WASH in schools in Tajikistan

Current status and recommendations – an in-depth study of 30 schools by Eawag and Oxfam

June-August 2017, published in March 2018

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Acknowledgements

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Schweizerische Eidgenossenschaft
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About the importance of school sanitation

" Schools exist for no other reason than to meet the needs of children; specifically, to satisfy their right to learn. The basis for everything that is done in the school environment is the needs and rights of learners. Urination and defecation are among the most basic physical needs of a child. These acts should not, be avoided or needlessly delayed during the school day due to inadequate sanitation. Because of the private nature of these acts, a child is psychologically vulnerable when using the toilet. Keeping a child physically and psychologically safe while using the school toilets is therefore one of the most basic requirements for a learning environment and a core management responsibility. Toilets that are structurally unsafe, dirty, scary, not private, or allow learners to feel threatened violate children's rights and undermine learning. Because of the private nature of using the toilet, the issues that learners face there and violations of their rights that they experience can be "invisible" to management. "

Louton & Still, 2016, South Africa

Executive summary

Water, sanitation and hygiene (WASH) in schools is a challenge worldwide, and Tajikistan is no exception. Oxfam has been providing water supply to schools in Tajikistan for the last years and, since recently, has been building full WASH infrastructure. WASH in schools will remain an important work-in-progress for the coming years, and Oxfam, in partnership with the Swiss Federal Institute of Aquatic Science and Technology (Eawag) decided to lead an in-depth study of the situation in five regions of the country in order to be able to provide evidence-based recommendations for future programmes. The findings should also feed the policy dialogue with the institutional partners, in the framework of the TajWSS network, supported by the Swiss Development Cooperation (SDC), and support the monitoring of WASH in schools

The research objectives of the study are:

- To analyse the practices and results of WASH projects in schools implemented by national/provincial governments and international organisations in Tajikistan and to identify the best practice and challenges.
- To assess the applicability and effectiveness of various technical solutions to school sanitation.
- Assess the quality of water in a selection of schools and propose mitigating measures if needed.
- To assess the management models and mechanisms for operation and maintenance of the facilities, including:
  - Arrangements for fee collection and provision of materials (soap, toilet paper cleaning products, etc.)
  - Roles of students, teachers, school cleaning staff and parent associations
  - Arrangements for accessing emptying services (if applicable)
- To propose evidence-based recommendations for improving water, sanitation and hygiene in schools.

In each school 13 stakeholders were interviewed, by a team consisting of up to 8 interviewers: the school principal, 4 teachers, 4 students and 4 parents. Men and women were interviewed in equal proportions. An evaluation questionnaire was developed and adapted for these four types of stakeholders. The questionnaires were divided in five sections: (i) general information; (ii) water supply; (iii) sanitation; (iv) hygiene; (v) operation and maintenance. The questionnaire included the core questions and indicators proposed by WHO and UNICEF (2016) for the monitoring of WASH in schools in the perspective of the Sustainable Development Goals (SDGs). To complete the questionnaires, a transect walk was done in each school together with the school principal, during which the WASH infrastructure was assessed through a checklist as well as documented with pictures.

Water quality monitoring was done through sampling of the main water source (typically, the tap system outside the school). If other drinking water sources were present, for example if there were storage tanks within the school to provide water close to the classroom, those were sampled as well. The main objective of the sampling was to get a snapshot of the main water quality parameters at the main water sources in the schools as an indication of possible challenges. The water quality data are single point measurements, taken on single dates and do not account for expected variability in water quality of different sources. They should be considered as an indication of possible problems with the goal to further evaluate the situation or confirm that water quality corresponds to the national standards.

The study provided very concrete insights into the strengths and weaknesses of WASH infrastructure in the study area, which probably reflect the situation in the whole country, if not even in most of post-Soviet countries. Monitoring of SDG-related indicators show that if the

quality of the water supply network vary strongly from one place to the other, with large urban and peri-urban schools being in average better served, the quality of latrines and access to functioning handwashing facilities remains low overall. The two latter should be given much more focus. A major issue is that most schools have only one water point, outside of the school, and that the latrine blocks are far on the other side of the school premises, without connection to the water supply network. This results in no handwashing facilities and unsatisfactorily cleaned latrines. The shortcomings of WASH facilities in Tajikistan stem both from design and management issues. Part of the design issues result from the national standards (SNiPs), which, according to several stakeholders interviewed, should be updated. Not only do they lead to high costs and often dysfunctional infrastructure, but they also have an impact on the user friendliness of the infrastructure and equipment.

The research shows that in terms of design, the focus should be on optimising pits and ventilation, and not only on the superstructure. The new toilet blocks usually look good from outside, but, for many of them, it is only the superstructure that was renewed, and the main comfort problems remain: poor ventilation and bad odour, and lack of toilet appliances. Government agencies and NGOs should focus much more on the design of the underground structure (the pit), the ventilation, and all the details that make a toilet block clean, user-friendly and functional. This report provides a number of recommendations on this issue.

Water quality issue is a serious concern. This study shows that the water quality in many schools is bad or worrying. This sampling campaign was a snapshot and further water quality monitoring is needed to follow up and confirm the results. In schools where E.Coli have been detected, immediate measures should be taken to eliminate this risk. In particular, improved onsite storage and onsite disinfection should be considered.

Next to the water supply quality, a serious issue is the location of water points within the school premises. Especially, a functioning handwashing facility is missing in almost all toilet blocks. This should be addressed in priority wherever a new water supply system is built. For the other schools, refill of the handwashing facilities should be part of the maintenance protocol. Ideally, water points should also be available in other key locations of the school, such as the kitchen and at each floor. A concern that was expressed by the school management is the management of this extra wastewater. Simple onsite treatment solutions followed by infiltration or reuse in gardening do exist.

Finally, and as in many places around the world, the main issue of WASH in schools in Tajikistan is management. In most of the schools, there is no robust mechanism in place to ensure that the toilets are regularly cleaned, that the appropriate cleaning equipment is available, as well as key hygiene materials such as toilet paper, water for handwashing and soap. A clear maintenance protocol should be developed. Success will be achieved through fostering incentives and accountability. Feedback loops should be put in place to hold stakeholders accountable, and simply to engage stakeholders. This report provides respective recommendations.

Engagement of the concerned government agencies is crucial to lift the bottlenecks. In particular, the Ministry of Education should seriously put WASH on its agenda and lead a review process of the current practices. SSESS has a key role in fostering best practices of WASH in schools. The study showed that the headquarters of SSESS are not always aware of the alarming situation in some schools, and thus cannot take measures. SSESS should revise its monitoring procedure and base it on clear criteria. The use of recently developed online monitoring tool could be a great help for SESS in that regard. As for the Agency for Construction and Architecture has a key role in pushing for better designs and standards.

Access to appropriate drinking water and sanitation is a basic human right, and is important for the development of children. It is an integral part of the Sustainable Development Goals and should be seen as a crucial topic to focus on during the 2nd UN Water Decade which is spearheaded by the President of the Republic of Tajikistan. Poor WASH in schools is not a fatality. With a bit of good will and vision, significant improvements can be achieved quickly. WASH in schools should be at least as good as in restaurants. What restaurants achieve in Tajikistan should also be achieved by school management.

Acronyms

CFU	Colony-forming unit
COD	Chemical Oxygen Demand
EAWAG	Swiss Federal Institute of Aquatic Science & Technology
HLC	Healthy Lifestyle Centres
HLRC	Healthy Lifestyle Promotion Republican Centre
ISW	International Secretariat for Water
KMK	State Unitary Enterprise “Khojagii Manziliyu Kommunali”
MDG	Millennium Development Goals
MoE	Ministry of Education
MoEWR	Ministry of Energy and Water Resources
MoHSPP	Ministry of Health and Social Protection of the Population
O&M	Operation & Maintenance
PE	Population-Equivalent
SANDEC	Department for Sanitation, Water and Solid Waste for Development (Eawag)
SDC	Swiss Agency for Development and Cooperation
SDG	Sustainable Development Goals
SMC	School Management Committee
SNiP	Construction Codes and Regulations
SSESC	State Sanitary and Epidemiological Surveillance Centre
SSESS	State Sanitary and Epidemiological Surveillance Service
SWS	Safe Water System
TajWSS	Tajikistan Water Supply and Sanitation Network
UNICEF	United Nations Children’s Fund
VIP	Ventilated Improved Pit
WASH	Water Sanitation and Hygiene
WHO	World Health Organization
WinS	WASH in Schools
WWTP	Wastewater Treatment Plant

WASH in schools in Tajikistan

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1 Introduction

Water, sanitation and hygiene (WASH) in schools is a challenge worldwide, and Tajikistan is no exception. Oxfam has been providing water supply to schools in Tajikistan for the last years and, since recently, has been building full WASH infrastructure. WASH in schools will remain an important work-in-progress for the coming years, and Oxfam, in partnership with the Swiss Federal Institute of Aquatic Science and Technology (Eawag) decided to lead an in-depth study of the situation around the country in order to be able to provide evidence-based recommendations for future programmes. The findings should also feed the policy dialogue with the institutional partners, in the framework of the TAJWSS network, supported by the Swiss Development Cooperation (SDC).

The research objectives of the study are:

- To analyse the practices and results of WASH projects in schools implemented by national/provincial governments and international organisations in Tajikistan and to identify their advantages and constraints
- To assess the applicability and effectiveness of the various technical solutions to school sanitation
- Assess the quality of water in a selection of schools and propose mitigating measures if needed
- To assess the management models and mechanisms for operation and maintenance of the facilities, including:
  - Arrangements for fee collection and provision of materials (soap, toilet paper cleaning products, etc.)
  - Roles of students, teachers, school cleaning staff and parent associations
  - Arrangements for accessing emptying services (if applicable)
- To propose evidence-based recommendations for improving water, sanitation and hygiene in schools

This study was led onsite by Paul Koblan and Bilol Nushervon under the direct supervision of Gulchehra Boboeva and Abdulkosim Kayumov (Oxfam), and with the support of a team of up to 8 interviewers, including Kosim Kurbonov as national WASH consultant. Research guidance was provided from the distance, and through a field visit, by Philippe Reymond (Eawag-Sandec) and Maryna Peter (FHNW). The study was conducted between June and September 2017. An exploratory mission took place in October 2015.

2 Methodology

Thirty schools were selected by Oxfam team in the regions where Oxfam is active, and from the projects of the International Secretariat for Water (ISW). The schools were selected as to provide a representative sample of the situation. In each school, the school principal, four teachers, four students and four parents were interviewed, with a respect questionnaire addressing exhaustively the different aspects related to drinking water, sanitation and hygiene. Each interview was conducted in Tajik language (and exceptionally translated in Uzbek) by a pair of interviewer from the research team, in order to strengthen the quality of data collection. The interviews were completed by directed observation done during a walk through the school premises with the school principal.

In each school, the water sources were identified and grab water samples taken. Portable lab equipment allowed to measure part of the parameters onsite, and another part in the hotel in

the evening.Three scenarios were identified: (i) schools not connected to a drinking water supply system or connected to a non-functioning supply system; (ii) schools connected to a partially functioning water supply network or system; and (iii) schools connected to a reliably functioning water supply network or system. The data collected was then analysed with descriptive statistics for each scenario, and along with the SDG indicators.In parallel, literature review of positive and negative international experience with WASH in schools and in particular WASH infrastructure management was carried out, as well as a review of grey literature about past WASH in schools projects in Tajikistan. The review of international best practices as well as a short overview of the available information for the Tajikistan context is addressed in chapters 3-5. The results of the field assessment are summarized in chapters 6. Chapters 7-9 provide qualitative analysis of the results and recommendations. This chapter summarizes the information on the schools , the methods used during the field assessment and the limitations of the study.

2.1 Selection of schools

First of all, an inventory of the past WASH in schools initiatives in Tajikistan was carried out. The schools were then selected together with Oxfam team, with the aim to have a sample to be as representative as possible of the situation in the western part of the country.

30 schools were selected in 5 different regions (Rudaki (**1**), Muminabad (**2**), Penjikent (**3**), Ayni (**4**) and Sughd (**5**) – see Figure 1), thus 6 schools per district. In each district, the schools were selected in order to have a mix between urban, peri-urban and rural schools. The four first regions are the regions where Oxfam is active. The schools in Sughd region were visited in partnership with the International Secretariat for Water (ISW). Table 1 provides the list of the selected schools. The detailed number of boys, girls and teachers can be found in Appendix 3.

Figure 1: Regions where the study took place - Rudaki (1), Muminabad (2), Penjikent (3), Ayni (4) and Sughd (5) (source: adapted from ezilon.com)

Table 1: List of visited schools

District	School n°	Location	Jamoat	Domain	N° students	Partner(s)	Date of visit
RUDAKI							
	№67	Choryakoron village	Choryakoron	Urban	1658	Oxfam	15.06.2017
	№70	Gijdalobod village	Choryakoron	Urban	748	Oxfam	16.06.2017
	№69	Chavliboi village	Choryakoron	Peri-urban	579	UNICEF	19.06.2017
	№89	Tiloobod village	Lohur	Rural	347	Government	20.06.2017
	№43	Navobod village	Rohati	Rural	240	/	21.06.2017
	№3	Rudaki	Rudaki Centre	Peri-urban	2066	/	22.06.2017
MUMINABAD							
	№2	Muminabad Centre of district	Centre	Urban	1596	Oxfam	04.07.2017
	№48	Dehlolo village	N. Nazarov	Peri-urban	651	Oxfam	05.07.2017
	№43	Sangdarai Poyon village	Bogay	Rural	101	Caritas	06.07.2017
	№18	Dusti village	Bogay	Rural	601	ACTED	07.07.2017
	№41	Kuli Hayotbek village	S.H. Shohin	Rural	134	/	10.07.2017
	№38	Balkhobi village	Balkhobi	Rural	62	/	11.07.2017
AYNI							
	№50	Pinyon village	Fondaryo	Rural	131	Oxfam	14.07.2017
	№18	Shurmashk village	Fondaryo	Rural	135	Oxfam	17.07.2017
	№47	Pasrud village	Fondaryo	Rural	210	Government	18.07.2017
	№13	Vasheb village	Shamtuch	Peri-urban	426	German Agroaction	19.07.2017
	№58	Margeb Poyon village	Anzob	Rural	325	/	20.07.2017
	№1	Ayni Centre of district	Centre	Urban	708	/	21.07.2017
PENJIKENT							
	№40	Tagobi Khalk village	Voru	Rural	97	Oxfam	28.07.2017
	№93	Gijdarva village	Shing	Rural	292	/	31.07.2017
	№61	Mogiyon village	Mogiyon	Rural	936	Islamic Bank	01.08.2017
	№18	Artuch village	Rudaki	Peri-urban	482	Christian Aid	02.08.2017
	№71	Penjikent Centre of district	Penjikent	Urban	1270	/	03.08.2017
	№84	Kirq Archa village	Sarazm	Rural	321	/	04.08.2017
SUGHD							
Isfara	№55	Chilgazi village	Chilgazi	Rural	445	ISW	08.08.2017
	№66	Chilgazi village	Chilgazi	Rural	200	UNICEF	09.08.2017
	№34	Kulkent village	Chilgazi	Rural	630	UNICEF	10.08.2017
Konibodom	№31	Mahram village	Mahram	Rural	832	ISW / UNICEF	13.08.2017
Spitamen	№9	Safedteppa village	Safedteppa	Rural	1986	ISW / UNICEF	14.08.2017
	N°55	Bobojon Gafirov	Zerzamin	Rural	801	ISW	12.07.2017

2.2 Structured interviews and observation

In each school 13 stakeholders were interviewed:

- the school principal
- 4 teachers
- 4 students
- 4 parents

Men and women were interviewed in equal proportions. An evaluation questionnaire was developed and adapted for these four types of stakeholders (see Appendix). The questionnaires were divided in five sections: (i) general information; (ii) water supply; (iii) sanitation; (iv) hygiene; (v) operation and maintenance. The core questions corresponding to the indicators for monitoring of WASH in Schools in the Sustainable Development Goals (SDGs), as defined by WHO and UNICEF (2016), are included. This study can thus contribute to the monitoring of the SDGs in Tajikistan.

To complete the questionnaires, a transect walk was done in each school together with the school principal, during which the WASH infrastructure was assessed through a checklist as well as documented with pictures.

2.3 Drinking water quality evaluation

The main objective of the sampling was to get **a snapshot** of the main water quality parameters at the main water sources in the schools as an indication of possible challenges. The water quality data are **single point measurements**, taken on single dates and do not account for expected variability in water quality of different sources. They should be considered as an indication of possible problems with the goal to further evaluate the situation or confirm that water quality corresponds to the national standards.

The main water source of the school was sampled (typically, the tap system outside the school). If other drinking water sources were present, for example if there were storage tanks within the school to provide water close to the classroom, those were sampled as well. The following parameters were analysed:

- Onsite measurements: pH, temperature, conductivity, residual (free) chlorine
- Offsite analyses: E. Coli and total coliforms

The methods are detailed below and summarised in Table 2.

Direct Onsite Testing:

- **Visual assessment of the water quality:**

  Visual assessment has been done in order to evaluate presence of high concentrations of particulate matter as well as other aesthetic problems such as colour and odour.

- **Chlorine testing:**

  Free residual chlorine was measured in the systems where chlorination was established or potentially could have been used using DPD based method. This was done in order to evaluate if free residual chlorine concentration of 0.2-0.5 mg/L (WHO standard) is achieved at the school water sources.

- **pH, temperature and conductivity testing:**

  pH, temperature and conductivity were measured at the water point using a multimeter. pH was important to determine general condition of the water source, as well as possible

risk of corrosion of infrastructure. Conductivity was measured to estimate concentration of total dissolved solid (TDS) and the salinity of the analysed water.

Offsite analyses :

- **Faecal contamination testing:**

  Faecal contamination was tested by detecting *Escherichia coli* bacteria as an indicator microorganisms using the membrane filtration technique (MF) and applying Nissui Compact Dry Plates (by Hyserve) as well as portable lab equipment (see test protocol in Appendix 1). The presence of *E.coli* indicates the presence of contamination by faecal matter and thus, the possible presence of other pathogenic organisms. The two samples collected on site were stored and analysed within 24 hours. Since tests were done in the field conditions at the place of residence, quality assurance was done by using duplicates and blank measurements, as well as detection of *E.coli* in the sample volumes of 1 ml and 100 ml. Total coliforms were tested in parallel as another broader indicator of microbial contamination as well as microbial re-growth.

Table 2: Water quality parameters tested and related methods

Parameter	Objective	Method/Equipment
***Escherichia coli,* CFU/100 ml**	Microbial indicator *(CFU=Colony-forming unit)*	Membrane filtration based method using Hyserve Compact Dry Plates and incubation at 37 °C
Total Coliforms, CFU/100 ml	Microbial indicator	Membrane filtration based method using Hyserve Compact Dry Plates and incubation at 37 °C
Conductivity , µS/cm	Water salinity, total dissolved solids	Portable multitester
pH		Portable multitester
Free chlorine, mg/L	Presence of the residual disinfectant	Portable chlorine tester

The drinking water quality testing was conducted in 18 of the visited schools at the main water point of the school used by pupils for drinking. Only samples from protected water sources have been collected, including piped water supply, protected springs and yard pumps. Unprotected water sources, such as channels and rivers were not analysed and considered as unsafe and not corresponding to the standards.

In general, the goal should always be to comply with the National Guidelines on Water Quality which imply that there is no E. Coli present in the drinking water. Since in many systems this is not the case and the sources might fail to meet the requirements for water safety, we classify the results in four categories as follows:

- conformity to water quality standard/low risk: 0 CFU/100ml
- intermediate risk: 1-10 CFU/100ml
- high risk: 11-100 CFU/100 ml
- very high risk: >100 CFU/100 ml.

This classification has also been suggested by WHO, Drinking Water Quality Guidelines, Fourth Edition (WHO, 2011) in the concept of Water Safety Planning approach in order to be able to prioritize the problems, classify the results in terms of an overall grading for water safety and, as the final step, set realistic goals on progressive improvement. This grading scheme is particularly appropriate in this case, as usually no monitoring is done, and only point measurements are available.

Figure 2 illustrates an E. Coli analysis with dry plates.

Figure 2: Example of E. Coli tests

2.4 Limitations of this study

Although a lot of effort was put into this study by the different partners, there are a few limitations to the results of the field survey, which should be seen as an incentive to investigate more and validate the main findings with more samples and in different times of the year. The main limitations are the following:

- **Representativeness:** although we searched to encompass as much diversity as possible while working in five regions and rural, peri-urban as well as urban schools, the results are not fully representative of the situation at country level. Thus, the results and statistics only reflect our sample, and not the situation countrywide.
- **Period of the study:** the study was conducted mainly during school holidays so the encountered situations were not fully representative of the daily routine during the courses period. Although the main stakeholders could be met, including the students, this implies a bias in the observations. To verify the obtained data, another round of interviews should be conducted during the course period.
- **Extend the interviewed stakeholders:** both the school deputy on logistics and the cleaning staff have been identified as crucial in the O&M process for WASH in schools. However, they were not specifically interviewed during this study. More insight would be gained by interviewing these stakeholders as well.
- **Financial data:** Insufficient information was gathered to achieve proper conclusions concerning both water tariffs for the schools and finance/budgetisation of WASH in schools. These information being crucial to evaluate and optimize the management scheme, the detailed budgets and source of financing for WinS should be investigated further.
- **Drinking water quality:** one grab sample was taken per water source during each visit; in most cases, this was limited to the main water source. The results give an indication of the water quality, but do not show the variability of quality in time. This means that if the analysis shows a bad quality, follow-up should be made in all case, and if it shows a good quality, we cannot conclude that the quality is good at all times. Due to holidays, water storage tanks used in different areas of the schools were mostly empty. The surface water sources were considered as not appropriate water source as they are not improved water sources and are likely to be contaminated, but no water quality analysis was done for these sources. .

3 International best practice

WASH in schools is a topic under the spotlight and there is a significant number of practitioners and international organisations working on the topic. However, there is barely academic literature on the specific topic of operation and maintenance(O&M) in schools, but rather reports and guidelines from practitioners. The main platform linking them in the working group 7 of the Sustainable Sanitation Alliance (SuSanA) community of practice[1]. SuSanA carried out a literature review in 2012 (Abraham et al., 2012), produced two books compiling case studies on the topic (Wendland et al., 2014; Panesar et al., 2015) and a new online compilation in 2016[2]. Eawag and Antenna (2014), produced Safe Water School Training Manual. More recently, the Sustainable Development Goals (SDGs) provided a new framework for implementation and monitoring (see Chapter 4).

