formal coordination between the involved authorities (UNICEF 2012).

Related to WASH, the Sanitary Code of Practise (SanPiN 2.4.2-002-03) was produced by the State Department of Sanitation and Epidemiological Services (Ministry of Health) and was revised 2014. The aim of this regulation is to define the hygienic requirements for the specific facilities in schools: design of sanitary fittings, sanitary conditions, water quality and surveillance. In contrast to what is reported in the UNICEF report, the Ministry of Health of Kyrgyzstan stated that the SanPiN should also provide a sort of coordination between the ministries.

To provide data on WASH in schools, a monitoring system is present at national and regional level in Kyrgyzstan. This is organized by the Department of Disease Prevention and its regional centers, together with the Department for State Sanitary and Epidemiological Services (SES). Available documentation from the named departments indicates that the monitoring is conducted, assessing the presence or the absence of general WASH infrastructures in schools -not maintenance- and the hygiene practice (measured as children's appearance).

Information collected during the WHO meeting on advancing water, sanitation and hygiene in schools (additional info in Annex 3) and UNICEF, 2012a

In 2013, a report was published by Emory University's Center for Global Safe Water and UNICEF, concerning the access to WASH in Schools. The document responds to the 2010 Call to Action "Raising Clean Hands" (UNICEF, 2010), providing case studies aiming at presenting the issues related to equity and access to WASH in schools. The report includes also data from a primary survey, which consisted in 30 key informant interviews, 18 school visits and 22 focus group discussions. In addition, information from relevant publications was incorporated.

According to the publication, the challenges and issues for equal access to WASH in schools are not only related to the facilities, but as well to national monitoring. In contrast to regulations and state documents, the field interviews undertaken with school administrators revealed that the frequency and orderliness of SES monitoring is not evenly practiced, in some schools no monitoring was reported (UNICEF 2012). Furthermore, data concerning water availability in schools suggest that access to WASH in schools is currently overestimated by the national government. According to the official 2011 government statistics 100% of schools have access to

an improved water source (NSC, 2011), whereas lower coverage was observed in the surveys included in the UNICEF report (Domashov *et al.*, 2011; Central Asian Alliance for Water (CAAW), 2011). The studies included in the report covered most of the provinces (except Batken and Chuy provinces), surveying a total of 90 schools with a standardized methodology (Annex 4).

According to the surveys' findings, in many cases schools are missing the essential provision of water: 28 % of the schools don't provide water at all at premises, 23% of the schools have water on certain days per week (in rural areas) or for a few hours per day (in urban areas), and only 30 % have access to an improved water source on or near the school ground (within 50 meters). The disparity between urban and rural areas with respect to WASH in schools is particularly significant in Kyrgyzstan: most of school with unprotected water sources are located in the rural areas, especially because of the mountainous terrain that makes them harder to reach (UNICEF 2012). According to authors of the UNICEF report, the schools in the rural areas are also isolated from the policy and monitoring programs, which do not regulate basic infrastructure such as latrines but focus on centralized water supply and sewage system. As stated in the report, regional disparity is also observed, as schools populated by minority ethnic groups receive limited support from the government for maintenance and repair of WASH systems.

Concerning sanitation, even though 98% of school pupils have access to sanitation infrastructures, the report finding show that WASH in schools in Kyrgyzstan is still deficient. Predominantly, school toilets consist of reinforced pit latrines and lack maintenance. From the data collected in the Northern districts it results that all rural schools have toilets located on school grounds or nearby, but outside the school building, and only 14-15% of the urban schools have toilets inside the school building (Domashov *et al.*, 2011). Outdoor school pit latrines adhere to the Soviet design standards, have no slab and provide no privacy (no doors, neither partition), especially problematic for girls who reported to use the facilities one at a time, dramatically increasing the actual pupils-toilet ratio up to 400:1. Schools are missing an appropriately functioning sewage system: out of two thirds of schools that used to have been connected to the central sewage system, it was found that only 13 % have toilets connected to a centralized sewerage nowadays (UNICEF 2012). Hygienic conditions were found to be very poor: HWFs are rarely found and only in one third of the schools HWFs are accessible near the latrines; soap is almost nowhere available; the lack of maintenance, like an inefficient or irregular latrine emptying, also leads to presence of dirt (especially faecal matter on the ground floor) that exposes the pupils to an increased risk of disease transmission (UNICEF 2012).

The reported conditions of school sanitation and hygiene do not meet pupils' needs, especially for girls and secondary-school students. The majority of the pupils do not use the toilets, except in case of diarrhoea or menstruation. Girls especially complain about the lack of privacy, the lack of water near to the latrines and the missing disposal facilities for sanitary napkins. Additionally, the cold winter weather reduces the accessibility of sanitary facilities situated outside the school building.

In the UNICEF report a bottleneck analysis identified the main causes for the emerged drawbacks as follows: lack of monitoring of school hygiene and functionality of WASH facilities; lack of governmental funding (school budgets are not sufficient for the purchase of cleaning materials); and the lack of the prioritization of WASH by the families and teachers themselves.

Even though some teachers reported to provide hygienic education to their pupils, no hygiene promotion programme for schools has been nationally approved yet (UNICEF 2013b).

Republic of Moldova

In 2009 a study was conducted by the Ministry of Health, the Ministry of Education and the National Public Health Centre of the Republic of Moldova, with the support of UNICEF, concerning drinking water quality and mode of supply, hygiene conditions and practices in all pre-university institutions in Moldova (UNICEF, 2012).

All schools, gymnasiums and lyceums in the country were surveyed¹³ through analyzing water samples and evaluating the water supply and the sanitation systems. For the assessment of hygiene practices, one student per school was interviewed in 82 schools.

The condition of the sanitary facilities in the Republic of Moldova emerged as predominantly not in an adequate state and basic hygiene practices are not promoted among students. According to the results presented in the survey, all pupils have access to water supply, even though the majority still uses unimproved water sources. A centralized water supply is present in 69 % of the schools, while 28 % use wells – mostly in rural areas – and 3 % are supplied by water-tanks. Drinking water quality was found to be of concern: 61% of the students are exposed to moderate or high health risks (acute diarrheal diseases, methemoglobinemia¹⁴, and fluorosis¹⁵) due to the presence of microbial pollution and/or excess of nitrate, fluoride and boron in the water, especially in schools where well water is used¹⁶. In all administrative-territorial units, except for Basarabeasca district, 21% of students (33% of schools) consume water contaminated with nitrate and in 34 administrative-territorial units (32 districts, 2 municipalities and the ATU Gagauzia) 17% of the students (26% of schools) consume unsafe drinking water samples according to the national standards for microbiological parameters, found. The highest percentage of schools with incompliant water quality is found in the rural areas.

A high number of pupils are exposed to health risk, parasite and diarrheal diseases are common and the general hygienic conditions in the schools are affected by the lack of basic consumables to prevent disease transmission. Toilet paper is generally very rare (missing in 76% of schools) and almost absent in the rural institutions; soap is missing in 75% of the schools; drying towels or hand dryers are missing in respectively 52% and 84% of all surveyed institutions. Moreover, nearly one out of four toilets is in bad technical condition, affecting cleanliness and maintenance. The situation is worsened by the fact that the HWFs are usually not located near the toilets (76 % of

¹³ 1,526 schools were included in the survey. The number corresponds to the total amount of schools reported in the statistics published by the National Bureau of Statistics of the Republic of Moldova in 2009

¹⁴ Methemoglobinemia results in reduced oxygen availability that lead to headache, dizziness, fatigue, ataxia, dyspnea, tachycardia, nausea, vomiting. If not treated, it can lead to coma and eventually to death.

(methemoglobinemia. (n.d.) *Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition* (2003). Retrieved June 18 2015 from <http://medical-dictionary.thefreedictionary.com/methemoglobinemia>)

¹⁵ Fluorosis can affect the skeleton and lead to osteoporosis and other pathologic bone and joint conditions (fluorosis. (n.d.) *Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition* (2003). Retrieved June 18 2015 from <http://medical-dictionary.thefreedictionary.com/methemoglobinemia>)

¹⁶ The authors of the survey refer to some national data published by the National Health Management Centre and medical check-ups conducted during the study

schools) (UNICEF 2012d). Rural-urban disparity is observed also in relation to the provision of toilet seats, HWFs, hand dryers, and consumables. In 95% of the rural schools (for 55% of the total of students in the country) the sanitation facilities are cesspools located outside the building, without connection to a centralized sewage system. 19% of institutions located in rural areas do not provide proper HWFs whereas only 4% do so in urban areas.

Students' interviews revealed poor hygienic practices inside schools. It seems that this behaviour might be due to poor hygienic education – 52% of students rated the hygienic conditions of their school as unsatisfactory. However, the behaviour is also strongly influenced by the impaired accessibility of the WASH-related facilities. In fact, a distinction was found in hand washing behaviour at school and at home: in schools only 25% of students wash their hands before eating, whereas at home approximately 85% of the students reported to wash their hands (UNICEF 2012d).

A more recent survey was conducted by the National Center for Public Health and the territorial centres in 2014, including 1,335 schools (total number of schools after school reform) and 368,356 pupils. This national survey was conducted to collect comprehensive information, as the national statistics are mainly based on data from schools in the urban areas and no information is collected for the rural areas. No publication is currently available and the study results were provided to the authors during the WHO *1st Expert group meeting on WaSH in schools* (Budapest, April 2015).

The findings of the 2014 survey show some improvements compared to 2009 with a decreased number of schools with water and well water supplied and a concomitant increased number of schools with centralized water supply and centralized sewage system (92%). However, there is still a disparity between rural and urban areas and between northern and southern regions. Schools in rural areas in the North are less commonly equipped with a centralized water supply and centralized sewage system¹⁷. 63% of the schools (75% in rural areas vs. 27% in urban areas) still have external toilets, which consist in pit latrines used by the staff only in case of day care centres or a pit latrine block for staff and students in schools. Nevertheless, in 10% of these schools in-house facilities are present, but they are either not functional or used by the school staff only. Maintenance of the facilities was found inadequate in 21% of schools (24% in 2009), among those most are in rural areas. Accordingly to the information provided at the Budapest meeting (April, 2015), the urban areas might have better WASH conditions not only because of improved facilities, but also because of the higher engagement of the users, which actively participate in the maintenance, also allowed by the higher salaries in the urban areas.

Concerning water supply, water quality also improved compared to 2009 data, but 50% of all pupils are still considered to be exposed to moderate-high health risks due to the consumption of incompliant drinking water, and nitrate contaminated drinking water is still distributed in 39% of the schools. HWFs are now generally present, but only in 16% of schools the HWFs are in the washrooms and the HWFs in the canteen (48% of schools) are generally used by a limited number of pupils, as lunch or breakfast are organized only for some classes in primary schools.

¹⁷ *Centralized water supply and sewage system respectively present in 60% and 23% of schools in rural areas vs. 98% for both in urban areas; and respectively present in 43% and 22% of schools in northern regions vs. 78% and 29-35% in central and southern regions*

The survey presented a good opportunity for the staff of the Centers for Public Health for making hygiene promotion; the results of the study were also shared with the participating schools, together with instructions for preventive measures.

Uzbekistan

Box D: Key-actors and instruments for ensuring WASH in schools in Uzbekistan

In Uzbekistan the national Government is responsible for the water supply, in schools, as stated in the constitution of the Republic of Uzbekistan, the Law on Water and Water Use (1993), and the Law on Natural Monopolies (1997). In particular, the Ministry of Education is responsible for the provision of national funding for schools including funding of new infrastructures and maintenance, while the Department of Sanitation and Epidemiological Surveillance, within the Ministry of Health, acts as a regulatory body and is responsible for monitoring school sanitary conditions. The mentioned department also provide the guidelines for water quality, sanitation and hygiene facilities, and the general sanitation conditions in schools, enforced by the Sanitary Rules and Norms (SanPiN). The guidelines are detailed and regulate that school should provide potable water, sanitary facilities of specific dimensions for boys and girls, and hand-washing facilities in different areas of the premises. Targeted national policies for water supply and sanitation services are established by the Uzbekistan Communal Services Agency. Also local governments (local self-governing bodies) are responsible for local water supply and access to sanitation to schools (via water service providers). School administrators are, instead, responsible for the hygiene and maintenance of the WASH facilities on the school grounds.

Information retrieved from UNICEF, 2012a

In the 2012 report published by Emory University's Center for Global Safe Water and UNICEF, issues and challenges are presented with respect to equity and access to WASH in schools in Uzbekistan. The report includes also data from a comprehensive situation assessment of WASH in schools conducted by the Republican Center for Social Adaptation of Children in 2011-2012, under advice of the Ministry of Public Education and commissioned by UNICEF. The authors note challenges with respect to the quality of the data and analysis, as functionality and regularity of the facility systems might not have been considered. In addition, a primary data collection was incorporated, which include 13 key stakeholder interviews and 4 school visits for structured observation and interviews.

According to the findings (UNICEF, 2012a), in the 200 schools randomly picked among all schools in the 13 provinces a central water supply was accessible in 74% of the premises and in 16% of schools without central system, water is transported to the schools with trucks. Based on the report, in 80% of the schools the water source is potentially unimproved, as schools may use well water, spring water and surface water that are all at high risk of contamination, due to agricultural run-off.

Significant rural-urban and regional disparities are found. In rural areas a central water supply is found in 66% of schools and 20% of schools need water to be transported with trucks. Even less schools have a central water supply in the western Aral Sea regions of Bukhara, Djizak and Horezm. According to the report, the limited access to WASH in the Aral Sea regions may be further hindered by the water scarcity and the lack of maintenance leading to the deterioration of the central systems, if present.

Access to improved sanitation was reported in all schools, but the majority of schools, especially in rural areas have only pit latrines of Soviet design constructed before 1990: outside the buildings, adjacent for boy and girls, with no exterior doors or doors to separate squat holes, which have no slab. Privacy is therefore mostly not ensured, especially affecting girls' access to sanitation. Needs of disabled children are mostly not considered. The cold winter weather severely reduces the access to WASH, because of slippery pavements and the water of the hand-washing facilities may become too cold to use or even freeze.

Although the rules and norms are detailed, rural schools and schools without access to central infrastructure, especially in the Aral Sea region, are excluded by the national regulations and from potential government funding for maintenance and repair, because central infrastructures are not feasible and latrines are not regulated.

The observations suggest that latrines are unclean, 35 % in at least in three provinces were covered with faecal matter and there were few hand washing facilities, those only in toilets inside the buildings and rarely equipped with soap. According to the authors, the conditions of WASH in schools are eventually reflected in the prevalence of intestinal parasites among school children. In 2007 in the Ferghana Valley region of Uzbekistan more than 75% of school-aged children were infected with one or more type of intestinal parasites (Gungoren *et al.*, 2007).

Hygiene education is part of the curriculum for primary schools. It is not mandatory, but most schools reported to conduct it and to have at least one staff member in charge for the hygiene curriculum. Nevertheless, specific topics, like menstrual hygiene management, are not included in the curriculum because they are considered inappropriate (UNICEF, 2012a).

In the UNICEF report (2012a) a bottleneck analysis identified the main causes for the emerged drawbacks to be: lack of monitoring system; lack of governmental budgets specifically for WASH in schools at national or local level; and the lack of prioritization of sanitation and hand washing.

4.2 Upper-Middle Income Countries

Serbia

In the school year 2013/2014, the Institute of Public Health of Serbia carried out a pilot school survey (Jevtić & Matić, 2014) based on a standardized survey methodology (Annex 4). The survey covered 28 schools in the Južnobački District. Different environmental health-related risk factors were covered, including the conditions of WASH facilities. A questionnaire was designed for the school staff and the students. Interviews were conducted with the school directors.

The survey revealed that toilets and HWFs are in a satisfactory state in terms of availability and functionality. All schools have a central water supply and 86 % of the schools are connected to the central sewage system, while 14% of the schools dispose their waste water into cesspits. All schools toilets were reported to be gender-separated but the accessibility for disabled pupils is not always assured. Sometimes separated HWFs are available for girls and boys. The ratio of students per toilet was found to be satisfactory according to the WHO guidelines (WHO, 2009).

Most schools (89%) stated that sanitary facilities and HWFs were cleaned repeatedly over the day. 11% of schools reported cleaning once a day. The maintenance of the flush toilets was reported as satisfactory in most schools and bins were generally present within the facilities, even

though not in every single cabin. Furthermore, hot water supply was reported to be partially present in schools.

Nevertheless, the student's questionnaire revealed a high percentage of dissatisfaction (71 %) related to the condition of the toilets and HWFs, especially for the cleanliness and availability of consumables. About 96 % of students reported that toilet paper is not available in the facilities. As a result, more than 60 % of the students reported not to use the toilets in their school. 96 % of all investigated schools declared that training on hygiene and cleanliness is part of the pupils' curricula.

4.3 High Income Countries

Box 6: Standardized WHO surveys on sanitation and hygiene in schools in five European countries

Preliminary results of the WHO-supported surveys, carried out between 2012 and 2014 (Source: WHO, 2015)

Five surveys were carried out with standardized WHO methodology (Annex 4), in five European Countries: Albania, Croatia, Latvia, Estonia, and Lithuania. Of these, Albania is an upper-middle income country and four others are high-income countries. According to the WHO methodology three tools were used in each country: an administrator's questionnaire, a pupils' questionnaire and inspections. The average age of pupils who filled out the questionnaires is between 13.1 years and 15.7 depending on the country. All surveys included a limited number of schools, except for Croatia, as they were part of pilot projects. The survey in Croatia included in total 203 schools.

Even though all schools in the five surveys had adequate toilets, common problems have emerged from the data analysis of all the surveyed countries; most evident is the scarce availability of hygiene consumables. Consumable availability is especially of concern in Albania, where none of the 12 schools inspected had sufficient toilet paper and soap for hand washing, and in Lithuania. In both countries also illumination and provision of garbage bins are not sufficient, problems reported also in some schools in Croatia. All countries except for Estonia have also low percentage of lockable doors in the toilet facilities, which are important for ensuring privacy to pupils. Of concern in Albania is also the temperature of the toilet facilities during winter time, which is not adequate in some Croatian schools as well. From the inspection results, no significant difference has emerged with respect to rural-urban sanitation and hygiene provision in schools, except for Lithuania where provision of consumables in urban schools was significantly higher than in rural schools (67% vs. 21% of toilets with sufficient toilet paper; 83% vs. 21% of hand washing facilities with soap). Further surveys are planned to cover a larger sample of schools and provide more reliable data concerning the differences between urban and rural schools with respect to WASH.

The pupils' questionnaire mostly confirmed the results from the other tools and showed that the majority of pupils in all countries are not satisfied with the toilet facilities in their schools and avoid using them. The lowest satisfaction level was found in Albania. In most of the countries girls were more likely to report using the toilet daily (except in Albania) and to be satisfied with privacy in the toilets (except in Croatia) as compared to boys. In contrast with the inspection results, rural-urban contrast has emerged with respect to pupils' satisfaction especially in Albania, Estonia and Lithuania (2-fold change). In Albania,

Croatia and Estonia the satisfaction level is higher in rural than in urban schools, where generally more children attend school and the toilet numbers might not be sufficient. In Latvia and Lithuania the satisfaction level is higher in urban than in rural schools. Pupils' poor satisfaction is associated with toilet paper and soap availability, cleanliness and privacy. In all countries some pupils reported that the water for hand washing was not always present, in Albania and Croatia the issue was of particular concern.

In all countries the access to WASH in schools is affected even if dedicated policies are in place. Moreover, even where adequate toilets are present, poor maintenance, dirt and lack of hygiene consumables dramatically reduce pupils' satisfaction and lead to avoidance of the toilet, which has known to lead to negative effects on health and learning abilities of the children.

France

The National Observatory for Safety and Accessibility of Educational Institutions (*Observatoire national de la Sécurité et de l'Accessibilité des établissements d'enseignement*) periodically provides surveys that analyze in-depth the WASH situation in schools. In 2013, a survey was produced collecting teachers' and students' questionnaires from 1,739 colleges and high schools, comprising 18% of all the public schools in the country.

The results of the survey show a stable situation with relatively adequate conditions. Still, a pleasant WASH environment is not always provided. In the last published survey 28% of students have declared that they never go to the toilets in their school; 32% of students complain about the bad smell that characterizes the facilities. The avoidance might affect as well students' fluid intake, as students do not have access to drinking water outside the toilet in half of the schools.

Even though the majority of schools reported the availability of toilet paper (91%), soap (82%) and drying devices (90%), a significant number of students complain about the absence of these consumables (42% for toilet paper, 25% for soap, 15% for drying devices). The discrepancy found might be due to the fact that the schools provide the consumables but the improper usage by some students and the lack of maintenance of the facility devices affect their availability to all students. Some students also complain because the infrastructure is damaged (19%) and the lack of privacy (12%), especially reported by boys. Furthermore, 2% of the institutions admit that the cleaning is not assured for the whole school day and in 61% of the schools the facilities are cleaned once per day.

The survey included an analysis about the students' improper behaviours (especially from male students) that might affect the environment and consequently the accessibility of the sanitary facilities. In the toilet rooms the most frequent transgressions reported were tobacco smoking, alcohol consumption and drug use. Another concern is bad behaviours (bullying) towards other people. A relatively high number of schools (21%) reported aggressions inside the sanitary facilities, especially in colleges.

Despite the dedicated law, the access to WASH facility for disabled pupils is still of concern: 10% of schools do not have any appropriate facilities and 38% have only one or two appropriate facilities.

The situation in the primary schools is not better than in the secondary schools, as reported in the latest survey (ONS, 2007), which collected teachers' and pupils' questionnaires from 817 primary

schools (24,781 children included). Only 43% of pupils generally use the sanitation facilities of their school every day, while 48% go when they cannot do otherwise and 7% never use the facilities, even if half of them stay all day at school. The problems do not seem to be related to the number of toilets, as 95% of the pupils reported to have enough time to go to the bathroom during the break.

When specifically asked, a significant number of pupils seem to present pathologies related to non-attendance of the sanitation facilities: acute or chronic constipation (15%), urinary tract infection (22%), the first more common in boys (15%) and the latter more common in girls (23%). However the association could not be specifically verified.

According to the teachers' perception significant issues are: the insufficient number of toilets, the lack of separated sanitary facilities for boys and girls and for pupils and teachers, the lack of sanitary facilities on the higher levels of the school buildings, the latter impairing accessibility and also appropriate surveillance. Additionally, some schools reported the abnormal use of the school's facilities as public toilets.

Hygiene is not ensured in all schools: toilet brushes are missing in 56% of the schools; soap and any kind of hand drying facilities are missing (respectively in 13% and 10% for both). In few schools (<1%) hygiene is particularly impaired, as toilet paper is not available to children and hand washing facilities are not present inside the facilities. According to the teachers, the cleaning should be done at least two times a day (reported by 15%) and cleanliness and ventilation are inadequate in respectively 19% and 34% of the premises, causing bad odours. The bad smell is actually the most mentioned problem among pupils, reported by 73% of them, together with the lack of cleanliness, reported by 57%. Half of the pupils consider the toilets unpleasant, some specifying the lack of adequate illumination (22%) and temperature (30%).

Privacy of children is also not fully ensured: in half of the schools walls of any height might be lacking or might not be adequate, because of a large space above and/or below and in 10% of the schools the door can't be locked. Privacy is further impaired by the fact that in more than 25% of schools boy and girls, pupils and teachers have to share the same facilities. The privacy and the malfunctioning locks are issues particularly affecting pupils behaviour: 14% of children avoid going to the toilet because they are afraid to be trapped in the toilet; 453 indicating that this already happened to them; to be spied by other children, in accordance with teachers' reporting of inadequate partition; and to be victim of bullying, also associated by the impaired illumination and surveillance.

Emerging issues related to equity: girls' accessibility is particularly affected, especially for those who already started menstruating, due to the privacy limitation and as well as the lack of disposable bins in the girls' toilets, missing in the majority of the primary schools (76%). Less girls regularly visit the toilets compared to the boys. Moreover, disabled pupil's accessibility is severely impaired, due to the lack of dedicated facilities in 40% of schools.

Additional problems emerged from the teachers' questionnaire: the need for warm water, less slippery floors, lower pressure at taps, better toilet paper quality and regulation for minimum toilet equipment; and the need for more adequate equipment, like cleaner toilet bowls or self-cleaning bowls, toilets adapted to the different ages of the children, clothes hangers, mirrors, toilet seats, partitions for urinals, more powerful flush.

The pupils' perception is generally in line with the teachers' perception, but more negative. Pupils did not report any issue related to the availability of the facilities, but instead issues concerning hygiene and maintenance, as previously described.

Nevertheless, the survey shows how the condition of WASH in schools seems to be deprioritized: children (23%) rarely complain to their parents the status of sanitary fittings in their school and in school councils, if addressed the subject is not further reported in the minutes. Specific hygiene education is anyway provided in the majority of the schools (73%) and seven teachers reported significant improvements in the condition of the facilities after raising awareness in pupils. During the survey, teachers also suggested an annual campaign on the subject, with posters and stickers supply.

Hungary

In Hungary, in-depth surveys were conducted repeatedly by the local public health authorities with the coordination of the National Institute of Environmental Health in separated sessions in schools, kindergartens, nurseries and family day care centres. The surveys are aimed to comprehensively assess the environment, including WASH aspects, and are complementary to the routine yearly surveillance of the public health authorities. No publication is currently available and the study results were provided to the authors during the WHO *1st Expert group meeting on WaSH in schools* (Budapest, April 2015).

Data from 5,000 primary and secondary schools were collected using a standardized questionnaire for teachers and pupils in 2001, 2006 and 2011/2012. The results show a decrease in number of facilities and of pupils over the years, due to demographic changes. Hygienic conditions in schools were generally found adequate and an improving trend was observed. Drinking water from central water supply is available in almost 100% of the schools, but in 13% the chemical quality of the drinking water is still not compliant. All schools have sanitation facilities, 80% are connected to a central sewage system, with increasing tendency. The number of toilet seats is compliant with the national requirements in more than 92% of the schools. An improvement was observed concerning the availability of toilet paper, available in 92% of schools, but at the same time an inadequate level of maintenance was observed in an increasing number of schools (30% in 2012): taps and washbasins (18% of the facilities), toilet slab or washrooms in general are in bad condition, including doors, windows and walls, illumination or ventilation is inadequate, pipelines are corroded, hot water is lacking.

In 2003 and 2014, more than 4,600 kindergartens were surveyed. The results show that central drinking water supply and sewage system are available in almost all kindergartens (100% and 82% respectively), with an improving trend. Also, mixed water is available in 90% of kindergartens. The number of washbasins and toilet seats was in line with the requirements in more than 81% of the kindergartens, with increasing trend, and in 93% the toilet facilities are ventilated. Some kindergartens (6%) use outdoor pools, but the number has decreased, due to the new regulation requiring water treatment to be installed in all pools.

In 2007 and 2014, more than 550 nurseries were surveyed. Coverage for water supply is 100% and centralized sewage system is present in 95% of the nurseries. The number of washrooms, washbasins and toilet seats is compliant with the regulations in 86% of the nurseries, mixed water

is provided in accordance with the requirements in 95% of the nurseries and ventilation is present in 93% of the washrooms. Hygienic conditions were found to be adequate; maintenance was occasionally insufficient, similarly to other childcare institutions. Hygiene management (toy disinfection, diaper management) was adequate in most facilities. Concerning pools, almost one third of nurseries have an outdoor splash-pool, which is usually filled and drained daily. Chemical safety¹⁸ was evaluated as adequate in 90% of nurseries.

In 2009, premises meant for family day cares (225) and play-centres (205) were surveyed. According to the results compliance with the hygiene requirements has been found in more than 90% of the premises. 81% of premises have also a separate bathroom for the children.

Italy

Regarding the actual situation of WASH in the Italian schools, an independent non-profit organization named Cittadinanzattiva (Active citizenship) conducts and publishes surveys about **safety, quality and accessibility in schools** every year. The surveys are conducted via direct observation (no questionnaire) and comprise a relatively small sample of schools (213 in 2014) in Italy, which has more than 41,000, but it includes buildings from every region, therefore covering 85% of the country.

The latest report released (Cittadinanzattiva, 2014) shows that the current legislation is not sufficient to provide an appropriate hygienic environment for pupils. The results obtained from the analysis of the 213 schools pointed out that many schools do not provide hygienic consumables: toilet paper (40 % of schools), soap (44 % of schools), and any kind of drying towel (66 % of schools).

In the survey of 2012, which analyzed 111 schools, poor basic hygienic standards were also reported: more than 33% of schools (many primary schools included) were cleaned only once a day and in 12% of the schools dirt was observed (Cittadinanzattiva, 2012). Furthermore, in one third of the schools privacy and comfort are compromised by damaged doors. From the taps, drinking water was always present, but in 5 cases the taste of the water was unpleasant and it was therefore not used for drinking. Accessibility for disabled people is impeded in 34% of schools (2013).

It seems that an enforcement system for follow-up actions in non-compliant schools is either lacking or inefficient, as 38% of operating schools in 2013 had no certificate for compliance with the norms for hygiene and health (released by the local health authorities). Moreover, no significant difference was found comparing the reports of the different years, from 2008 until 2014 (e.g. lack of soap: 39% in 2008, 42% in 2011, 30% in 2012, and 38% in 2013).

Disaggregated data were available for architectural barriers and for missing hygiene certificates, which show significant regional disparities, with northern regions reporting higher percentages of compliance.

¹⁸ Assessed through observation of the following parameters: availability of surface- and hand-disinfectants, reporting of dangerous products, safety data sheets for dangerous product, appropriate labelling and storage of dangerous products

Russian Federation

Concerning WASH in schools, The Federal Service for Supervision of Consumer Rights Protection and Human Well-Being reports every year on the coverage level of water supply and sanitation in schools among the various districts that compose the Russian Federation. The latest update of 2013 reported that almost 6% of the schools are connected to a central sewage system and a central water supply. The current data represent an improvement compared to data reported in previous years: the percentages of schools without central sewage system and central water supply have been progressively reduced since 2000 until 2013, as shown in the figure below (source: national reports¹⁹).

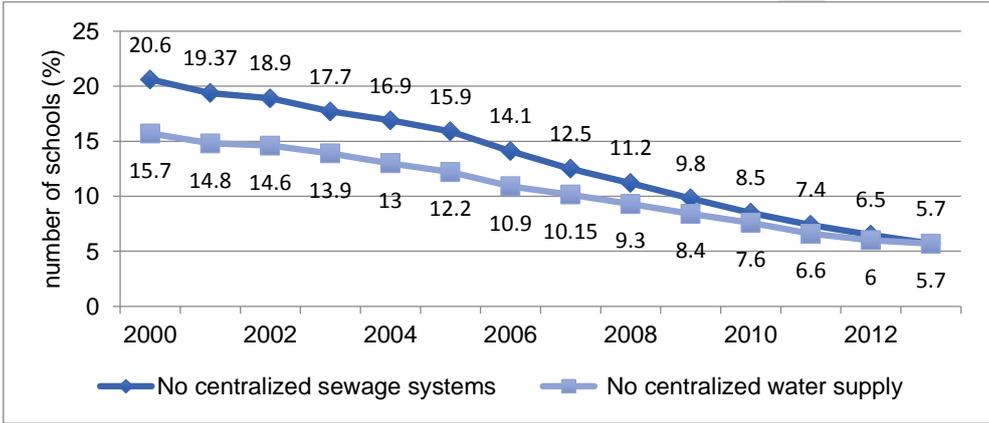


Figure 2: Decreased number of schools lacking centralized water supply and/or centralized sewage system in Russian Federation

Data collected by the Federal Service for Supervision of Consumer Rights Protection and Human Well-Being between 2000 and 2013 (National reports from Federal Centre of Hygiene and Epidemiology and Federal Service for Supervision of Consumer Rights Protection and Human Welfare).

The situation among the different districts is not homogenous: while some districts have a low number of schools without central systems (between 2% and 3%), three districts present a higher number of schools (figure below). The highest percentages are found in the Far Eastern Federal District, where more than 18% of schools having no central sewage system and 22% of the schools have no central water supply. The reasons for the disparity can be attributed to the geography of these territories, where a larger number of settlements are hard to reach in the districts with poorer conditions. However, it is not clear if any different other type of improved sanitation or improved water source is present in those regions.

¹⁹ On the sanitary-epidemiological situation in the Russian Federation: State report. (each report between 2000 and 2014), Federal Center of Hygiene and Epidemiology and Federal Service for Supervision of Consumer Rights Protection and Human Welfare

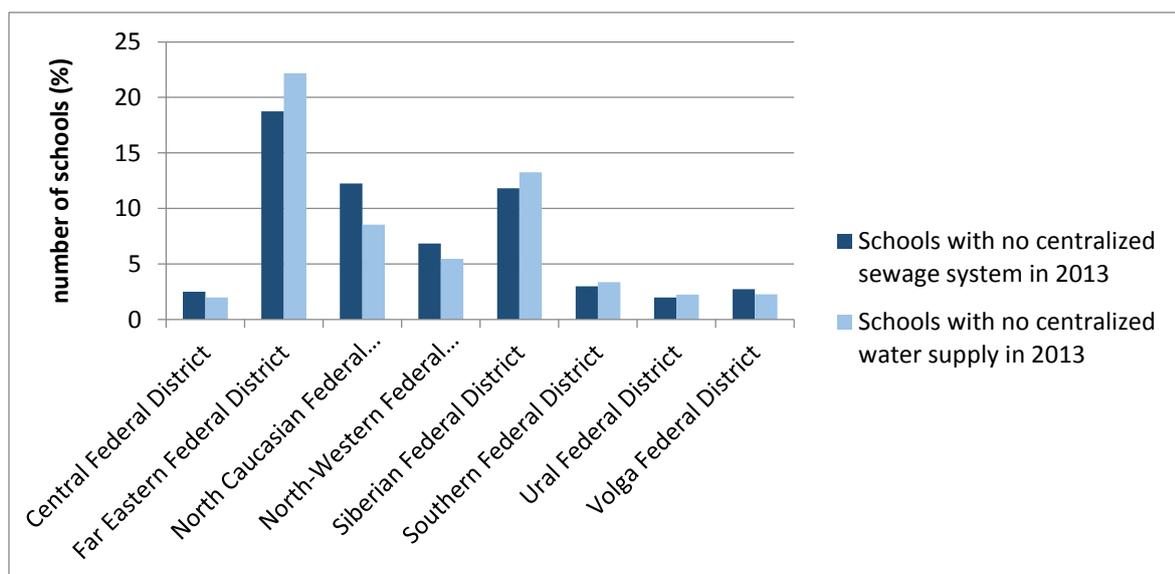


Figure 3: WASH in schools in Russian Federation, stratified by Federal District

Data collected by the Federal Service for Supervision of Consumer Rights Protection and Human Well-Being in 2013 (National reports from Federal Centre of Hygiene and Epidemiology and Federal Service for Supervision of Consumer Rights Protection and Human Welfare).

Additional data are presented in the literature: three studies were published between 2009 and 2012 with the aim of assessing the hygienic conditions in educational institutions in specific areas of the country (Ponomarenko and Cherkashin, 2009; Zulkarnaev *et al.*, 2009; Rapoport *et al.*, 2012) (full summary in chapter 6). These small-scale studies are not representative for the whole country, but suggest problems not identified by the national reports which can affect the accessibility of WASH in schools and consequently the health and the education process of the pupils. The problems emerged are: age of the school buildings, where implementation of the federal standards is pending; overcrowding of the facilities; use of buildings that are not meant for educational purpose; and hygienic conditions. The biggest study, conducted by Zulkarnaev *et al.* (2009) in Ufa - the capital city of the Republic of Bashkortostan, which lies in the Volga Federal District (please refer to Figure 4 for national WASH data) - included schools used by more than 100,000 pupils. The results of the study show that in most schools within the capital city the sanitation facilities are not compliant with the national standards and hygiene is not sufficient to ensure a healthy environment for the pupils (Zulkarnaev *et al.*, 2009). The study conducted by Rapoport *et al.* (2012) suggests a disparity between rural and urban schools in the analyzed area (Vyazma, in the Smolensk Oblast), which belongs to the Central Federal District, one of the districts with the lowest percentage of schools lacking a central system for wastewater collection or water supply (Figure 4). One fourth of the rural schools analysed in Vyazma lack a central water supply and need to transport drinking water with tanks (Rapoport *et al.* 2012).

Scotland

A survey was recently conducted in Scotland by Ipsos MORI, as part of the campaign “Flushed with Success” launched by the Scotland’s Commissioner for Children and Young People for improving WASH in schools. The survey was conducted involving 2,154 young people in 59 secondary schools that were asked what they thought about their school toilets (Ipsos MORI, 2013). One of the key findings is that toilets are not appreciated for a large part of the pupils: 27%

of pupils think the school toilets are poor or very poor and the majority of pupils' reported issues concerning lockable doors, toilet paper, soap and overall cleanliness (Ipsos MORI, 2013). The survey also assessed schools policies for going to the toilet and the results highlighted that, if pupils have to ask for permission to go to the toilet, 16% of them are rarely allowed to go and 2% reported they were never allowed to (Ipsos MORI, 2013). A significant number of pupils also reported to feel uncomfortable when asking for permission (especially girls): 14% feeling embarrassed, 9% feeling annoyed, 7% feeling worried (Ipsos MORI, 2013).

Accordingly it emerged that a very high number of pupils avoid using the toilet at school: only four in ten pupils say they use school toilets whenever they need to (41%); while 10% never use school toilets and 46% try to avoid using the school toilets and only go if they really have to (Ipsos MORI, 2013).

Box 7: WASH related issues in other countries of the WHO European Region

According to the information retrieved at the WHO *Meeting on Advancing Water, Sanitation And Hygiene in Schools* (Bonn, September 2014), many countries (75 %) have started to develop national surveys with or without the help of international agencies such as UNICEF and WHO (Table 13). Such data collection exercises are an important step towards appreciating and improving the WASH conditions in schools. The highlights that emerged from those surveys allow the countries to identify the main problems and direct the efforts on a specific focus, to have a more efficient action plan and use of funding. Various surveys are in fact pilot projects in a program for renovation or general improvements for WASH in schools.

According to the information collected during the Bonn meeting (Annex 3), several problems affects the access of WASH in schools for pupils also in other countries in the WHO European Union, for which such detailed information was not retrieved. Important issues emerged are:

- the lack of proper ventilation (in Estonia and Latvia), enhanced by the high number of students sharing the same facility;
- the lack of an appropriate sewage system (in 44% of schools in Ukraine);
- the major water source is unsafe in schools of TFYR Macedonia and Ukraine (2% of schools), as it does not comply with the chemical and microbiological requirements;
- the overcrowding of the schools and consequently of the WASH facilities (in Albania and Latvia)
- the insufficient provision of hygiene consumables, reported in Lithuania and Ukraine;
- the insufficient maintenance of the sanitary facilities and the poor quality of the building materials used for the renovations, reported by a survey conducted in Latvia;
- The inequalities among the student populations, reported in a survey conducted in TFYR Macedonia: the WASH accessibility is particularly impaired for the students in the rural areas.
- The level of children' awareness on adequate hygiene and its importance was reported as very unsatisfactory in TFYR Macedonia
- Few new schools, built after the approval of the regulations, are compliant with the current standards for WASH, showing a limited support for renovation in old buildings (TFYR Macedonia)

According to an unpublished survey conducted by the German Toilet Organization that involved 426 pupils in Berlin, consumables and cleanliness are issues of concern also in Germany. In the capital city 81% of the pupils finds the toilet facilities not clean enough, and many never or rarely have soap (46%) or toilet paper (58%) available. The majority of the children reported to care about the toilet conditions in schools, but 11% of pupils never use the school toilets and 65% of pupils use them only in case of urgent need.

4.4 Conclusions

As outlined in chapter 3, the countries in the WHO European Region are progressing towards ensuring WASH in schools, especially concerning national policies and targeted programs. However, effective decision making relies also on accurate information and chapter 4 shows how many countries reported to conduct or have conducted assessments on the provision and the condition of WASH services in schools. In line with the political commitment, many countries (18) have been conducting one-shot surveys in recent years, the majority with the support of international organizations like UNICEF and other NGOs.

The reported surveys show that many important issues are still affecting the condition of WASH in schools and preschools in the countries of the WHO European Region. Many schools are non-compliant with national regulation and with the WHO guidelines (2009), regardless of the economic status of the country. Non-compliance can be caused by geographical limitations, lack of legislation, lack of prioritization and budget. Another factor that emerged in the Russian Federation and TFYR Macedonia is that school buildings are often old and were not built in compliance with the recent norms in the first place. This shows a lack of renovation programs to implement the new approved laws. One of the most important challenges is the lack of safe drinking water in many schools (especially in the low-income countries), as the water source might be unimproved or the quality or the available water was unknown or reported as non-compliant with national chemical and microbiological requirements. Other important issues are reported in Table 14.

The presented data revealed that the sanitation facilities are often in unpleasant conditions regardless of the economic status of the country. As a result, even where WASH facilities seem to be adequate, a large number of students do not make use of them. It appears that the proportion of non-users decreases with better economic conditions in the countries, but it never reaches satisfactory levels. In the France survey conducted it was outlined that the avoidance might affect students' fluid intake, as drinking-water is often not available outside the toilets. Furthermore, a significant number of pupils present potentially related pathologies, like constipation or urinary tract infection. It was thus the need to assess the association between the facility conditions and the pathology prevalence among pupils expressed.

Assessing pupils' perception emerged to be essential to identify hidden problems, which might not be acknowledged even by schools staff. In fact, teachers' and children's perception of WASH facilities in schools are often different, showing how teachers' might not always be aware of all children's issues and needs and the lack of communication between these two main actors in the schools systems. This might be still due to the fact that WASH needs, especially concerning cleanliness and maintenance, are still not fully understood and are not seen as a priority, reported explicitly in France, Kyrgyzstan, Scotland and Uzbekistan. WASH needs might instead often be seen as a taboo, suggested also by the lack of awareness among teachers and children, by the lack of implementation of a comprehensive hygiene education, reported in all low-middle income countries, in France and in TFYR Macedonia, and by the discomfort of children expressing their need to use the toilet, as shown by the survey in Scotland. In Scotland it also emerged that school policies regulating pupils access to the toilets might be contrary to children's needs and be a further limit to ensure access to WASH in schools.

All countries reported, in higher or lower percentages, unsatisfactory conditions concerning cleanliness and the provision of consumables like toilet paper and soap, i.e. primary hygienic tools to prevent transmission of infectious diseases. From the study conducted in France, it appears that the lack of consumables is not only due to reduced public funding, but also due to improper behaviour of the students themselves: toilet paper might be available but misused. Asocial behaviour might anyway be also associated with the hygienic conditions in schools, as it will be described in chapter 5 (Rapoport et al., 2012). Concerning cleanliness, the need for more frequent cleaning emerged from the surveys conducted in France and Italy. In schools where one cleaning per day is ensured, in accordance to the national regulation, dirt accumulates during the school day. Besides, cleanliness was reported insufficient by students in Serbia, where the majority facilities and HWFs were reported to be cleaned repeatedly over the day, suggesting possible issues with children's behaviour and/or quality of the cleaning service.