The international experience shows that WASH in schools is a challenge everywhere, even in developed countries, and that there is not a "silver bullet" or single recipe for successful operation and maintenance (O&M of WASH facilities in schools. Instead, there is a need to identify which combinations of measures are sufficient for a high likelihood of sustained maintenance in order to improve effective management (Chatterley et al., 2013). Even though in prescriptive literature conditions that promote continued maintenance of school WASH services have been postulated (Mooijman et al., 2010; Abraham et al., 2012), there is a lack of evidence of their collective effects and the sufficiency of their aggregated presence to promote continued maintenance (Chatterley et al.,2013; 2014). Chatterley et al. (2013; 2104) identify two distinct pathways sufficient to support well-managed services that are applicable to both government and non-government schools:

(1) quality construction + financial community support + WASH champion

(2) quality construction + financial government support + maintenance plan + school management committee involvement

The available literature mainly brings up challenges from where conclusions regarding improvements can be drawn. Louton & Still (2016) listed the typical obstacles to effective management of toilets (Table 3). According to UNICEF WASH reports (2009a,b,c), different schools developed different ways in which responsibility for cleaning toilets was ensured. In India the report showed the value of having one individual who takes a key leadership role with special commitment to sanitation and village development. In Nepal the children themselves ensure that facilities are cleaned. In Bhutan, school health coordinators are appointed – which are not teachers but people who have been trained in first aid, health and hygiene issues. However, the review demonstrates that such 'schemes' cannot be looked at in isolation but must be analysed in context since their successful implementation depends on a variety of factors.

The following sections review the factors that are necessary for a sustainable O&M of WASH at schools. Across the literature reviewed, the mentioned constraining and enabling environment domains are quite similar across all WASH services. Generally, the challenges relate to the structural (socio-economic frame conditions) as well as the individual sphere (hygiene behaviour). They involve both 'software' also 'hardware' aspects (i.e. the technical dimension). These different dimensions are deeply interlinked, but they are treated separately in the following in order to gain a structured overview.

[1] SuSanA Working Group 7: http://www.susana.org/en/working-groups/community-rural-and-schools *(last accessed on 29.10.2017)*

[2] SuSanA literature compilation: http://forum.susana.org/forum/categories/27-schools-sanitation-and-hygiene-in-schools/17134-key-documents-for-the-sub-category-on-schools-sanitation-and-hygiene-in-schools?limit=1000#19716 *(last accessed on 29.10.2017)*

Table 3: Typical obstacles to effective management of toilets in South Africa (Louton & Still, 2016)

	OBSTACLES TO EFFECTIVE MANAGEMENT OF TOILETS
Values	Staff[1] **lack the key values** of service, i.e. placing the needs of learners first. They see the unpleasant smells, sights and problems associated with failed sanitation as below them and place their status and comfort above the health and safety of learners.
Knowledge	Schools: A **lack of understanding** of the importance of sanitation in ensuring learners' wellbeing and its role in learning, they are also unaware of learners' rights and their own obligations and lack an understanding of principles of structural safety and of disease transmission. Department: A **lack of training** for school managers.
Vision	Schools and department[2]: Vision results from core values engaging knowledge to produce a desire for a better reality and the positive energy to work for that. Staff who lack the values of service and meeting learners' needs and do not have a clear understanding of learners' rights, their responsibilities and a minimum standard for sanitation may **lack vision** to change the situation.
Capacity	Schools: A **lack of capacity** to assess sanitation needs, develop a successful management plan, create implementation tools, and carry it out consistently. Department: A **lack of support** in terms of providing clear standards and tools.
Follow through	Schools: A **lack of concern** for the plight of learners and a **lack vision** for sanitation. Department: A **lack of accountability,** in terms of monitoring and enforcement.
Resources	Schools: A **lack of resources** to pay for maintenance, cleaning and hygiene materials. Department: A **lack of responsiveness** to maintenance needs and funding challenges.

[1] *"staff" here means the school employees;* [2] *"department" stands for "department of education"*

3.1 Roles and responsibilities of the different stakeholders

It is stressed by various authors, that – regardless of private sector engagement – at the heart of an effective and sustainable O&M lie two essential conditions: ownership and accountability (Tiberghien et al., 2015a; Mooijman et al., 2010; Saboori et al., 2011). To this end, participative stakeholder approaches are deemed to be of utmost importance, because by including the very people affected it is expected that the required sense of responsibility and accountability is induced. There is however no consensus on the division of competences, for example between the authorities, the local community or parent association, the pupils and the school leadership.

3.1.1 Participation of local authorities and communities

In the best case, participation of local authorities and communities happens already in the planning process. Mooijman et al. (2010) emphasise that choices are best made by men and women together, whereas the more community member participate in planning decisions the better the performance of these services. Chatterley et al. (2013) stress that local involvement is a necessary condition for sustainable O&M: schools reported to feel more involved when they felt respected by the contractor and others, in contrast, described frustration when there was no local consultation during implementation or when their input was ignored. Saboori et al. (2011) suggested that when the community has a stake in the continuous functioning of the safe water system (SWS) in schools, the pressure to sustain these SWS components may encourage the head teacher and staff to ensure that they actually work.

UNICEF (2013) advises that government responsibility lies less in funding hardware and more in creating a supportive policy framework, which is of utmost importance to create an enabling environment. Additionally, there is a need to foster programme design and institutionalisation of daily hygiene activities, which involves standards setting, monitoring, certification and training for teachers in hygiene promotion. Certification offers opportunities to recognise achievement, create visibility for all stakeholders and provide incentives for further improvement. Chatterley et al. (2014) found that after a school was awarded 'best school in the sub-district', financial support from the community and influence from the school management committee (SMC) increased, which fostered sustainability.

3.1.2 School leadership and management

Regarding the influence of schools in the process, Jordanova et al. (2015) found that beside community support, school leadership and management is a crucial and enabling factor for success. Also Xuan et al. (2012) highlighted that even though pivotal, the management of individual schools were not in a position to influence the design, planning and construction of school latrines and most importantly, did not have budget allocated for maintenance and cleaning of the sanitation facilities. It was criticised that technicians are often placed in the position of choosing the hardware required at the school, whereas families of pupils, teachers and school management committees are frequently omitted from this process (ibid., 2014). Indeed, it is stressed by various authors that a feeling of (social) responsibility is one of the key conditions for sustainable O&M of school WASH facilities (Muellegger et al. 2010; Chatterley et al. 2013, 2014; UNICEF 2009a, 2013; Tiberghien et al., 2015a).

Findings from Tiberghien et al. (2015a) suggest that at the local level the conditions of ownership and accountability are best approached through engagement and support of headmasters in conjunction with parent-teacher-associations and the community. Active school management committees are said to have a positive influence too, yet only if they are specifically involved in school sanitation, regardless of meeting frequency or attendance (Chatterley, 2014; Monirul, 2014).

There is a consensus between different authors that responsibilities for O&M must be clearly defined and appropriate skills provided (Adams et al., 2009; Chatterley et al., 2013; Monirul, 2014; Tiberghien et al., 2015a). UNICEF (2009b) reported that uncertainty regarding who has responsibility for maintenance of facilities resulted in inoperability. This includes not only cleaning, but also the responsibility to replace necessary equipment for cleaning as well as soap and towels for handwashing purposes. It is emphasised by different authors that having an O&M plan is crucial (Zomerplaag and Mooijman, 2005; Adams et al., 2009; Chatterley, 2013; Chatterley et al., 2014; Monirul, 2014).

A question to be solved is if the school should employ paid cleaning staff as emphasised by Abraham et al. (2012). Experiences from Bangladesh (Tiberghien, 2016a) show that while most secondary schools employ cleaners, primary schools rely on arrangements involving either student brigades, students or a hired cleaner or janitor, whereas such arrangements generally fail to provide regular and effective cleaning. Mathew et al. (2009) found in a comparison of 300 schools no evidence that the presence of a paid janitor was associated with cleaner toilets or urinals.

Chatterley et al. (2013; 2014) found that the presence of a 'local WASH champion' has a significant influence on positive outcomes regarding O&M challenges, even though it did not guarantee continued maintenance in all cases (Tiberghien, 2016a).

3.1.3 Involvement of school children and teachers

Whereas Zomerplaag and Mooijman (2005) recommend that children of age of 8 and above are to be part of the OM schemes, Adams et al. (2009) gives caution because school children could be exposed to disease risk, an unfair burden could be placed on one particular group of children or – worst case scenario – O&M tasks are viewed as punishment, which will cause negativity (UNICEF, 2013). On the other hand, beside cost saving, the inclusion of school children could encourage them to use facilities cleanly and demonstrating important hygiene skills. This is also emphasised by Mathew et al. (2009) who insist that cleanliness depends on what children and teachers do, not primarily on janitors cleaning up. UNICEF (2009a, 2009b, 2009c) expresses concern that children could be asked to play a too great role in cleaning, whereas other examples of schools were able to create a situation in which children felt proud of the responsibility they had been given, which is also the experience of Monirul (2014).

Generally and most importantly, good practice was observed in schools where responsibilities were clearly defined and where teachers worked with children in maintaining the facilities (UNICEF, 2009a, 2009b, 2009c), which supports the idea of including school children and teachers in O&M. A significant cause of not maintaining and cleaning properly was that the cleanliness

issue was not taken into account as a part of regular activities by schools (UNICEF, 2009b). Therefore, Xuan et al. (2012) recommend that O&M and hygiene practices of school children should form an integrated component of annual school assessments and Adams et al. (2009) suggest that the subject should be included in the curriculum.

It is stressed by various authors that the issue should be treated in an integrative way and that WASH delivery services as well as WASH practices themselves need to be put in a wider context and must be part of education (Zomerplaag and Mooijman and, 2005; Nguyen-Viet et al., 2009; Abraham et al., 2012).

3.2 Financial challenges

It is widely acknowledged that adequate budgets for O&M are required in order to keep school facilities clean and in useable state. It is especially the case if any change of child WASH behaviour is to be expected, which forms a fundamental component of O&M (Adams et al., 2009; UNICEF 2009a; Lupu, 2010; Xuan et al., 2012; Wall Ive, 2013; Monirul, 2014; Jordanova et al., 2015).

In a study on 'pathways' to well- and poorly-maintained WASH facilities in schools, Chatterley et al. (2013, 2014) found that on-going financial support for O&M is a necessary condition for continued management of school sanitation. Lack of financial resources, while certainly not the only barrier, is one of the primary barriers to school purchase of a number of essential O&M materials such as soap, toilet paper or chlorine, and cleaning and repair equipment. Especially financial support from the community has proven to be effective (Chatterley, 2013), whereas despite high levels of government involvement, many schools struggled to continue proper maintenance (ibid.; Monirul, 2014).

Authors emphasize that budgeting O&M requires its consideration and inclusion in the planning process of the facilities themselves (cf. above). On the one hand, O&M includes preventive maintenance, i.e. activities that aim to prevent breakdowns and misuse as well as reactive maintenance in order to bring a system back into operation once breakdowns/misuse have taken place. To this end, it is important to include ordinary as well as extraordinary expenses in the O&M budget (Lupu 2010). The UNICEF (2009b) report from Bangladesh presents that a main reason for not maintaining the toilets properly was a lack of budget for cleaning purposes. Conversely, sometimes schools do have budgets but it is spent otherwise since it is not explicitly reserved for WASH related expenses or, in case it is spent on other purposes, for instance to hire extra teachers (Wall Ive, 2013).

Njuguna (2008) found that where teachers controlled the budget there tended to be better water supply in the toilets and more taps for children. This again hints to the positive influence of the 'twin requirement of ownership and accountability'. The UNICEF (2009b) report also found that in some schools where teachers and school management committee played an active role, proper maintenance of the school toilets was possible. This supports the findings from Chatterley et al. (2013; 2014) who suggest that a 'local WASH champion' is crucial for on-going maintenance, even if the budget is limited.

3.3 Technical Challenges

The right technical choice, the quality of construction, ease to do maintenance and the availability of spare parts are key aspects for the sustainability of WASH infrastructure in schools. The absence of one of these can demotivate adequate management due to frequent maintenance needs, or the impossibility to carry out proper O&M. Many toilet blocks fell into disrepair or were almost never used because of an issue related to design or the technical feasibility of O&M.

3.3.1 Planning and design

The success of O&M is partially anchored in the planning process of WASH facilities and the initial design considerations (Zomerplaag and Mooijman, 2005; Adams et al., 2009). However, this aspect is often neglected. First of all it is about choosing the right materials and technology, since well-designed facilities with adequate materials are for obvious reasons less fragile. Abraham et al. (2012) emphasize that a low-cost toilet can meet all the principle of sustainable sanitation, whereas special attention needs to be given to the superstructure.

Familiar technology is an enabling factor to well-maintained school sanitation (Chatterley et al., 2013). Regarding design choices, there is now a growing amount of studies and academic literature that advocate for the implementation of ecological sanitation (Ecosan) approaches. The fundamental idea of the concept relies on a resource-recovery approach, by closing the loop of local material flows and therefore saving limited resources such as water, nutrients and energy. However, the urine-diverting nature of Ecosan implies two holes (one for urine and one for the faeces), which is not familiar to the children. Misuse of such toilets can quickly threaten the O&M.

Regarding hardware design of the sanitary facilities for schools, Reed and Shaw (2008) developed guidelines which include among others guidance for the selection of the type of latrine according to the school context. Regarding the necessary amount of toilets in terms of a pupil-toilet ratio, contrary to the expectation, current literature finds no connections between the number of students per toilet and cleaner and maintenance (Chatterley et al., 2014; Njuguna et al., 2008; Mathew et al., 2009).

Xuan et al. (2012) mentioned the reluctance among school children to use the school latrines because of the bad smell. This problem can be tackled by using a ventilated improved pit (VIP) latrine. As Tilley et al. (2014) emphasise, well-designed VIPs can be completely smell free, and more pleasant to use than some other water-based technologies.

Whereas most technical design choices are often depending on the availability of financial resources as well as the predominant physical conditions and socio-economic circumstances, some design factors go beyond purely technical considerations (Mooijman et al., 2010). In general these comprise child-friendly, gender-sensitive and demand-based design of school WASH facilities (UNICEF 2009a; Abraham et al., 2012; Tiberghien 2016b). Wendland et al. (2015) mention a project from Tajikistan where the leading organisation involved, beside the community, the children in all steps of the project, i.e. also in the planning stage. Zomerplaag and Mooijman (2005) also emphasise that involving the principal users, the children, is essential during the designing and rehabilitation of WASH facilities. A reason for that is that children can be frightened in situation that adults consider to be safe. Additionally, they claim that kids generally are good designers and able to find solutions for problems that affect them (ibid.).

A major challenge often faced in school environment is vandalism, which leads to poorly-maintained facilities. Zomerplaag and Mooijman (2005) recommend tackling this problem by choosing well-considered locations through a participatory site selection. Chatterley et al. (2013) suggest more secure designs, including fencing around the bathrooms and washbasins, so that facilities are protected after hours but hand-washing can still be observed from outside the toilets during the school day (cf. also Tiberghien, 2015c).

3.3.2 Availability of spare parts

Beside the above mentioned importance to choose the right construction, Adams et al. (2009) emphasise that the design needs to be suitable to local capacities for maintenance and repair. In order to avoid having essential equipment that cannot be repaired when it breaks down, it may be necessary in some cases to choose a lower level of service (ibid.). Regarding availability, the lack of spare parts often is a major constraint (Tiberghien, 2016a; 2016b). Lack of spare parts can result for example from policies pursued by donors when the hardware has to be purchased from the donor countries, which additionally can cause affordability challenges (Brikke and Bredero, 2003; Tiberghien, 2016b).

Saboori et al. (2011) found in a study that even though access to affordable replacement parts is essential for on-going repairs, it is sometimes beyond the control of the school. Therefore, and in line with Adams et al. (2009), Saboori et al. (2011) recommend that hardware components must be selected with attention to ease cost of repair and replacement. In order to ensure that local vendors can provide necessary hardware components and schools know where to obtain supplies, implementing organisations establish a linkage between the manufactures and local vendors regarding the hardware needed (Monirul, 2014).

Njuguna et al. (2008) underline the need for an established supply chain. Additionally, Saboori et al. (2011) suggest that if design options are standardised across particular geographic regions, a demand and incentive for supply chain creation can be created which then, in a second step, may reduce costs, increase ease of use, facilitate systematic training, promote supply chain availability and facilitate systematic monitoring. Concerning standardisation, Brikke and Bredero (2003) list pros and cons of standardising technology. Monirul (2014) points out that construction monopolies, whereby government agencies or large contractors provide all water and sanitation facilities at schools, are found in many countries. Such arrangements are not always the most efficient or cost-effective and can encourage dishonesty (Tiberghien, 2016a). Therefore, Monirul (2014) emphasises the need to create a healthy competitive market for the construction of water and sanitation facilities at schools. Indeed, 'Social-Franchising' (Wall et al., 2011; Wall and Ive, 2013; Wall, 2014), 'Social-Entrepreneurship' (Hurschler, 2012) and 'Social Marketing' (Evans et al., 2014) are concepts that are more and more called for in the WASH sector. This is due to the fact that they create and strengthen a local network that fosters ownership, which in turn is claimed to enhance accountability.

3.4 Monitoring and evaluation

It is widely acknowledged that having a functional monitoring tool is crucial in order to guarantee sustainable O&M (Brikke Bredero, 2003; Mooijman and Zoomerplaag, 2005; IRC, 2007; Njuguna, 2008; Adams et al., 2009; Saboori et al.,2011; UNICEF, 2012; Chatterley et al., 2013; Tiberghien, 2015c; 2016b). Questions remain regarding the methodology. Adams et al. (2009) emphasise that monitoring systems should use a limited set of indicators that can be easily and regularly measured to identify problems and correct them in a timely way. In order to ensure that the overall objective can be met, Mooijman and Zoomerplaag (2008) state that a good operation and maintenance plan should: (i) be developed and agreed upon before the facilities are completed; (ii) define responsibilities and monitoring scheme; (iii) be non-discriminatory towards sex, age, caste, nationality, religion, ethnic group and social class; (iv) be linked to other school improvement efforts; (v) ensure an open and on-going dialogue between stakeholders (e.g. between users, caretaker and deputy of logistics).i) Monitoring and evaluation should go hand-in-hand with operation and maintenance, to ensure sustainability. Adams et al. (2009) as well as Chatterley et al. (2014) consider the presence of a maintenance plan as an enabling factor, as it can help to assign roles and responsibilities to the different WASH in school stakeholders. However, the existence of a plan does not guarantee that the schedule will be followed (ibid.).

At schools where one teacher, usually appointed by the field officer or head teacher, was responsible for sanitation monitoring of cleaning and repair needs was much more common. A conclusive monitoring tool that is able to properly evaluate must not only take the availability and condition of the facilities into consideration but also if they can be and/or are utilised by the pupils and if they are actually maintained. For instance, Monirul (2014), in his analysis at national level in rural Bangladesh in order to understand key barriers to effective O&M, found that whereas the availability coverage of improved sanitation facilities was rather high with 84%, he found out that 'effective coverage' is only 9% because, inter alia, the latrines are locked during school hours and are not available for students' use (Monirul, 2014).

4 SDG targets for WASH in schools

The SDGs, launched in 2015, are defined by the United Nations as a "universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity" (UNDP, 2015). They aim at continuing and finishing transformation started by the Millennium Development Goals (MDGs) launched in 2000 for the horizon 2030.

The SDGs consider WASH in schools in two sets of goals: (i) water and sanitation (SDGs 6.1 and 6.2) and (ii) education (SDG 4.a). The targets and indicators are provided in Figure 3. Adequate WASH services are set to improve educational opportunities and lower the risk for disease transmission among the student population.

Goals	Targets	Indicators
6: Ensure availability and sustainable management of water and sanitation for all	6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all	See 4.a.1 for WASH in schools indicators
	6.2: By 2030 achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	See 4.a.1 for WASH in schools indicators
4: Ensure inclusive & equitable quality education & promote lifelong learning opportunities for all	4.a: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all	4.a.1 Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the Water, Sanitation and Hygiene for All indicator definitions)[6]

Figure 3: SDG targets and indicators related to WASH in schools (source : WHO and UNICEF, 2016)

The WHO-UNICEF Joint Monitoring Programme (JMP) is in charge of setting the indicators and doing the monitoring of progress. The indicators and the associated monitoring can be followed in more details on their webpage[3]. Besides, they published a guide with the core questions and indicators for monitoring WASH in Schools (WHO and UNICEF, 2016).

The following indicators provided by WHO and UNICEF are used to assess the goals.

1. **Proportion of schools with basic drinking water**: Proportion of schools (including pre-primary, primary and secondary) with drinking water from an **improved** water source **available** at the school.

   improved: The main drinking water source is of an "improved" type. An "improved" drinking water source is one that, by the nature of its construction, adequately protects the source from outside contamination, particularly faecal matter (JMP definition). "Improved" water sources in a school setting include: piped, protected well/spring (including boreholes/tube wells, protected dug wells and protected springs), rainwater catchment, and packaged bottled water. "Unimproved" sources include: unprotected well/spring, tanker-trucks, and surface water (e.g. lake, river, stream, pond, canals, irrigation ditches) or any other source where water is not protected from the outside environment.

   available: There is water from the main drinking water source available at the school on the day of the survey or questionnaire.

[3] JMP webpage for WASH in schools: https://washdata.org/monitoring/schools

2. **Proportion of schools with single-sex basic sanitation**: Proportion of schools (including pre-primary, primary and secondary) with **improved** sanitation facilities at the school, which are **single-sex** and **usable**.

   improved: The sanitation facilities are of an "improved" type. An "improved" sanitation facility is one that hygienically separates human excreta from human contact (JMP definition). "Improved" facilities in a school setting include: flush/pour-flush toilets, pit latrines with slab, and composting toilets. "Unimproved" facilities include: pit latrines without slab, hanging latrines, and bucket latrines, or any other facility where human excreta is not separated from human contact.

   single-sex: There are separate toilet facilities dedicated to female use and male use at the school.

   usable: Toilets/latrines are accessible to students (doors are unlocked or a key is available at all times), functional (the toilet is not broken, the toilet hole is not blocked, and water is available for flush/pour flush toilets), and private (there are closable doors that lock from the inside and no large gaps in the structure) on the day of the survey or questionnaire.