The students suffer from the absence of consumables and complain mostly about the bad smell of the facilities, but also about the lack of privacy. The latter affects especially the girls in Kyrgyzstan and especially the boys in France. Privacy is affected by the lack of separated toilets for boys and girls and/or for pupils and teachers, missing or damaged doors, missing or malfunctioning locks for the toilet cubicles, missing partitions between latrines or urinals or partition sizes inadequate to the need of pupils, which are afraid of being spied or bullied by other pupils. Lack of privacy, together with other issues like illumination and the poor surveillance, caused by the distance of the facilities (outside the building, or on another floor of the building) also facilitate bullying. Children in France reported to avoid going to the toilet also because they fear to be harassed from other students.

Another common issue is the insufficient maintenance of the washrooms - in France and Latvia reported together with the use of low-quality equipment or building materials - that highly affects pupils' access to WASH in schools even in fully furnished schools. It is, thus, important to consider the level of maintenance and the functionality of the facilities when assessing the conditions of WASH in schools, as otherwise they might be overestimated.

Equitable access is often a challenge at schools. In most of the countries, for disabled people accessibility to WASH facilities is often not given. Access for girls is also particularly impaired, as menstrual hygiene management is often not properly addressed by the lack of privacy, the lack of disposable bins and the lack of adequate hygiene education.

Distinct problems became visible from the analysis of country data considering the different economic status of the countries²⁰. For several low- and upper-middle income countries the national requirements and international criteria (WHO, 2009) are not met with respect to water supply and water quality, the sewage systems and the liquid waste disposal (Table 14). There are still many schools without improved water supply; inadequate number, location and functionality of HWFs and sanitation facilities. HWFs are however found non-functional in several high-income countries as well. Overcrowding of the facilities is especially reported in low- and middle-income countries. Nevertheless, overcrowding of schools and eventually facilities was also reported in Albania, Latvia and Russian Federation.

²⁰ *Economic status obtained as GNI per capita, calculated with the World Bank Atlas method, retrieved from: World Bank: Country and Lending Groups (<http://data.worldbank.org/about/country-and-lending-groups>)*

Rural-urban and regional disparities are often observed, especially in low-middle income countries where in rural areas, often populated by minorities, the situation concerning the provision of drinking-water and sanitation facilities is much worse than in urban areas. From bottleneck-analyses conducted in Kyrgyzstan and Uzbekistan, it also emerged that rural areas are excluded by the national policies and renovation programs, which focus only on central systems that are not in place those rural areas. This finding suggests the need for national policies to consider decentralized on-site alternatives for areas that are less accessible or where natural water resources are not available. Examples for such policies are reported in Chapter 3 (Section 3.5 – Georgia and Russian Federation). The rural sanitation facilities in low-middle income countries are more often outside the school building, further affecting the accessibility, especially in those regions with cold weather. In winter, accessibility is particularly affected, due to low temperature in the facilities and lack of warm water, reported by several countries with different income economies. In some cases water is in fact too cold or frozen, severely hindering hand washing practice and facilitating thus the spread of infectious diseases. In low-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 the access to WASH in schools are more often related to lack of consumables, overcrowding and lack of maintenance. Where disparities are not reported, disaggregated data are as well not presented.

Besides the already mentioned inadequacies, a need for improvement of the enforcement system for follow-up actions in incompliant schools is seen. This emerged especially in Italy, where between 2008 and 2014 no substantial improvement in WASH in schools was observed and many operating schools have no certificate for compliance with the norms for hygiene and health (released by the local health authorities).

One-shot surveys proved their importance as tools for in-depth assessment, with scientific methodology and trained observer and providing a comprehensive picture on WASH in schools. In fact, figures reported by one-shot surveys significantly differ from national monitoring that focus on the number of facilities only or on a single type of service (e.g. central system), without specifying other types of facility, functionality and accessibility. A significant difference is observed comparing different indicators with different level of completeness, e.g. the coverage of water supply in general, the coverage of improved water supply and the functionality or the safety of such improved water supply (e.g. section 4.1 - Georgia), confirming the importance of strong indicators, with clear definition, to properly assess the accessibility of WASH in schools. Other examples of overestimation of WASH in schools accessibility are due to irregular monitoring and/or superficial assessments, suggesting the need for detailed surveillance requirements for the implementation of an efficient monitoring system. This is the case of Russian Federation, where national statistics report the condition of WASH in schools by percentage of schools having a central water supply and sewage system, or Kyrgyzstan, where the national statistics omit pit latrines and data on functionality. In the Republic of Moldova, one-shot surveys complete the information collected by the national monitoring, which do not consider rural schools.

On-shot surveys are also useful to assess the efficiency and the cost-effectiveness of policies and plans and show how the local authorities responsibly manage the building and hygiene programs. Moreover, by focusing on disaggregated data possible regional and rural-urban disparities can be

shown and the policies gaps be identified. Nevertheless, overall the indicators are heterogeneously chosen and, by comparing different surveys, a clear difference is notable in the ability to depict the actual situation, suggesting the need for national and international organizations to set and utilize a minimum of satisfactory indicators, with a clear definition of terms to be used (e.g. toilet vs. toilet seat vs. WC vs. washroom). This could avoid possible data gaps, facilitate the data interpretation and promote the production of comprehensive assessments in all interested countries. For example, the level of privacy within the facilities was not reported in all surveys, but when analyzed it emerged as a relevant issues affecting WASH accessibility. Streamlined indicators would also contribute to the international dialogue and progress comparison, allowing data consolidation and promoting international collaborations and coordination.

Finally, one-shot surveys involving teachers and pupils can be an event for promoting hygiene in schools and involve and stimulate stakeholders like the school community.

Table 14: challenges and issues concerning WASH in schools mentioned in the surveys conducted within the WHO European Region. Reported issues are listed by number of reporting countries

Issues and challenges	Reporting countries
Lack of cleanliness and bad odours	n= 16 Albania, Croatia, Estonia, Georgia, Germany France, Hungary, Italy, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Russian Federation, Scotland, Serbia, Uzbekistan
Lack of consumables	n=16 Albania, Croatia, Estonia, France, Georgia, Germany, Hungary, Italy, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Scotland, Serbia, Ukraine, Uzbekistan
Lack of privacy³	n=14 Albania, Croatia, Estonia, Georgia, Germany France, Hungary, Italy, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Scotland, Uzbekistan
Lack of maintenance (toilet seats, doors, HWFs, pipes)	n=12 Albania, Croatia, Estonia, France, Georgia, Hungary, Italy, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Uzbekistan
Poor/unknown water quality	n=9 Georgia, Hungary, Italy ¹ , Republic of Moldova, Russian Federation, Serbia, TFYR Macedonia, Ukraine, Uzbekistan
Rural-urban disparities	n=9 Albania, Croatia, Georgia, Kyrgyzstan, Latvia, Lithuania Republic of Moldova, Russian Federation, TFYR Macedonia, Uzbekistan
Toilet avoidance	n=9 Albania, Croatia, Estonia, France, Germany, Kyrgyzstan, Latvia, Lithuania, Scotland, Serbia
Toilet temperature and/or warm water	n=8 Albania, Croatia, France, Georgia, Hungary, Kyrgyzstan, Serbia, Uzbekistan
Overcrowding²	n=8 Albania, Croatia, Estonia, Georgia, Hungary, Kyrgyzstan, Latvia, Russian Federation
Lack of functional sewage system	n=7 Georgia, Hungary, Kyrgyzstan, Republic of Moldova, Russian Federation, Ukraine, Uzbekistan
Regional disparities	n=7 Georgia, Italy, Kyrgyzstan, Republic of Moldova, Russian Federation, TFYR Macedonia, Uzbekistan
Lack of disposable facilities in the toilets	N=6 Albania, Croatia, France, Italy, Lithuania, Republic of Moldova
Presence of mould/poor ventilation	n=6 Albania, Estonia, France, Georgia, Hungary, Latvia
Lack of adequate illumination in toilets	n=6 Albania, Croatia, France, Georgia, Hungary, Lithuania,
Lack of water (transported with tanks)	n=5 Georgia, Kyrgyzstan, Republic of Moldova, Russian Federation, Uzbekistan
Lack of equal access for disabled people	n=5 France, Georgia, Italy, Serbia, Uzbekistan
Unimproved water source	n=4 Georgia, Kyrgyzstan, Republic of Moldova, Uzbekistan
Lack of functional centralized water supply	n=4 Georgia, Republic of Moldova, Russian Federation, Uzbekistan
Lack of HWFs in toilets	n=4 Georgia, Kyrgyzstan, Republic of Moldova, Uzbekistan
Lack of sanitation inside the schools	n=4 Georgia, Kyrgyzstan, Republic of Moldova, Uzbekistan

Poor hygienic practice/improper behaviours within the WASH facilities	n=4	France, Georgia, Kyrgyzstan, Republic of Moldova
Comprehensive hygiene education not in curricula	n=4	France, Georgia, Kyrgyzstan, Republic of Moldova, Uzbekistan
Unimproved sanitation	n=4	France ⁴ , Georgia, Kyrgyzstan, Uzbekistan
Discontinuous water supply	n=2	Georgia, Kyrgyzstan
Lack of sanitation	n=1	Georgia
Lack of water inside the school	n=1	Kyrgyzstan
Lack of water outside the toilets	n=1	France

*Information retrieved from the surveys evaluated in chapter 4 or reported at the Meeting on advancing water, sanitation and hygiene in schools (Bonn 18-19 September 2014), the percentage of schools reporting the specific issue may significantly differ between different countries; the number of countries is not assumed to be representative of the actual coverage in the WHO European Regions, as issues might not be reported but may still be present.

¹No chemical or biological in compliance observed, but water was not drinkable because of the bad taste

²According to the WHO guidelines (WHO, 2009) the adequate pupils-toilet ratio is 25 pupils per toilet seat

³ due to missing or damaged doors, shared facilities between boy and girls, shared facilities between teachers and pupils, missing or broken lockable facilities

⁴ in some schools the facilities were reported to be misused as public toilets

5. Literature Review

A literature research was conducted by screening the databases PubMed and Science Direct for publications focusing on WASH in schools and specifically addressing the topics Drinking-water, Hygiene Behaviour, Condition of Water and Sanitation Facilities, Menstrual Hygiene and Health Assessments. The research methodology which is specified in chapter 2, was based on the literature review carried out by Jasper *et al.* (2012), which investigated the health effects of water and sanitation in schools in a global perspective. The findings confirm the direct link between WASH in schools and pupils' health. The results provide evidence that a general improvement in WASH in schools has beneficial effects on pupils' fluid intake and is decreasing absenteeism rate. School absenteeism was shown to decrease, because improved access to WASH reduces the incidence of diarrheal and gastrointestinal diseases and the discomfort of girls during menstruation, a remarkable problem potentially triggering high dropout rates among young women in developing countries.

The methodology of Jasper *et al.* has been adapted to examine relevant themes in the WHO European Region. The literature research delivered 35 articles, all conducted in countries of the WHO European Region and meeting the inclusion criteria (specified in chapter 2). Five further articles were subsequently added upon suggestion of a country representative, for a total of 40 articles. The following paragraphs and Table 15 summarizes the outcomes of the reviewed journal articles.

Table 15: Summary of scope and outcomes of the reviewed literature

Original Title	Author / Year / Location	Scope	Outcome
Drinking-water			
Drinking-water in schools	Brander, 2003, UK	To evaluate the effects of the 'Water is Cool in School' campaign	The campaign has increased awareness on the importance of drinking-water but fluid intake is highly dependent on facilities in schools and on the school's internal drinking regulation for the pupils.
A survey of drinking and toilet facilities in local state schools.	Croghan, 2002, UK	To measure accessibility, availability and cleanliness of toilets, hand washing facilities and drinking-water	A significant part of the schools failed in providing facilities suitable for children needs. Only a minority of schools allow students to drink during lesson and to bring drinks to school in general.
Effects of drinking supplementary water at school on cognitive performance in children.	Fadda et al. 2012, Italy	To investigate the effects of the amount of fluid intake during the school day on the cognitive performance and the subjective state	84% of the surveyed children were in a state of mild dehydration at the beginning of the school day; the supplementation of drinking-water indicates a positive effect on short-term memory.
A study of drinking facilities in schools.	Haines & Rogers, 2000, UK	To assess the provision of drinking-water in UK schools	Most schools (approximately 70%) provide water for all children at lunchtimes; to leave the lesson for

			drinking-water was permitted in less than half of the surveyed schools; in most schools drinking-water was available only from the taps.
Fluid for thought: availability of drinks in primary and secondary schools in Cardiff, UK.	Hunter et al., 2004, UK	To assess the provision of potables in schools	More than a half of the schools were equipped at least with one drinking-water facility and milk was available; 68% of primary schools allow the pupils to leave the rooms during the lessons to drink; in none of the secondary schools this was allowed.
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?	Kaushik et al., 2007, UK	To investigate the relationship between water availability in the classroom, children's fluid intake and the frequency of toilet visits	The amount of fluid intake was higher in schools with free access to water during lesson, compared to schools where access is limited or prohibited; toilet visits are not influenced by free or restricted access to drinking-water during lessons
Does the provision of cooled filtered water in secondary school cafeterias increase water drinking and decrease the purchase of soft drinks?	Loughridge & Barratt, 2005, UK	To assess the impact of health promotion and the free provision of cooled filtered water	The higher consumption of fluids was observed in school where health promotion activities and the water provision take place.
An exploration of factors that influence the regular consumption of water by Irish primary school children.	Molloy et al., 2008, Ireland	To explore the knowledge of teachers about the consumption and effects of water on their students and the barriers which hinder the children to have access to drinking-water during school lessons	The interviewed teachers weren't aware of the children's need of fluid intake and its effects on health and concentration; this knowledge gap seems to have an impact on the consumption of fluids of the children.
Promotion and provision of drinking-water in schools for overweight prevention: randomized, controlled cluster trial.	Muckelbauer et al., 2009, Germany	To assess the impact of combined measures of environmental and educational interventions promoting drinking-water consumption in the prevention of obesity of pupils	Interventions show a remarkable reduction (31 %) in the risk to be obese in comparison to schools which weren't part of the intervention; concurrently fluid intake increases.
Feasibility and Impact of Placing Water Coolers on Sales of Sugar-Sweetened Beverages in Dutch Secondary School Canteens.	Visscher et al., 2010, The Netherlands	To explore the effects of the installation of water coolers on soft drinks sales	The placing of water coolers as a solitary intervention seems not to be effective in influencing the students behaviour promoting drinking more water and less soft drinks.
Hygiene Practice			
The impact of common infections on school absenteeism during an academic year.	Azor-Martinez et al., 2014, Spain	To investigate the potential of reducing the absenteeism rate using an additional hand sanitizer besides soap	The rate of absenteeism was significant lower in the experimental group, using an additional hand sanitizer, than in the Control Group.

Hygiene tips for kids	Gebel et al., 2008, Germany	To describe a hygiene education programme designed for school and kindergarten settings	Positive effects were observed on children's behaviour and on the cooperation and communication between public health authorities and teachers, children and their parents.
What are school children in Europe being taught about hygiene and antibiotic use?	Lecky et al., 2007, EU	To assess the educational structures and the school curricula in six European countries for the implementation of teaching resources specific for hygiene and antibiotic use	The majority of the schools provide education on hand hygiene practices from a young age. The curricula in all evaluated countries cover the topic of human health and hygiene.
Alcohol-based hand-disinfection reduced children's absence from Swedish day care centers	Lennell et al., 2008, Sweden	To investigate the potential of reducing the absenteeism rate using an alcohol-based hand sanitizer in addition to regular hand washing at day care centres	The practice of hand-disinfection introduced among children and caregivers significantly decreased children's absenteeism due to infections.
Mandatory hand washing in elementary schools reduces absenteeism due to infectious illness among pupils: a pilot intervention study	Nandrup-Bus, 2009, Denmark	To investigate the effect of mandatory hand washing on school absenteeism caused by infectious diseases	Pupils washing their hands three times a day had less absence periods due to infections than the control group, which received no instruction.
Impact of an educational intervention upon the hand hygiene compliance of children.	Randle et al., 2013, UK	To develop measures to increase the hand hygiene compliance of children	The intervention and the introduction of a yo-yo equipped with an UV light led to a remarkable improvement of hand washing habits, which sustained for more than one year.
Can a hand washing intervention make a difference? Results from a randomized controlled trial in Jerusalem preschools	Rosen et al., 2006, Israel	To assess the impact of hygiene programmes, specifically if they are conducive in promoting hand washing and reducing absenteeism	The amount of children washing their hands almost tripled; the absenteeism rate, however, wasn't affected.
Formative research on the feasibility of hygiene interventions for influenza control in UK primary schools.	Schmidt et al., 2009, UK	To detect the current need for enhanced hand hygiene interventions and spot barriers which may hinder their implementation	Implementation of intensive and regular hygiene activities in primary schools appear to be most effective in times of temporary health threats like an influenza pandemic.
Hand hygiene compliance and environmental determinants in child day care centers: An observational study	Zomer et al., 2013a, Netherlands	To evaluate the caregivers' compliance to hand hygiene guidelines in day care centres and to identify environmental determinants of behaviours related to hand hygiene	In 122 analyzed preschools overall compliance was 42%. Factors significantly associated with the hand hygiene behaviour were number and type of towels available in the facilities, with paper towels being a positive factor for increasing compliance to the guidelines.
Sociocognitive determinants of observed	Zomer et al.,	To evaluate the caregivers' compliance to hand hygiene	Factors significantly associated with the hand hygiene behaviour

and self-reported compliance to hand hygiene guidelines in child day care centers	2013b, Netherlands	guidelines in day care centres and to identify socio-cognitive determinants of behaviours related to hand hygiene	were knowledge of the guidelines and perceived disease severity. Factors associated with the self-reported hand hygiene compliance were as well 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	Zomer et al., 2013c, Netherlands	To evaluate the effectiveness of an hygiene intervention aimed to improve caregivers' and children's compliance with hand hygiene guidelines	Description of a study protocol to carry out a cluster randomized control study.
Condition of Water & Sanitation facilities			
Standards in school toilets - a questionnaire survey.	Barnes & Maddocks, 2002, UK	To assess the perception of children on school toilet facilities and the effects on their habits in using the facilities	A significant part of the surveyed children don't feel comfortable using school toilet due to their condition.
A survey of drinking and toilet facilities in local state schools.	Croghan, 2002, UK	To measure accessibility, availability and cleanliness of toilets and hand washing facilities providing drinking-water	A significant part of the schools failed in providing facilities suitable for children needs.
Standards in school toilets: do extra resources make a difference?	Fujiwara-Pichler et al., 2006, UK	To assess state of WASH in schools after the improvements done in South Wales schools and reported in the study by Barnes and Maddocks (2002)	Increased availability of the facilities alone is not enough for improving school toilet standards. Only a slight improvement in pupils' perception was reported.
School hygiene today. Problems known for a century are still relevant	Heudorf & Exner, 2008, Germany	To compare current with past problems concerning school hygiene	The problems that were present in the past and are still present today are insufficient cleaning of sanitation rooms and non-functioning lavatories.
Hygiene in Schools – also an important responsibility of the Public Health Service	Heudorf et al. 2011, Germany	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 school	From 180 schools, only 80 were able to present their SOP; approximately 70 % of the school wash basins were equipped with liquid soap and disposable towels. In a second assessment an overall improvement was observed due to a concurrent influenza pandemic.
Better loos for schools	Jones & Wilson, 2007, UK	To assess the current state of toilets in Glasgow schools	The results of the children's questionnaires used in the study showed that overall the condition of toilet facilities are insufficient.
Perceptions of school toilets as a cause for irregular toilet habits among schoolchildren	Lundblad & Hellström, 2005	The study seeks to explore the perception of pupils on school toilets and the impact on their habits in using them	The conditions of the toilet facilities in many cases were not suitable for the children leading to unhealthy toilet habits during

aged 6 to 16 years.	Sweden		school time.
Experiences of children treating functional bladder disturbances on schooldays	Lundblad et al, 2007, Sweden	To investigate experiences of children treating functional bladder disturbances on schooldays	School toilets are not adapted to the needs of children with functional bladder disturbances.
Children's experiences of attitudes and rules for going to the toilet in school	Lundblad et al., 2010, Sweden	To investigate the significance of school rules for toilet visits for children's experience and toilet habits	School rules for maintaining order in classrooms are not adapted to children's physical needs. Children might not ask permission to go to the toilet so that they do not have to make their private need public.
Hygienic characteristics of children's educational establishments	Ponomarev & Cherkashin, 2009, Russian Federation	To investigate significant factors for the assessment methodology used to investigate the hygienic conditions in schools	Four factors affecting WASH in schools were identified: 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	Rapoport et al., 2012, Russian Federation	To evaluate the hygienic conditions and the health status of pupils in rural junior schools (8-10 years old pupils) in the rural areas of Vyazma, Smolensk Oblast, Central Federal District.	One fourth of the rural schools are in need of repairs and buildings not meant to be schools are also being used. Main problems identified: lack of centralized sewage system and water supply, and poor hygienic conditions. A correlation between hygienic state of the school, disobedience and asocial behaviour was observed.
Improving school sanitation in a sustainable way for a better health of school children in the EECCA and in the new EU member states	Samwel & Gabizon, 2009, Ukraine and Romania	To assess the effects related to the introduction of dry urine-diverting school toilets in a school in Romania and Ukraine	As a result of the intervention the toilets can be located indoor and contribute to a greater comfort and safety for the children.
Children's experiences of school toilets present a risk to their physical and psychological health	Vernon et al., 2003, Sweden and UK	To investigate problems with school toilets described by parents and children	The responses of the children indicate that dirty toilets, inadequate privacy and intimidation and bullying are the three major problems in school toilets.
Integrated assessment of the learning environment in educational institutions of various types	Zulkarnaev et al., 2009, Russian Federation	To assess the condition of WASH in general schools in Ufa, Republic of Bashkortostan, Volga Federal District	Most of the surveyed schools are old and do 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.
Menstrual Hygiene Management			
A survey of drinking and toilet facilities in local	Croghan, 2002, UK	To measure accessibility, availability and cleanliness of	A significant part of the schools failed in providing facilities suitable

state schools.		toilets and hand washing facilities providing drinking-water	for children needs.
Sanitary towel provision and disposal in primary schools.	Jones & Finlay, 2001, UK	To get insight to the arrangements for menstruation hygiene management in primary schools	Tools for menstrual hygiene management for girls in primary school are inadequate. Even if in 90 % of schools sanitary towels are available, girls often have to ask the teacher for them and in more than half of the schools disposal facilities are not present in the washrooms or in individual toilet cubicles. In the majority of school without disposal facilities, the girls use the teacher toilets.
Better loos for schools	Jones & Wilson, 2007, UK	To assess the current state of toilets in Glasgow schools	The results of the children's questionnaires used in the study showed that overall the condition of toilet facilities are insufficient.
Health Assessments			
Sanitary-epidemiological characteristics of preschool institutions	Grebniak & Agarkova 2000, Ukraine	To assess sanitation hygiene (pinworm) in preschool establishments (kindergarten) in Donetsk, Ukraine. Different locations inside the premises were tested for the occurrence of parasite eggs.	Worm eggs were found in 2% of all restrooms, especially on door handles, on toilet tanks and partitions. 5-6% of children were reported to be infected by pinworms (<i>Enterobius vermicularis</i>) between 1994 and 1998, but the incidence could be 10 -15 times higher
Approaches to the evaluation of the level of sanitary-epidemiological well-being of educational establishment for children and adolescents	Kuchma & Milushkina, 2004, Russian Federation	To develop an assessment methodology for sanitary and epidemiological conditions in schools	There is a significant correlation between pupils' well-being and sanitary-and-epidemiological safety. Specific WASH-related parameters were not among the ones mostly affecting children's physical development.
Prevalence and risk factors of helminths and intestinal protozoa infections among children from primary schools in western Tajikistan	Matthys et al., 2011, Tajikistan	To assess the status on helminths and intestinal protozoa infections in Tajikistan	A third of all children 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.	Sherkhonov et al., 2013, Tajikistan	To assess the prevalence of intestinal helminth infections among school-children, identify risk factors for infection and explore the knowledge on intestinal helminth infections	54 % of all children were infected at least with one helminth species; location (administrative districts) and hand washing practices are significant predictors for infection with certain intestinal helminth species. Pupils' awareness is significantly variable among different district.
Demographic and parasitic infection status of schoolchildren and	Ulukanligil & Seyrek,	To investigate demographic distribution of absenteeism rates and the reasons for	The school in the shantytown was at most disadvantaged; in shantytown gender distribution is

sanitary conditions of schools in Sanliurfa, Turkey	2003, Turkey	absenteeism among children visiting schools in a shantytown, rural area and apartment area	unequal in the school; sanitation conditions and parasite infection rate are worse compared to rural and apartment area.
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5.1 Drinking-water