3. **Proportion of schools with basic handwashing**: Proportion of schools (including pre-primary, primary and secondary) with **handwashing facilities**, which have **soap and water available**

   handwashing facilities: A handwashing facility is any device or infrastructure that enables students to wash their hands effectively using running water, such as a sink with tap, water tank with tap, bucket with tap, tippy tap, or other similar device. Note: a shared bucket used for dipping hands is not considered an effective hand-washing facility.

   soap and water: Both water and soap are available at the handwashing facilities for girls and boys on the day of the questionnaire or survey. Soapy water (a prepared solution of detergent suspended in water) can be considered as an alternative for soap, but not for water, as non-soapy water is needed for rinsing. Note: ash or mud may be available for hand cleansing but is not an acceptable alternative to soap for global monitoring.

These indicators, together with the service ladder presented in Figure 4, allow to estimate basic WinS according to the SDGs.

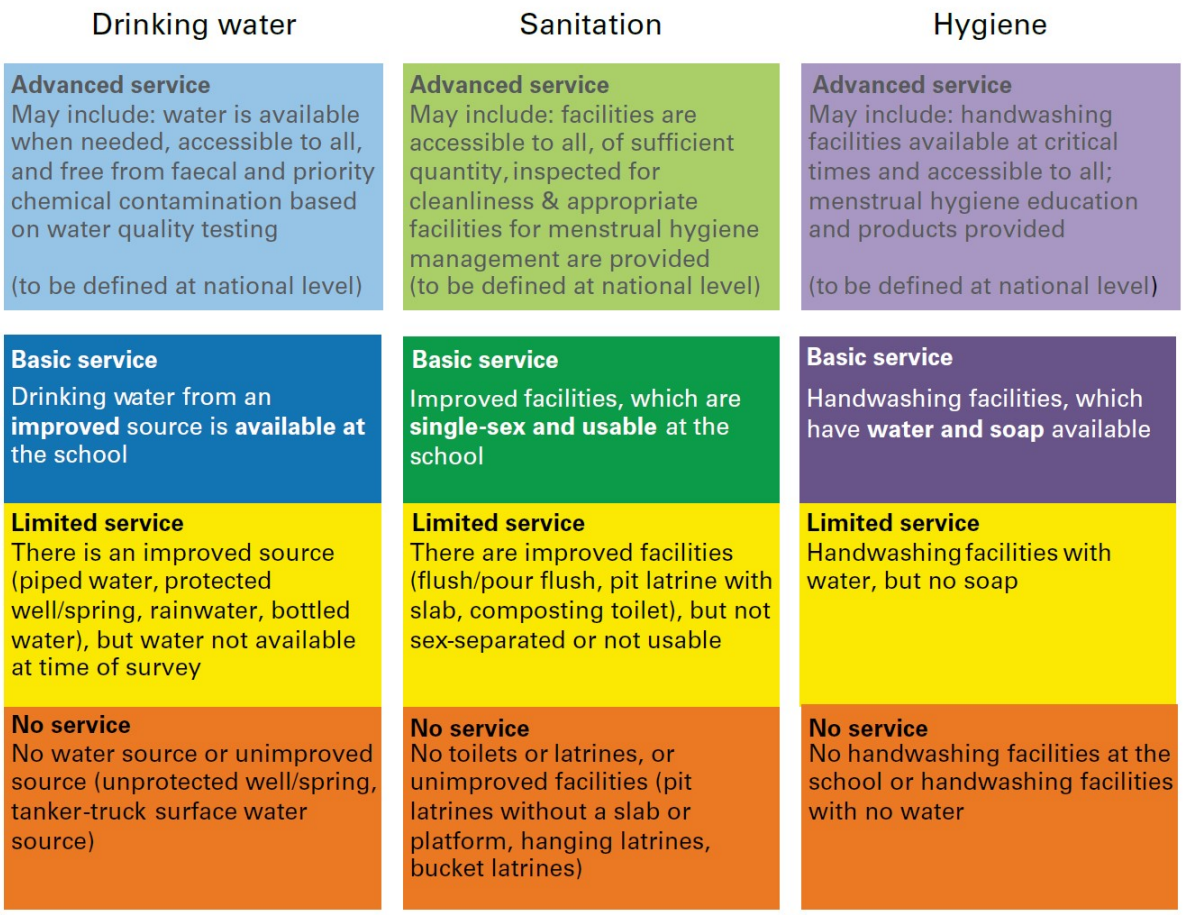


Figure 4: Emerging JMP service ladders for monitoring WinS in the SDGs (Source: WHO and UNICEF, 2016)

For more information: https://washdata.org/monitoring/schools

5 WASH in school in Tajikistan

5.1 Current situation and existing initiatives

According to World Bank (2017), it is increasingly recognized that WASH conditions pose a major development challenge and the Government of Tajikistan has taken concrete steps in this area in recent years. The government has adopted more than 15 programs, strategies, and plans of actions, and passed a series of legislation to address poor WASH conditions across the country. These efforts were accompanied with public and donor-funded investments focusing on the rehabilitation of urban water systems, and on the installation of latrines, boreholes, pumps, and small-scale water systems in rural areas and small towns. At the global policy level, Tajikistan is a member of the High-Level Panel on Water launched by the World Bank and the United Nations, and has announced its commitment to the Sustainable Development Goal (SDG-6) to "Ensure availability and sustainable management of water and sanitation for all." Tajikistan has also made significant attempts to improve access to WASH and address the various well-being impacts, such as on health and nutrition outcomes for children, through its National Development Strategy. The Government of Tajikistan is also spearheading the implementation of a 2nd UN Decade of Water, to be launched in Dushanbe in June 2018.

According to World Bank (2017), the majority of the population has access to flush toilets connected to a sewage system in urban areas. By 2016, this proportion had increased to 60%. In rural areas, the share of the population using unimproved sanitation facilities has declined, while improved sanitation has increased to 41% of the rural population. According to the same report, access to flush toilets connected to a sewer system in rural areas is however chronically low, at only 1.7%. Inequalities in access to improved sanitation are pronounced across regions, Dushanbe accounting for more than four-fifths of all sewer connections. In peri-urban and rural areas, the availability and affordability of the materials required for building improved latrines are constrained, reinforcing wealth-based inequalities. Because of the high cost of building and maintaining permanent sanitation facilities, pit latrines in rural areas are usually replaced with new pits dug in yards. Many latrines are located outside the house, making access difficult for certain household members, such as the elderly and people with disabilities. In urban areas, where sewage connections are more common, 5% of urban households still rely on shared sanitation facilities because of the poor condition of the sewer system and discontinuities in water supply. Many latrines also fail to meet basic hygiene standards because they are poorly constructed or have no running water supply. Household sanitation facilities, including those that are considered improved facilities, typically do not have protective lids or running water. In addition, only a few latrines are equipped with hygienic cleansing material or disinfectants, largely because these items are costly in local markets. Limited water supply also makes it difficult to practice hand washing regularly.

Even when households have access to water, there are significant challenges in the availability and continuity of water supplies (World Bank, 2017). According to World Bank's report, one in four households in Tajikistan does not have access to sufficient quantities of water when needed. Service is interrupted for long periods because of breakdowns in water supply infrastructure. Rural residents experience more instances of major service interruptions that last a week or more. Water outages increase in frequency and length during winter months, mainly because of frozen water sources, frozen pipes, or electricity outages. Only 15% of water connections nationally, and only 5% in rural areas, are metered. Thus, it is likely that households do not use water efficiently and underpay for the amount of water they consume. Given the unreliability of the main drinking water sources, many households rely on multiple sources throughout the year, particularly in rural areas. In winter, households compensate for service interruptions in piped water supply with other (nonpiped) improved water sources. In summer, households must turn to unimproved water sources in the face of heightened water scarcity and increased demand. Drinking water in Tajikistan contains high levels of coliform bacteria and has low palatability, but low E. coli rates suggest that fecal contamination is not a major concern. Because open and

unprotected water sources are more commonly used in rural areas, coliforms are more commonly detected in water sources used by rural households (58%) than by urban households (49%). Despite the high presence of bacteria, only a few incidences of E. coli presence are detected in drinking water. The chlorine concentration in drinking water is dangerously low and does not comply with national or global health guidelines. Chlorine remains unavailable in local markets. Thus, the population is overly dependent on boiling as their main water treatment method.

According to the World Bank's latest study (World Bank, 2017), schools rely on the same water sources as households, and thus face similar conditions in terms of access, availability, and quality of drinking water services. Most schools in Tajikistan have access to piped water sources in their yard, but a significant proportion rely on open drinking water sources that may pose a health risk for children. A greater proportion of schools in urban areas (74%) have access to water piped into the compound or yard as their main source of drinking water than schools in rural areas (50%). The chemical quality of the drinking water is lower in rural areas. Thus, rural students are more likely to consume water with higher concentrations of inorganic salts, organic matter, and traces of heavy metals. The average free and total chlorine concentrations are alarmingly low and may pose a significant health risk for children.

The practices of WASH in schools in Tajikistan are inherited from the Soviet Union and until today not much improvement has been made. Most standards and the Codes of Practice used are still similar to those used during the Soviet Union time. In the case of sanitation, the main features of latrine blocks did not change and are most of the time characterised as follows, according to our observations:

- latrine blocks at a certain distance of the school building (at least 30 m.)
- squatting toilets, with several holes, all leading to a very big holding tank under the latrine block structure
- poor ventilation or no ventilation
- often, no doors, especially for the young pupils
- often: no toilet paper, no water and no soap
- no handwashing facility close to latrines
- no toilet adapted for children with disabilities
- lack of facilities for menstrual hygiene management

Figure 5 illustrates few commonly found design and operation problems which have been observed in a number of schools. The design issues are discussed in more detail in Chapter 7.

The issues of WASH in schools in Tajikistan were well documented by Artyushevskaya (2014 a,b), as well as Wurzel (2007) and Keast (2010). Their main recommendations unanimously advocate for new national WASH in schools standards. Besides, they highlight the need to provide onsite treatment for drinking water in schools and pinpoint the insufficient or intermittent water supply as a major issue. Appendix 2 presents a few key excerpts from these reports.

Further available information and commonly heard opinions as well as our own observations let us summarize that in general, water supply and lack of budget are seen as the two main constraints for the implementation of water-based school sanitation facilities. In such conditions, the focus in most cases is to improve the current dry latrine system.

The school toilet block design encountered almost everywhere is a structure consisting of several drop holes connected to one big single holding tank. The content is sometimes emptied and disposed into the environment, or, when an emptying service is not available, the toilet block is abandoned when the tank is full and a new one is constructed. It is not an unusual sight in Tajikistan to see three generations of toilet blocks next to each other. However, differences are seen in the type of superstructure, the operation & maintenance, management schemes, but also in the culture and practices of people. However, good practices as well as initiatives to keep WASH facilities in good conditions do exist (see for example Figure 52 and Figure 46).

Figure 5: Typical design and maintenance issues encountered in school toilet blocks in Tajikistan

For example, in the mountain regions of the country, especially in Ayni and GBAO, part of the population is used to compost the excreta and use it in gardening or agriculture. Such practices have also been observed at school level (see Figure 6). Overall, it is important to notice that it is not the quality of the superstructure that necessarily makes the comfort of WASH facilities in schools, but the design of the pits and ventilation system, as well as the operation and maintenance. In that respect, toilet blocks made out of mud bricks are sometimes as brick-and-mortar ones.

The shortcomings of WASH in schools in the country have been recognised by the international partners of the Government of Tajikistan, who have been continuously implementing different initiatives. A non-exhaustive list of international organisations which work or have worked in the field includes Oxfam, UNICEF, who implemented 600 twin pits pour flush toilet blocks across the country, International Secretariat for Water (ISW), Aga Khan Foundation, Save the Children, ACTED, Caritas, Christian Aid, Islamic Development Bank, German Agroaction and others. One of the goals of this study is to further elaborate on the general situation, describe the heterogeneity of solutions and practices and assess the best practices which can be suitable for replication within the country.

Figure 6: School toilet block in the Fann mountains (Ayni), with reuse of composted excreta in gardening

5.2 Institutional framework

WASH in schools in Tajikistan is a complex issue. Institutionally speaking, several stakeholders are sharing responsibilities. However, lack of coordination and communication tends to create a disabling environment for the implementation of sustainable solutions in the field. According to the World Bank (2017), the complex institutional structure of the drinking water and sanitation sector—a reflection of Tajikistan's centralized yet fragmented governance structure—serves as a barrier to service improvements. The sector is characterized by a plethora of stakeholders operating at the national, regional, and district levels. The State Unitary Enterprise (SUE) Khojagii Manziliyu Kommunali (KMK) - the government agency for public utilities, including water supply - is the main actor with the largest range of assets, but it coordinates with at least seven other ministries and agencies. According to the same report, the lack of explicit boundaries between the regulatory functions of state authorities has resulted in widespread duplication of responsibilities and led to a pattern of inefficient resource management. The direct conflicts of interest that evolve from the dual nature of SUE KMK as a public governor and a for-profit entity deprive the sector of a robust accountability structure.

The institutional framework for WASH in schools can be divided in several layers following the country geographical structure (national level, regional level, district level, Jamoat level). Most government agencies are represented at all levels. Figure 7 maps the different stakeholders at the different levels.

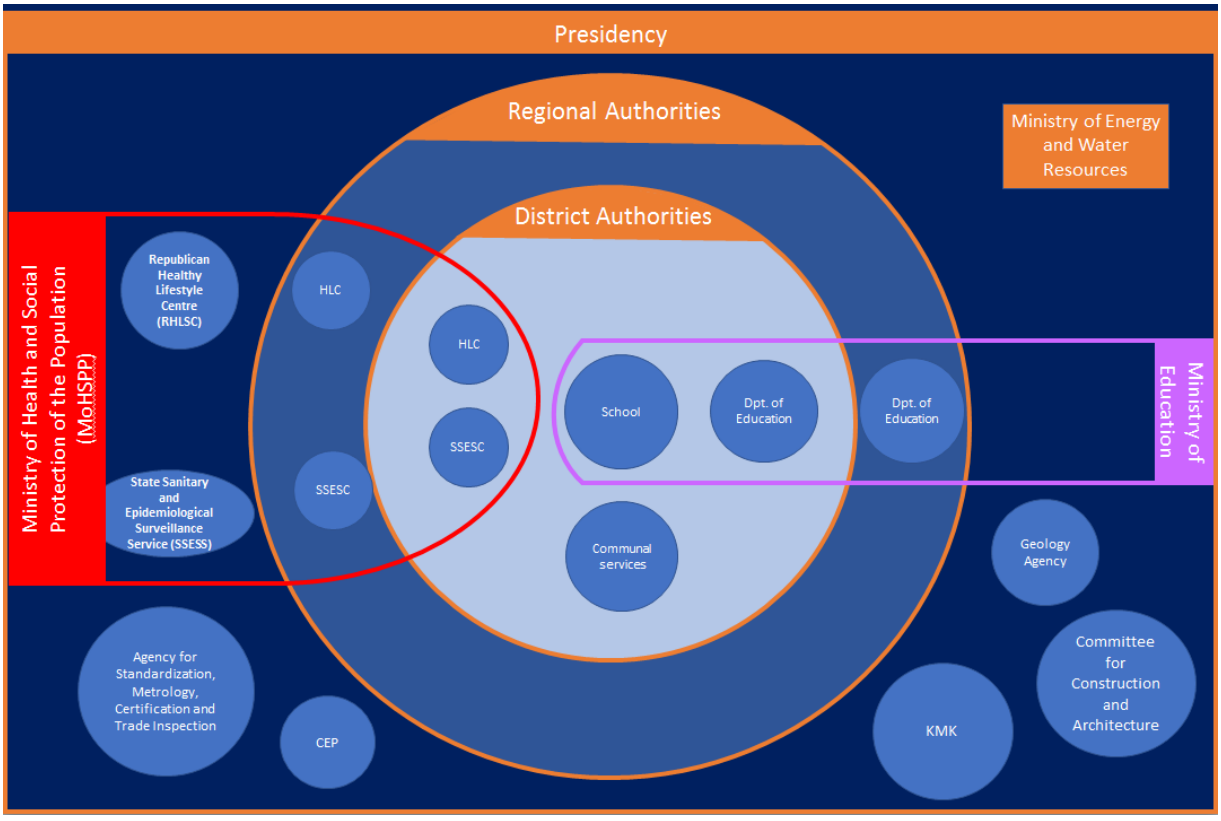


Figure 7: Key institutional stakeholders for WASH in schools in Tajikistan and their scope of action

The main stakeholders are described below:

- **Ministry of Health and Social Protection of the Population (MoHSPP) :**

  Manages healthcare, the health industry, the public health system and the social security of the country's population. WASH monitoring is delegated to the State Sanitary

Epidemiological Surveillance Service (SSES) and for the Healthy Lifestyle Promotion Centre (RHLC).

- **State Sanitary and Epidemiological Surveillance Service (SSESS) :**

  State agency/service under s MoHSPP, SSESS defines and controls implementation of the country's policy with regards to ensuring sanitary and epidemiological safety of the population. SSESS main objective is to monitor and coordinate the activities of organizations, private enterprises and public institutions in order to ensure that they comply with national sanitary standards and regulations. They have a key role for WASH in schools. The agency operates either directly or through geographically layered sub-units called State Sanitary and Epidemiological Surveillance Centres (SSESC) for each regions and districts. It conducts state control over protection of water sites, prevention from contamination and effectiveness of waste water treatment plants (WWTP) in coordination with the relevant public and private stakeholders. Each district SSESC has a school sanitation department in charge of controlling implementation and following the national sanitary and water supply laws and regulations within the district/city schools.

- **Republican Healthy Lifestyle Centre (RHLSC) :**

  State agency under MoHSPP, the RHLSC core activities consist in awareness raising and knowledge sharing among the population on hygiene and sanitation habits through educational campaigns. As for the SSESS, the RHLSC operates through geographically layered sub-units. Its organizational structure comprises a republican centre (RHLSC), and 4 regional , 14 city and 40 district Healthy Lifestyle Centres (HLSC).

  The republican centre is the leading body that coordinates the promotion of a healthy lifestyle at national level. It develops annual work plans and national promotion programs and ensure their implementation through the use of mass media and visual information materials. At the district level, and particularly for schools, the HLCs distribute the information material and organize workshops and special classes to advocate improvement of sanitary and hygiene condition in schools.

  The content of both the classes and workshops is determined at the district level by the local HLSC office that has to submit training materials to both the RHLSC and the local Education department for approval before being able to pursue. This approach tends to create different training materials from one district to the other. It has also been observed in some districts that the local HLC can use outdated documentation as a base for their activities.

- **Ministry of Education (MoE) :**

  Manages and organizes the education in the country. It is in charge of the education curriculum taught at schools, allocation of the regional and district budgets for the education department, local offices and it also controls any initiative of the governmental and non-governmental actors that are related to schools in Tajikistan. The district Education department offices are in charge of the above responsibilities in schools of their district. They work in partnership with local SSESC and HLC for monitoring of the WASH O&M in school and with the local authorities for seeking funds to improve the situation. However, funds are allocated by the local government, i.e. at khukumat level, proportionally to the number of students.

- **Ministry of Energy and Water Resources (MoEWR):**

  Established in November 2013, it took over water related tasks of the former Ministry of Land Reclamation and Water Resources. It is now especially in charge of the policy development, regulation and coordination of the water sector, including planning and

strategic guidance on rational water use, conservation, protection, and limits of allocation at the basin level.

- **State Unitary Enterprise "Khojagii Manziliyu Kommunali" (KMK):**

  Is in charge of providing water supply and sewerage services to cities, districts, villages, remote areas, controlling water flows quality and the specialized work related to water distribution and sanitary facilities (construction, installation, maintenance, sanitary engineering...).

- **Committee for Construction and Architecture:**

  Like KMK is a state agency which is in charge of state control on compliance with construction standards and regulations for placement, construction, design and O&M, incl. for water supply and sanitation.

- **Agency on Standardization, Metrology, Certification and Trade Inspection** ("TajikGosStandart")**:**

  Is in charge of establishing standards for drinking water and state control on compliance with established technical regulations and technical requirements to drinking water.

- **Geology Agency:**

  In charge of the implementation of the state policy on geological explorations of underground stocks of water. It is also in charge of the control on compliance with the laws in the field of use of underground water and its protection.

- **CEP (Committee for Environmental Protection):**

  Develops state standards and regulations for an ecologically safe treatment of wastes. It is also in charge of state surveillance on compliance with established regulations,norms of ecological safety and waste management.

- **Communal service:**

  Communal services constitute a department under local governance of cities and districts and is in charge of sewerage and solid waste management. They sometimes provide a renting service of emptying trucks for the schools sanitation facilities.

5.3 Legal and regulatory framework

The legal framework regulating both drinking water supply and sanitation is based on Constitution, legal acts, regulations and in some occasions on international legal acts recognized by the government. The following laws and regulations are relevant for WinS:

- According to the **Article 13 of the Constitution**, water is the exclusive property of the state that guarantees its effective use and protection for public health.
- The **Water Code of the Republic of Tajikistan** provides a legal basis defines basic principles of use and protection of water resources (including distribution networks as well as sewerage and waste water treatment facilities). A updated version should be validated by the government in 2018, which may include the WHO's approach of Water Safety Planning.
- The **Law on protection of population health** provides among others the provision on ecological and sanitary/epidemiological safety for the population by establishing a set of sanitary, anti-epidemic and hygiene actions to be enforced and controlled by a system of state surveillance.
- The **SNiP**, inherited from the Soviet system, is a set of construction norms, codes and regulations which provide among others a legal basis for the construction of water supply

systems and sanitation facilities (SNiPs 2.04.02-84 and 2.04.03-85 apply to the water and sanitation systems).

- The **GOST** *(gosudarstvennyy standart = State standards)* refers to a set of technical standards developed during and after the Soviet Union and administered by the Euro-Asian Council for Standardization Metrology and Certification (EASC). Some of them apply to sanitation facilities. There is no GOST for drinking water as it was replaced by Sanitary Norms and Rules (SanPin).
- **Sanitary Norms and Rules**: SanPin 2.1.4.004-07 «Drinking water and hygiene requirements on quality of the water in centralised supply system. Quality control»; there is also a specific SanPin regulating O&M of the WASH facilities.

GOST and SNiP are complementary and normally do not overrule each other. GOST sets technical requirements towards water quality and safety and SNiP provide guidelines for construction such as for land characteristics, level of underground water, size of rooms, foundations, walls, distance and placement of building from and toward pollution sources, etc.

In 2011, UNICEF supported MoE inthe development of national standards for WASH in schools (Artyushevskaya, 2014b). However, MoE did not show much involvement and did not approve it yet.

Many of the current laws and regulations are very conservative and do not foster the development of pragmatic solutions for small-scale sanitation or WASH in schools. More pragmatic standards should be developed. A supportive policy environment should also allow stakeholders at district and school level to establish effective governance and management arrangements in order to plan, fund, implement and coordinate improvements.