Drinking-water in schools (UK) (Brander, 2003)

Brander reviewed the outcomes of the campaign “Water is Cool in School”, initiated in England by the Enuresis Resource and Information Centre (ERIC) in 2000. The aims of the campaign were to increase the awareness for the benefits of a sufficient fluid intake, to improve provision and access to drinking-water in schools and to review regulations concerning drinking facilities in schools. The campaign was launched after the publication by Haines *et al.* (see dedicated paragraph), which revealed a general poor provision of WASH facilities and access to water in schools.

Different tools were produced during the campaign: a national information pack for schools, containing material and information outlining the importance of regular drinking of water during the school day, and guidelines for facilities on how to provide best access to water.

The author states that the Water is Cool in School campaign has raised awareness of the importance of the pupil’s sufficient fluid intake, but the improvement is not consistent. According to the author, the fluid intake is highly dependent on the quality and quantity of the drinking-water facilities in schools and on the school’s internal food and drink regulation for the pupils, which could be improved by implementing the legislation.

Effects of drinking supplementary water at school on cognitive performance in children (Italy) (Fadda *et al.*, 2012)

The scope of the study was to investigate the effects of fluid intake during school day on the cognitive performance and the subjective state.

168 children aged between 9 – 11 years were divided in two groups: control group and experimental group, which received additionally a water supplementation. During the survey the dehydration state of the children was measured. The outcomes were correlated to the cognitive performance and transitory subjective states which the assessment of them were part of the study.

84% of the surveyed children were in a state of mild dehydration at the beginning of the school day. The supplementation of drinking-water indicates a positive effect on short-term memory.

A study of drinking facilities in schools (UK) (Haines & Rogers, 2000)

The scope of the study was to assess the provision of drinking-water in schools in Wales and the northwest of England. In their article, the authors Haines & Rogers combine the results of their own surveys with the results of a survey conducted by the Royal College of Paediatrics and Child Health on behalf of the Enuresis Resource and Information Centre. The studies gathered data from more than 200 schools in England concerning the drinking facilities (201 schools) and the school’s policies on the provision of water (242 schools).

The results of the study showed that the current pupil’s fluid intake at school is insufficient. The majority of the schools declared to provide drinking-water during lunchtime. Drinking

facilities like taps or fountains were mainly present in the toilet areas and less often within the classrooms or outside. Concerning the policies on access to water and sanitation during lesson, the majority of the schools allowed the pupils to go for the toilet, but only half of the schools allowed the pupils to drink during lesson inside the classroom. Additionally, cases of bullying in the toilet rooms discouraged the children from using the drinking facilities in toilet areas.

The above mentioned facts might be some of the leading causes of insufficient fluid intake by the pupils. The authors conclude that the provision of drinking-water should be part of educational programmes for pupils and parents, but also stretched on the agenda for architectural planning of schools buildings.

Fluid for thought: availability of drinks in primary and secondary schools in Cardiff, UK (UK) (Hunter *et al.*, 2004)

The availability of drinking-water provided by fountains and the availability of other drinks in schools was investigated. 86 state primary and 18 state secondary schools in Cardiff, UK responded to a postal questionnaire addressed at the head teachers.

In 75 primary and 12 secondary schools, at least one drinking-water facility was available for the pupils. Milk was made available in 70 mainly primary schools. 16 secondary and 3 primary schools were equipped with drink vending machines. In 15 secondary schools the vending machines contained drinks with additives of sugar. In 58 primary schools the pupils were allowed to leave the room during the lesson to drink. In none of the secondary schools this permission is given.

The authors concluded that the availability of drinking-water and drinks in primary and secondary schools could be improved. Teachers could supervise the children's drinking and they could easily encourage pupils to bring bottles to fill with tap water. The use of water dispensers improves and already improved the pupil's fluid intake. The availability of vending machines mainly in secondary schools might promote the soft drink intake, which can have negative consequences for the children's and adolescents' health in general, including obesity and dental caries. The authors suggest the elaboration of guidelines for the provision of soft drinks in 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? (UK) (Kaushik *et al.*, 2007)

The study was conducted in Southampton, UK, in 6 primary schools with 298 children, aged 6-10 years. The scope of the study was to investigate the relationship between water availability in the classroom, children's fluid intake and frequency of toilet visits.

145 pupils aged 6-7 years and 153 aged 9-10 years old were involved in the study. The total amount fluid intake and the quantity of toilet visits were gathered and assessed in schools with different drinking policies: prohibited access of water in classroom; limited access (water allowed in the classroom but not on the desks); and free access (pupils are allowed to have the bottles on the desk).

In the 'free access' schools the amount of fluid intake was higher than in the schools with limited and prohibited access to water during class. 80% of the pupils visiting the latter two types of schools consumed an amount of water that is below a recommended quantity. In the free access

schools, this was only true for 47% of pupils. 35% of all children didn't use the toilet facilities during schools days. There was no significant difference in the behaviour of the three groups.

Children drank significantly more water if they were allowed water bottles on their desk. Primary schoolchildren with free access to water at arm's length in class also consume fewer flavoured drinks, and are less likely to suffer dehydration than children in classrooms where drinking-water is prohibited. Contrary to teachers' expectations, these children do not visit the toilet any more frequently. The health and learning benefits of a permissive approach to drinking-water in school classrooms require further evaluation.

Does the provision of cooled filtered water in secondary school cafeterias increase water drinking and decrease the purchase of soft drinks? (UK) (Loughridge & Barratt, 2005)

The scope of the study was to assess the impact of health promotion and the free provision of cooled filtered water on the consumption of water and an exploration of the students' perspective on these measures. Three schools in North Tyneside, England, participated in this study. In one school health promotion activities were conducted and cooled filtered water was provided. In another school only the cool, filtered water was provided. A third school served as the control group.

The highest rate of water consumption in the cafeteria was registered in the school where both health promotion activities and the provision of water took place. It constantly increased over the duration of the study to up to 160 ml. In the school, where only the treated water was provided, the average water consumption increased to app. 60ml. In contrast, the water intake in the control group remained on a constant level (less than 10ml) and in all schools the consumption rate of soft drinks remained relatively stable, showing a slight decreasing trend for the schools, where water was provided.

Focus group interviews in the control group revealed that the students rate the provision of water in their schools as poor, as it needs to be purchased, is of ambient temperature or not easily accessible (taps too narrow, in girl's room). In an ideal world, the pupils would like to have many water machines strategically located around their school (in each corridor, in changing rooms) to improve the water provision. The students reported that teachers and staff predominantly support the fluid intake nowadays, but not in all areas, e.g. computer rooms. Even though the study was limited in its duration, an increase of water uptake was seen in the schools. Longer studies would be necessary to see, if these effects are long lasting. The school caterer did not lose revenue, as the sales of soft drinks remain stable, rather the provision of free, cool water will attract students to the dining room to purchase meals and snacks. The authors concluded that the students will benefit from the water provision in terms of health and learning and the combination of promoting and providing drinking-water achieves the best results.

An exploration of factors that influence the regular consumption of water by Irish primary school children (Ireland) (Molloy *et al.*, 2008)

The scope of this study is to explore the teachers' knowledge about water consumption and its effects on the students and the barriers which hinder children's access to water during the lessons.

Twelve teachers from primary schools located in the Midlands of Ireland participated in interviews.

The teachers were not aware of the effects of fluid intake on health and concentration. A lack of knowledge of types of fluid being consumed by pupils, fluid recommendations, and of the effect of fluid on health and learning was observed among the teachers. This knowledge gaps seemed to have an impact on the children's fluid consumption. Four of the 12 teachers allowed the children to drink during lesson and only one of them allowed the children to leave the water bottles on the tables. In general, the teachers stated that water has positive effects on health. However, the knowledge was incomplete in regard to the effects of different drinks on health, as well as the relation between concentration and fluid intake. The promotion of the positive effects of water and hydration on health and concentration was seen as the most important way to encourage their fellows to introduce water in their lessons.

Many teachers also perceived a lack of access to drinking-water fountains and fresh water taps in their schools. Moreover, barriers for the access to water during lesson were mainly the potential of mess and spillage of water and disturbance of the lessons by allowing visiting the toilets.

Teachers serve as role models for students. Therefore, if a teacher does not drink plenty of fluids, particularly water, and does not understand the importance of fluid or promote its intake; it will be more difficult for children in the classroom to develop healthy drinking habits, or to consume adequate water through the school day. The teacher suggested that promotion amongst their peers must highlight the view that access to fluid in the classroom enhances concentration, mental performance and decreases lethargy. This would encourage teachers to overcome the perceived barriers of promoting drinking of water in classrooms and schools.

Promotion and provision of drinking-water in schools for overweight prevention: randomized, controlled cluster trial (Germany) (Muckelbauer *et al.*, 2009)

The authors investigated the effectiveness of a combined application of environmental and educational interventions for promoting drinking-water consumption in preventing obesity of pupils living in social deprived urban areas. The study investigated 32 elementary schools in two German cities and analyzed data from 2,950 children. In 17 schools drinking-water fountains were installed and lessons to promote the water consumption were given to 1,641 children. 15 schools (1,309 pupils) served as a control group which was not part of the intervention.

The study showed that the drinking behaviour changes with the availability of such drinking-water fountains and that the fluid intake increased and was 1.1 glasses higher (1 glass = 200ml) compared to the control group. A remarkable reduction (31%) in the risk for the pupils to become obese could be observed in the schools where water fountains had been installed compared to schools which had not.

Feasibility and Impact of Placing Water Coolers on Sales of Sugar-Sweetened Beverages in Dutch Secondary School Canteens (The Netherlands) (Visscher *et al.*, 2010)

The study sought to explore the effects of the installation of drinking-water coolers on soft drinks sales. Six schools with 5,866 pupils participated in the study. Three schools were assigned to the experimental group and three served as a control group.

Water coolers were placed in the canteens of the schools which were part of the experimental group and observations were conducted to study the feasibility of the water intervention and learn about pupils' habits according to usage of water coolers and vending machines. Furthermore, school personnel were interviewed. The sales of beverages were monitored prior and after the intervention. 366 students completed a questionnaire about their drinking habits.

The placing of the water coolers appeared as a practicable intervention. The sales of soft drinks in the school after the intervention were not affected as the majority of soft drinks were not purchased at schools. Therefore, the installation of water coolers as a solitary intervention seems not to be effective in influencing the students behaviour promoting drinking more water and less soft drinks.

5.2 Hygiene Practice

The impact of common infections on school absenteeism during an academic year (Spain) (Azor-Martinez *et al.*, 2014)

The scope of the study was to assess how upper respiratory infections (URI) and gastrointestinal infections (GI) impact on school absenteeism rates and to evaluate the potential of reduction using an additional hand sanitizer besides soap. 1,609 children between 4-12 years of age were divided in a experimental group, washing their hand additionally with a hand sanitizer, and a control group, which followed their usual hand washing habits without modifications.

The incidence of total absent episodes and percent of missed days, including those because of URI and GI, were significantly lower in the control group using hand sanitizer ($P < .001$), even during a flu pandemic. Therefore the study concludes that school absenteeism due to infections can be reduced by using sanitizing gels in hand hygiene on top of hand-washing. Performing this additional measure is particularly important in time periods of the highest absent rate, such as the annual flu season.

Hygiene-Tipps für Kids. Konzept und Umsetzungsbeispiele [Hygiene tips for kids. Concept and examples of implementation] (Germany) (Gebel *et al.*, 2008)

The authors describe a hygiene education program for children, set up by the Institute for Hygiene and Public Health, University of Bonn.

By teaching and applying basic hygiene measures proposed in this program, e.g. frequent hand-washing with soap, a sustainable behaviour change could be observed in the children. An improvement of children's hygiene behaviour was triggered that lead to a decreased incidence of infectious diseases in pre-school, kindergarten, primary school and homes. Besides, communication between implementing institution and target institution improved information dissemination and epidemiological surveillance.

What are school children in Europe being taught about hygiene and antibiotic use? (EU) (Lecky *et al.*, 2007)

The paper examines the educational structures of nine European countries (Belgium, Czech Republic, Denmark, England, France, Greece, Italy, Portugal and Spain) in terms of the implementation of hygiene and antibiotic use in the country's health education plan. Participating

teachers and other stakeholders completed a questionnaire with questions about the educational structure and school curriculum, with special attention to microorganisms, hand and respiratory hygiene and antibiotic use. The collected data was then used to develop “e-Bug”, a European Union funded hygiene and antibiotic teaching resource.

Six of the participating countries gave information on their current science curriculum: Health and microbiology are part of the science sector of the curriculums, starting with basic microbiology in junior schools to teaching the biological structures of the microbes in senior schools. Throughout Europe, the topic of hand washing is well covered and in many countries hand washing is taught in pre-primary schools and is a repeated topic in primary and secondary schools. Although schoolchildren are taught that washing their hands can prevent infections, the 6 steps of hand washing practice were not part of the curriculum in junior schools of the responding countries. Since the paper focuses on the implementation of the e-Bug-program, discussion and suggestions aim at improving school curricula and awareness of antibiotic use mostly. The e-Bug-Program can be a useful tool to deal with both of these issues in European schools.

Alcohol-based hand-disinfection reduced children's absence from Swedish day care centers. (Sweden) (Lennell *et al.*, 2008)

The study consisted in a cluster randomized controlled trial of 30 weeks. 29 Swedish day care centres, 1431 children aged 0-6 and their caregivers, participated in the trial, either in the experimental group (EG), where an intervention on hand hygiene practice was introduced, or in the control group (CG), where normal hygiene practice was not interfered. The aim of the study was to investigate the effects of using of an alcohol-based hand-sanitizer (70% ethanol), after regular hand washing, on children's absenteeism rate due to infection. Absences were reported by the parents.

The results of the study show that the intervention significantly reduced the rate of absenteeism in the EG by 12% compared to the CG. It was concluded that the use hand-sanitizers by children and caregivers is a good prevention measure against infections, reducing children's absenteeism rate.

Mandatory hand washing in elementary schools reduces absenteeism due to infectious illness among pupils: a pilot intervention study (Denmark) (Nandrup-Bus, 2009)

The aim of the study was to investigate the impact of mandatory hand washing on school absenteeism caused by infectious diseases. Within a period of three months, two elementary schools participated (N=652 pupils at the age of 5 to 15 years) in the study. In the experimental group (N=290) the students were obliged to wash their hands prior to the first lesson, lunch and before going home. The control group did not receive any intervention (N=362). All absences due to illness were recorded and subject to a multivariate analysis.

The comparison between the two participating schools showed remarkable results in reduced school absenteeism in the experimental group. The pupils washing their hands three times a day had significant less absence periods due to infections than the control group that was performing their regular hand washing behaviour. The odds ratio for absence was 0.69 (95% CI 0.52 to 0.92) for the EG compared to the CG.

Hand washing is an effective measure for reduction of absenteeism caused by infectious diseases. The authors concluded that school policies should always include the topic hand hygiene.

Impact of an educational intervention upon the hand hygiene compliance of children (UK) (Randle, 2013)

As the authors consider hand hygiene compliance the most effective way to reduce healthcare-associated infections among children, the scope of the study was to induce long-term behavioural change regarding the hand hygiene compliance among children at 5-8 years of age in order to achieve decreased infection rates. Interactive teaching sessions in two schools in the East midlands included measures showing the effectiveness of hand washing, as well as focus group discussions. (Un)effective hand hygiene was demonstrated by applying an ultraviolet (UV) lotion on the children's hands that showed the presence of germs and their transmission, as well as their prevention. The children were then educated on how to properly clean their hands. A yo-yo equipped with an UV-light was developed with the participating students, allowing them to control their hand hygiene compliance after the intervention has ended.

The intervention and the introduction of the yo-yo have led to remarkable behavioural change. Comparison of the hand washing manners before and after the intervention revealed an improvement of children's hand hygiene compliance by 34%. The induced behavioural change resulted in improved hand hygiene, sustained for more than one year, suggesting that this approach is likely to have a major positive influence on the population by reducing the incidence of potentially life-threatening infections.

Can a hand washing intervention make a difference? Results from a randomized controlled trial in Jerusalem preschools (Israel) (Rosen *et al.*, 2006)

The scope of the study was to assess the impact of hygiene programmes promoting hand washing and as a consequence reduce school absenteeism due to illness. 40 preschools located in Jerusalem with 1,029 students participated in this study. The intervention included an educational programme with a puppet theatre, self-reward system, games posters, puzzles, a video and presentation by the school nurse, as well as provision of liquid soap dispensers, paper towel dispensers and cup racks providing individual cups with the aim to promote a behavioural change concerning hand hygiene and eliminate the sharing of cups or towels. Additionally, the students received a package to take home with materials dealing with the topic of hand washing, including a video, a card and a magnet.

The program has been overall well received by parents, administrators, educators, children and parents. None of the preschools dropped out of the trial and only 1% of the participating parents dropped out of the survey. Although a notable change in hand washing behaviour was registered, the study showed little to no effect in the change of absenteeism due to illness; if the changes reduced illness rates in general remained unclear.

Formative research on the feasibility of hygiene interventions for influenza control in UK primary schools (UK) (Schmidt *et al.*, 2009)

The study sought to describe needs for enhanced hand hygiene interventions and identify barriers which hinder their implementation in order to increase acceptability and feasibility. The study

was conducted in four primary schools in East London; teachers and school nurses participated in interviews. Group discussions, essay questions, tests of hand hygiene activities and interviews were conducted with the students.

In all schools personal hygiene was part of the curriculum. However, barriers to a successful implementation of intensive hygiene interventions (e.g. liquid soap, liquid hand sanitizer) have been identified. These included time constraints and competing health issues to be addressed during the classes. Especially in the curriculum of the older students nutrition, drug abuse and sex education have to be considered beside hygiene education. The motivation in teaching hygiene was mainly directed to provide general health education, rather than for immediate infection control. The interviewed school nurses stated that infection control have only minor importance in their work due to their workload. Unlike the interviewed teachers the nurses considered hygiene education as a contribution to infection control.

The authors concluded that implementing intensive and regular hygiene activities in primary schools appeared to be limited unless there is a major perceived public health treat like an influenza pandemic. Interventions on hand hygiene are most effective in times of temporary health threats like an influenza pandemic.

Hand hygiene compliance and environmental determinants in child day care centers: An observational study & Sociocognitive determinants of observed and self-reported compliance to hand hygiene guidelines in child day care centers (Netherlands) (Zomer *et al.*, 2013a & 2013b)

The articles report about an observational study on hand hygiene compliance conducted in 122 day care centres in the regions of Gouda, Leiden and Rotterdam-Rijnmond in the Netherlands in 2010. The study consisted in unobtrusive observation by trained observers and self-reporting through a questionnaire, which also investigated for socio-cognitive determinants of health hygiene behaviours. The observers also reported on environmental characteristics of the day care centres. The aim of the study was to evaluate caregivers' compliance to the Dutch national guidelines for hand hygiene in day care centres and to identify its socio-cognitive and environmental determinants.