SNiPs and GOSTs:

SNiPs and GOSTs are very conservative, strictly enforced and considered as “gold standards”. This makes any change or innovations very difficult. As a consequence, it is a challenge to implement international best practice or state-of-the-art systems and technologies in Tajikistan.

Following the SNiPs and GOSTs often results in oversized designs and systems, with consecutive high capital and operational costs, which threaten the affordability and sustainability of the systems.

Furthermore, it seems that both implementers and regulating authorities are not always informed on the current status/version of the norms even if they should be the main concerned stakeholders. This often lead them to purely omit to include the exception provided by the norms (e.g. specific conditions for water provision in small settlements) in the decision-making process when designing or when assessing designs. That means, though the norms are rather strict, exceptions are allowed but not applied (Broglie, 2016).

In order to solve these problems, an accessible and well-disseminated legal monitoring system allowing to be fully aware of the different norms and their exceptions should be implemented for all the concerned entities. In a second stage, a revision of the standards for schools should be made together with experts aware of the different situations that can be encountered across the country, and aware of the international best practice.

Experiences in other post-Soviet countries have shown that reviewing these norms to the current context and improving the capacities of the controlling authorities, have resulted in a substantial increase of foreign investments in the sector (Broglie, 2016).

An upgrade with the international best practice and state of art technology is necessary; so technical standards have to be effective tools (and not only constraints) and have to be adapted in order to: (i) be more flexible (available for both urban and rural area); (ii) be pragmatic (and not dogmatic); (iii) be practice-oriented; (iv) to fit the on-site situation and take in account the practical experience; (v) follow the technical evolution. According to the internal rules in Tajikistan, GOSTs should be revised and updated every 5 years. SNiPs should also be updated at regular intervals. The committees in charge of revision should be incentivised to include innovation, through awareness-raising, exposition and capacity-building.

5.4 Institutional monitoring of WASH in schools

The State Sanitary and Epidemiological Surveillance Centres (SSESC) are in charge of controlling if the national sanitary and water supply laws and regulations are followed within the district schools, in collaboration with the district department offices of the Ministry of Education and the Healthy Life Centres. There is no specific legal document/act regulating frequency and procedures a of the inspection ofschools. Each school is categorized according to a three levels of risks (low medium high) ladder that determine the number of inspections that must be operated per year (in practice each school is visited once or twice in a year).

After inspection, an act of inspection is provided to the school, engaging its responsibility for fulfilling the recommendations of the inspector within a given period of time (varying according to the gravity of the situation). In the case which the deadline is not respected the SSESC has the right either to penalize the involved individuals (the school is not penalized directly but one or several of its staff responsible for O&M are fined directly on their salaries) or in emergency cases to temporarily close the school until the situation is improved.

If funds are needed to meet requirements according to the SSESC recommendations, the school principal has to submit a request either to the Education Department or to the local authorities to seek necessary budget tfor improving the situation. However, it must be noted that these kinds of request rarely succeed due to lack of budget in the Education Department and local authorities which also sometimes contest their responsibilities in the matter or due to an administrative dealing time of the school's demand for funds superior to the deadline imposed by the SSESC representatives.

SSESS suffers from a deficit of both expert and mid-level medical staff, especially in rural areas (it is quite common in rural areas to find only one professional and 1 or 2 mid-level medical staff in a SSESC). This lack of mid-level expertise staff is often a major obstacle for the local teams to fulfil correctly their missions and for the local organizations and population to trust onthe results provided by them.

6 Results of the field assessment

6.1 School typology

Multiple factors influence the quality of WASH in schools, as the international experience shows (see Chapter 3) and most common challenges found internationally are also observed to various extent in Tajikistan.

The results show that schools in all regions rely on the variety of water sources as shown in figure 8. These sources include piped water from a protected spring, piped water from a distribution network, groundwater pumped from a borehole or well on premises, and surface water either stored in storage tanks or delivered with a pipe from open water sources. With the exception of one school which did not have access to water at all, all other schools had access to water sources or water systems. However, 5 schools had access only to unprotected surface water sources, and thus were lacking improved functional water supply system.

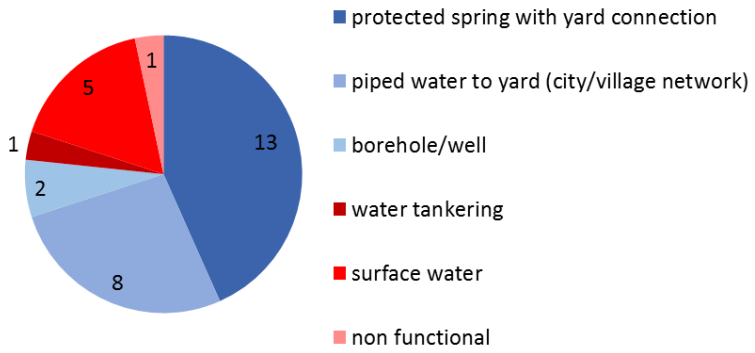


Figure 8: Water sources used by the schools as a main source of drinking water

In part of the schools with a functional water supply system, intermittent water supply was observed or reported, with water lacking on few days per week. Figure 9 shows the number of schools with continuous access to water, continuous access to insufficient volume of water, access on 5-6 days/week, 2-4 days/week and less than 2 days/week for different water sources. For protected spring water supplied to the yard connection, 8 out of 13 schools did not have sufficient volume of water or supply was intermittent. For network piped water supply systems, 2 out of 8 were intermittent.

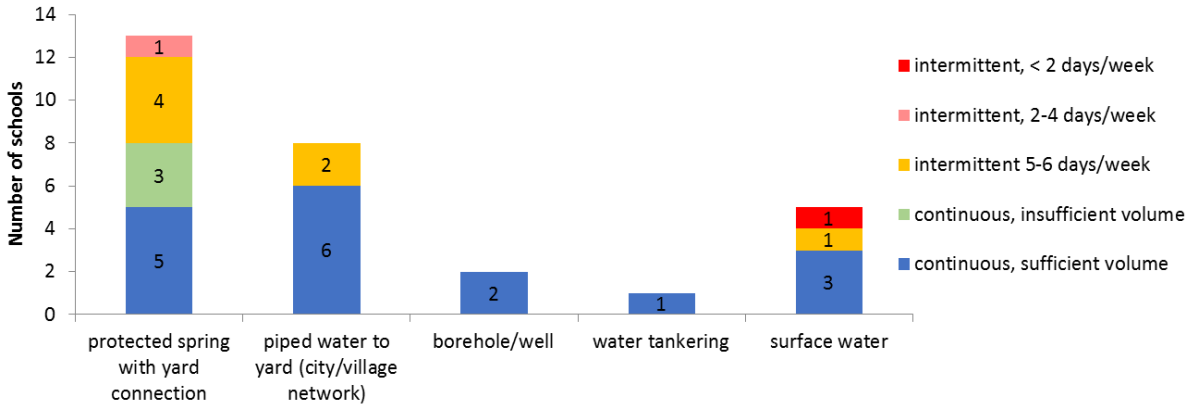


Figure 9: Continuity of water supply for different water sources

Availability of water at different critical points within the school varied a lot between different schools, as illustrated in Table 4. While some schools had multiple taps in the yard, kitchen, toilets, classrooms, 16 schools had less than 2 taps over the entire school territory, mostly in the yard. Nine schools used water dispensers for providing water in critical places. Majority of the schools with multiple taps were urban schools, with a notable exception of the school n°9 in Sughd. Only six schools had water available at the toilet facility.

Table 4: Number of water points within the school premises

Area	School Number	Number of taps						Number of dispensers
		total	yard	building	toilets	kitchen	other	
Rudaki	67	**26**	9		16	1		
	43	**0**						3
	70	**16**	8		8			
	89	**3**	1		2			1
	3	**1**						
Muminabad	41	**1**	1					1
	38	**1**	1					
	43	**0**						1
	18	**4**	1				3	
	2	**10**					10	
	48	**4**	1				2	1
Penjikent	93	**1**	1					2
	71	**7**					7	
	18	**3**	1		2			
	40	**0**						
	61	**14**	3	11				
	84	**0**						
Ayni	58	N.A.						
	13	**1**	1					
	50	**5**	1		4			1
	18	**3**	1	1		1		3
	47	N.A.						
	1	**13**	2	5		5	1	2
Sughd	55	**2**					2	
	9	**31**	31	25		4	2	
	55	**2**	1			1		
	31	**4**	3			1		
	34	**0**						
	66	**1**	1					

The field observation of the general situation in all schools revealed that the quality of the water supply is the foremost driver for the overall quality of WASH services. For this reason, we decided to create a typology of schools based on the quality of the water supply system, and to analyse the results and provide recommendations for each category.

Three scenarios were identified:

1. Schools not connected to a drinking water supply system or connected to a non-functioning supply system
2. Schools connected to a partially functioning water supply network or system
3. Schools connected to a reliably functioning water supply network or system

The three scenarios and respective results are discussed below. The methodology of the field survey and the water sampling and analysis is described in Chapter 5. In the end of this chapter, the overall results of the drinking water analysis and management arrangements are discussed.

6.2 Scenario 1 : no drinking water supply system or non-functioning system

This scenario was encountered 6 times out the 30 visited schools, all in rural schools, across five regions. In what follows, results of the field survey are structures is four sub-sections: (i) drinking water supply & quality; (ii) sanitation; (iii) handwashing and hygiene.

6.2.1 Drinking water supply

Table 5 provides information on each school falling under this scenario and synthesises the information regarding the drinking water source, the water treatment, the contamination risk as well as the responsibility regarding water provision. In 4 out of the 6 observed cases, the alternative drinking water source was directly or indirectly surface water. This kind of water represented high risk for the school population as the risk of presence of pathogenic microorganisms and possibly other contaminants if not treated properly is high.

Table 5: Drinking water situation in the schools not connected to a functioning drinking water supply system

School n°	District	Location	Drinking water source	Water treatment	Contamination risk	Responsible person for providing water
89	Rudaki	Rural	Tanker Truck providing water to a tank	Always, boiling	Not tested	Deputy on logistics
38	Muminabad	Rural	2 buckets of 10L filled with water from spring	Always, boiling	Tested High	Cleaning staff
40	Penjikent	Rural	Buckets filled with surface water from channel	Always, boiling	Assumed High	Students
84	Penjikent	Rural	Pipe connected to an open channel	Never treated	Assumed High	/
47	Ayni	Rural	Tank filled with surface water from river	Sometimes chlorin.	Assumed High	Cleaning staff
34	Sughd	Rural	Tank filled with surface water from channel	Always, boiling	Assumed high	No Answer

Since water was collected directly from surface water sources, it had to be stored within the school premises. The most common method was to store the water directly in drums, buckets or in tanks when available, prior to any treatment (see Figure 10 and Figure 11). The state of the tanks and drums was usually poor, leading to the assumption that untreated water stored in non-safe water containers was further subjected to contamination.

Boiling the water was the solution which we observed in four cases to address the poor water quality. While boiling in general is an appropriate method of improving water quality before use, this treatment option bears certain risks, and its efficiency reduces if not done properly. In general we observed that equipment used for boiling (tea kettles) was not appropriate for the required quantity, and the person responsible did not follow any particular protocol to ensure its quality. The person responsible was not necessarily aware that for the pathogens to be destroyed, water should be brought to a rolling boil for 1 min at altitudes inferior to 2000 m and for 3 minutes if the altitude is greater than 2000 m. We have observed that this was not always respected when the water was boiled in schools, since electric tea kettles switch off when water just starts boiling or can be even switched off before.

Figure 10: Example of deteriorated tank used to store water in school

Figure 11: Example of drum used to store water in school

In cases where surface water shows presence of particulate matter, or chemical products or waste, boiling might be less efficient than for clarified water, and does not address risks due to the presence of chemicals. The risk was especially high in water collected from channels crossing streets and neighbourhoods before reaching the school, which was the case in a few schools. In some cases, young students drinking water directly from the storage water tanks prior to boiling were observed.

The majority of school students however were aware of the poor drinking water quality. As shown in Figure 12, 62% of the interviewed school students in Scenario 1 declared not trusting the water provided by the school for drinking. However, despite this distrust, only 18% of the students reported to bring drinking water from home (Figure 13).

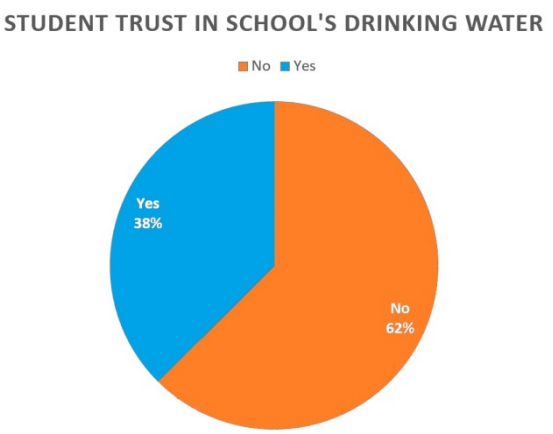


Figure 12 (left): Proportion of interviewed students trusting the water provided by the school for drinking

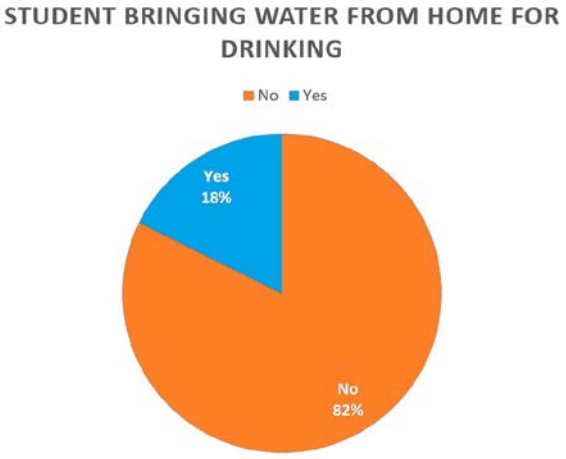


Figure 13 (right): Proportion of interviewed students bringing water from home for drinking

6.2.2 Sanitation

Table 6 synthesises the type of toilets and the pit accessibility for the six schools of scenario 1. In most of the cases the observed sanitation facilities were constituted of outdated pit latrines (the oldest observed was constructed in 1975) with no ventilation, no accessibility for physically disabled, no private hygiene disposition for girls and low quality standards (no doors, deteriorated superstructure), as illustrated in Figure 14. 4 of the 6 observed schools used dry soil as anal cleansing material while only 2 used toilet paper. One school had cistern flush toilets, but they were not in use because of lack of water. In consequence, student and teachers had to use the previous toilet facility (pit latrines).

Pit accessibility was observed to be an issue as well, as an emptying truck would not be able to reach the latrine block in 50% of the cases.

Table 6: Sanitation situation in the schools not connected to a drinking water supply system

School number	District	Location	Type of toilets	Pit accessibility for an emptying vehicle
89	Rudaki	Rural	Pit latrine, concreted slab	Yes
38	Muminabad	Rural	Pit latrine, concreted slab	No
40	Penjikent	Rural	Pit latrine, earth made slab	No
84	Penjikent	Rural	Pit latrine, earth made slab	No
47	Ayni	Rural	Cistern flush	Yes
34	Sughd	Rural	Cistern flush	Yes

The general poor quality of sanitation facilities had an impact on the students' behaviour. As illustrated in Figure 15, 36% of the interviewed students declared avoiding to use the toilets at schools because of their bad condition. Among those 36%, 62,5% were girls meaning that as it could be expected girls student tend to be more sensitive to the sanitation facilities condition

than boys. Although global poor state of the sanitation facilities is usually considered a non-negligible factor of girl absenteeism, especially during menstruation, all interviewed teachers disagreed on that statement.

Figure 14: Sanitation facilities in school n°89

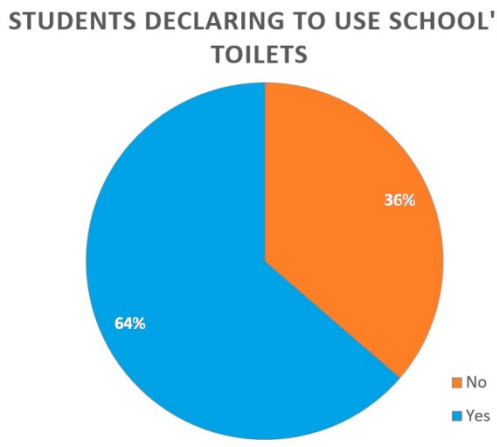


Figure 15: Proportion of interviewed student declaring to use the toilets in Scenario 1

Regarding the students per toilet ratio, we could see that except for school 84, where the toilet building for the students had been destroyed during spring by a mud slide, almost all of the observed schools were respecting or were close to respect the international UNICEF/WHO guideline standard of 50 boys/toilet compartment. For the girls however, the international standards of 25 girls/toilet were not respected in any school but the school 47. Concerning the teachers, the international standard recommending only 1 toilet unit for each gender was met. As for the national standards that recommend respectively 20 girls and 13 boys per toilet compartment, they were neither met both boys nor for girls.

6.2.3 Handwashing and hygiene

Except for school 34 which was using occasionally hand poured water from a bucket for handwashing and school 47, all the visited schools had handwashing facilities consisting most of the time in small water tanks like the one presented in Figure 16. Presence of water in the handwashing dispensers was observed in only one school out of the 6 and soap was missing for all of the visited schools.

Regarding handwashing at critical times, 47,6% of the interviewed students answered when asked that the other students usually don't wash their hands after using the toilets and 36,8% before eating.

Figure 16: Typical handwashing station in schools

6.2.4 SDGs conclusions

From the previous points it is possible to assess the average position of the schools falling under Scenario 1 on the SDG service ladder for WASH in Schools, described in Chapter 4 (WHO and UNICEF, 2016). As shown in Figure 17, almost all the evaluated indicators are negative. The absence of an improved water source and appropriately implemented water treatment leads to low quality service for drinking water and handwashing. The outdated and poorly maintained toilets units also tend to lower the grades for service on the sanitation side. Thus, the schools of the Scenario 1 can be classified as "no service" schools according to the SDGs service ladder.

		Evaluation according to SDG indicators					
	District	Rudaki	Muminabad	Penjikent	Penjikent	Ayni	Sugd
	School number	89	38	40	84	47	34
Water	Improved drinking water source	**No**	**No**	**No**	**No**	**No**	**No**
	Available drinking water source	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
	Drinking water available from an improved source	**No**	**No**	**No**	**No**	**No**	**No**
Sanitation	Improved toilets	**No**	**No**	**No**	**No**	**No**	**No**
	Improved toilets which are usable	**No**	**No**	**No**	**No**	**No**	**No**
	Improved toilets which are single sex	**No**	**No**	**No**	**No**	**No**	**yes**
	Improved toilets which are usable and single-sex	**No**	**No**	**No**	**No**	**No**	**No**
Hygiene	Handwashing facilities which have water available	**yes**	**No**	**No**	**No**	**No**	**No**
	Handwashing facilities which have water and soap available	**No**	**No**	**No**	**No**	**No**	**No**

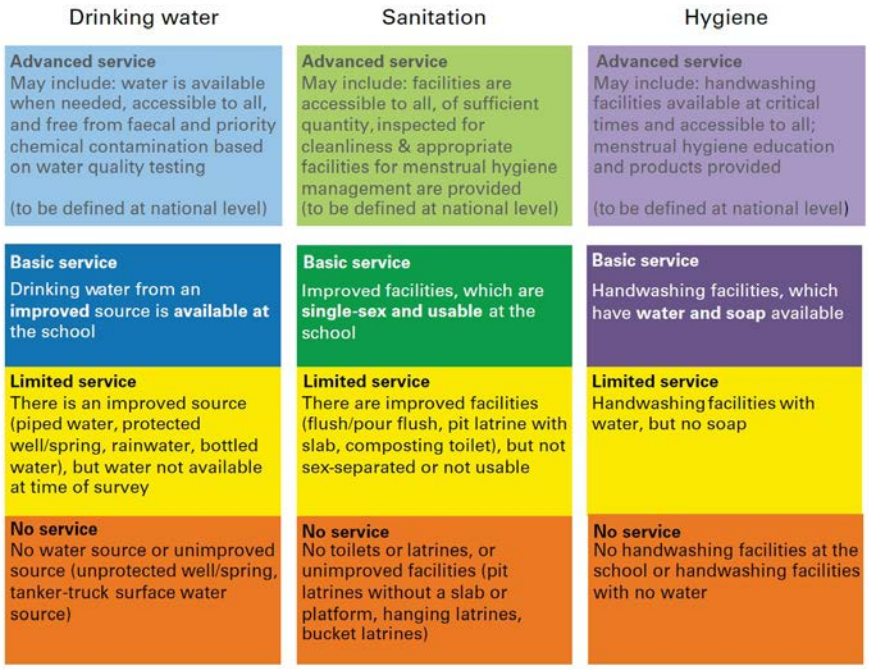


Figure 17: Summary of SDGs indicators for scenario I

6.3 Scenario 2: partially functioning water supply system

The schools of this scenario are connected to a drinking water supply system that works partially (intermittent water supply or insufficient pressure). Such situation has been encountered 8 times out of the 30 visited schools, in five different regions.

6.3.1 Drinking water supply

All schools of this scenario 2 are rural schools and are not connected to a water network. The major water sources as shown in Table 6 are protected springs delivering water to a yard connection. These small scale gravity supplies are able to provide water for the school only or just several households. Limited quantity of water, as well as poor O&M practices of the source are the main reasons of intermittent water supply or low pressure.

Water quality of these type of systems was measured in all cases where running water was available during the time of the visit. Generally, the risk of contamination was found to be low to intermediate (see Table 7) for all the schools tested except of one, where higher E. Coli counts were observed, corresponding to the high risk of the water quality classification proposed in section 2.3. It was not clear if contamination of water occurs already at the spring or during water transport by the pipeline from spring to the yard connection. Filtration, boiling and chlorination has been practiced in some schools to treat water, but in most cases not consistently.

All schools except one had access to an alternative water supply system (protected or not) or had storage containers available to cover the need of water during interruptions of the main system.