Overall, observed compliance among day care centre caregivers was 42%, with very lower percentages for hand hygiene before food handling, after sneezing, after changing a wet diaper when the child was standing and after contact with body fluids. The overall self-reported compliance score was 8.7 (0 corresponding to never, 10 corresponding to always). Nearly two third of the caregivers (62%) answered all true/false questions concerning knowledge of the guidelines in the questionnaire correctly, with 71% of participating caregivers correctly answering the true/false question: "when washing hands it is not always necessary to use soap".

Socio-cognitive factors significantly associated with the observed and self-reported hand hygiene behaviour were knowledge of the guidelines and perceived disease severity. Factors associated with the self-sported hand hygiene compliance were also guideline awareness, perceived importance, perceived behavioural control (ease), habit and children at home. Environmental factors significantly associated with the hand hygiene behaviour were number and type of towels

available in the facilities, with paper towels being a positive factor for increasing compliance to the guidelines.

A hand hygiene intervention to decrease infections among children attending day care centers: design of a cluster randomized controlled trial (Netherlands) (Zomer *et al.*, 2013c)

The study is a cluster randomized controlled trial of a hand hygiene intervention for caregivers in 71 day care centres, conducted in the regions of Gouda, Leiden and Rotterdam-Rijnmond in the Netherlands between September 2011 and April 2012. The study focused on the effects of the trial on infection incidence among children attending the participating day care centres.

The intervention involves three phases: free provision of hand hygiene products at the beginning of the trial (dispensers for paper towels, soap, alcohol-based hand sanitizer and hand cream, including re-fills for 6 months); provision of posters and stickers for both caregivers and children; three training sessions and a booklet concerning the Dutch national hand hygiene guidelines for the caregivers; and formulation of specific improvement activities in team training sessions. The gastroenteritis and respiratory infection incidence was reported by the parents and it was compared to the incidence among children in control day care centres where no intervention was conducted.

5.3 Water & Sanitation

Standards in school toilets - a questionnaire survey (UK) (Barnes & Maddocks, 2002)

The scope of this study is the assessment of the children's perceptions of toilet facilities in their schools and how this influences their habits in using these facilities.

The survey questionnaire that addressed 87 children from 65 schools in Wales showed that 40% of them would never use the toilets in their schools to defecate. The use of school toilets for urination is less problematic; 71% of pupils reported to use them when they need to and 25% only when they couldn't wait until they are back at home. However, 4% are not willing to pass urine while they are in school. A reason for this habit might be the condition of the facilities. 45% of the children reported that toilet paper is not always available; 52% of the pupils reported that lockable facilities are lacking. Only 37% of the children reported that the facilities are always clean and 22% had problems with bullying while using the facilities. Nevertheless, 98% of the pupils had access to hand-washing facilities.

To overcome the poor conditions of toilet facilities the authors suggest that standards valid for adult workplaces should be applied to the schools and could prevent the occurrence of chronic constipation or the spread of diseases.

A survey of drinking and toilet facilities in local state schools (UK) (Croghan, 2002)

The scope of the survey was to evaluate the accessibility to drinking-water and toilets, their cleanliness and availability of facilities for hand washing for children in 136 Midlands schools. A questionnaire was developed to assess the condition of the sanitation facilities in schools.

In 22% of the surveyed schools the ratio of pupils per toilet was insufficient. In 9% of the surveyed schools at least one toilet seat per facility is missing. 8% of the hand washing facilities did not provide warm water, and only 60% were equipped with soap for each basin. 54% of the

students described the condition of the hand washing facilities as fair. 79% of the toilet facilities were described as clean, while 11 % as smelly.

92% of the pupils were allowed to use the toilets during lesson. 13% of the toilets were locked at certain times, like class times, and were only accessible with a key. 84% of the toilets were equipped with lockable doors. The majority of the surveyed schools was cleaned once per day (88 %), before or after school day. The toilets become thus insanitary by the end of the school day, especially in schools where the ratio between pupils and toilet was too high. In 34 % of the school there was no specific toilet available for disabled students.

In 3 % of the schools no drinking-water facilities were available at all, 41% had water fountains and 72% had a tap water installation as the main source for drinking-water. In 34% of the schools the toilet area was the only place for obtaining drinking-water. Only two schools allowed pupils to keep a water bottle on their desks and to drink at any time, but 55% of schools did not allow children to bring any drinks to school.

All of the senior school girl's toilets were equipped with sanitary bins, but only 49% of the surveyed junior schools, which might be a problem because many girls start menstruating before entering senior school. A great number of the schools failed in providing facilities suitable for children's needs, because facilities were often overcrowded and not in a sufficient sanitary state, which discourage the children to use them. This could lead to severe health problems like continence and constipation. Efforts should be made to improve both sanitary conditions of the facilities and the possibility for children to drink at any time.

Standards in school toilets: do extra resources make a difference? (UK-Wales) (Fujiwara-Pichler *et al.*, 2006)

This article refers to the study of Barnes and Maddocks (2002). It is reported the local education authority invested 800,000 pounds until 2005 with the goal to improve the school toilet facilities in South Wales. By repeating the former survey from 1999 the authors investigated whether the investments influenced the condition of the toilet facilities.

The analysis of the survey data showed that there was only a slight improvement in the perception of the surveyed student, which is poor especially concerning cleanliness, hand-washing/drying facilities and toilet paper, which are still not always available respectively for 11% and 21% of the pupils. In 2005, more children (39%) than in 1999 (21%) had problems using the school toilets to urinate.

The authors propose therefore that schools '*should be under a legal obligation*' to provide adequate, clean and well-maintained toilet facilities for children's use.

School hygiene today -Problems known for a century are still relevant (Germany) (Heudorf & Exner, 2008)

The authors compared problems concerning school hygiene in the past with problems schools are facing today, by a literature research of present publications and publications from a century ago with the topic of hygiene in schools.

Main identified problems are: poor indoor air quality, insufficient cleaning of classrooms and sanitation rooms, broken lavatories and vandalism. The complaints about these issues haven't changed much through the years and so has the awareness of school hygiene in general.

To overcome these conditions, it is suggested not to equip schools with sophisticated or expensive technical equipment, but rather to provide robust and simple technology to reduce the effort for maintenance. At the same time it is important to provide high hygiene standards with basic hygiene rules that should be followed by teachers, pupils and other accountable stakeholders.

**[Hygiene in Schools – also an important responsibility of the Public Health Service]
Hygiene in Schulen – auch eine wichtige Aufgabe des öffentlichen Gesundheitsdienstes –
(Germany) (Heudorf *et al.*, 2011)**

The German Protection against Infection Act obliges schools to establish standard operating procedures (SOPs) to maintain hygiene. The scope of the study was to assess the status of the SOPs in Frankfurt/Main, Germany, and to find to what extent the public health departments follow their obligation to check the hygienic condition in schools.

On request, 80 of the total of 180 schools in Frankfurt were able to present their SOP in use, when requested by the public health department in 2006. During an inspection carried out by the public health department in 62 schools, the wash basins were equipped with liquid soap in 73% of and with disposable towels in 72% of the schools. In 94% of the schools, facilities were equipped with bins. After a second assessment an improvement was observed. Notably this second assessment was conducted during an influenza pandemic in 2009. In 2010 a slight deterioration was observable.

The drinking-water quality was measured in all 180 schools complied with German drinking-water ordinance, with the exception of high legionella contaminations in the hot water systems supplying the showers in gymnasiums.

The authors conclude that the aim of improving hygiene in schools could be achieved by increasing consulting services and control visits by the public health departments. Furthermore responsibility of the schools as well as of the individuals in the schools is demanded.

Better loos for schools (UK) (Jones & Wilson, 2007)

This scope of this study was to assess the problems that inadequate school toilet facilities can create for children, including wetting, incontinence and bullying. Information was collected by surveying 75 children with wetting problems of different age and both sexes.

The children's perceptions showed that overall the condition of the toilet facilities are insufficient. More than a half reported that the toilet doors aren't lockable, not enough toilet paper is provided, toilets are not supervised and are smelly. Nearly a half reported the lack of soap and hand drying towels. Less than half of the girls stated that the toilet facilities lack sanitary bins. Further comments were about blocked toilets that cannot be flushed, findings of ripped wallpaper, dirty toilets, dirty soap, bullying, and about the fact that pupils have to ask for toilet paper.

The insufficient state of the school toilets is problematic especially for children with wetting problems. The problems which were listed could further distress the problems of wetting. At the same time uncomfortable facilities could contribute to an insufficient fluid intake, caused by the avoidance of the toilets, and could lead to negative health outcomes in the end.

Perceptions of school toilets as a cause for irregular toilet habits among schoolchildren aged 6 to 16 years (Sweden) (Lundblad & Hellström, 2005)

The study seeks to explore the perceptions of 385 pupils between 6 to 16 years of age concerning school toilets and their usage.

The authors postulate that irregular bladder and bowel habits are contributory factors to urinary tract and intestinal problems. When children suppress or ignore 'full bladder' signals the risk of developing emptying disturbances and urinary tract infection, constipation and incontinence is more probable.

59% of the children reported that toilets are available for exclusive use by their class. 72% of pupils stated that the toilets were only sometimes or never clean and 58% reported that the toilet facilities are always smelly. This was mostly reported by children without access to their own class toilet. 50% stated that they found urine on the floor, 14 % on the wall and 70 % upon toilet seats. In 40 % of all cases toilet paper was always available. For paper towels and soap this is valid in 33% and 25% of all cases.

41% of the children reported always to receive the permission to leave the class during lesson to go to the toilet. The majority of 74% had free access to the toilet rooms, 17% need to ask for the key. 57% didn't know whether cases of bullying occurred in the toilets, 40% stated that bullying did not happen and 3 % knew that bullying occurred.

Among all pupils, 15% never used the toilets. 16% would never urinate and 63% would never use the school toilets for defecation. For older children, the availability of a class toilet is of higher importance. 54% of pupils avoid common toilets, but if a class toilet is available only 20% never use it. 10% of the lower grade, 22% of the middle-grade, and 33 % of the higher grade pupils mentioned anxiety as the reason to avoid the toilets.

Schoolchildren endure physical discomfort of not relieving themselves rather than the psychological and social discomfort of using a school toilet. The findings of this study highlight that unhealthy toilet habits adopted during school time by many children are caused by precarious situation of school toilets. Negative attitudes and habits increased with age.

Experiences of children treating functional bladder disturbances on schooldays (Sweden) (Lundblad *et al.*, 2007)

This study seeks to describe experiences of children treating functional bladder disturbances on school days. 20 pupils in the age of 8-14 years participated in interviews.

Children with functional bladder disturbances are aware that they should go to the toilet two or three times during school day, best before they have the need to. This could be in conflict with the rules, which are in place for visiting the toilet facilities. Rules for toilet visits varied between the interviewed children. The majority had to ask the teacher whether they are allowed to go to the toilet or not. They were not always allowed to go immediately after asking, but they have instead to wait until the teacher finds an adequate time. In some cases the teachers decided not to allow the child.

The children experienced poor and broken illumination in the toilet cabins. These were described as small, smelly, unclean and unpleasant. The floor was often wet and toilet paper lies around. The children reported damaged locks which made it difficult to ensure privacy. Children

developed strategies to avoid the use of toilets which impacts on their physical and psychological wellbeing. And this in turn influenced their ability to concentrate during the school lessons while they are postponing their needs.

The authors conclude that school toilets are generally not adapted to the needs of children with functional bladder disturbances. The conditions of the toilets lack all the factors which aim to support recovery. The children tend to give their psychological needs priority towards their physical needs and carrying out treatment. Clinical interventions before self-care at school must include analysis of the impact of the school environment and also the meaning of performing treatment at school from a child's perspective and need to give children's opinions a high priority. Schoolchildren should be provided with elementary instructions on healthy toilet habits and toilet usage, while school leaders require information concerning the importance of good school toilet conditions when it comes to maintaining and restoring health during childhood.

Children's experiences of attitudes and rules for going to the toilet in school (Sweden) (Lundblad *et al.*, 2010)

The study was aimed at investigating the behavioural and social reasons that lead to pupils' irregular toilet habits. In particular individual open-ended questions were given to 19 schoolchildren aged 9-16 to find out their experience with school rules for going to the toilet.

The results showed a conflict between the rules for maintaining order in the classroom and the pupils' physical need. It emerged that the pupils avoid going to the toilet because there is not enough time and they feel ashamed when asking for permission. Toilet needs are seen as a private matter and revealing in front of the class their need to go to the toilet is experienced as a violation of their integrity.

Hygienic characteristics of children's educational establishments (Russian Federation) (Ponomarenko & Cherkashin, 2009)

This study is a part of the National Family Project. The aim of the study was to improve the assessment methodology used to investigate the hygienic conditions in schools. Data from two sample schools with different hygienic state were also reported. The researchers identified four factors affecting WASH in schools: school location, school building, sanitary-technical infrastructure and the education process. In the example school with the worst conditions, the compliance with the WASH standards defined by law (sewage system, water source) was about 60%. The main reason for the poor condition was reported to be overcrowding: the number of sanitation facilities was not sufficient.

Hygienic evaluation of educational conditions and health status in junior pupils from rural schools (Russian Federation) (Rapoport *et al.*, 2012)

The study evaluates the hygienic conditions in rural junior schools (8-10 years old pupils) and the health status of pupils in the rural areas of Vyazma, in the Smolensk Oblast, which belongs to the Central Federal District. The findings were also compared to the results from other surveys: one on sanitary and hygienic school welfare carried out by the Russian Inspectorate for the Protection of Consumer Rights and Human Welfare; a sociological survey of teachers and school directors.

The results showed that 25% of the rural schools are in need of repairs and that buildings that are not meant to be schools are also being used as educational institutions. These buildings have drawbacks as they lack a centralized water supply and drinking-water is provided by tanker trucks. Also they lack a sewage system and in two schools pit latrines were outside the building. On the other hand, schools located in educational buildings have a centralized water supply system, but in 40% of the buildings there is no sewage system existing. A correlation between hygienic state of the school disobedience and asocial behaviour was observed, underlying the importance of improvement measures.

Improving school sanitation in a sustainable way for a better health of school children in the EECCA and in the new EU member states (Romania & Ukraine) (Samwel & Gabizon, 2006)

The article describes a pilot project on the advantages of using dry urine-diverting (UD) toilets as a tool to improve the sanitary conditions in schools that are not connected to a central water or sewage systems. e.

The pit latrines in schools located in rural Ukraine and Romania lack comfort and adequate hygiene, toilet paper and hand washing facilities, are located far away outside the school buildings, and do not provide a separation by gender. Furthermore, they can adversely affect water quality. In order to improve the sanitary conditions, the UD toilet, a sustainable sanitation facility working without any water, odourless and fly proof while at the same time providing sanitized products that can be used as organic fertilizers, was introduced. The UD toilet protects groundwater against infiltration of human excreta, and at the same time is affordable and sustainable. Such toilets can be located indoors and contribute to a greater comfort and safety.

After the installation, in Romania 66 % of the citizens reported the UD toilet as the best choice for the school usage and the pupils acknowledged the easy (65 %) and pleasant (29 %) usage of the new devices. School staff and parents of Ukrainian pupils also appreciated the introduction of UD toilets. On a larger scale, the final success of this sanitation pilot project depends not only on proper operation and maintenance of the facility, but also on the involvement of local farmers, who should be well informed and willing to use the sanitized products as fertilizers.

The authors conclude that UD toilets increase comfort and safety of children and thus improve learning capacity. School sanitation is an important issue and both the local development and the implementation of a sustainable sanitation approach such as UD toilets requires well organized authorities and policy makers besides the involvement of all stakeholders and experts. However, local governments are often lacking experience, expertise and financial resources. Scaling up sustainable school sanitation requires dissemination of information, knowledge transfer, recognized national and international regulations, good collaboration and financial resources in the communities.

Children's experiences of school toilets present a risk to their physical and psychological health (Sweden & UK) (Vernon *et al.*, 2003)

By comparison of two cities in the UK and Sweden, the study seeks to explore the reasons for the problems with school toilets described by parents and children. Self-administered questionnaires were given to students (aged 9-11) in Newcastle upon Tyne and Goteborg. A questionnaire for the

head teacher was prepared to record their observations about the facilities in regard to predetermined standards.

The children's responses revealed that the three major problems in school sanitation facilities are dirty toilets, inadequate privacy and bullying. For 83% of the children in UK and 77% in Sweden toilets are very unpleasant because of dirt and smell. Only 28% of the Swedish students use a school toilet to defecate. In England 62 % of the male students and 35 % of the girls defecate in schools.

European standards are needed for school toilets in order to prevent children developing problems such as constipation, urinary tract infections and incontinence.

Integrated assessment of the learning environment in educational institutions of various types (Russian Federation) (Zulkarnaev *et al.*, 2009)

The study was conducted in Ufa, the capital city of the Republic of Bashkortostan, which lies in the Volga Federal District, Russian Federation. Data from 2006 and 2007 were collected in urban general schools, investigating the WASH conditions offered to 103,424 pupils in the city. The survey covered 35% of regular schools, 58% of gymnasia and 7% of lyceums, excluding private and partial schools (respectively 1.9% and 0.6% of all schools).

Most of the surveyed schools were built before 1960. The hygienic situation was reported as generally bad and '*moderately hazardous*' and sanitation facilities for gyms were missing. The study also pointed out that in one year the sanitary conditions improved by 1%, not because of improvements in the existing schools, but due to the building of new schools. However, one third of the new schools did not meet the sanitary standards regulated by law.

5.4 Menstrual Hygiene

Sanitary towel provision and disposal in primary schools (UK) (Jones & Finlay, 2001)

The scope of the study was to get insight to the arrangements for menstruation hygiene management in primary schools. This study investigated the provision of sanitary towels and disposal facilities in schools throughout the UK. A questionnaire was compiled by the head teacher in 282 schools. In 90% of all cases sanitary towels were available. However, in order to access is in most of the schools girls had to ask the teacher or the school secretary; eight schools were equipped with machines supplying sanitary towels. Overall, 57 % of the schools had disposal facilities; in 43 % of all schools located in the individual closets. In 68 % of schools without disposal facilities, the girls use the teacher toilets.

The authors conclude that the provision of sanitary napkins for girls who begin to menstruate whilst still at primary school is inadequate. As coping with menstruation at school is more difficult than at home, the topic should be taught in all primary schools. Schools need to provide sensitive and practical advice for girls in managing the situation discretely and for providing such educational programs, school nurses could play a vital role.

5.5 Health Assessments

Sanitary-epidemiological characteristics of preschool institutions (Ukraine) (Grebniak & Agarkova, 2000)

The article is about sanitation and hygiene in preschool establishments (kindergarten) in Donetsk, Ukraine. Between 1992 and 1997 wet and dry samples (dust) from different location inside the premises were analysed for the presence of parasite eggs (pinworm).

The results show that both wet and dry samples were positive in more than 2% of all restrooms surveyed, especially on door handles (9%), but also on toilet water reservoirs and partitions.

The article also reports that 5-6% of children were infected by pinworms (*Enterobius vermicularis*) in the time period between 1994 and 1998. Nevertheless, the authors suggest that the real incidence rate is usually 10 to 15 times higher than the reported incidences.

Approaches to the evaluation of the level of sanitary-epidemiological well-being of educational establishment for children and adolescents (Russian Federation) (Kuchma & Milushkina, 2004)

The study proposes a system for the assessment of sanitary and epidemiological condition of schools, based on a quantitative analysis on hygiene factors associated with the sanitary and epidemiological situation at schools and pupils' health conditions.

The authors identified 105 possible factors having an effect on children's health, including WASH-related factors, i.e. water availability, quality of water, system of waste disposal. A significant correlation was identified between pupils' physical development and the considered parameters of sanitary-and-epidemiological welfare. Specific WASH-related parameters do not, however, emerge in the list of the parameters mostly affecting children's physical development.

Prevalence and risk factors of helminths and intestinal protozoa infections among children from primary schools in western Tajikistan (Tajikistan) (Matthys *et al.*, 2011)

The aim of the study is to assess the status on helminth and intestinal protozoa infections in four districts in Tajikistan among children between 7-11 years of age. During the cross-sectional survey, stool samples were taken from 602 children and interviews were conducted about the sanitary situation and hygiene behaviour. A questionnaire was prepared to get insight about the demographic and socioeconomic characteristics and was addressed to the heads of the pupil's households.

A third of all children were infected with helminths, nearly half of them by at least one intestinal protozoan species. A fifth of the children were infected by more than one intestinal protozoan species. A spatial heterogeneity in the helminth infection prevalence was noticed. The lowest prevalence was found in two schools located in a mountainous area. The eight schools located in 'lowland' areas, where alluvial or loess soils and intensive agriculture are predominant, showed a higher prevalence. Almost half of the households surveyed (47%) depend on unimproved drinking-water sources, such as irrigation canals, rivers and unprotected wells. Protective factors against certain helminth infections included the use of public taps, standpipes and protected springs as drinking-water sources.

Based on their findings the authors conclude that locally adapted interventions, combining an initial school-based deworming and targeted health education programmes, promoting better hygiene and improved sanitation would significantly reduce the infection rates. Further investigations are needed to assess the true public health burden due to the predominant helminth *Hymenolepis nana* (tapeworm) to guide future control efforts in the study area.

National intestinal helminth survey among schoolchildren in Tajikistan: prevalence's, risk factors and perceptions (Tajikistan) (Sherkhonov *et al.*, 2013)

This study aimed at identifying the prevalence of intestinal helminths infection among school children, identifying local relevant risk factors for infection, assessing the knowledge and perception of intestinal infections as well as the anaemia status in Tajikistan. Data of 1,642 children at aged 7-11 years from 33 randomly selected schools located in different parts of Tajikistan were analyzed.

The nationwide cross-sectional survey demonstrated the presence of *E. vermicularis* (26% prevalence), *A. lumbricoides* (17% prevalence), *T. trichiura* (16% prevalence) and *H. nana* (3% prevalence) in Tajik school children, with prevalence varying between the administrative districts (oblast). The prevalence of common soil-transmitted helminth infections was 19%. Distinct geographical and socioeconomic conditions likely account for these differences. Location (administrative districts) and hand washing practices were significant predictors for infection with certain intestinal helminth species. Hand washing after toilet usage and handling of animals had a protective effect against *E. vermicularis* infection, emphasizing the relevance of health education including the promotion of proper hand washing with soap. The consumption of raw, unwashed vegetables and fruits was perceived as a major risk factor as well. A negative impact of *H. nana* infection on haemoglobin levels was observed, and it has been suggested that larval migration across the walls of the small intestine might cause intestinal bleeding, resulting in anaemia. The proportion of children with knowledge about intestinal helminths and hygiene practices varied significantly between the oblast. Health workers, teachers and family members were identified as the most important sources for health information.

The authors conclude that locally adapted health education interventions are needed for the school children. Problems associated with translating health knowledge into practice have to be overcome and the importance of tailoring the health education approaches to local conditions has to be emphasized. The identification of the major health information channels for children could facilitate the transmission of high-quality information to these critical sources of information for children, and underscores the untapped potential of mass media to further popularize health education. Apart from mass drug administration and the provision of safe water and sanitation, such health education initiatives can influence health risk behaviour and thereby lead to sustainable control and eventual elimination of intestinal helminths on the long run.

Demographic and parasitic infection status of schoolchildren and sanitary conditions of schools in Sanliurfa, Turkey (Turkey) (Ulukanligil & Seyrek, 2003)

The study seeks to explore the demographic distribution of absenteeism rates and the reasons for absenteeism among school children, analyze the sanitary conditions of schools and the prevalence of helminth infections.

1,820 children aged 7-14 years of age (61,5% male, 38,4% female) from three primary schools in the shantytown, apartment and rural district in Sanliurfa province in eastern Turkey participated in this study. The survey was used to capture demographic, prevalence and sanitary information of both the children and their schools. Stool samples were analyzed for intestinal helminths eggs.

The analysis of the data shows a disproportional gender ratio in the shantytown and rural schools. The proportion of female students decreased gradually from second grade on. A more equal gender distribution is present in the school located in the apartment district. The sanitary conditions in the schools located in the rural area and the shantytown were poor. The latrines and the water supply as well were also in poor conditions. Good sanitation conditions were noted in apartment district school. In case of water shortage, school toilets were closed, forcing children to defecate in the surrounding environment. Water shortage and lack of soap are also hindering hand washing and the development of hygienic habits.

The prevalence of helminthic infections was 77.1 % for the schoolchildren in shantytown, 53.2% in the apartment district and 53.1% in the rural area. *Ascaris lumbricoides* was the most prevalent species and followed by *Trichuris trichiura*, *Hymenolepis nana* and *Taenia* species in three schools. Though both, the shanty town school and the rural school, lack soap and have poor sanitation, water was constantly available only in the rural school and this might have a positive influence on disease prevention seen as a reduced prevalence rate in the rural school. The relatively high rate of helminth infection in the apartment district may be due to the consumption of raw vegetables that were fertilized with night soil (human excreta).

The burden of parasitic infections and poor sanitation conditions poses a public health challenge among to the schoolchildren. School health programmes including deworming and sanitation activities could be a key in improving the sanitation conditions, health status and health education for schoolchildren. Such programmes offer the potential to reach significant numbers of pupils in schools with high level of absenteeism.

5.6 Outcomes

Drinking-water

Ten articles related to drinking-water in schools were identified through the literature review. All were conducted in high income economies, six of them only in the UK. Most studies were concerned about adequate children's fluid intake at school and how to promote it. Children in Italy and UK were found dehydrated, as the level of fluid intake is significantly low (Fadda *et al.*, 2012; Kaushik *et al.*, 2007). Dehydration was associated with negative effects on the cognitive performance, especially with short-term memory, and with continence problems (Fadda *et al.*, 2012; Kaushik *et al.*, 2007).

Overall, two distinct factors have a main influence on the children's water intake. First factor is the awareness of teacher and children concerning the importance of an adequate fluid intake and the 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 teacher might not always be aware of children's adequate fluid intake and of its effects on health and concentration. In a significant number of schools, especially in secondary schools, pupils are eventually not allowed to visit the toilet, not either to drink in class or even to bring drinks from home with significant consequences on 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 latter factor affecting children's fluid intake is related to the state of the school facilities, i.e. 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 do not provide adequate facilities for children needs, especially with respect to drinking-water promotion (Croghan, 2002; Haines & Rogers, 2000; Hunter *et al.*, 2004). The positive effect through the provision of more drinking-water facilities was shown by Muckelbauer *et al.* (2009).

However, promotion of water intake is not sufficient where drinking-water facilities are not available and availability of water facilities is not sufficient if there is not awareness and policies for promoting adequate fluid intake (Brander, 2003; Visscher *et al.*, 2010). Both key-factors emerged from the literature and should therefore be concurrently implemented for an efficient improvement. Finally, improvement interventions towards higher water consumption can also be useful to reduce the risk of obesity, as children are less prone to soft drink consumption (Loughridge & Barratt 2005; Muckelbauer *et al.*, 2009).

Hygiene Practice

Thirteen articles were found concerning the topic hygiene behaviour. All studies took place in high-income countries of the WHO European Region. The majority of studies dealt with the effects of hand washing practice at school and improvement of it, with seven articles assessing the impact of hand washing interventions in schools on incidence of common children's disease, i.e. common cold, gastroenteritis, and on absenteeism rates. Five studies out of seven 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 an additional hand sanitizer (Azor-Martinez *et al.*, 2014; Lennell *et al.*, 2008); implementation of a targeted program in schools (Gebel *et al.*, 2008), which also improved the communication on hygiene matters between the different stakeholders involved; implementation of mandatory hand washing policy (Nandrup-Bus, 2009); and more sophisticated methods like a UV-light yo-yo to let pupils understand by themselves how to better practice hand-washing (Randle *et al.*, 2013). One study showed how comprehensive intervention, providing training and information materials together with hygiene tools, were ineffective with respect to absenteeism rate, nevertheless succeeded in efficiently improving children's hand washing behaviours (Rosen *et al.*, 2006).

According to the analyzed literature, even countries where regulation for hygiene are in place might still have challenges to implement best hygiene practice. The study of Lecky *et al.* (2007) highlighted that six European countries include hand hygiene in the school curriculum, but the details for adequate hand washing practice are not covered in any of those. Moreover, hygiene activities are not best implemented when there are no specific stimuli or awareness promotion. The implementation was in fact observed to work better when a major perceived public health threat is ongoing – e.g. a wave of influenza (Schmidt *et al.*, 2009). A study conducted in the Netherlands by Zomer *et al.* (2013a, 2013b) also showed that hygiene practice in pre-schools is still inadequate even when national guidelines are in place. Low compliance was observed for various practical situations. Factors identified as affecting the compliance are concrete impairments, as the lack of consumable provision in the facilities (especially paper towels), 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 and 2013b).

Water & Sanitation facilities

Thirteen articles were identified addressing water and sanitation facilities in schools. Seven of them focused especially on the student's perception of toilet and sanitation facilities in their schools. The situation emerging from the studies suggest the presence of a health risk for pupils, especially for those with wetting problems. A significant number of children – increasing with age – avoid going to the toilets at school, especially for defecating. The reasons for this are mainly related to inadequate facilities and the school policies (Barnes & Maddocks 2002; Fujiwara-Pichler *et al.*, 2006; Jones & Wilson, 2007; Lundblad *et al.*, 2005, 2007 and 2010; Vernon *et al.*, 2003). Pupils' habit of avoiding toilets is associated by scientists with higher risks of developing intestinal problems, functional bladder disturbances – like constipation or incontinence –, urinary infections (Barnes & Maddocks 2002; Croghan, 2002; Jones & Wilson, 2007; Lundblad *et al.*, 2005) and could contribute to low fluid intake (Jones & Wilson, 2007). Additionally, Rapoport *et al.* (2012), observed a correlation between hygienic state of the school and pupils' disobedience and asocial behaviours. Heudorf and Exner (2008) suggest the urgent need for school high hygienic standards, together with robust and simple technology, because the same problems are affecting WASH in schools since more than a century with no significant improvement.

Concerning school facilities, pupils' comments and researchers' observation identified several problems: poor maintenance, especially of hand washing facilities, and unhygienic toilets, with dirt, unpleasant smell and often lacking hygiene consumable (toilet paper, soap, hand drying towels) (Barnes & Maddocks 2002; Croghan, 2002; Heudorf *et al.*, 2011; Jones & Wilson, 2007; Lundblad *et al.*, 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 seem equally important for pupils, as shown by Fujiwara-Pichler *et al.* (2006): inadequate cleanliness and lack of consumables were still significantly hindering pupils' access to WASH in several schools, even after a consistent renovation of the toilet facilities, suggesting the need for a stricter legal obligation for schools. However, the results reported in the study conducted by Croghan (2002) show that cleanliness can be a challenge even when in place: when cleaning is done once per day

facilities get dirty the end of the day, especially if they are overcrowded (insufficient ratio pupils-toilets). Moreover, several studies showed that the regulation in place might not be sufficient to implement WASH in schools, because a significant number of schools still do not comply with their legal obligations (Heudorf *et al.*, 2011; Ponomarenko & Cherkashin, 2009; Rapoport *et al.*, 2012; Zulkarnaev *et al.*, 2009). Compliance is especially affected by school location, with rural areas being worse, age and original purpose of the school building, type of sanitary-technical infrastructure and education process provided at school (Ponomarenko & Cherkashin, 2009; Rapoport *et al.*, 2012; Zulkarnaev *et al.*, 2009). According to Heudorf *et al.* (2011), factors increasing compliance are availability of consulting services, more frequent control visits by the responsible authorities and increase in perceived importance of hygiene practice, like an ongoing major perceived public health threat as observed also by Schmidt *et al.* (2009).

Pupils avoid going to the toilets also because they feel insecure, as toilets are not supervised (Jones & Wilson, 2007) and bullying episodes were reported in most of the studies. Moreover, pupils complain about lack of privacy, as not all facilities are lockable (Barnes & Maddocks 2002; Jones & Wilson, 2007; Lundblad *et al.*, 2007).

Another aspect affecting pupils' access to WASH in school is the school policy for going to the toilet. Pupils are not always allowed to go to the toilet during lessons (Croghan, 2002; Lundblad *et al.*, 2005, 2007 and 2010), even if they are affected by bladder disturbances (Lundblad *et al.*, 2007). They might avoid going to the toilet because they don't want to make public in front of the class their private toilet need when asking for permission (Lundblad *et al.*, 2010). Even in schools where pupils are allowed to go during lesson, toilets might be locked and pupils have explicitly to ask for the key to use them (Croghan, 2002; Lundblad *et al.*, 2005).

Other issues were associated with the implementation of central water supplies and centralized sewage system (Pnomarenko & Cherkashin, 2009; Rapoport *et al.*, 2012; Zulkarnaev *et al.*, 2009). Nevertheless, the study of Samwel & Gabizon (2006) describes the positive effects of the introduction of dry urine-diverting toilets, useful in areas where implementation of a central sewage system is not feasible. These facilities can be installed inside of the school buildings, improve pupils' access to WASH in schools and could consequently improve pupils' learning performances. The authors also highlight the need for information and knowledge sharing, for recognized national and international regulations, and for good collaboration and financial resources in the communities where sanitation should be implemented.

Menstrual Hygiene Management

Three peer reviewed scientific journal article revealed by the literature research deal with menstruation hygiene and match the described criteria in Chapter 2. Only the study by Jones & Finlay (2001) is specifically targeted to the topic menstrual hygiene management. It shows that even if most primary schools might provide sanitary towels, menstrual hygiene management is still not adequate. In many schools girls have to ask an adult to be provided with a sanitary towel and disposal facilities are not present in the toilet cubicle or not even in the washrooms. Two other studies addressing in general the condition of toilet facilities in schools confirm the need of disposal facilities in primary schools (Croghan, 2002; Jones & Wilson, 2007).

Health Assessment

Five studies investigated the health state of school children in the WHO European Region. Two of them were conducted in Tajikistan (Matthys et al., 2011; Sherkonov et al., 2011) one in the Russian Federation (Kuchma & Milushkina, 2004), one in Turkey (Ulukanligil, 2003), and one in Ukraine (Grebniak & Agarkova, 2000). Part of the studies was to quantify the rate of infection with intestinal parasites. In three out of four study, 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. The high incidence is in fact associated with poor access to WASH in schools, due to unimproved water source, bad sanitation conditions and lack of hygiene education. Only in one study specific WASH factors were not among the factors mostly affecting children health, but an association was not explicitly excluded (Kuchma & Milushkina, 2004). In some schools, helminth eggs were found on door toilet door handles, partitions and water reservoirs (Grebniak & Agarkova, 2000). The study in Turkey revealed that there was a correlation between infection rate and socio-economic status of the surveyed children.

5.7 Conclusions

In the WHO European Region only 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 are related to WASH facilities (pupils' perception and facility conditions), drinking-water (mainly on the pupil's fluid intake) and hygiene practices (hand washing and infection incidence). The educational institution mostly under focus in the analyzed literature are primary schools, less is available for pre-schools and secondary schools. Very little was found for menstrual hygiene management and health assessment in schools. Studies in high-income countries are more likely addressing questions related to usage and perception of existing infrastructure. Studies in middle- and low-income countries are more likely addressing health problems resulting from a lack of infrastructure. No quantitative data were found with respect to association between WASH in schools and health problems like incontinence and only one article covered the effect of WASH on school performances.

Most of the published studies were conducted in the UK, many were conducted 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 two on health assessment in schools. According to the results of the literature research, the literature available for EECCA and for low/middle-income countries seems in general very limited. Low- and middle-income countries of the WHO European Region that were included in the review are Tajikistan (low income economy), Ukraine (lower-middle economy), Romania and Turkey (upper-middle economy).

Reasons that might have led to a limitation of access to published research are the focus on literature with at least an English abstract and the time range of 10 years for the research. As WASH in school is not of high priority in many countries, it can also be assumed, that less research is carried in this field, resulting in few publications. Moreover, schools and WASH in schools might still be considered a national issue, despite the international agreements, and therefore national results might not always be published in international journals.

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6. Conclusions and Recommendations

The 2010 Parma Declaration on Environment and Health has been an important step in defining regional policy goals towards better WASH conditions in schools and other childcare settings. Until today, this has led to the approval and revision of national policies, regulations and standards on WASH in schools in several countries. Many countries in the WHO European Region have prioritized WASH in schools in the programmes of work with due date 2015 or 2020, especially the parties of the Protocol on Water and Health. The Protocol is the primary policy instrument for implementing the Parma commitments and several countries have also established national targets towards improving WASH in schools under the Protocol. In accordance, several countries have started monitoring the conditions of WASH in schools and the progress of the established implementation programs. With respect to this, national surveys have been conducted, also with support of international organizations, with the aim to establish a national baseline and/or to assess current problems and policy and monitoring gaps. The progress achieved until now is however still not enough to guarantee universal access to safe WASH for all pupils in the region. One-shot surveys and scientific studies contribute to outline the general discomfort felt by pupils in the WASH facilities and the related problems with hygiene practice and toilet avoidance and their negative effect on health.

Maintaining and improving WASH conditions in schools is important in terms of education and children's health but also provides economic and environmental benefits. The main issues that emerged from the analysis of evidence available for the WHO European Region are summarized in the following paragraphs.

WASH related issues

The national surveys (chapter 4) and the literature review (chapter 5) have shown that WASH in schools is often impaired in the countries of the WHO European Region. The issues prevail regardless the economic status of the country, even where specific regulations are in place. Many reported problems are related to improper planning, poor maintenance and cleanliness. Pupils' perception revealed a general dissatisfaction, mostly due to the lack of maintenance and cleanliness. Pupils complain especially about bad smell, the lack of consumables, the lack of privacy and surveillance of the facilities and the consequent bullying episodes, problems not always acknowledged by the teachers. The dissatisfaction is not always addressed and may promote antisocial behaviours and vandalism, which would further limit the WASH access in schools. A significant number of pupils avoid using the WASH facilities with consequences on health and cognitive performances. Children in schools are in fact dehydrated, a significant number of pupils report urinary infections and constipation and in some countries a high rate of parasitic infection was observed in relation to inadequate WASH in schools. The scientific evidence show that toilet avoidance is not only fostered by insufficient and inadequate facilities, but also by lack of teachers' and children's awareness concerning the importance of WASH and the consequent school policies for drinking and toilet visits.

Rural areas present particularly poor conditions with respect to water and sanitation in schools, especially in low-middle income countries. Urban areas present instead more often challenges related to overcrowding. Girls' accessibility is particularly impaired, as menstrual hygiene

management is not sufficiently handled in many countries. Access to sanitation facilities for disabled pupils is often not ensured; because insufficient facilities are present that fit the needs of disabled pupils.

The access of water for drinking and for hand washing is not fully ensured

- Functional central water supply is not always available or feasible;
- Some schools lack any on-site water supply. Drinking water is transported with tanks, and a significant number of schools have to rely on unimproved water source, especially in rural areas;
- Access to drinking water is impaired by the fact that water is not always available inside the school and when it is found inside the buildings, in the majority of cases it is only available inside the toilet facilities;
- Even in schools that have a central water supply, it might be discontinuous functioning only some hours every day or some days in a week;
- In many schools water quality is incompliant with the national laws or the quality is not known;
- Hand washing facilities are often insufficient or not close to the toilets;
- In many schools there is no warm water, hindering hand washing especially in the winter season.

The hygiene management is not adequate to pupils' needs

- There is a general lack of cleanliness and bad odours are present. In the toilets that are cleaned once per day, dirt accumulates during the school days, becoming a problem especially when facilities are overcrowded and where hygiene education is not comprehensive of good hygiene practice;
- Basic consumables, like soap, toilet paper and drying devices, important for hygiene and disease prevention, are insufficient in the majority of schools;
- Disposable facilities are often missing in the toilets, impairing especially girls' menstrual hygiene management;
- Bad odours are also caused by poor ventilation, reported in several countries, which causes also the spread of mould, impairing air quality;
- Poor hygienic practice and improper behaviours are observed within the WASH facilities. Probably it is facilitated by the lack of comprehensive hygiene education in the curricula and hygiene promotion, as reported in the schools of several countries.

Sanitation is not fully ensured

- Sanitation is not fully ensured in some countries, especially in rural areas where central wastewater systems are not feasible. Several schools lack a functional sewage system, while some schools do not provide any sort of sanitation. Others provide unimproved sanitation and/or sanitation facilities only outside the schools, which are hardly accessible during the cold season;
- In almost all countries the lack of maintenance was reported, especially concerning toilet seats, doors, HWFs, pipes, and further hindered by the choice of poor materials for the construction and the equipment of the facilities;
- Access to sanitation facilities is also significantly impaired by the lack of privacy, as toilets are shared between boys and girls or between pupils and teachers in some countries, but also because functioning lockable facilities are missing, doors and partitions are missing

(especially between urinals) or they are broken, and the sizes regulated for partitions are not adequate to children's needs;

- In some countries the room temperature in the toilets is inadequate, especially in winter and then pavements are slippery (also because of the limited cleaning);
- In many schools the number of facilities is still insufficient and there is consequently overcrowding, hindering accessibility and raising issues with cleanliness and maintenance;
- The illumination in toilets is not adequate in several countries, reported to favour improper behaviours.

Equal access is not ensured

- Rural-urban and regional disparities were observed in all countries where disaggregated data were available;
- In many schools facilities accessible by disabled people are still not available, even if most of the countries have addressed policies.

The reported challenges and issues already provide important inputs, on which countries' policies should focus. The most practical suggestions are:

- Resources for on-going maintenance need to be reflected in **human resource and financial planning of the educational sector**. The emerged needs are especially of concern for **renovation programs, hygiene promotion**, a stronger **reporting system** to keep track of the progress, where reporting on functionality and water quality is essential, and for enforcement mechanism for schools found non-compliant.
- An increased effort is necessary for **rural areas: specific policies with realistic, achievable targets** could improve WASH in schools in areas where central supplies are not feasible and/or natural water resources are not available.
- The issues reported by the pupils in all countries, especially concerning cleanliness, privacy and internal surveillance, suggest the potential need for revision of the current requirements for the arrangement of the facilities and the school cleaning policies, to ensure adequate **access to WASH in schools, responsive of children's needs**. Increased drinking-water uptake not only depends on availability of drinking-water in schools, but also on the school policies for access of water during lesson time.
- **Scientific literature addressing WASH in schools** is essential to raise the importance of WASH in schools and further attention is required on such topics, especially in EECCA and low-middle income countries. Particularly of relevance would be evidence on the importance of menstrual hygiene management and evidence for statistical significance of the association between urinary problems and poor accessibility to WASH in schools.

Policies and targets

The information collected in international surveys here presented show a general progress towards the goals set by the Parma Declaration. The majority of the countries have established policies and/or guidelines on WASH in schools, have a coordination mechanism in place and only few countries have not set targets for the implementation of WASH in schools. However, only some countries have fully implemented and financed targeted programs for WASH and not all thematic areas are considered by each country, with hygiene promotion being not as prioritized as water and sanitation.