Table 7: Drinking water situation in the schools connected to partially functional drinking water supply system

School n°	District	Location	Drinking water source	Water treatment	Contamination risk	Alternative source
18	Ayni	Rural	Piped water to yard	Always, boiling	Not tested	2x10L buckets
18	Muminabad	Rural	Tank connected to a protected spring	Never	Tested Low	200L tank + protected spring, 400m from the school
48	Muminabad	Peri-Urban	Yard pipe connected to a protected spring	Never	Tested Low	Protected spring 2 km from the school
43	Muminabad	Rural	Underground reservoir connected to a protected spring	Sometimes, chlorination	Tested intermediate	No
61	Penjikent	Rural	Yard pipe connected to a protected spring	Sometimes, boiling	Not tested	800 L tank
3	Rudaki	Peri-Urban	Piped water to yard	Always, filtration	Tested High	3 Drums
69	Rudaki	Peri-Urban	Piped water to yard	Sometimes, boiling	Not tested	Water from another village
66	Sughd	Rural	Piped water to yard	Sometimes	Tested Intermediate	Channel

The student community perceived water as rather good, as 77% of the interviewed students reported trusting the water provided by at school for drinking (see Figure 18). However, 45% of the interviewed students also declared to bring water from home for drinking (see Figure 19). Interestingly, the number of students bringing water with them to school was higher than in case of Scenario 1 schools although trust in water services was higher. Our hypothesis is that interruption of the water supply services is the main reason for students to bring water to school more often than in case of Scenario 1. This could hint to a better awareness of the students enjoying a proper water supply service.

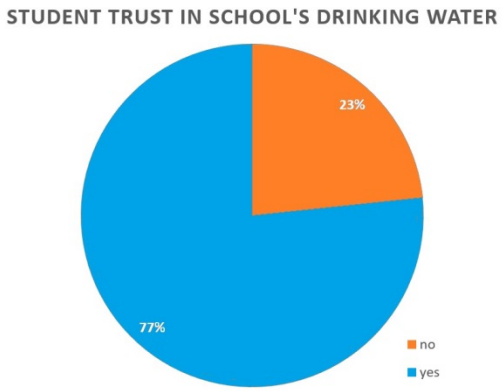


Figure 18 (left): Proportion of interviewed students trusting the water provided by the school for drinking in Scenario 2

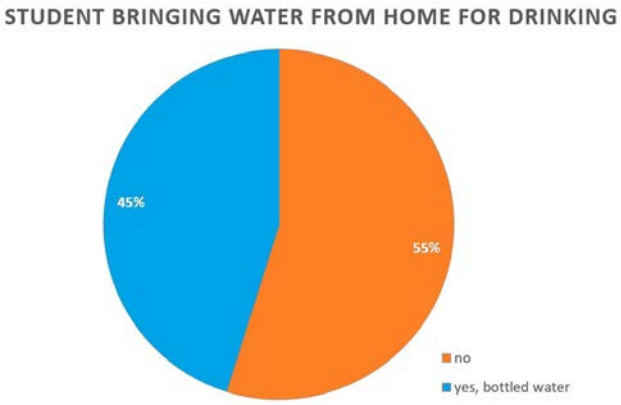


Figure 19 (right): Proportion of interviewed students declaring to bringing water from home for drinking in Scenario 2

6.3.2 Sanitation

Table 8 shows that the situation of sanitation is also better in Scenario 2 than in Scenario 1, as reflected by the presence of ventilation pipes in a majority of the visited toilets (VIP toilets). However we have observed a contrast in the quality of buildings. The sanitation facilities of better construction quality observed in this group were the ones which were built by Oxfam (improved toilets with 1 pit and 2 ventilation pipes) and one toilet block that was built by the Saudi Arabian Bank (improved toilets with 1 pit, 4 ventilation pipes and an access ramp for disabled students - see Figure 20). Pit accessibility was also better in the schools of Scenario 2.

Table 8: Sanitation situation in the schools connected to partially functional a drinking water supply system

School number	District	Location	Type of toilets	Pit accessibility for an emptying vehicle
18	Ayni	Rural	VIP toilets	Yes
18	Muminabad	Rural	VIP toilets	Yes
48	Muminabad	Peri-Urban	Pit Latrine with slab, VIP toilets in construction	Yes
43	Muminabad	Rural	Pit Latrine, concreted slab	Yes
61	Penjikent	Rural	VIP toilets	Yes
3	Rudaki	Peri-Urban	VIP toilets	Yes
69	Rudaki	Peri-Urban	Pour flush toilets	No
66	Sugd	Rural	Pit Latrine with slab	No

Figure 20: Sanitation facility built by the Saudi Arabian Bank (school 18, Penjikent)

In this scenario, 71% of the interviewed students often use the toilets at school while only 29%, among which 66,67% are girls, do not.

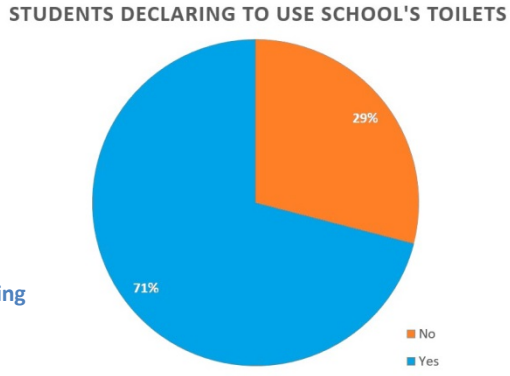


Figure 21: Proportion of interviewed students declaring to use the toilets at school in Scenario 2

Regarding the student per toilet ratio, we have observed that the international standards (50 boys/toilets) were respected for the boys' toilets only in half of the school while the national standards (13 boys/toilets) were not respected in any of the schools. As for the girls' toilets, neither the international standards nor the national ones were respected in any of the visited schools. We assume that the results here are inferior to the ones obtained in Scenario 1 schools because the school population tends to be greater in Scenario 2.

6.3.3 Handwashing and hygiene

All of the visited schools had handwashing facilities with running water from pipe or tank. However only one of the observed schools had some handwashing facilities inside the school building (school 61, 2 in yard and 11 in classrooms). During the visit, half of the schools did not have water or soap , 2 of them had only water, 1 of them had only soap and 1 had water and soap. This may be due to school holiday time, and should be followed up.

Concerning handwashing at critical times, 33% of the interviewed students answered that other students did not wash their hands after using the toilets and 28,6% of them answered that other students did not wash their hands before eating. This was a slight improvement compared to Scenario 1.

6.3.4 SDGs conclusions

The average position of the schools falling under Scenario 2 on the SDG service ladder for WASH in Schools, described in Chapter 4 is showed in the Figure 25.

AThe results for the SDGs indicators for scenario 2 are quite heterogeneous. In average, drinking water services can be considered as basic. Regarding sanitation, schools tend to be at the limit between limited and basic service while for hygiene a "no service" state is maintained.

		Evaluation according to SDG indicators			
	District	Penjikent	Rudaki	Rudaki	Sughd
	School number	61	3	69	66
Water	Improved drinking water source	**Yes**	**Yes**	**Yes**	**Yes**
	Available drinking water source	**Yes**	**Yes**	**Yes**	**Yes**
	Drinking water available from an improved source	**No**	**Yes**	**Yes**	**Yes**
Sanitation	Improved toilets	**Yes**	**Yes**	**Yes**	**Yes**
	Improved toilets which are usable	**Yes**	**Yes**	**Yes**	**No**
	Improved toilets which are single sex	**Yes**	**Yes**	**No**	**No**
	Improved toilets which are usable and single-sex	**Yes**	**Yes**	**No**	**No**
Hygiene	Handwashing facilities which have water available	**No**	**No**	**No**	**Yes**
	Handwashing facilities which have water and soap available	**No**	**No**	**No**	**No**

		Evaluation according to SDG indicators			
	District	Ayni	Muminabad	Muminabad	Muminabad
	School number	18	18	48	43
Water	Improved drinking water source	**Yes**	**Yes**	**Yes**	**Yes**
	Available drinking water source	**Yes**	**Yes**	**Yes**	**Yes**
	Drinking water available from an improved source	**No**	**Yes**	**Yes**	**Yes**
Sanitation	Improved toilets	**Yes**	**Yes**	**Yes**	**Yes**
	Improved toilets which are usable	**Yes**	**No**	**Yes**	**No**
	Improved toilets which are single sex	**Yes**	**No**	**Yes**	**No**
	Improved toilets which are usable and single-sex	**Yes**	**No**	**Yes**	**No**
Hygiene	Handwashing facilities which have water available	**No**	**Yes**	**No**	**Yes**
	Handwashing facilities which have water and soap available	**No**	**Yes**	**No**	**No**

Figure 22: Summary of SDG indicators for scenario 2

6.4 Scenario 3: reliably functioning water supply system

This scenario corresponded to the cases where the visited school were connected to a drinking water supply system that was fully operational. This situation was encountered in 16 of the 30 visited schools.

6.4.1 Drinking water supply

Table 9 shows that the quality of the drinking water in the schools falling under Scenario 3 is quite similar to the one observed for the second one. For the schools situated in more rural areas the strategy adopted for providing drinking water follows the one of Scenario 2 while in the more urban areas the schools were connected to village or city supply network. In that context the schools often choose not to treat at all the water before drinking it as they trust the village or city network for providing drinking water of good quality.

Concerning the contamination risks, it was found to be low for all the urban schools and low to intermediate for the others except for the school 43 in Rudaki where a very high concentration of E. Coli was observed implying a high risk of faecal contamination. This has to be followed up.

Table 9: Drinking water situation in the schools connected to an always functioning drinking water supply system

School number	District	Location	Drinking water source	Water treatment	Contamination risk
50	Ayni	Rural	Piped water to yard	Sometimes, boiling	Tested Intermediate
13	Ayni	Peri-Urban	Yard pipe connected to a protected spring	Never	Tested Intermediate
58	Ayni	Rural	Piped water to yard	Sometimes, boiling	Tested Low
41	Muminabad	Rural	Yard pipe connected to a protected spring	Never	Tested Low
93	Penjikent	Rural	Yard pipe connected to a protected spring	Never	Tested Intermediate
18	Penjikent	Peri-Urban	Yard pipe connected to a protected spring	Never	Tested High
71	Penjikent	Urban	City network	Never	Tested Low
67	Rudaki	Urban	City network	Sometimes, boiling	Not tested
43	Rudaki	Rural	Yard pipe connected to a protected spring	Never	Tested Very High
70	Rudaki	Urban	Village network	Never	Not tested
31	Sughd	Rural	Underground water	Sometimes	Not tested
55	Sughd	Rural	Village network	Always, boiling	Tested Low
55	Sughd	Rural	Village network	Never	Tested Low
9	Sughd	Rural	Underground water	Never	Tested Low

79% of the interviewed students declared trusting the water provided by school for drinking (see Figure 23) and 74% of them also declared not needing to bring water from home for drinking (see Figure 24). This shows the high trust into aa fully functional water supply system. However, these results stress the problem of lacking water quality monitoring since most students of the school with very high risk drank water from the school water supply system without questioning its quality.

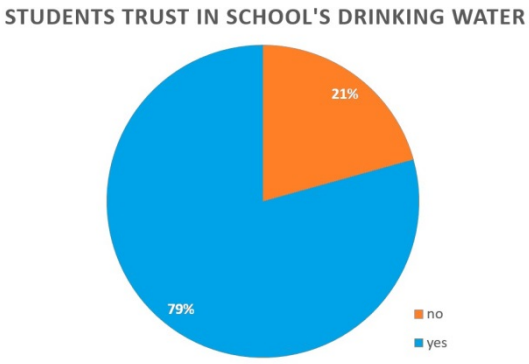


Figure 23: Proportion of students trusting the water provided by the school for drinking in Scenario 3

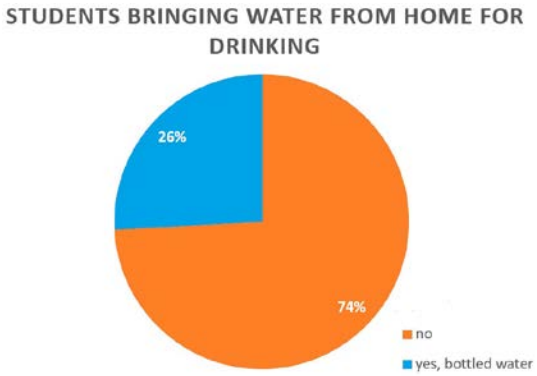


Figure 24: Proportion of interviewed students bringing water from home for drinking in Scenario 3

Concerning water storage we observed that on the contrary to the previous scenario, and as a logical consequence of the continuous water supply, the use of a water storage system was much less spread among the visited schools. Only 4 of them had large storage units (in 1 urban and 3 rural schools) and a few others had smaller ones often distributed in key places of the school (kitchen, classrooms, school hall) mostly for convenience (easier access to water).

6.4.2 Sanitation

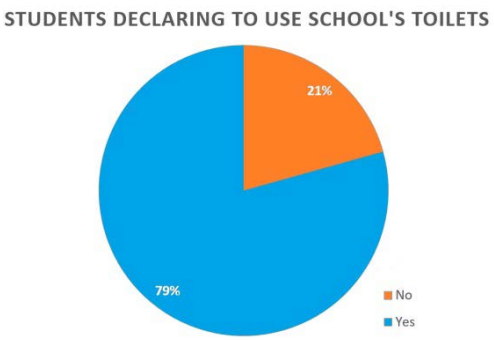
As shown in Table 10, the sanitation situation was similar to the one observed in Scenario 2. Only half of the visited schools had toilet facilities which could be characterized as "improved". One school had cistern flush toilets, one had Ecosan toilets , and others VIP toilets. Differences in the quality of toilet buildings were observed. An interesting case was observed with cistern flush toilets, illustrating the fact that ceramic and nice toilet seats alone do not necessarily make a good design (Figure 25 and Figure 26).. The students toilets were located outside of the main building and the teachers' ones located inside. In both cases, basic privacy was not respected both for the teacher and student toilets. The school principal mentioned when interviewed that she wanted to go back to a simpler system (pit latrines) due to water leaks generated by a poorly designed system made with low cost materials.

Table 10: Sanitation situation in the schools connected to an always functioning drinking water supply system

School n°	District	Location	Type of toilets	Pit accessibility for an emptying vehicle
50	Ayni	Rural	VIP toilets	Yes
13	Ayni	Peri-Urban	VIP toilets	
58	Ayni	Rural	Pit Latrine with slab	No
41	Muminabad	Rural	Pit Latrine with slab	No
93	Penjikent	Rural	Pit Latrine with slab	No
18	Penjikent	Peri-Urban	Pit Latrine with slab + VIP toilets	Yes
71	Penjikent	Urban	Cistern flush toilets	
67	Rudaki	Urban	VIP toilets	Yes
43	Rudaki	Rural	Pit Latrine with slab	No
70	Rudaki	Urban	Pit Latrine with slab	Yes
31	Sughd	Rural	Pit Latrine with slab	Yes
55	Sughd	Rural	ECOSAN toilets	No
55	Sughd	Rural	Pit Latrine with slab	Yes
9	Sughd	Rural	VIP toilets	Yes

Figure 25: Male teachers toilets, school 71, Penjikent

Figure 26: Students toilets, school 71, Penjikent



The perception of toilets varied among the students with the majority (79%) of the interviewed students reporting to use the toilet facilities at school while 21%, among which 50% girls, reporting not to use these facilities as shown in Figure 27.

Figure 27: Proportion of interviewed student declaring to use the toilets at school in Scenario 3

As for the student per toilet ratios we observed that the national and international standards were not respected for the boys) in any of the visited schools while they were respected for the girls in only 2 of them.

The ratios were in general worse than in the other scenarios. However, this could be explained by the larger average school size than in other scenarios (urban and peri-urban schools).

		Evaluation according to SDG indicators			
	District	Rudaki	Rudaki	Rudaki	Muminabad
	School	67	43	70	41
Water	Improved drinking water source	Yes	Yes	Yes	Yes
	Available drinking water source	Yes	Yes	Yes	Yes
	Drinking water available from an improved source	Yes	Yes	Yes	Yes
Sanitation	Improved toilets	Yes	Yes	Yes	Yes
	Improved toilets which are usable	Yes	Yes	Yes	No
	Improved toilets which are single sex	Yes	Yes	Yes	Yes
	Improved toilets which are usable and single-sex	Yes	Yes	Yes	No
Hygiene	Handwashing facilities which have water available	Yes	Yes	Yes	Yes
	Handwashing facilities which have water and soap available	Yes	Yes	No	No

		Evaluation according to SDG indicators					
	District	Ayni	Ayni	Ayni	Penjikent	Penjikent	Penjikent
	School number	50	13	58	93	18	71
Water	Improved drinking water source	Yes	Yes	Yes	Yes	Yes	Yes
	Available drinking water source	Yes	Yes	Yes	Yes	Yes	Yes
	Drinking water available from an improved source	Yes	Yes	Yes	Yes	Yes	Yes
Sanitation	Improved toilets	Yes	Yes	Yes	Yes	Yes	Yes
	Improved toilets which are usable	Yes	Yes	Yes	No	No	No
	Improved toilets which are single sex	Yes	Yes	No	Yes	Yes	Yes
	Improved toilets which are usable and single-sex	Yes	Yes	No	No	No	No
Hygiene	Handwashing facilities which have water available	No	Yes	No	Yes	No	Yes
	Handwashing facilities which have water and soap available	No	No	No	No	No	Yes

		Evaluation according to SDG indicators			
	District	Sughd	Sughd	Sughd	Sughd
	School number	31	55	55	9
Water	Improved drinking water source	Yes	Yes	Yes	Yes
	Available drinking water source	Yes	Yes	Yes	Yes
	Drinking water available from an improved source	No	No	Yes	Yes
Sanitation	Improved toilets	Yes	Yes	Yes	Yes
	Improved toilets which are usable	No	Yes	No	No
	Improved toilets which are single sex	Yes	Yes	Yes	Yes
	Improved toilets which are usable and single-sex	No	Yes	No	No
Hygiene	Handwashing facilities which have water available	Yes	Yes	Yes	Yes
	Handwashing facilities which have water and soap available	No	No	No	No

Figure 28 (right): Summary of SDG indicators for scenario 3

6.4.3 Handwashing and hygiene

All visited schools had functional handwashing facilities with running water with an exception of the schools 58 which had no handwashing facility and schools 50 and 18 which had no water at the time of the visit. Only one school had handwashing facilities for the students inside the school building (School 9, 25 in classrooms) and 4 of them had facilities inside the toilet blocks. 8 of them had only water and 3 had both water and soap available.

Concerning handwashing at critical times, 42% of the interviewed students answered that other students do not wash their hands after using the toilets and 30% of them answered that that other students do not wash their hands before eating.

6.4.4 SDGs conclusions

Figure 28 shows the SDG service ladder for the scenario 3. For drinking water, a basic service is reached in all cases, while for both sanitation and hygiene, the service can be considered as limited on average.

6.5 Drinking water quality

The drinking water quality testing was conducted in 18 visited schools at the main water point of the school used by pupils for drinking. Only samples from protected water sources have been collected, including piped water supply, protected springs and yard pumps. Unprotected water sources, such as channels and streams, very not analysed and considered as unsafe and not corresponding to the standards. The results of the water quality evaluation represent the single measurements on a specific day and do not account for possible variation of the water quality. They should be considered as an indication of possible problems with the goal to further evaluate the situation or confirm that water quality corresponds to the national guidelines.

6.5.1 E.Coli

Figure 29 shows the number of samples classified into the four risk categories suggested by WHO in the Guidelines for Drinking-Water Quality (WHO, 2011) which can be summarized as follows:

- conformity to water quality standard/low risk - 0 CFU/100ml
- intermediate risk - 1-10 CFU/100ml
- high risk - 11-100 CFU/100 ml
- very high risk - >100 CFU/100 ml.

The results show that 27 % of samples showed high or very high level of contamination and only 44% corresponded to the National Water Quality Standard of 0 CFU/100 ml. Action should be taken when results are not 0: monitoring of water quality at the source and point of use to understand the situation. Although the health risk at the moment can be low, there is potentially contamination, which should not be there if the system would perform correctly. 0 values should also be treated with care, as we talk about single measurements. The measures to improve the quality of water should be taken urgently in the systems showing high or very high risk level, especially in the schools with improved water sources, as water is perceived by students and teachers as safe and consumed without any additional treatment.

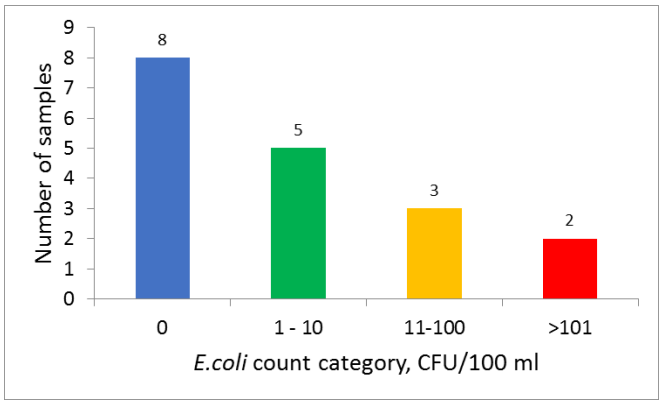


Figure 29: Number of samples in four E.coli count categories: 0; 1-10; 11-100 and >100 E.coli/100 ml corresponding to the different risk levels for all schools measured for protected water sources

The samples were collected from four major type of water sources: piped water to yard, protected spring with yard connection, city or village network and system with a yard pump. Figure 30 summarizes the results of E.coli counts for the type of water sources and the risk category. It shows that the samples in which the E. Coli numbers exceeding 11 CFU/100 ml were measured were taken either at the systems with a piped water to yard or protected spring with yard connection. These systems were functioning intermittently, with insufficient tap pressure or, in one case, the system was not functional during the time of the visit. Only one school with intermittent water supply had E. Coli count of 0 CFU/100ml.

Two out of the five cases with E. Coli count of over 10 CFU/100 ml perceived their water source safe and not requiring further treatment. In one case, the source water perceived as not safe, but the school claimed not to have equipment and knowledge needed to treat the water.

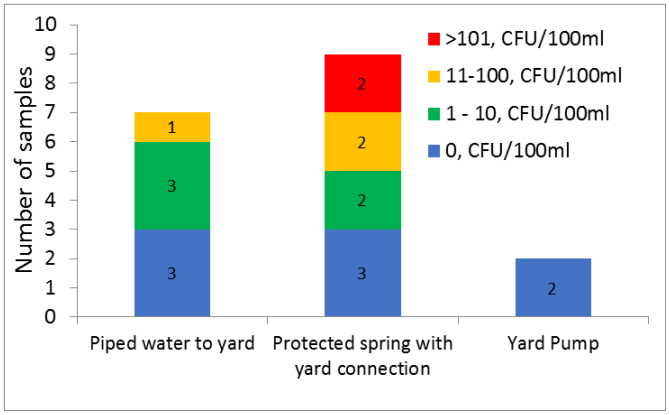


Figure 30: Number of samples in four *E. Coli* count categories: 0; 1-10; 11-100 and >100 E.coli/100 ml corresponding to the different risk levels for each water source type for protected water sources

6.5.2 Residual chlorine

Total coliforms as well as residual chlorine concentrations were measured to evaluate presence of residual disinfectant, relevant for piped water as well as to obtain an indication of microbial re-growth and biological stability inside the systems. Residual chlorine was not detected in any of the systems evaluated. Only three schools mentioned that water is chlorinated at the source or that chlorine is added to the storage tank once a month. Unfortunately, the chlorine concentration in these schools was not evaluated, since the systems were not operational due to school holidays during the period of the survey. All other schools were not aware of any

chlorination practice. In these schools 0 values of residual chlorine were measured. Since no chlorine was used and present in water, total coliform counts gave us an indication of microbial re-growth and biological stability of water.

6.5.3 Total coliforms

In general, re-growth of pathogenic organisms is unlikely in natural environment or in water storage containers. Thus, high total coliforms values should not necessarily be associated with a health hazard. However, under certain conditions, such as high water temperature, lack of competition with natural bacteria, there is a risk that some pathogens might re-grow (Vital et. al, 2010). Total coliforms can be a good indirect indicator of combined contamination, re-growth as well as biological stability of water, when other methods of water quality control are unavailable.

Total coliforms were found in mostly large numbers in all samples (Figure 31), and in each water source type (Figure 32). This was expected, since no residual chlorination was used in the systems, and relatively warm temperatures of water (up to 30.1 ^{o}C) from natural water sources is expected to support possible re-growth of natural coliforms. Only one sample from a yard pipe connected to protected spring showed low total coliforms values. This case was also characterized by the water temperature of 16.2 ^{o}C, which is relatively low compared to other cases, with the mean value of 23.5 ^{o}C. The other factor which might have affected high total coliform counts is the fact that some of the water supply systems were not in operation due to the holiday period, leading to stagnation of water in the pipeline and tanks. Since samples from almost all schools were affected by high total coliform values, it was impossible to define if intermittent operation had an impact as well.

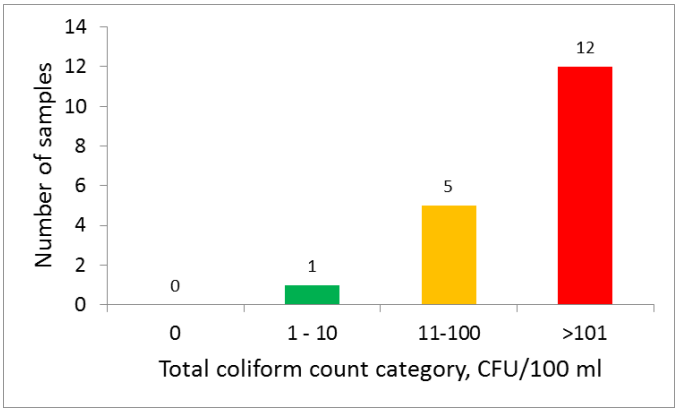


Figure 31: Number of samples in four *Total Coliform* count categories: 0; 1-10; 11-100 and >100 E.coli/100 ml.

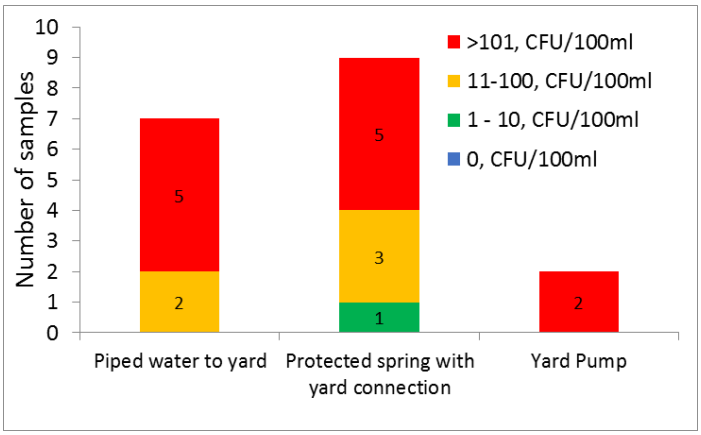


Figure 32: Number of samples in four *Total Coliform* count categories: 0; 1-10; 11-100 and >100 E.coli/100 ml for each water source type

6.5.4 Physical parameters

One of the parameters monitored was concentration of total dissolved solids, measured with a conductivity meter, as illustrated in Figure 33. This was done in order to evaluate salinity of water. Generally, in all samples total dissolved values were acceptable, with exception of the two yard pump systems in schools in the Sughd region. In both systems, TDS > 1000 mg/L was measured, characterizing water as slightly brackish. The salinity problem is well known in the area, and it planned to build water supply networks bringing water from other sources. Also this water was characterized by relatively high pH 8.5. This should be considered in the area when evaluating potential of using groundwater as a major water source.

pH values measured in other schools varied between 7.3-8.3.

Figure 33: Onsite measurement of physical parameters

6.6 Management schemes

The field visits showed a recurrent management scheme for WASH in schools in Tajikistan. This scheme is presented in Figure 34.

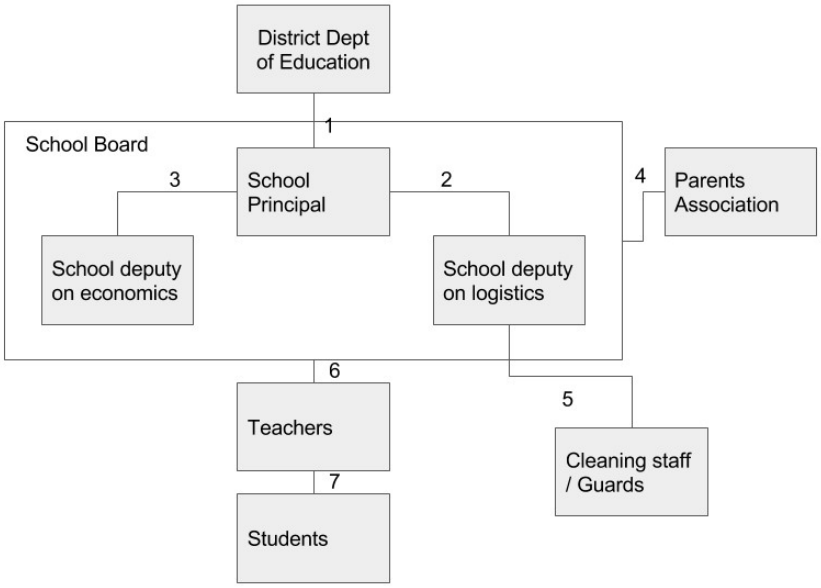


Figure 34: Typical management scheme for WASH in Schools in Tajikistan

The following paragraphs detail the roles and responsibilities of each stakeholders. The numbering below refer to the relationships between stakeholders featured in Figure 34. It is important to mention that if this scheme is the one presented "on paper" by the schools, the definition of tasks and responsibilities are usually much less clear in the real everyday functioning of the schools.

1. The accounting service of the **Department of Education** is in charge of providing budget to the schools. The amount provided is calculated each year according to the number of students, meaning that small schools receive less money than larger ones.

   The **school Principal** serves as the interface between the school and the Department of Education at district level. He/she is in charge of providing to the Education Department the forecast expenses of the school in the different domains according to the budget. He/she is also responsible for introducing special requests for additional money in case of needs (emergency reparations, renovation of WASH facilities, etc.).

2. The **school Principal** delegates all the management of the operation and maintenance of the WASH in the schools to the **Deputy on Logistics**, in the schools big enough to have one. In the schools too small to have a Deputy on Logistics the School Principal either handle this matter himself or delegate the management to the teachers or the cleaning staff.

3. The school **Deputy on Economics** records and manages all the expenses of the school. He is responsible, under the supervision of the **school Principal**, for the elaboration of the detailed budget of the school that is further transmitted to the Department of Education.

4. The **Parents Association** may have several roles in the school. On a case-by-case basis, they may provide materials, money or even labour to the school according to its needs. They also generally monitor the teaching quality and act together with the school board to solve potential behaviour issues among the students. Regular meetings are normally organized between the school board, the teachers and the parent association to discuss about these matters.

   In the visited schools we often noticed that the school Principal asked the Parents Association to gather money from all the parents to complete the budget provided by the Department of Education, which is often not sufficient to cover all the needs. However it must be noted that the government recently ordered the schools to stop this practice starting from autumn 2017. This will potentially create a deficit in schools that are already lacking money and there is a risk for the WinS matter that already was put in the background to be purely and simply ignored by the school Board.

5. The school **Deputy on Logistics** has, among others, the role to manage all the activities related to operation and maintenance of the WASH facilities in the school. This includes ensuring that both the drinking water and sanitation facilities are maintained and run properly and that the handwashing facilities are regularly filled with water. He is also in most of the cases responsible of the stock of operation consumables for all the WASH facilities (soap, toilet paper or dry soil, cleaning products, chlorine...) and of the activities of the cleaning staff. However we have to mention that some of the visited schools followed a slightly different model for the provision of operation consumables. In some schools for example the students had to follow a BYOM model (Bring Your Own Material) meaning that each student had to bring his or her own soap, toilet paper or any other operation consumables that he or she would need. In other schools the management of the operation consumables was attributed to the Parents Association or even to the teachers.

6. The **teachers** serve as a link between the school board and the **student community**, communicating to the school Board about the needs of the students regarding WinS.

7. The **teachers** are responsible to monitor the hygiene behaviour among the student community and to provide them with basic hygiene knowledge. They usually work with teaching material provided by state bodies such as the Department of Education and the Healthy Lifestyle Centres (see section 5.2) or by non-governmental organizations. The main issue noticed was that the teaching material was not updated regularly enough.

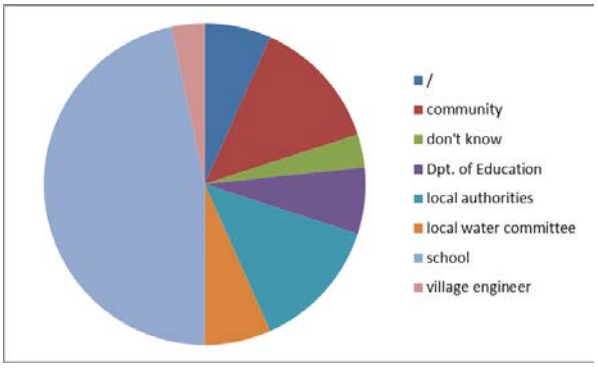
The allocation of responsibilities in the visited schools, as mentioned by the school principal of each school, is synthesised in Table 11.

Table 11: Allocation of responsibilities in the visited schools according to the school principal

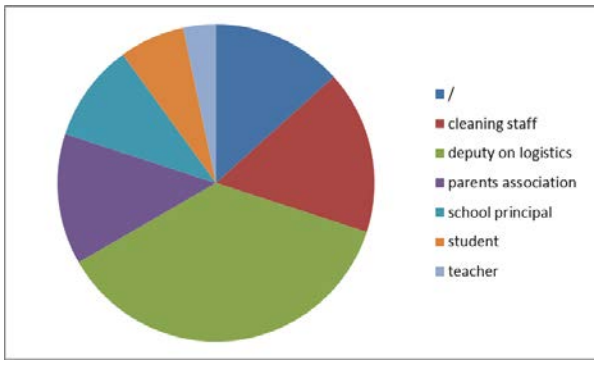
		Responsibilities			
District	**School n°**	**Water supply system**	**Anal cleansing material**	**Soap**	**Cleaning equipment**
Ayni	58	community	cleaning staff	*Not allocated*	cleaning staff
	13	*Not allocated*	*Not allocated*	*Not allocated*	*Not allocated*
	50	local water committee	parents association	parents association	Deputy on logistics
	18	local water committee	parents association	parents association	Deputy on logistics
	47	school	cleaning staff	*Not allocated*	Deputy on logistics
	1	school	*Not allocated*	*Not allocated*	Deputy on logistics
Muminabad	41	school	Deputy on logistics	Deputy on logistics	Deputy on logistics
	38	Dpt. of Education	cleaning staff	school principal	Deputy on logistics
	43	school	cleaning staff	Deputy on logistics	cleaning staff
	18	don't know	*Not allocated*	school principal	Deputy on logistics
	2	Dpt. of Education	parents association	parents association	parents association
	48	school	*Not allocated*	school principal	*Not allocated*
Penjikent	93	village engineer	cleaning staff	Deputy on logistics	school principal
	71	school	Deputy on logistics	Deputy on logistics	Deputy on logistics
	18	school	Deputy on logistics	teacher	Deputy on logistics
	40	school	school principal	parents association	Deputy on logistics
	61	school	teacher	parents association	Deputy on logistics
	84	community	Deputy on logistics	*Not allocated*	Deputy on logistics
Rudaki	67	school	Deputy on logistics	Deputy on logistics	Deputy on logistics
	43	community	Deputy on logistics	*Not allocated*	*Not allocated*
	70	school	Deputy on logistics	Deputy on logistics	Deputy on logistics
	89	local authorities	Deputy on logistics	*Not allocated*	*Not allocated*
	3	local authorities	school principal	school principal	Deputy on logistics
	69	community	school principal	*Not allocated*	*Not allocated*
Sughd	55	school	Deputy on logistics	Deputy on logistics	*Not allocated*
	9	school	student	students	school principal
	55	local authorities	parents association	parents association	Deputy on logistics
	31	school	deputy on logistics	Deputy on logistics	*Not allocated*
	34	local authorities	deputy on logistics	*Not allocated*	*Not allocated*
	66	*Not allocated*	student	*Not allocated*	parents association

It shows that the responsibility of the water supply is in the hands of the school itself in about 50% of the visited schools, and in the hands of either the community or the local authorities in 25% of the schools. The responsibility for the anal cleansing materials lays in the hands of the Deputy on logistics or the cleaning staff in more than 50% of the cases, and is the parents association's responsibility in less than 15% of the cases. The results are different for the soap, where in a majority of cases (33%), the school principal does not point to any responsibility. The responsibility is delegated to the Deputy on logistics and to the parents association in 27% and 20% of the cases respectively. Regarding the cleaning equipment, the school principals declare that it is the responsibility of the Deputy of logistics in more than 50% of the cases. However, this responsibility is not allocated in about 25% of the cases. Figure 35 illustrates how patchy the allocation of responsibilities is among the surveyed schools.

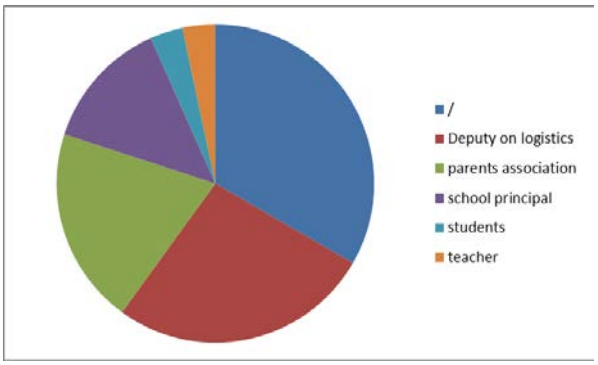
Water supply system



Anal cleansing material



Soap



Cleaning equipment

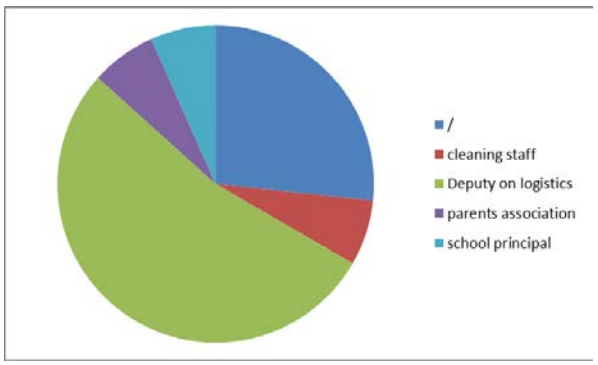


Figure 35: Allocation of responsibilities for the water supply system (top left), the anal cleansing material (top right), the soap (bottom left) and the cleaning equipment (bottom right)

The school principals where asked if they thought that the parents association was doing what it was supposed to do. The survey shows about 70% of satisfaction. This means that in most of the cases a trustful relationship exists between the school and the parent association, which represents a favourable ground for the implementation of collaborative strategies. The main reasons for dissatisfaction were:

- some parents are too poor to help
- some parents do not feel concerned and are not really involved in the school activities

Figure 36 shows, for each region, the number of schools where each type of inputs from the parents association takes place, whereas Figure 37 illustrates the percentages of visited schools where the parents association provides different services. It highlights that financial contribution (monthly or on-demand) as well as controlling role (monitoring the courses, monitoring students behaviour, participating in school board meetings) happen about everywhere. The provision of materials, such as construction materials or consumables, takes place in about half of the school, whereas the contribution in terms of labour (e.g. to help constructing and refurbish the school) is rather rare and only takes place in Penjikent region.

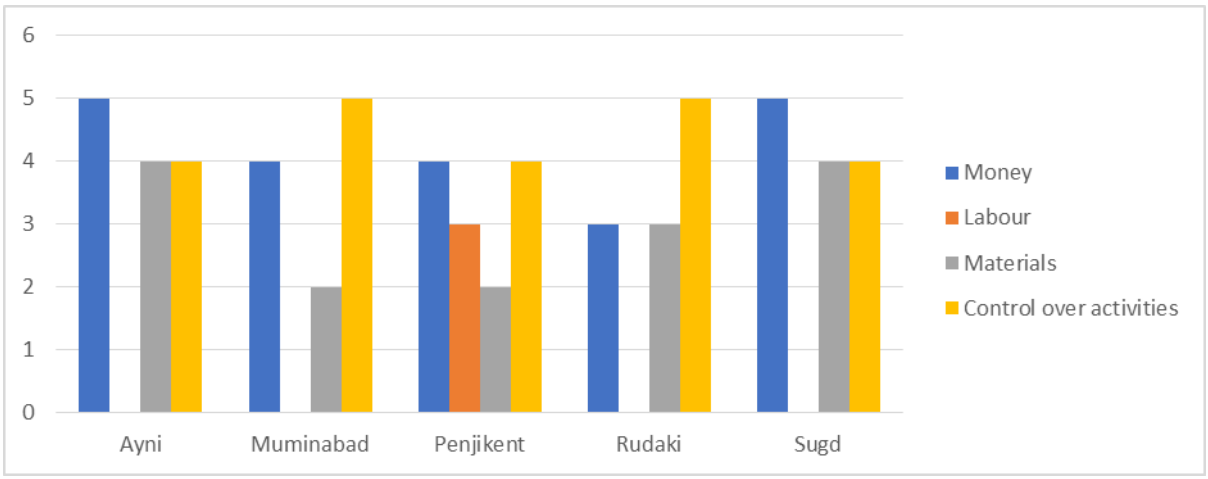


Figure 36: Number of visited schools where the parents association provides specific inputs.

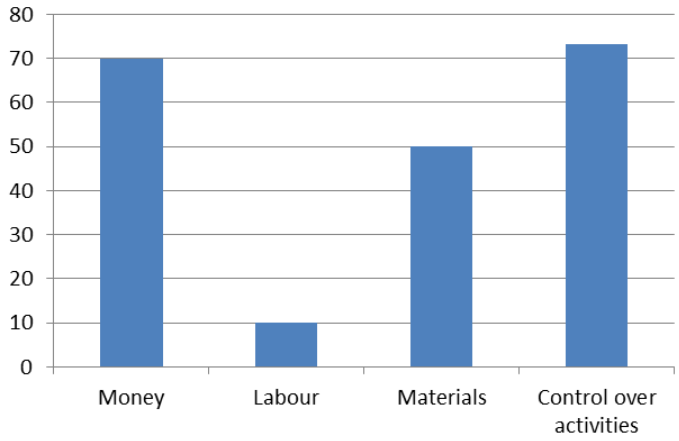


Figure 37: Percentages of the visited schools where the parents association provides different services

7 Design recommendations

The main design issues detected when visiting the school were the following regarding sanitation:

- **Smell:** Complaints from the students and the teachers about the smell of the toilets, even when new VIP toilets where used.
- **Privacy**: lack of doors
- **Deterioration** of old toilets
- **UNICEF twin pits pour flush toilets**: lack of water to be able to use the toilets
- **Desludging**: accessibility to pits for emptying and willingness of the school board to do it instead of digging other pits.
- **Distance of the toilets facilities from the schools main building.**

The main design issues regarding drinking water were the following:

- **Use of unimproved water sources**
- **Lack of water distribution network within the school buildings and territory**
- **Broken taps and water losses**
- **Deteriorated water tanks**
- **Lack of functional water storage facilities and alternative water sources to cover for interruptions**
- **No or non-functional handwashing facilities**

In what follows, recommendations are provided for a few key aspects.

7.1 Smell

To avoid smell issues action can be taken at the **ventilation** and at the **user interface** level. Ventilation is a general problem in the visited school latrines, even in the new ones. The issue is that the huge single tanks below the latrine blocks and sparse chimneys do not allow an airflow that goes from the toilet towards the chimney. On the contrary, the gases go up in the toilet room. In order to improve ventilation, **the new holding tanks should be divided in smaller pits, with one pit and one ventilation pipe per 2 toilets units maximum**. Cross-flows may indeed affect the effectiveness of ventilation (Ryan and Mara, 1983). Figure 39 illustrates a case where a ventilation chimney was planned but missing. Figure 40 shows a proper design of a ventilated improved pit (VIP) latrine.

Ventilation can be improved with devices such as rotary chimney cowl (see on the picture of Figure 48) or solar extractor fans (“solar vent”), as illustrated in Figure 38.

It is also important, when possible, to have a **lid** to close the the drop hole when not in use.

Figure 38: Solar vent

Most of the bad smell in pit latrines is usually generated when urine mixes with faeces. There is thus a real added value in separating the urine from the faeces wherever possible. Urine-diverting toilets are presented below. In general, it should be acknowledge that students mainly use school toilet for peeing, for two main reasons: (i) it is more comfortable to defecate at home; (ii) in Tajikistan, classes often happen in shorter shifts of only 4-5 hours. Waterless urinals should be more frequently installed, and the urine should be directed in a storage tank (see also section 7.8 on user interface considerations). This urine, if stored in a bigger tank, can then be pumped by a vacuum truck and sold as fertiliser.