In general the involvement of the educational sector in the provision of WASH in schools is still limited, as many aspects of WASH in schools are seen like a mere infrastructure, instead of an education intervention. Often an explicit link between water, sanitation and hygiene is not present in the complex legal framework in place. Additionally, the division of roles and responsibilities is often extended to several different institutions, without a clear key-actor with overall responsibility and coordinating all the others. These shortcomings are eventually affecting the coordination mechanisms; the level of awareness and knowledge of the regulations by directly involved stakeholders, like caregivers in day care centres (Chapter 5), and hinders schools to be compliant with the requirements (Chapter 4 and 5). Some exceptions are found in Germany and UK, where comprehensive advisory documents were developed, and in Georgia, Scotland and Wales, where schools have the opportunity to take actively part in the reporting system for WASH surveillance.

Standards and regulations are commonly in place. Nevertheless, in many countries, regardless their income economy, policies still lack specific requirements recognized as essential for ensuring access to WASH in schools, as reported in the WHO guidelines (WHO, 2009)²¹. Often the pupils/toilet ratio specified in the regulations is not in accordance with the internationally agreed standards of the WHO guidelines. In many countries hygiene education is not integrated in school curricula and even countries where regulations are in place might still have challenges to implement best hygiene practice, because minimum parameters are not provided and menstrual hygiene management and practical skills are not considered, especially in secondary schools.

Most of the countries reported to have requirements in place for WASH surveillance in schools. However, action plans and enforcement mechanism for follow-up actions in non-compliant schools are often lacking. Rural areas where settlements are particularly hard to reach might be excluded from surveillance coverage and from WASH in schools policies, if they focus only on central water supply and/or sewage system, not considering realistic alternatives.

- Member States may wish to review the national regulations vis-à-vis the WHO guidelines and the emerged pupils' needs, and assess in how far, under consideration of national circumstances and conditions, adaptations are advisable. This may include a **review of thematic coverage of regulations related to WASH in schools** (e.g. water quality, water quantity, water facilities and access to water, hygiene promotion, toilets etc.), and respective requirements and indicators for regular surveillance.
- The lack of a **legally binding requirements comprehensively addressing WASH in schools** and/or effective **enforcement mechanisms** are frequent barriers to improvement. Establishing statutory systems with the aim to ensure follow-up action by responsible institutions and authorities in case of non-compliance are needed.
- A **formal coordination mechanism** has been proven as essential to inform and harmonize actions among the various stakeholders, authorities and organizations sharing responsibility in WASH in schools at national level. Despite the development of curricula,

²¹ Even though the WHO (2009) Water, sanitation and hygiene standards for schools in low-cost settings were designed to be used by schools in low- and medium-resource countries, it became clear in the drafting of this report that the proposed standards are useful recommendation as well for the school sector in high-resource countries.

a stronger cooperation between the Ministry responsible for Education and the other Ministries involved is needed to ensure access to WASH in schools. The countries are encouraged to revive and strengthen the existing coordination mechanism, assuring a clear distribution of responsibilities and establishing a coordinating body.

- Policies need to **take into account rural-urban and regional disparities** to ensure equal accessibility to WASH in school. Specific budgets and implementation projects are required to reduce the high disparities observed, especially but not exclusively in low-income countries. Where central supply systems are not feasible, adequate realistic decentralized alternatives need to be considered.

Surveillance

Monitoring the condition of WASH in schools has been done in several countries in the WHO European Region, with several reporting to have reached high or universal coverage. The majority of the countries have a surveillance system already in place. Additionally, in many countries surveillance requirements are covered in dedicated regulations. Even though many countries reported that the requirements include frequency of the inspections, surveillance is often not regularly conducted and sometimes it is insufficient for an appropriate assessment of the water and sanitation conditions in schools. Indicators are highly heterogeneous and national surveillance system often do not assess important aspects, like present type of facility (improved-unimproved), functionality and water quality, suggesting a clear gap of information. Additionally, surveillance systems may not have full coverage in the country, as reported in Republic of Moldova, where rural schools are excluded from the national statistics. Several countries present shortcomings in the regulations, which divert the government's perception of WASH accessibility in school - as emerged from the discrepancies between national statistics and UNICEF data in Kyrgyzstan-, and limit establishment of an enforcement mechanism - as seen in the lack of improvement in Italian schools during the last 7 years. Incomplete understanding of the actual condition of WASH in schools is also caused by the lack of disaggregated analysis between rural and urban areas and between different regions, shown to be essential for monitoring and one-shot surveys, in order to identify issues that could otherwise be overseen.

The condition of WASH in schools emerged from the literature review and the one-shot surveys noticeably reflect the observed issues in the surveillance system, that are: the limited efficiency of the indicators used; the unclear division of responsibilities among the stakeholders; the lack of requirements for accountability and effective sanctions for schools incompliant with the requirements; the lack of specific requirements for coverage and frequency of inspections to check on WASH in schools; and the lack of reporting system between the involved institutions, caused by the fact that surveillance is often not seen as a tool for implementation of the standards.

- School realities often do not match the ambitions laid out in the policies. Every country should be aware of the prevailing conditions of WASH in schools. **Routine surveillance of WASH facilities in schools** is vital to appreciate prevailing conditions and inform about improvement needs and actions. To be effective, minimum **requirements** for on-going surveillance efforts (e.g. coverage, frequency, parameters to investigate) need to be

established. A harmonization of the indicators for water quality could be useful, especially to enhance knowledge exchange and data comparison between different countries.

- In countries where routine surveillance is already in place, the **monitoring and inspection schemes** might be reviewed and possibly improved. In particular to include **children's perceptions and needs**, which are not reflected in many cases but may provide a better indication of the real situation. In-depth assessments are particularly useful to identify subtle limiting factors to WASH access in schools. The survey results have shown that the irregular or superficial surveillance systems lead to an underestimation of the presence and size of the problems.
- Routine surveillance is an essential tool for the implementation of the standards and regulations, to keep the decision makers updated, to identify improvement needs, to coordinate improvement interventions and to target funding. It is thus important to establish a **reporting system** of surveillance results, which should be **periodically published**. Surveillance data are needed to help monitoring the progress of the on-going implementation plans, identifying the gaps, and promoting the international collaborations.
- Besides regular surveillance, also one-shot surveys have proved to be of extreme importance. During the development of this landscape report, many details were retrieved from such surveys, providing a comprehensive picture of the situation of WASH in school. One-shot surveys allow policy-maker to see the progresses of the implementation programs and the results of the policy removal. Such studies can also help to identify and fill gaps in the national statistics.

School involvement

Campaigns and projects involving active participation of the schools have shown prompt response and a faster improvement of the WASH facilities in those schools (chapter 5). Examples are found in different countries and comprise not only the participation of the school staff, but also of parents and children themselves to raise awareness and facilitate the process of surveillance and implementation of the improvement plans. The need of school participation for WASH implementation is explicitly reported in the literature: increased availability of sanitation facilities alone does not lead to a significant improvement in pupils' perception as cleanliness and maintenance play a main role too. Accordingly, improved facilities will not have a significant effect on hygiene practices without adequate hygiene promotion and adequate practice. Users' participation makes the difference also in urban schools in Republic of Moldova for example, where users themselves are essential actors in the improvement of cleanliness and consumable availability in school facilities (Chapter 4). In France, as well, teachers reported that providing ownership to pupils has a positive effect on the condition of WASH in schools and suggested the national provision of materials for hygiene promotion.

- The **active involvement of schools** in the implementation of WASH is essential to reach the goals. Initiatives for cooperation between responsible authorities, schools as well as parents and children have been proven successful. Better communication between schools

and involved authorities or direct involvement of schools in the monitoring system could favour a more efficient organization to ensure safe and adequate WASH in schools, improving the use of hygiene education and the efficiency of surveillance;

- In schools, talking about toilets and hygiene should **no more be a taboo** and **adequate hygiene education need to be prioritized**, with comprehensive training on good hygiene practice and provision of information on menstrual hygiene management. Hygiene education as an integral element in the curricula at every level of education is essential to empower children with knowledge on their rights for water, sanitation and hygiene and raise pupils' awareness and responsibility with respect to WASH in schools. Furthermore, in several countries there is a lack of prioritization of WASH by the schools community, which could be avoided promoting the **communication system** between pupils, school staff and authorities and by **hygiene promotion programs**;
- Together with facilities improvements, continuous cleanliness and maintenance of the facilities is concurrently needed for the implementation of WASH in school. The schools have a main role in ensuring such aspects, also in terms of supervision and surveillance. A clear **distribution of responsibilities** and **adequate tools for non-expert school staff**, like informative materials, monitoring tools and trainings, are thus necessary to avoid incompliance.

Gaps

National policies are often missing the references to important WASH related topics:

- Requirements for access to hand washing facilities
- Accessibility for disabled people
- Hygiene education and promotion, comprehensive of topics like proper hygiene practice and menstrual hygiene management, especially in secondary schools
- Menstrual hygiene management
- Provision of consumables like soap and toilet paper
- Minimum cleaning requirements
- Alternatives to central systems for water supply and sewages are not always included in policies and national plans, which thus exclude areas where such systems are not feasible. An efficient alternative was reported by Samwel & Gabizon (2006) with the introduction of internal facilities provided with dry urine-diverting toilets in schools.

Evidence data is not sufficient with respect to low- and upper-middle income countries. Moreover, scientific literature and monitoring data, still often neglect important WASH related topics:

- Menstrual hygiene management
- Hygiene promotion and teachers' knowledge

- Statistical significance for the association between inadequate sanitation and health conditions like urinary tract infection or continence.

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Annex

Annex 1: Questions related to WASH in schools in the 2012 and 2014 GLAAS Survey

Glaas 2012

Question	Answer Choices
<p>Drinking-Water supply (Urban and Rural): National Coverage Targets– Please indicate existence of national coverage targets. If available, please provide urban/rural breakdowns.</p> <p><i>What is the percentage of schools in your country that have improved water supplies?</i></p> <p>Asked individually for:</p> <ul style="list-style-type: none"> • Primary schools • Secondary schools 	<p>Responses in % of coverage:</p> <ul style="list-style-type: none"> • coverage national in % • coverage urban in % • coverage rural in %
<p>Sanitation (Urban and Rural): Please indicate existence of national coverage targets. If available, please provide urban/rural breakdowns.</p> <p><i>What is the percentage of schools in your country that have improved sanitation facilities, including access to improved water sources and soap for hand-washing?</i></p> <p>Asked individually for:</p> <ul style="list-style-type: none"> • Primary schools • Secondary schools 	<p>Responses in % of coverage:</p> <ul style="list-style-type: none"> • coverage national in % • coverage urban in % • coverage rural in %
<p>Hygiene Promotion (Urban and Rural)</p> <p><i>Are national hygiene promotion programmes implemented in:</i></p> <ul style="list-style-type: none"> • Primary Schools • Secondary Schools 	<p>Range of coverage in %</p> <p>Urban:</p> <ul style="list-style-type: none"> • >75 % of facilities • 25-75 % of facilities • < 25 % of facilities <p>Rural:</p> <ul style="list-style-type: none"> • >75 % of facilities • 25-75 % of facilities • < 25 % of facilities
<p>These national hygiene promotion programmes are targeted to:</p> <ul style="list-style-type: none"> • Primary school children • Secondary school children • Teachers and other staff at schools 	<p>Range of coverage in %</p> <p>Urban:</p> <ul style="list-style-type: none"> • >75 % of programmes for schools • 25-75 % of programmes for schools • < 25 % of programmes for schools <p>Rural:</p> <ul style="list-style-type: none"> • >75 % of programmes for schools • 25-75 % of programmes for schools • < 25 % of programmes for schools
<p>Policy and Institutions</p> <p>Are access targets included in policy or strategy for schools?</p> <p>Is there a specific line in the budget of the education ministry/department to address maintenance of school sanitation facilities?</p>	<ul style="list-style-type: none"> • Targets included and monitored • Targets yes, but not monitored • No targets or strategy for schools <ul style="list-style-type: none"> • Yes • Not yet but in a minority of localities • No
<p>Is the ministry of education participating in sanitation/drinking-water coordination?</p>	<ul style="list-style-type: none"> • Yes, very active • Yes, fairly active • No

GLAAS 2014

Question	Answer Choices
<p>Policy/plan development and implementation: Do national policies and plans exist, and to what extent are these implemented to ensure the provision of water and sanitation?</p> <p>Asked individually:</p> <ul style="list-style-type: none"> • Sanitation in schools • Drinking-water in schools • Hygiene promotion in schools 	<ul style="list-style-type: none"> • No national policy or policy still under development • National policy formally approved and gazetted through formal public announcement • Implementation plan developed based on approved policy • Implementation plan developed based on approved policy • Implementation plan developed based on approved policy
<p>Policy and plan coverage targets: Please indicate the coverage target (including the year targets are expected to be attained) as documented in the policy or plan?</p> <p>Asked individually for:</p> <ul style="list-style-type: none"> • Sanitation in schools • Drinking-water in schools • Hygiene promotion in schools 	<ul style="list-style-type: none"> • Coverage target (% of facilities) • Title of policy or plan where coverage target is expressed (and web link if available) • Date of policy/plan • Year that coverage target will be attained

Annex 2: Targets set by Parties which are related to WASH in schools

Country	Targets and indicators
<p>Armenia</p> <p><i>Not Party: draft target not adopted</i></p>	<p>Target area II: Reduction of the scale of outbreaks and incidents of water-related diseases</p> <p><u>Target:</u> Maintain the vaccination of children against rotavirus</p> <p><u>Target date and indicator:</u> At least 90 % annual coverage</p> <p>Target area III: Access to drinking-water</p> <p><u>Target:</u> Improve access to safe drinking-water in educational facilities (facilities include kindergarten through senior school and boarding facilities)</p> <p><u>Target date and indicator:</u> In 20 facilities by 2016; in a further 30 by 2020</p> <p><u>Related measures:</u> Development and implementation of programmes to improve drinking-water supplies in educational facilities by 2020</p> <p>Target area IV: Access to sanitation</p> <p><u>Target:</u> Improve sanitation in educational facilities</p> <p><u>Target date and indicator:</u> Construction of new sanitation systems, including Ecosan toilets: 10 by 2018; and a further 25 by 2025</p> <p><u>Related measures:</u> Development and implementation of programs to improve sanitation in educational facilities by 2010</p>
<p>Belarus</p> <p><i>Party: targets adopted</i></p>	<p>Target area II: Reduction of the scale of outbreaks and incidents of water-related diseases</p> <p><u>Target 1:</u> Reduction morbidity by hepatitis A from 6.9 for 100 thousand of population in 2005 to 5 for 100 thousand of population in 2010</p> <p><u>Activities:</u> Introduction of immunization against hepatitis A among contingents of high risk focused in pre-school and general educational institutions</p> <p><u>Target date:</u> 2007-2010</p> <p><u>Executors:</u> The regional executive bodies, the Minsk City Executive Body</p> <p><u>Financial sources:</u> Local budgets</p> <p><u>Target 2:</u> Prevention of morbidity by acute enteric infections related to the drinking-water in the educational institutions</p> <p><u>Activities:</u> Providing of the bottled drinking-water for educational institutions</p> <p><u>Target date:</u> 2007-2009</p> <p><u>Executors:</u> The regional executive bodies</p> <p><u>Financial sources:</u> Local budgets</p>
<p>Germany</p> <p><i>Party: targets adopted</i></p>	<p>Additional national target area: Improved national communication and education on</p> <p><u>Target:</u> To improve Federal communication and education of the general public on the topics of drinking-water, bathing and swimming, with particular consideration for children's health</p> <p><u>Activities 3:</u> Children's book and quiz: The aim is to educate children of various age groups in water-related issues in a playful manner. An interactive water quiz with computerised animations on the topics of drinking-water, open waters, swimming pools and open-air swimming pools will be devised for the over-12s. An illustrated children's book for the under-12s will focus on drinking-water and bathing waters.</p> <p><u>Target date:</u> 31 December 2013</p> <p><u>Indicator:</u> Publication of the above mentioned products</p>

<p>Kyrgyzstan</p> <p><i>Not Party: targets adopted</i></p>	<p>Target area II: Reduction of the scale of outbreaks and incidents of water-related diseases</p> <p>Key national problem of this target area is the maintenance of high level of acute intestinal infections cases, particularly among children in rural areas of the southern regions of Kyrgyzstan. These negative trends are due to limited access of the population to safe drinking-water and sanitation; degradation and low efficiency of water supply and sanitation systems; poor quality of water in water supply sources for domestic and recreational purposes; low awareness of population about the need of personal and public hygiene rules observance.</p> <p><u>Target 2.2:</u> To cover with the monitoring of water-related diseases program in a pilot region at least 70 % of children by 2015 and at least 90 % of children by 2020.</p> <p><u>Responsible organisation:</u> Ministry of Health</p> <p>Target area III: Access to drinking-water</p> <p><u>Target 3.2:</u> By 2015 to make an assessment of the status and required investments for the improvement of water supply systems in 100 % of schools and preschool institutions, and on this basis to develop a program of rehabilitation and development of these systems until 2020, provided with sustainable funding sources.</p> <p><u>Responsible organisations:</u> Ministry of Economy, Ministry of Finance, Ministry of Education and Science, local authority, State Inspectorate for Sanitary, Veterinary and Phytosanitary Safety, Department of Water Supply and Sanitation, ARIS, NGOs</p> <p>Target area IV: Access to sanitation</p> <p><u>Target 4.2:</u> To provide by 2015 not less than 80 % of schools and at least 90 % of preschool institutions with improved sanitation facilities, including new buildings in Bishkek (not less than 70 %). By 2020 to provide at least 90 % of schools and 100 % of preschool institutions with these facilities.</p> <p><u>Responsible organisations:</u> Ministry of Economy, Ministry of Finance, Ministry of Education and Science, local authorities of Bishkek and Osh, local authorities of small towns</p>
<p>Republic of Moldova</p> <p><i>Party: targets adopted</i></p>	<p>Target area I: Quality of the drinking-water supplied</p> <p><u>Target 3:</u> Achieve compliance with all the existing chemical and microbiological drinking-water quality standards in schools</p> <p><u>Target dates:</u> 2015 - in about 95 % of all schools; 2020 - in about 100 % of all schools</p> <p><u>Responsible:</u> Local authorities, operators of water supply systems, Ministry of Environment</p> <p><u>Measures and activities 5:</u> Installation of water filtration systems in 300 schools (2011-2015)</p> <p><u>Responsible:</u> Local authorities, Ministry of Education, operators of the 'Apa-Canal' enterprises</p> <p>Target Area III: Access to drinking-water</p> <p><u>Target 2:</u> Increase the access of children in schools and pre-school institutions to improved water supply sources</p> <p><u>Target dates:</u> 2015 -- in 95 % of schools and pre-school institutions; 2020 - in 100 % of schools and pre-school institutions</p> <p><u>Responsible:</u> Local authorities, operators of water supply systems, Ministry of Education</p> <p>Target Area IV: Access to Sanitation</p> <p><u>Target 2:</u> Provide access of children in schools and pre-school institutions to improved sanitation systems</p> <p><u>Target dates:</u> 2015 - about 90 % of all schools and pre-school institutions; 2020 - about 100 % of all schools and pre-school institutions</p> <p><u>Responsible:</u> Local authorities, operators of the 'Apa-Canal' enterprises, Ministry of</p>

	<p>Education</p> <p><u>Measures and activities 2:</u> Implement projects to improve the sanitary conditions in schools and pre-school institutions and achieve 100 % access to improved sanitation systems (2012-2020)</p> <p><u>Responsible:</u> Local authorities, Ministry of Environment, operators of the 'Apa-Canal' enterprises</p>
<p>Tajikistan</p> <p><i>Not Party: draft target not adopted</i></p>	<p>Area III: Access to drinking-water</p> <p><u>Target:</u> To develop a program for rehabilitation of the water supply and sanitation in secondary schools, child care institutions and medical centers by 2015</p> <p><u>Indicators:</u> The program of reconstruction of water supply and sanitation systems in secondary schools, child care institutions and medical centers</p> <p><u>Responsible:</u> SUE HCS, Ministry of Education, Hukumats of cities and regions</p> <p>Area IV: Access to sanitation</p> <p><u>Target:</u> To provide with at least 80 % of schools and at least 90 % of pre-schools with improved sanitation facilities by 2020</p> <p><u>Indicator:</u> To provide by 2020 schools and pre-school institutions with improved sanitation facilities</p> <p><u>Responsible:</u> Hukumats of cities and regions</p>
<p>Ukraine</p> <p><i>Party: targets adopted</i></p>	<p>Target area I: Quality of the drinking-water supplied</p> <p><u>Target:</u> Ensuring children in preschool and secondary schools with quality drinking-water</p> <p><u>Indicator:</u> Percentage of preschool and secondary schools with access to safe drinking-water</p> <p><u>Target dates:</u> Intermediate: 2015 - in cities and towns 15 %, in villages 10 %; final: 2020 - in cities and towns 25 %, in villages 20 %</p> <p><u>Responsible:</u> Local authorities, State Sanitary and Epidemiological Service, Ministry of Education, Youth and Sports, Ministry of Regional Development, Construction and Housing and Communal Services</p> <p>Target area IV: Access to sanitation</p> <p><u>Target:</u> Providing improved sanitation children in preschool and secondary education (improved sanitation and connection of pre-school and secondary schools to sanitation systems):</p> <p><u>Indicator:</u> Number of preschool and secondary schools in canalized dug and connected to sewerage systems</p> <p><u>Target dates:</u> Intermediate: 2015- in cities and towns 15 %, in villages 5 %; Final: 2020 - in cities and towns 25 %, in villages 15 %</p> <p><u>Responsible:</u> In cities and towns: the local authorities, the State Sanitary and Epidemiological Service, Ministry of Education, Youth and Sports, Ministry of Regional Development, Construction and Housing and Communal Services; in villages: State Water Resources Agency</p>

Annex 3: Water Sanitation and Hygiene in Schools surveillance in countries within the area of responsibility of the WHO Regional Office for Europe

Representatives of the countries taking part in the meeting on advancing water, sanitation and hygiene in schools (Bonn – September 2014) for the WHO Region Europe compiled a small questionnaire about the measures formalized by their government to regulate, control and promote WASH in Schools, including the measures for coordinating all the related actions.