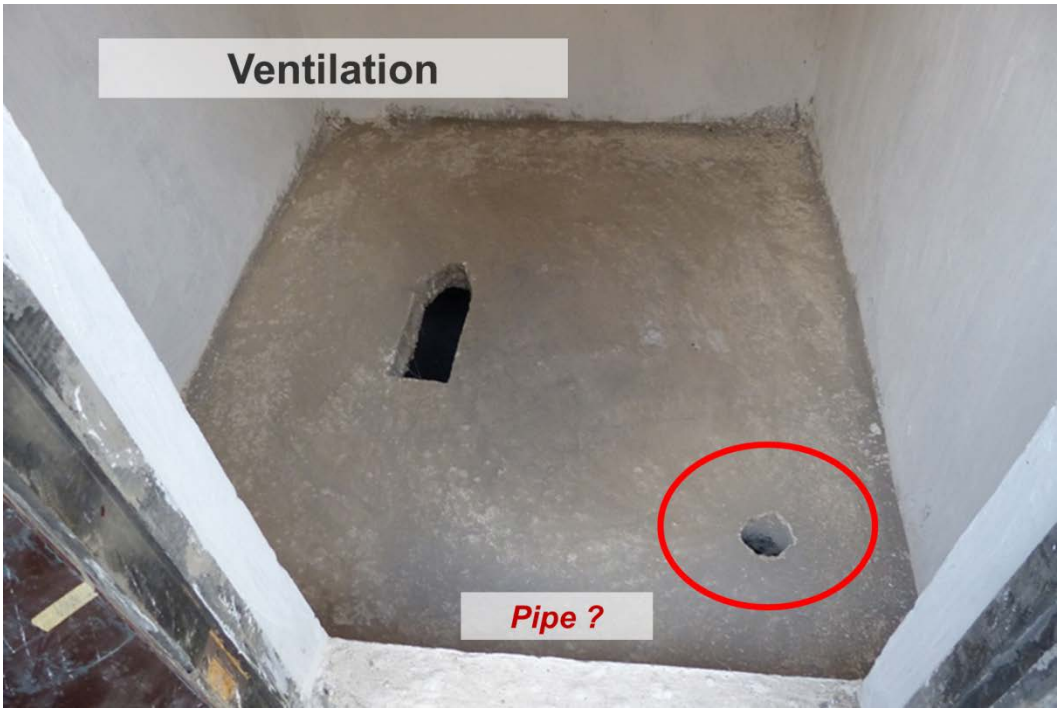


Figure 39: Lack of ventilation

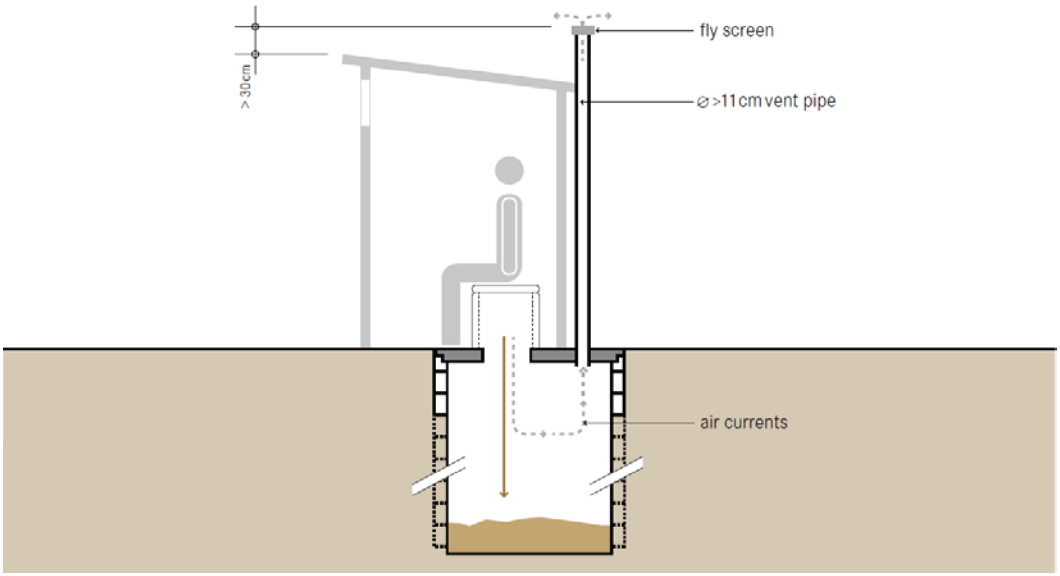


Figure 40: Proper VIP latrine design (source: Tilley et al., 2014)

For schools where water is available, a measure to avoid the gases to come up in the toilet room could be to try **toilet pans with self-sealing trap doors** ("flapper"), like the SaTo™ toilet pan (see Figure 41) could be installed to avoid odours and insects to come from the pit. The trap door only opens when urine and faeces exert weight on it. The advantage of this interface is that the mechanism does not require specific knowledge to be maintained (except the cleaning of the trap door) and it is well adapted for regions were the water is scarce. Water in that case would only be necessary to clean the trap door.

Figure 41: *SaTo™* Pan design for avoiding odours and insects

In the future, **alternative dry toilet systems** could contribute to provide more comfort. Well run urine-diverting dry toilets (UDDTs) have been proven to deliver good services (Deegener et al., 2009; SKAT experience in Moldova[4]). Urine-diverting dry toilets, also known as "EcoSan" toilets, are illustrated in Figure 42. They are currently being piloted by the International Secretariat for Water (ISW) in the Sughd region (Figure 43). The advantages of UDDTS, if properly used, are much less smell than conventional pit latrines and the transformations of faeces in an earth-like compost. Important factors for the use of UDDTs are: (i) availability of material for composting (e.g. sawdust); (ii) readiness to use the composted faeces; (iii) interest / willingness to use the urine in agriculture. Alternatively, in some cases, urine can be directly infiltrated.

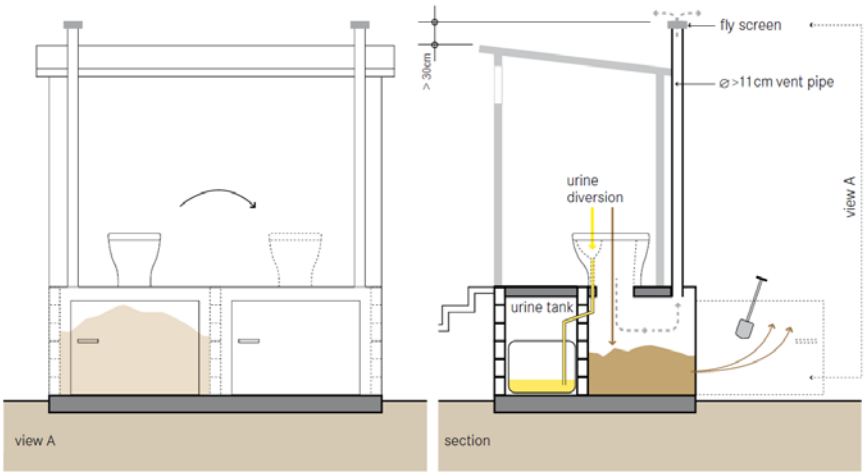


Figure 42: Urine-diverting dry toilets (source: Tilley et al., 2014)

[4] SKAT Apasan project in Moldova: http://skat.ch/portfolio-item/apasan/

Figure 43: A urine-diverting dry toilet implemented by ISW in the Sughd region, including also a waterless urinal.

Single-hole urine diverting technologies developed in Europe for public toilets and alpine environments seem also very promising, like the Ecodomeo and Sanisphere[5] systems (see Figure 44). An important fact is that most odour nuisance is generated when urine mixes with the faeces. Thus, it is of advantage to separate them. Besides, if soil infiltration is good and if there is no risk of groundwater contamination, urine can be infiltrated.

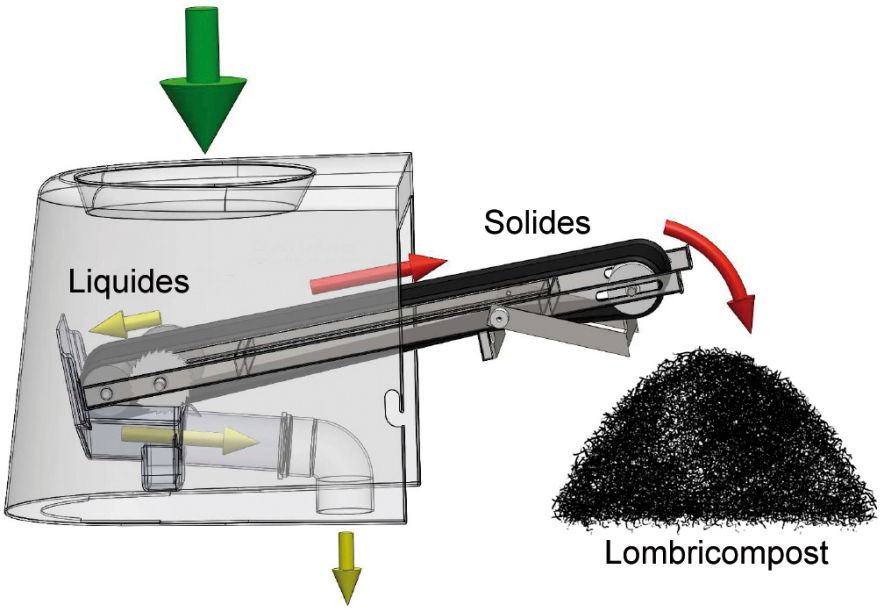


Figure 44: Ecodomeo system (source: Ecodomeo)

[5] Respective websites: http://www.ecodomeo.com/english/ and http://www.sanisphere-fr.com/en/home/

7.2 Waterless urinals

Most students use the school toilet for peeing only. It is thus recommended to install more **waterless urinals** (an example can be seen in Figure 43); ISW has experience with them. In soils with good infiltration capacity and no risk of groundwater contamination, urine can be infiltrated in soak pits. Such a measure would reduce the odour nuisance. This observation is also relevant for urine-diverting toilets: in that case, it is recommended to monitor urine and faeces production, in order to optimise future designs.

Alternatively, urine can be stored in a big tank, and pumped when the tank is full. It can then be used in agriculture, diluted with irrigation water. The urine storage tank must be very well sealed, otherwise odour nuisance can appear.

7.3 Maintenance

Lack of maintenance leads to cleanliness problems and, in the middle-term, to the deterioration of the infrastructure and privacy problems. The problem of deterioration and privacy issues related to it (lack of doors or doors coming loose, damaged slab, dirty toilets, damaged building) can only be solved if a good system for operation and maintenance is in place. Clear responsibilities must be allocated, the concerned staff should be trained and a clear and constant system for maintenance consumables should be established. It is recommended to build a **small room for the storage of consumables** like toilet paper, brushes, chlorine and other cleaning material directly in the toilet building. This room should be accessible by the persons responsible (i.e. cleaners and school deputy on logistics), who would be in charge of monitoring the stock and refill it when needed. Having all the necessary consumables directly available onsite should enhance the maintenance of the facility.

It is also important that the **ground and the toilet be easy to clean**. Surfaces like ceramics are easy to clean and also foster good cleaning through a higher perceived status. To aid cleaning, the floor should be designed to slope gently towards a 40 mm drain hole.

Figure 45: Two different surfaces; the ceramic surface on the right is much easier to clean and thus provides safer and more hygienic conditions.

Top priority should be given to cleaning surfaces touched by the hands: flush handles, door handles and locks, soap dispensers and tap handles, including the handles of taps elsewhere that students use. Toilet seats, which are also dermal contact points, should also be given priority for cleaning. Any full or blocked toilet or an accident on the floor must be given priority and the area sanitized before users are allowed access to it again.

7.4 Handwashing facilities

Handwashing facilities should be placed inside or directly outside of the toilet blocks. Ideally, hands-free, self-closing taps should be used for school taps for two important reasons (Louton & Still, 2016):

- The purpose of washing hands is to remove germs from hands. When students open the tap they may leave germs on the tap. When they then close the tap again afterwards, their hands may pick up germs that others have left on the tap.
- Taps that do not self-close can be left open by users, wasting water and potentially causing flooding.

A self-closing tap design should be chosen carefully. Some designs require more strength to operate, which could be a problem for young learners or those with a physical disability. Others are even easier to operate than standard taps, potentially solving issues for young students or those with physical disabilities. The tap should stay on long enough for pupils to wash their hands properly.

A market study should be done in the region to identify the best taps (usability, robustness), as this is recognised as one of the main weak points for the sustainability of handwashing facilities. Alternatively, a pedal system should be piloted. Systems which avoid the contact of the clean hands with contaminated surfaces should be preferred. A design which eliminates finger contact, e.g. a lever hat is pressed with an arm or foot, further reduces the risk of hand to mouth disease transmission. Companies like MTE Valves in Thailand produce foot operated self-closing valves[6].

During the Soviet time, it was common to have a handwashing facility in every classroom. This was still observed in a few schools, as illustrated in Figure 46. Usually, it is an initiatives from the parents association, which provides the handwashing stations. Then, a refill mechanism need to be put in place.

Figure 46: Handwashing facility in the classroom (Penjikent)

[6] Foot operated self-closing valve: http://www.valvemte.com/Foot%20Tap%20Valves%20MCM.html

7.5 Problems with pour flush toilets

UNICEF built approximately 600 twin pits pour flush toilets around the country. Several of them were encountered but all of them were abandoned. They were all either closed or unused due to lack of water for the system to function. It turned out that those toilets were built without taking into consideration the local constraints among which is the lack of water for pouring the flush. This example shows that prior to construction local **observation and a discussion with the future users** about the design should be made in order to adapt the final design to the local constraints.

7.6 Desludging

Removal of the sludge from the holding tanks is hardly ever done in the schools visited. Reasons are a lack of accessibility to the pit, or the lack of an efficient and affordable faecal sludge management system that the schools can rely on. As a consequence, school boards are often unwilling to do it, and prefer to request funds to dig new pits and build new latrine blocks. Up to three generations of toilet blocks were observed in some schools.

When constructing new toilet blocks, it is recommended to choose a location that is accessible for the emptying trucks. The holding tanks should also be designed with several access points, so that the trucks can operate an efficient removal of the sludge.

7.7 Distance to the toilet facilities

Having the toilets outside, as far as possible to the house, is a cultural habit in Tajikistan and is also in the standards. This is to be correlated to the odour nuisance issues previously mentioned. This is of particular issue in schools, as children sometimes need to walk more than 100 meters from their classroom to reach the toilet, as illustrated in Figure 47.

Figure 47: Large distance from the school to the toilet block

The only solution is the implementation of toilet systems which can guarantee the absence of smell. SKAT Apasan project[7] in Moldova proved the feasibility of urine-diverting toilet blocks attached to the schools (see Figure 48). Together with the International Secretariat for Water, they are currently piloting the concept in the Sughd region, starting in a Jamoat building.

In general, a small block of urinals, can be located closer to the classrooms or playground, making it easier for staff to monitor their use and reducing the amount of time students spend during break or class using the toilet. The feasability of urinals for girls, developed in several countries (Louton & Still, 2016), should be investigated in Tajikistan.

The experience shows that toilets are better taken care off when they are located inside or close to the schools. It turned out that better use and better cleaning happened when the toilets were not located far from the main building.

Figure 48: UDDT-based school toilet block attached to the school building in Moldova (picture: SKAT)

7.8 Further user interface improvements

Internationally, recommendations for the number of toilets per children served typically range from 1:20 to 1:50. The World Health Organisation (WHO, 2009) provides ratios of 1:25 toilets for girls and 1 toilet plus 1 urinal (or 50 cm of urinal wall) to 50 boys, with a minimum of one toilet for female staff and one for male. The situation is sometimes far from this norms, as shown in Chapter 6 and in Figure 49.

[7] http://skat.ch/portfolio-item/apasan/

Figure 49: Very low toilet per capita ratio

Menstrual hygiene management is an issue that is hardly addressed. Hygiene material **disposal points** must be installed. Several sources recommended to build a special room for woman hygiene purposes (cf. Oxfam's new latrine blocks). The use and design of such a room should be further investigated.

Provision of soap is also an issue. Soap is most of the time missing, and it is reported that it is sometimes stolen. Liquid soap should be preferred, as bar soap can harbour pathogens and pass them from one user to the next. A market study should be done to identify the best soap distributors (usability, robustness), as in restaurants.

Locks for doors should be simple and easy to operate to avoid the possibility that a student locks the door and is unable to open it again.

Provide a **mirror** at the exit of the toilet (for example, above the handwashing facility if it is inside), especially in the girls' toilets.

Figure 50 illustrate a proper handwashing facility with the above-mentioned accessories, as found in restaurants. Why should it be different in schools?

Figure 50: A proper handwashing facility, with a good quality tap, liquid soap distributor, mirror and paper.

7.9 Cosmetic aspects

While budgets for cosmetic aspects of school sanitation may seem like a luxury that is out of reach for poor schools in the developing world, even small efforts to beautify the toilets can increase the level of comfort enjoyed by users as well as ownership of the facilities with potentially positive spin offs in terms of reduced vandalism, theft and abuse of facilities (Louton & Still, 2016). If a small amount of funds can be raised some key improvements could be made which could boost morale. For example:

- Paint doors a bright colour. Learners could vote to choose the colour.
- Buy a mirror for each toilet block. A full length mirror would allow girls to be able to check their dresses.
- Incorporate students' creative work into the toilets. For example:
    - Run a competition in the school for the design of a mural, a catchy or funny slogan, or an inspiring quote to be painted in each toilet.
    - Have learners paint a mural in the toilets or paint decorative designs on the stall doors.

7.10 Water sources

The results of the water quality analysis showed that faecal contamination is a problem in water supplies which originate from protected water sources as well. At the catchment level, protection of springs can be improved. However, it is the responsibility of the communities and local authorities, and these might not have the resources or interest to improve their current practices. Introduction of a simple water safety plan for operation and maintenance of spring based gravity supplies can be considered. WHO is currently trying to disseminate water safety plans[8] in Tajikistan.

[8] The Water Safety Portal of WHO: http://www.wsportal.org

At the community level, due to risk of faecal contamination as well microbial re-growth and potentially low bio-stability of water observed and measured in almost all schools evaluated, disinfection of spring water and piped water is highly recommended. Depending on the local availability of chlorine containing compounds and system capacity, chlorination with sodium hypochlorite, commercially available or produced on-site by electrolysis of salt can be used.

Disinfection by chlorine can also be done at the school level, if willingness of community to improve the infrastructure at the community level is lacking or resources are not available. In this case, production of small quantities of sodium hypochlorite by small scale generators can be the cheapest and most feasible option. WATA devices[9] can be recommended for the production of chlorine directly in the schools. Sodium hypochlorite can be dosed to the main water storage tanks installed in schools to increase reliability of the system and cover for interruptions. Automated dosing systems depending on the water level in tank or water pressure in the network are available as well.

For the systems supplied by surface water, turbidity of water might be an issue and should be evaluated. There are few options to address this problem:

- Explore the use of alternative water sources, such as springs or groundwater;
- Install a water (pre-)treatment system. Roughing filtration can be an option, which can be constructed with locally available materials. Rapid sand filtration can be used as well, but would require higher O&M expertise. Gravity-driven membrane based systems can be a suitable options but investment costs are usually high.
- In case turbidity fluctuations are limited to few events per month, a sensor, shutting down water supply can be used in combination with sufficient storage capacity to cover for the high-turbidity events.

Chlorination after pre-treatment is recommended in all cases, with the exception of membrane based systems capable of efficiently disinfecting water by size exclusion.

Water quality monitoring is not done at all or not on a regular basis. Establishment of laboratories equipped with low cost equipment for microbial water quality monitoring and trained technicians with the capacity to conduct regular monitoring of water quality can considerably reduce risk of students drinking contaminated water from improved water sources.

7.11 Water storage

Half of the schools selected did not have any alternatives in case of interruption of the water supply. Although in some schools with non-functional or partially functioning water supply system, water storage containers such as tanks, drums, buckets, jerry cans etc. were available, most of them were either deteriorated or not appropriate for safe water storage. Thus, in the schools with intermittent water supply or limited water availability, reliability of the water supply as well as its resilience can be increased by providing sufficient storage capacity within the school, preferably by installing a main storage tank which can be used to distribute water and store sufficient amount of water to cover for interruptions. Small safe water storage containers, with lids and taps can be used to increase accessibility of water in the critical places, such as handwashing stations next to the toilets.

7.12 Water distribution

Half of the schools had two or less taps on the school territory, indicating that availability of water where it is actually needed is a common problem. Water dispensers were used in some schools. In schools were sufficient volume of water with adequate pressure in the network is available, installation of a simplified distribution network can be an option. However, freezing of

[9] WATA devices: https://www.antenna.ch/en/activities/water-hygiene/wata-work/

the water in the network in winter can be a problem which needs to be considered, and pipes placed underground should be sufficiently protected in prevision of the cold season. The risk of freezing can also motivate users to constantly run the water, which will inevitably lead to the high water loss. Such practices have already been reported in few schools for yard taps.

Water dispensers have been observed in few schools without reliable distribution network within the school. This option can be further evaluated and possibly optimized. Availability of water in the dispensers is an issue which needs to be considered on the management level. In case of low water quality, combination of water dispensers with household water filtration can be assessed.

Although no data was collected to measure water loss in schools, during school visits we have observed multiple practices leading to water loss. Installation of water meters, revision of water taps (see section before on handwashing) and behaviour change interventions in regard to water loss reduction can be considered, especially for the areas with insufficient amount of supplied water.

All recommendations regarding optimization and mitigation strategies for water supply are summarized in Table 12.

Table 12: Recommendations regarding optimization and mitigation strategies for the water supply

	Catchment/Community level	School level
Water source	Protection of springs, introduction of water safety plans for community based infrastructure. Establishment of laboratories with trained staff and equipment to conduct regular water quality monitoring.	Alternative water sources for surface water supplies
Water storage	Rehabilitation of the water storage infrastructure at community level if available	Improvement of the storage capacity in schools, storage tanks to cover school needs for the interruptions of 1-3 days. Upgrade of the small scale storage tanks such as buckets and drums to covered safe storage containers
Water treatment	Chlorination at the community scale also of the water from protected sources. For unprotected, potentially turbid surface water pre-clarification is required. Automatic shut-off systems can be considered when turbidity peaks are of a short duration.	Chlorination at the school level. On-site sodium hypochlorite generation can be an option
Water distribution and availability at point of use		Installation of the simple distribution networks within the schools with few taps in critical areas; Further use and upgrade of water dispensers, which can possibly be combined with household filtration
Water losses	Water metering at the community level as well as water safety plan are recommended	Water metering at the school level, replacement of damaged taps are required as well as better water freezing mitigation strategies in winter. Awareness raising and behaviour change regarding water wastage might be required especially in the areas/schools affected by water scarcity and intermittent supply.