Summary

	Formal mechanism to coordinate the work of different institutions	Regulation for routine surveillance requirements	National surveys	Targeted programmes to improve WASH in schools
Albania	✓	✓ ¹	✓	✓
Armenia	X	✓	X	●
Azerbaijan	✓	✓	✓	✓
Bosnia and Herzegovina	✓	✓	✓	●*
Croatia	X	X	✓	✓
Czech Republic	✓	✓	X	✓
Estonia	✓	✓	✓	X ²
Georgia	X	✓ ³	✓	✓
Hungary	X	✓	✓	✓*
Kazakhstan	●	✓	-	✓
Kyrgyzstan	●	●	✓	✓
Latvia	✓	✓	✓	X
Lithuania	✓	✓	✓	✓
Montenegro	X	✓	X	X
Republic of Moldova	✓	✓	✓	✓
Russian Federation	✓	✓	✓	✓
Serbia	✓	✓	✓	✓
TFYR Macedonia	✓	✓	✓	✓
Turkmenistan	✓	✓	✓	✓
Ukraine	✓	✓	✓	✓

● Under approval by the authorities or still to be implemented

- no information retrieved

*the programs focus only on water consumption

¹ Only four schools were included

² Funding is available for single initiatives

² State Sanitary Supervision Centres mentioned in the Decree were abolished in 2007

Full version

	Formal mechanism to coordinate the work of different institutions	Regulation for routine surveillance requirements	National surveys	Targeted programmes to improve WASH in schools
Albania	National Legal framework sets obligations and responsibilities Central Inspectorate coordinates and harmonizes surveillance	-Twice a year -High coverage Requirement set by: Health Inspectorate; Education Inspectorate; National Food Authority	- At regional level: regular assessments conducted by the Public Health Authority Highlights: issues were identified related to hydro isolation, mould, toilet functioning, the ratio boys/toilet and girls/toilet, access to potable water	- National Strategy on Water Supply and Sewerage for 2013 – 2017, approved by Decision of the Council of Ministers No.643 (2011) Scope: to improve the water related legislation and Water-Sewage system Coverage - The Policy of School Health Services approved by the Order of the Minister No. 300 (2012) Scope: to promote health in schools
Armenia	Not present	<i>No info</i> Requirement set by: Law of the RA <i>On the organization of inspections</i>	Not present	- WASH-related targeted programme developed by the National Centre for Disease Control and Prevention under approval Scope: to investigate current WASH situation in schools
Azerbaijan	Cabinet of Ministries (MOH and Ministry Of Education)	<i>No info</i> Requirement set by: Decree No. 156 (2009); Law on sanitary and epidemiological well-being	Conducted by institutional and national organizations responsible for the safety and quality of drinking-water: AZERSU, MOH, Ministry of Environment and Natural Resources	Strategic Plan of the Ministry of Health of Azerbaijan for 2014-2020
Bosnia And Herzegovina	Regulation done by jurisdiction institution in the field of hygiene, sanitation and drinking-water quality National legislation: -Regulation of drinking-water No. 40/03 -Law on Protection of Population from Communicable Diseases	-Four times a year -Regular sampling of water distribution Requirements set by: Institute of Public Health (annual plan for Sanitary-hygienic Annual)	- At the regional level: in 2010 conducted by the Ministry of Education and Culture and the Ministry of Health and Social Welfare in the Republic of Srpska for schools that were affected by the floods	-Nutrition-Friendly Schools Initiative (NFSI) in five preschools

Croatia	Not present	Not present	- At national level: 2012/13 Pilot Survey conducted by Croatian Institute of Public Health in cooperation with Institute of Public Health of Osijek-baranja County	- At national level: The National Educational Standards for Elementary school system (<i>Državni pedagoški standardi osnovnoškolskog sustava</i>) and The National Educational Standards for Elementary preschool system (<i>Državni pedagoški standardi predškolskog sustava</i>) approved by Decree No. 63/08 and No. 90/10
Czech Republic	National Decrees: Decree No. 410/2005; Decree No. 274/2003	Decree No. 137/1998; -Kindergartens once in 5 years -Elementary schools once in 2 year Unannounced inspections based on annual set of requirements Requirements set by: Decree 410/2005 and Decree 137/1998	Not present	- National Public Health Institute distributed materials promoting hand hygiene specifically for NGOs, low-threshold centres or special schools for kids from socially excluded groups
Estonia	The national Health Board supervises WASH in the country The Veterinary and Food Board controls the safety and hygiene of food in schools	Once every two years Requirements set by: governmental act No. 84	- At regional level: yearly assessments in school by the Health Board Highlights: in 2013 100 % of assessed schools were meeting the requirements. No water-related diseases were discovered. In 1,2 % of schools were discovered either dampness or mould	Not present ¹
Georgia	Not present	<i>No info</i> Requirement set by: Decree No. 308/n (2001) ²	- At national level: in 2013 conducted by Ministry of Education and Science of Georgia and UNICEF Highlights: there are inequalities in schools were found, since i) schools children in rural areas face disadvantages in terms of access to safe water supply and adequate sanitation and (ii) children with physical limitations do not have access to drinking-water, hand washing and sanitation facilities adapted to their needs; the major water source is unsafe in 4 % urban and 12 % rural schools; 70 % of schools have	- State program <i>The Rehabilitation of the Educational Institutions' Infrastructure</i> Scope: to improve the school building infrastructure (with secondary target WASH) - teachers' guide on hygiene and students' electronic text book have been distributed with support of UNICEF

			outside water facilities; every 10th schools have non-functional water source; average toilet/student ratio is 1/54; only 50 % of schools have separate toilets for teachers; only 50 % of schools have functional drainage system; in 45 % of rural, 12 % urban schools the solid waste is burned in schools yards	
Hungary	Not present	<ul style="list-style-type: none"> - All educational facility once every 5 years (one facility group per year) - complete hygiene and safety picture of the facilities Requirements set by: Chief Medical Officer	<ul style="list-style-type: none"> - At national level: regular assessments conducted by the National Institute for Environmental Health 	<ul style="list-style-type: none"> - Happy Week Scope: to favourite the water consumption in schools
Kazakhstan	The MOH deems it advisable to transfer school health professionals from the system of education to the health system. Authorities involved: state sanitary and epidemiological surveillance authorities; education authorities; water supply and sanitation organizations	<i>No info</i> Requirement set by: <i>Code On the health of the people and the health system; Law On state control and surveillance; Ordinance of the MOH No. 729; Decree No. 1684</i>	<i>No info</i>	<ul style="list-style-type: none"> - National Programme Ak Bulak for 2011-2020 approved by Decree No. 570 (2011) Scope: to ensure the supply of high-quality drinking-water and the access to sanitation facilities to the whole population by establishing proper interaction between the national and local government authorities, and other stakeholders
Kyrgyzstan	Sanitary Code of Practice (SanPiN 2.4.2-002.3) - revised version under approval in 2014	<ul style="list-style-type: none"> -regular planned basis -2204 schools of general education in the country (over 1MM students) Requirements set by: regional centres of disease prevention and state sanitary and epidemiological surveillance of the republic (CDPSES); the Sanitary code of practice (SanPiN 2.4.2-002-03)	<ul style="list-style-type: none"> - At national and regional level: in 2011 conducted by UNICEF 	<ul style="list-style-type: none"> -List of targets in the Millennium Sustainable Development Strategy of Kyrgyzstan approved by ordinance No. 128/357 (2013) of the Ministry of Agriculture and land reclamation and the Ministry of Health of Kyrgyzstan. Scope: to ensure access to drinking-water, access to sanitation, decreased scale of outbreaks and cases of water-related diseases <ul style="list-style-type: none"> - National Programme <i>Optimization of the school meals programme in the KR</i>, part of the UN World Food Programme's Development Project No.

			200176 in collaboration with the Ministry of Education and Science of the Kyrgyz Republic (technical support by the Social and Industrial Food Services Institute of the Russian Federation) Secondary scope: to improve the water and sanitation infrastructure in schools.	
Latvia	Regulation of the Cabinet of Ministers: <i>Hygiene requirements of universal primary education, secondary education and vocational training institutions</i>	- every year before the school year start for hygiene -audit monitoring for drinking-water Requirements set by: Health Inspectorate; Regulation of the Cabinet of Ministers; Regulation No. 235	- At national level: in 2013 conducted by the Health Inspectorate and supported by WHO Europe (4 schools in different regions) Highlights: some school children do not use sanitary facilities due to poor quality and hygiene; insufficient ventilation, moisture and signs of mould have been identified in each school and the maintenance of sanitations facilities is insufficient; drinking-water quality complies with the requirements; authorities do not consider the quality of building materials for renovations; For schools of big cities an issue is overcrowding, which enhance consequences of poor ventilation. Some schools have not adequate sport facilities with showers and sanitary facilities, thereof school children avoid sport exercises	Not present
Lithuania	Working Group formed by Ministry of Health and Ministry of Environment Responsibilities regulated by law	-every year -70 % of all schools and pre-schools Requirements set by: Regional Public Health Centre; Order of the Minister of Health No V-773 (2011) on Lithuanian Hygiene Norm HN 21:2011; Order of the Minister of Health No V-313 (22 April) on Lithuanian Hygiene Norm HN 75:2010	- At regional level: regular assessments by Regional Public Health Centres during routine school Highlights: not all schools ensure minimum sanitary conditions required by hygiene norms: 23 % of schools did not provide hot water in hand washing facilities, 10 % of schools did not provide adequate amount of toilet paper, soap and towels or other means to dry hands, in 5 % of schools privacy in toilet cabins	- Programme of Educational Institutions Modernization for 2013-2016 approved By Order No. V-410 (2013) of Minister of Education and Science Scope: to enable the modernization of at least 120 buildings (38 900 school children) of educational establishment, including water and sewage systems renovation.

			was not ensured	
Montenegro	Not present	- once a month Requirement set by: Law on Sanitary Inspection No. 14/2010; Law on Health Insurance	Not present	Not present
Republic of Moldova	National Extraordinary Commission for Public Health	<i>No info</i> Requirement set by: Law No. 10 (2009); Government Decree No. 384 (2010); <i>Regulations and sanitary and epidemiological standards of hygiene in elementary schools, gymnasia and lycees</i> approved by decision No. 21(2005) of the chief medical officer of the Republic of Moldova	- At national level: in 2010 conducted by MOH, Ministry of Education, National Public Health Centre and supported by UNICEF Highlights: pre-university do not provide universal access to drinking-water and adequate sanitation facilities, especially in the rural areas; measures to ensure safety and compliance of water for human consumption are inadequate as 61 % of students are exposed to a moderate or high risk from water contamination and excessive use of nitrates, boron and fluorine; quality of water in schools reflects the substandard conditions in the populated areas where these establishments are situated	State program approved by Ordinance No. 91/704 (2010) of the minister of environment and the minister of health <i>On approval of the List of targets and target dates relating to the implementation of the Protocol on Water and Health.</i> Scope: to ensure children access to improved water supply - in up to 95 % of schools and pre-school establishments by 2015 and in up to 100 % by 2020 - and access to improved sanitation facilities - in up to 90 % of establishments by 2015 and up to 100 % by 2020
Russian Federation	Various Sanitary Codes of Practice (SanPiN) and federal laws: No. 52-FZ <i>On sanitary and epidemiological well-being of the population</i> dated (1999; rev. 2014), No. 416-FZ <i>On water supply and sanitation</i> (2011; rev. 2014)	-once a year (before the school year start) and <i>ad hoc</i> inspections -186,379 children's and adolescents' establishments inspected in 2013 Requirement set by: Federal Law No. 294-FZ (2008); the RF Government Decree No. 944 (2009 -rev. 2011); Ordinance No. 764(2012) by the Rospotrebnadzor (Federal Service of Russia for Supervision of Consumer Rights Protection and Human Well-Being);	- At regional level: regular assessments by the territorial divisions of the Federal Service for Supervision of Consumer Rights Protection and Human Well-Being Highlights (2013): the situation is improving - the proportion of CAEs without a sewerage system is 5.73 %, those without piped water -5.66 %, without central heating -3.37 %. 10.2 % of samples of drinking-water did not comply with hygienic standards of chemical parameters and 3.8 % did not comply with microbiological standards.	- Several federal targeted programmes (FTP) aiming inter alia, at improving the WASH in schools, e.g. FTP "Clean Water" 2011-2017 FTP "Social Development of Rural Areas for the period up to 2013"; FTP "Sustainable Development of Rural Areas for the period 2014-2017 and up to 2020". - Regional targeted programmes (RTP) established being implemented within the framework of the FTP in nearly all the sub-national entities of the Russian Federation. - A number of executive decisions implemented in recent years to improve the conditions for the

	Federal Law No. 52-FZ (1999 - rev. 2014); Code of administrative offences of the Russian Federation No. 195-FZ (2001)	The percentage of surface wash off that does not meet the standards is 2.1%, including 1.45 % containing pathogenic microorganisms	upbringing and education of children and to prevent illness among secondary school students. E.g. Sverdlovsk oblast, Decrees on the implementation of the RTP "Developing the network of pre-school children's education establishments in the Sverdlovsk oblast for the period 2010-2014" and RTP "Developing education in the Sverdlovsk oblast" ("Our new school") for the period 2011-2015; Oryol oblast RTP "Construction of warm sanitation facilities in educational establishments of the Oryol oblast for the period 2012-2014".
Serbia	<p>Inter-ministerial working groups – current NWG for GLAAS (not on regular basis)</p> <p>-every year</p> <p>- Coverage varies from region to region and ranged from 20 % to 80 % (mostly 20 %)</p> <p>Requirements set by:</p> <p>Law no. 107/05, 72/09 on health care; Law no. 125/2004 on the protection of the population of infectious diseases; Law no. 125/2004 on Sanitary Surveillance; Regulation no. 29/2002 on the protection of population from communicable diseases with Programme on the protection of population from communicable diseases from 2002 to 2010; Regulation no. 28/2009 on the national programme of the health care for women, children and young</p>	<p>- At national and regional level: regular assessments conducted by the network of institutes of public health under the Ministry of Health</p> <p>Highlights (2013): 51.8 % of schools are connected to the public water supply systems in urban area. 48.1 % are connected to the small scale water supply systems, standpipes or have their own wells; 60.6 % dispose waste water to the septic tanks; 11.7 % do not have hand wash facilities; 55.8 % microbiological non-compliance due to faecal coliforms, 31.8 % chemical non-compliance due to nitrates, nitrites, iron and manganese, only 2 % of analyzed samples comply to residual chlorine [water quality data from a selected region]</p>	<p>- Regional pilot project led by the health sector (2013-2014): <i>Exposure assessment survey in schools using the standardized WHO methodology in Juznbacki Region</i></p> <p>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 survey through the implementation of the WHO methodology in one administrative district;</p> <p>- National Project <i>Delivery of Improved Local Services</i> led by the education sector in 2013</p> <p>Scope: to replace WASH facilities in schools. 161 inquiries (out of 692 submitted) from primary and secondary schools were approved; in 40 schools in five municipalities all WASH facilities were replaced and 8 septic tanks were remediated</p> <p>- National program adopted by the Serbian Government: <i>Regulation on Determining National Programme of Renewal of Public Facilities within Education Sector</i></p> <p>scope: rehabilitation and reconstruction facilities in pre-schools, primary and secondary schools</p>

				affected during the heavy floods in May 2014
TFYR Macedonia	<p>Coordinating body: National Institute of Public Health (NIPH)</p> <p>State Sanitary and Health Inspectorate (SSHI) in close cooperation with the Ministry of Education and Science</p> <p>Law on Public Health (OG 22/2010)</p> <p>Rulebook on standards and norms for the performance of activities of institutions for children (OG 28/2014)</p>	<p>-once a month and 15 days before the school year start</p> <p>Requirement set by: Annual National Program for Public Health; Sanitary Inspectorate</p>	<p>- At national level: in school year 2010/11 conducted by NIPH</p> <p>Highlights: school buildings are old and were thus not built in accordance to the current standards, most schools have access to safe drinking-water, satisfactory control of vectors and rodents, but access to sanitation is not satisfactory especially in rural areas; the level of hygiene awareness among the children is unsatisfactory</p>	<p>- Centres for Public Health sporadically conduct activities</p> <p>Scope: to raise awareness of the significance of personal and collective hygiene, prevention of contact, faecal-oral and respiratory diseases.</p> <p>- Laws for Policy on Hygiene education in schools (OG no. 44/1995, last addition 24/2013; OG no. 44/1995, last addition 24/2013;)</p> <p>-secondary school educational programs</p> <p>Scope: to provide education on life skills, on health profession, hygiene and health education</p> <p>- primary school educational programs <i>Green package</i> and <i>Green package junior</i></p> <p>Scope: to raise awareness for risks associated with consumption of unsafe drinking-water and food, and improper disposal of wastewater.</p>
Turkmenistan	<p>The legislation regulating WASH in schools in Turkmenistan describe also the mechanism to coordinate the work of various agencies and institutions sharing responsibility. It includes: the Water Code of Turkmenistan; the Law <i>On drinking-water</i>; the Law <i>On education</i> and the Law <i>On safeguards of the rights of the child</i>; various systems codes of practice(in total 60 documents) about state standards, sanitation and building</p>	<p><i>No info</i></p> <p>Requirement set by: Ministry of Education; State sanitary and epidemiological service of the MOH and medical industry; local governments and other bodies; many different laws and codes (more than 60)</p>	<p>- At regional level: in 2012 conducted by UNICEF</p>	<p>- National programme 'Provision of clean water to the population' and other programmes approved by Decrees of the President of Turkmenistan</p> <p>Scope: to build or renovate schools furnished with the state-of-the-art infrastructure systems and supplied with high-quality drinking-water and improved sanitation facilities</p> <p>- Healthy lifestyle programme</p> <p>Scope: to develop hygiene skills in children</p>
Ukraine	<p>Inter-agency working group (WIG) for implementation of the Protocol on Water and Health</p>	<p>-every year before the school year start</p> <p>Requirement set by: Decree No. 1405 (2011)</p>	<p>- At the national level: in 2013 conducted by the AECO MAMA-86 and the State Sanitary and Epidemiological Service, supported by the Ministry of Ecology</p> <p>- At the local level: In 2010, conducted by</p>	<p>- National Programme 'Drinking-water of Ukraine' for 2006-2020 approved by Ordinance No. 247 (2011)</p> <p>scope: to allocate funds to improve drinking-water supply and quality in pre-school</p>

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Highlights: the students are not satisfied with the sanitary conditions, consumables are missing in many cases (soap in 50 % of schools); 2.3 % of schools have no centralized or local sources of water supply that complies with the standards and 44 % of establishments are not connected to centralized or local sewer systems

establishments, schools and health facilities, primarily in rural areas

- Local and network WASH project, e.g. 'Safe water and sanitation for the children of Ukraine'

Scope: to promote hygiene and to improve children's access to safe water and sanitation by implementing technical solutions

¹ Funds are available for renovation and improvement initiatives by single schools

² State Sanitary Supervision Centres mentioned in the Decree were abolished in 2007

DRAFT

Annex 4: Standardized methodology for WASH in schools data collection

a) The surveys reported that were produced in collaboration with United Nations Children’s Fund - for Georgia, Kyrgyzstan and Serbia - were developed following defined standard methodologies for quantitative and qualitative data collection, formulated by UNICEF itself²². Specifically, the methodology of global evaluation and monitoring of water, sanitation and hygiene conditions was used, which includes three main tools with standardized form:

- Questionnaire for face to face interviews with School Principals/administrators
- Form for infrastructure and pupils’ hygiene behaviour observation
- Questionnaires for focus group discussions composed by the pupils and the teachers.

In Georgia, the survey indicators were then discussed with the experts of the national ministries involved (e.g. Ministry of Education; Ministry of Labor, Health and Social Affairs).

	Variations in the survey conducted in Kyrgyzstan	Variations in the survey conducted in Serbia
Questionnaire for face to face interviews with School Principals/administrators	Plus: members of national and local government, experts working in local and international NGOs and aid agencies and teachers	(No variation)
Form for infrastructure and pupils’ hygiene behaviour observation	(No variation)	(No variation)
Questionnaires for focus group discussions composed by the pupils and the teachers	Only students were involved, primarily secondary-school-aged girls, but also boys, and children from Grades 3 th and 4 th .	Students in grades from 6 th to 8 th were involved

b) According to the commitments done during the Parma Conference, the WHO supported assessment methodology is aimed at collecting the same information as the UNICEF methodology and therefore does not significantly differ²³. The agreed WHO methodology for assessing sanitary facilities and hygiene practices in schools includes the following tools: Questionnaire for the school director with core and optional questions;

- Inspection of sanitation facilities by survey technicians;
- Questionnaire for the schoolchildren about hand wash facilities.

Sanitation and hygienic practices is evaluated using the following indicators: functionality, adequate operation and maintenance, accessibility, safety, privacy, and acceptance/perception. Data should be analyzed stratified by school location (urban vs. rural area), gender and age category.

²² More information from UNICEF on WASH in schools monitoring can be retrieved from:

<http://www.sanitationmonitoringtoolkit.com/sanitation-monitoring-toolkit/monitoring-wash-in-schools>

²³ More information about the monitoring program agreed during the Ministerial Conference to track the commitment implementation can be retrieved from: <http://www.euro.who.int/en/countries/germany/news/news/2011/08/monitoring-the-implementation-of-parma-conference-commitments-organizational-and-methodological-issues.-bonn,-germany,-29-30-september-2011>