8 Management recommendations

Infrastructure not accompanied by an effective management system can be expected to fail from the outset. The Department, the principal and the school board must make a commitment not only to deliver sanitation but to see sanitation through over the long term, otherwise it can be assumed that the rights of learners will continue to be violated.

(in Louton & Still, 2016)

Effective management requires both **capacity** and **will** on the part of managers. School principals often feel helpless in the face of conditions where their budgets seem inadequate for the needs of their schools. In this context, it is not surprising that many principals simply ignore the toilets altogether. Intervention is needed from the Department of Education – to support principals, equip them with skills and tools, and hold them accountable for their responsibility for protecting learners' rights (Louton and Still, 2016).

Monirul (2014) provides a list of typical Requirements for O&M of School WASH Facilities, to be found in Appendix 4.

8.1 Role of SESS and of the Ministry of Education

The department of Education should provide clear **standards and protocols for managing toilets**, models and support to develop a comprehensive management plan, the administrative tools for implementing these standards and monitoring and enforcement to ensure that standards are upheld. Training and ongoing support is needed.

SSESS and the State Sanitary and Epidemiological Surveillance Centres (SSESC) (see section 5.2) is obliged to systematically monitor the sanitary condition of toilets and water supply. It is thus supposed to monitor schools regularly to ensure that toilets are maintained at an acceptable standard. At the moment, it seems that the monitoring reports which are sent from the district to the national level do not always reflect the reality. This hints to a lack of seriousness/structure of the monitoring process on the ground. **The data collectors on the ground would probably benefit from a standardised, online monitoring tool, with automatic descriptive statistical analysis of the data.**

Specific and **clear guidelines for O&M** should be provided to and observed by the school. A **reward system** for schools with exemplary sanitation management would provide a positive motivation.

8.2 Capacity building

The lack of capacity is observed as a critical issue, especially in rural areas. Capacity building and training of both administrative and technical staff are needed. A clear definition of tasks and responsibilities among all the stakeholders involved in WinS should be developed. A control system should then be put in place to ensure that the established system continues to work well.

8.3 Creating feedback loops and psychological incentives

The study shows that there is often a lack of interest or incentives to keep the toilet blocks clean and well maintained. The international experience shows that it can be improved if each week, one class or one teacher is appointed to monitor and report about the cleanliness (NB: which does not mean responsible for cleaning!). The name of the responsible teacher or responsible class can be hanged on top of the toilet block doors. The class and/or teacher can then report to

the school board, or directly to the cleaner. On the other side, it is important that the cleaner can also provide feedback to the users.

A competition with rewards can be also put in place nation-wide or region-wide to highlight the schools with the best maintained toilets.

8.4 Facilitating the work of the cleaning staff

For the WASH facilities to be clean and properly maintained, they should be easy to clean and the maintenance equipment should be readily available. Section 7.3 under Design Considerations provide guidance in that respect. In brief, the surfaces should be easy to clean, a storage room for cleaning equipment and consumables should be built in the toilet block and the cleaners should be provided with adequate protective equipment (clothes, gloves, etc.).

8.5 Ensuring the availability toilet paper, soap and cleaning equipment

The provision of toilet paper and soap should be guaranteed by the school. Figure 51 illustrate a bad example, where students use pieces of mud bricks taken from the latrine building structure. Different mechanisms can be thought of:

- Provision with school budget and storage in a storage room in the toilet block
- Students bring one soap and one toilet roll at the beginning of each school year/semester
- Parents give 1-2 TJS per semester to fund these appliances

Small soaps are often an issue in schools, and other designs should be adopted. More information on this topic is given in section 7.8.

Figure 52 shows a good example of toilet appliance management in Tajikistan.

Figure 51: Inappropriate anal cleansing material, taken from the latrine building structure.

Figure 52: Good example of toilet interior design.

8.6 Alternative sources of funding

In schools including agricultural land in their premises, small schools cooperatives aiming to produce and then to sell agricultural products could be created to increase the income. This kind of system was encountered in some of the visited schools where fruits were produced in the school garden and then sold to the market (see Figure 53 and Figure 54). Structuring within the school and between the schools in a given area by creating these cooperatives could have a positive impact for the school budgets. It could also encourage the participating schools to implement sanitary solutions such as Ecosan toilets that produce fertiliser material out of urine and faeces, which could be used on the spot with the usual precautions.

Figure 53: Productive agriculture in the school premises (Sughd region)

Figure 54: School fruit production (Sughd region)

9 Conclusions

WASH in schools in Tajikistan is characterised by a number of shortcomings, but also some good practice. There is still a big margin for improvement both on the design and on the management sides. In both cases, engagement of the concerned government agencies is crucial to lift the bottlenecks. In particular:

- The **Ministry of Education** should seriously put WASH on its agenda and lead a review process of the current practices. He should develop a clear WASH facility management protocol to be disseminate in each school, and coordinate an update of the facility designs. Several designs should be proposed, that fits to the different contexts found in Tajikistan. Besides, the Ministry should launch an update of the WASH curriculum in the schools.
- **SSESS** has a key role in fostering best practices of WASH in schools. The study showed that the headquarters of SSESS are not always aware of the alarming situation in some schools, and thus cannot take measures. SSESS should revise its monitoring procedure and base it on clear criteria. The present study can help them in that regard.
- The **Agency for Construction and Architecture** has a key role in pushing for better designs and standards. This study provides evidence of some design shortcomings and easy improvements. Besides, the agency should also open the door to innovative systems, such as the urine-diversion dry toilets.

The SNiPs should be updated. Not only do they lead to high costs and often dysfunctional infrastructure, but they also have an impact on the user friendliness of the infrastructure and equipment. For instance the location of water distribution points is not always chosen in a pragmatic way, but rather strictly according to normative indications, putting the users and the infrastructure at danger. The translation of the Compendium of Sanitation Systems and Technologies (Tilley et al., 2014) into Russian could help the government agencies to improve the standards and include sanitation systems that are still missing, such as urine-diverting systems.

A few stakeholders interviewed said that Sustainable Development Goals are not of interest for the Government of Tajikistan. Advocacy should be made by the development partners to show the benefits of following the SDGs for the government. The launching of the 2nd UN Water Decade in Tajikistan would be a great opportunity for that. More than being a constraints, SDGs are a good basis for constructive dialogue and for monitoring progress. Their monitoring guidelines contain clear indicators that could be taken up directly by the different government agencies. We recommend Oxfam to follow-up on those, especially for the monitoring of WASH in schools and health care facilities. Combined with the use of smartphone-based online monitoring tools, it has the potential to facilitate the life of all stakeholders while greatly improving the quality and relevance of the data collected.

This study sampled urban, peri-urban and rural schools. The main differences in terms of infrastructure derive from their size. Bigger schools in urban and peri-urban areas have in average a better water supply system. As the school budget is usually proportional to the number of pupils, large school usually have a bit more resources, which results in more staff that can be allocated to the O&M of WASH infrastructure and also more ease to afford desludging truck services. However, if the superstructure of latrines look in average better, the design and accessibility to functioning hand washing facilities remains problematic.

Looking at the whole sample, the focus should be on optimising the design of the pits and ventilation, and not only on the superstructure. The new toilet blocks usually look good from outside, but, for many of them, it is only the superstructure that was renewed, and the main comfort problems remain: poor ventilation and bad odour, and lack of toilet appliances. Government agencies and NGOs should focus much more on the design of the underground structure (the pit), the ventilation, and all the details that make a toilet block clean, user-friendly and functional. This report provides a number of recommendations on this issue.

Water quality issue is a serious concern. This study shows that the water quality in many schools is bad or worrying. This sampling campaign was a snapshot and further water quality monitoring is needed to follow up and confirm the results. In schools were E. Coli have been detected, measures should be taken as soon as possible.

Next to the water supply quality, a serious issue is the location of water points within the school premises. Especially, a functioning handwashing facility is missing in almost all toilet blocks. This should be addressed in priority wherever a new water supply system is built. For the other schools, refill of the handwashing facilities should be part of the maintenance protocol. Ideally, water points should also be available in other key locations of the school, such as the kitchen and at each floor. A concern that was expressed by the school management is the management of this extra wastewater. Simple onsite treatment solutions followed by infiltration or reuse in gardening do exist.

Finally, and as in many places around the world, the main issue of WASH in schools in Tajikistan is management. Obviously, in most of the schools, there is no robust mechanism in place to ensure that the toilets are regularly cleaned, that the appropriate cleaning equipment is available, as well as key hygiene materials such as toilet paper, water for handwashing and soap. A clear maintenance protocol should be developed. Success will be achieved through fostering incentives and accountability. This report provides a few ways in this direction. Feedback loops should be put in place to hold stakeholders accountable, and simply to engage stakeholders.

Access to appropriate drinking water and sanitation is a basic human right, and is important for the development of children. Poor WASH in schools is not a fatality. With a bit of good will and vision, significant improvements can be achieved quickly. WASH in schools should be at least as good as in restaurants. What restaurants achieve in Tajikistan should also be achieved by school management.

Ten points towards child-friendly hygiene and sanitation facilities in schools

(Zomerplaag and Mooijman, 2005)

Child-friendly hygiene and sanitation facilities in schools...

1. Are 'interactive' spaces that stimulate children's learning and development.
2. Are designed with involvement of children, teachers, parents and communities.
3. Provide lowest-cost solutions with no compromise on quality.
4. Have operation and maintenance plans.
5. Have appropriate dimensions and features for children.
6. Address the special gender-related needs and roles.
7. Do not harm the environment.
8. Encourage hygienic behaviour.
9. Offer enough capacity and minimal waiting time.
10. Have well-considered locations.

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WASH in schools in Tajikistan

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Appendix 1: Field Test protocol for E. Coli

Material checklist:

- ☐ Incubator
- ☐ Electrical outlet adapter
- ☐ Gloves
- ☐ 2 Forceps
- ☐ Graduated vacuum filter
- ☐ Plastic Syringe (100ml)
- ☐ Pipette or 1ml plastic Syringe
- ☐ Pipe
- ☐ Pen
- ☐ Compact dry growth media
- ☐ Filter paper
- ☐ Alcohol wipe or boiler
- ☐ Sample bags
- ☐ Paper towels

NB: **before sampling** take some time to **observe** around (turbidity of water, water system in place…) as it can give you key insights on how to operate

Sampling (use gloves if needed) :

1. Collect **two samples with the sample bags**, be careful not to contaminate the interior, use the lateral strips for manipulating.
2. Seal the bags by flipping it at least three times
3. Dry the bags with a paper towel
4. Identify the bags with a specific code (*write it at least in three different places for safety*)
5. Store the bags in a safe place if they won't be used right away
6. Cool the bags (*cool boxes, maybe bring cooling elements or use ice but not in direct contact to avoid freezing [for example use some tissue instead]*)

Prepare the test:

1. Sterilize the filter and the forceps by boiling it for at least 3 minutes or with the alcohol wipe. Once sterilized the material should be handled with caution.
2. Let it cool down for another 2-3minutes and assemble it together with the filter paper.
3. Use the pipette to wet two growth media with 1ml of sample water.
   You can seal directly one of them as the 1ml test is now complete
4. Pour 100ml of sampled water in the filter and create a vacuum with the syringe.
5. With the forceps, place the filter on the growth media grid upside and seal it.
6. With the pen Identify the sample with a specific code
7. Put the compact discs face down back into the packing and put it in the incubator at 32 to 36 degrees for 24 +max 3-6h (mention on the log book if the incubation time exceeded 24h).

NB 1 : both the sterilized filter upper body and the filter paper should be manipulated with the forceps.

Connect the pipe and the syringe to the filter

NB 2 : in case of multiple samples use a cardboard to make "compartments" to separates the different floors of samples.

NB 3 : Check if Chlorine is used in the system in place before operating the test .

Results:

Draw a four quarters grid on the back of the petri box and count the bacteria colonies with a pen (pink purple = Total coliforms, blue purple = E. coli) . If more than 300 colonies the bacteria have not enough food to grow so just write 301 or >300 on the record.

Waste disposal:

Dispose of the petri boxes and all the potentially contaminated wastes with either concentrated bleach or by boiling them (cook for 10-15 minutes' boxes closed or just pour boiling water directly inside the boxes).

Eawag-Sandec developed an online course (MOOC) module to illustrate the procedure:
https://www.youtube.com/watch?v=0v9-DAifXyo&list=PLxmioE3ClKwHwQGcwRPjQSiOl6-E2zdpT&index=7

Full course accessible at: www.eawag.ch/mooc

Appendix 2: Key excerpts from reports in Tajikistan

Artyushevskaya, N. (2014a).

(Keast, 2010). This suggests that out of the total 3,817 schools in 2008-2009 (GoT/UN, 2010), more than 3,160 schools experienced problems with inadequate sanitation facilities, while more than 1,700 schools were expected to have issues related to unreliable and unsafe access to drinking water supply.

Furthermore, the evaluation has found that most of the schools visited had issues with the installed water points, as water taps were often vandalized of broken (Figure 1). Based on the findings of the evaluation "75% of all taps fitted either to the child friendly water points or the latrine 3 tap array were non functional", and thus it has been recommended that "heavy duty self-closing taps should be installed" (Wurzel, 2007: 17-18). The subsequent comprehensive monitoring of WASH project schools have found that 80% of schools had broken or missing taps inside the school latrines (UNICEF, 2008).

report (2007:39). The observed ratios of children per latrine were quite high: 40% of school latrines had a ration of 1 to 80-90 children, while the ideal ratio is 20-30 children per chamber (Figure 4). The fact that the evaluation has shown that only 2% of project schools fell into this category (Wurzel, 2007), points out to the issues of lack of schools and the need for more latrines at schools.

Key lessons learnt:

3. **There is a need to treat drinking water in schools:** alternative methods to treat drinking water in schools are required to prevent drinking of contaminated water by children.

7. **New national standards for WASH in schools are needed:** new standards based on global guidelines will reinforce advocacy, planning and monitoring for WASH in schools.

Recommendations according to Keast (2010):

4. Develop a new Tajikistan school VIP design.
5. Develop and implement new national WASH in Schools standards.
6. Refine the slow sand point-of-use water filter design, and ensure correct operation and maintenance in schools.

2. A new design of school toilets based on the recommended VIP technology has been developed in cooperation with Polytechnic University, and international consultant. The new design incorporated with technical recommendations given by Greg Keast's evaluation document, however the cost of latrines has increased two-fold. Several latrines have been piloted in the south and north of the country via direct partnership with the local district authorities, but this cooperation experienced significant issues and delays.

Key lesson learnt:

3. Water is the biggest issue in Tajikistan (and will remain so for many years), and thus any considerations of WASH in schools interventions should prioritize solving water issues, and the preference should be given to large-scale systems, with well-thought mechanisms for operation and maintenance.

Artyushevskaya, N. (2014b).

However, due to insufficient and intermittent water supply, sustainable operation and maintenance of pour-flush latrines became a significant challenge, especially in dry and remote rural areas. A comprehensive monitoring of school toilets in winter 2008 found that in 69% of project schools, toilets were either locked or nonfunctional, and only 25% of school latrines had water for toilet flushing (UNICEF, 2008). This finding was attributed

In 2011, UNICEF supported MoE with the development of national standards on the recommendable water and sanitation facilities in schools. The recommendable standards intended to provide a set of recommendations for the promotion of improved water supply and sanitation in rural schools based on the available technologies. With the help of a national consultant, a guidebook has been developed in Russian language and provided for the review to the MoE. However, due to the lack of the involvement of the MoE, the Working Group on WASH in schools, and perhaps lack of commitment, the document has never been approved by the MoE. Please see Annex 3 for more information on the drafted Guidelines on Recommendable WASH in schools in Tajikistan.

World Bank (2015):

17. **Beyond financing and capacity limitations, poor institutional governance and social accountability also contribute to sector underperformance.** The collapse of the Soviet system in the country led to an institutional vacuum with no one in charge of the management of drinking water and sanitation facilities. In Tajikistan there is no higher-level ministry responsible for promoting and coordinating WSS services and reforms. For in particular the smaller drinking water and sanitation systems it is often unclear who the owner is, undermining maintenance and upgrading efforts. There is also no reliable inventory of WSS systems in the country and maps of WSS systems are not always available. All 67 municipalities in Tajikistan have severely degraded WSS systems, except Dushanbe and Khojand. The situation is worst in areas where available water is saline, where deep drilling is needed to reach ground water, and in rural areas more broadly.

Appendix 3: Summary table of the population in the visited schools

District	School n°	Location	Male teachers	Female teachers	Total teachers	Boys	Girls	Total students
Ayni	58	Rural	8	0	**8**	24	22	**46**
	13	Peri-urban	33	8	**41**	226	300	**426**
	50	Rural	15	1	**16**	69	63	**132**
	18	Rural	14	5	**19**	78	57	**135**
	47	Rural	16	2	**18**	114	96	**219**
	1	Urban	20	43	**63**	336	364	**700**
Muminabad	41	Rural	12	3	**15**	61	71	**132**
	38	Rural	7	9	**16**	33	28	**65**
	43	Rural	8	7	**15**	53	48	**101**
	18	Rural	32	8	**40**	317	285	**602**
	2	Urban	39	54	**93**	959	685	**1596**
	48	Peri-urban	25	22	**47**	305	325	**630**
Penjikent	93	Rural	13	3	**16**	159	134	**293**
	71	Urban	14	57	**71**	678	600	**1378**
	18	Peri-urban	24	10	**34**	232	248	**480**
	40	Rural	9	3	**12**	66	43	**115**
	61	Rural	40	5	**45**	488	444	**938**
	84	Rural	15	11	**26**	161	163	**324**
Rudaki	67	Urban	12	48	**60**	950	670	**1620**
	43	Rural	14	4	**18**	140	96	**236**
	70	Urban	17	24	**41**	370	390	**764**
	89	Rural	14	9	**23**	210	152	**362**
	3	Peri-urban	16	61	**77**	1062	1004	**2066**
	69	Peri-urban	/	/	**40**	281	390	**610**
Sughd	55	Rural	6	58	**64**	329	472	**801**
	9	Rural	27	78	**107**	1016	970	**1986**
	55	Rural	12	43	**55**	307	138	**445**
	31	Rural	4	43	**47**	512	320	**832**
	34	Rural	25	40	**65**	308	322	**630**
	66	Rural	8	31	**39**	163	200	**363**

Appendix 4: Typical Requirements for O&M of School WASH Facilities

(adapted from Monirul, 2014; pp. 65-66)

WASH in school facilities	Requirement			
	Day to day O&M		Periodic O&M	
	Operation	Maintenance	Operation	Maintenance
Water Points	➢ Fuel for generator in case of fuel based pump ➢ Salary of operator	➢ Clean surrounding of handpump/tap stand ➢ Brush water container ➢ No stagnant water around water point ➢ Providing necessary materials for use and ensuring facilities are clean	➢ Electricity bills for lighting and pumping water into overhead tank ➢ Cost of spare parts ➢ Water tariff in case of municipal connection ➢ Electricity bills for pumping water ➢ Conduct water tests for microbial contamination	➢ Platform properly constructed ➢ Proper drainage facilities ➢ Seals and valves ➢ Gutters and roofs for rainwater harvesting ➢ Taps or pipes repaired
Sanitation Facilities	➢ Salary of Janitor/Guard ➢ Electricity bills for light ➢ Electricity/fuel bills for overhead tank for running water	➢ Clean squatting pan/seat & building. ➢ Materials are available i.e. anal cleaning ➢ Providing necessary materials (herpic, broom, feline, container, mug, anal cleaning pot, tissue paper etc.) for use and ensuring facilities are clean	➢ Repair squatting pan/seat, U-trap or building. ➢ Pit-emptying services. ➢ Repair of motor pump, pan, tiles etc. ➢ Replacing tap, flash. Soap case etc. ➢ Repair and painting walls	➢ Inspect floor, squatting pan/sat and U-trap. ➢ Unlock U-trap when blocked. ➢ Structural conditions ➢ Visible condition i.e. painting, carton, colour etc. ➢ Pit/septic tank volume remaining
Handwashing Facilities	➢ Pumping expense of running water ➢ Buying soap for handwashing	➢ Clean taps/handwshing device ➢ Clean basins and mirror ➢ No stagnant water surrounding of handwashing device.	➢ Repairing basin, pipes ➢ Replacing tap	➢ Sufficient number handwashing place/stand for school children ➢ Replace damaged tap/basins/mirror. ➢ Provision of cleaning agents for cleaning basins, mirror and taps

Appendix 5: Survey questionnaires

Four different survey questionnaires were developed for the four types of stakeholders interviewed and are given in the following pages :

I. **School principals**
II. **Teachers**
III. **Students**
IV. **Parents**

On demand, Oxfam team can provide these questionnaires in Tajik language.

Survey on WASH in schools Tajikistan

PART I : School Principal

Preliminary information to be given to interviewee

"My name is (*adapt*). I assist in a research project on WASH (Water, Sanitation and Hygiene) in schools. This research is being conducted by *OXFAM GB in Tajikistan* with the research department of Sanitation, Water and Solid Waste for Development(Sandec) from the Swiss Federal Institute of Aquatic Science and Technology (Eawag).

We would like to include you in this investigation. The purpose of this study is to learn about your personal experiences, your needs and priorities related to the existing sanitary facilities in the present school and how this impacts you. The main objective of this study is to learn and inform about the specific needs of users with regards to water, sanitation and hygiene in Tajikistani schools as well as highlight the general framework governing their operation, management and maintenance.

We will be asking you a range of questions. All information you provide will be confidential and will not be used or shared with anyone except those involved in the study. We will not collect any information that could be used to identify you. You are free to skip any questions which makes you feel uncomfortable. Your personal views, experiences and critical comments are very important and welcome. They help to get a better understanding of the existing situation and will form the basis for recommendations for improvements regarding infrastructure as well as for adjustments at operational level.

The interview will take about 30 minutes .

Do you have any questions? "

"

: **Questions to assess SDGs indicators**

NB : Key quotes, words, stories & observation if any can be reported at the end of this document (words that stood out and may connect with other interviews)-

Topic	Comments	Answer(s)	Notes
General Information			
1. School Name			
2. School identification			
3. School location			
4. School level		☐ Primary ☐ Middle ☐ Secondary ☐ Mixed ☐ Other:……..	
5. Participant Location	*Where did you talk to this person*		
6. Interview Type		☐ In person ☐ Phone ☐ Other:…….....	
7. Interview Length	*How much did the interview last (minutes)*	……..	
8. Interviewer(s)	*People in your team who conducted the interview*		
9. Date/Time of interview			
10. Date/Time of observation (if different)			
11. Multimedia		☐ None ☐ Pictures ☐ Video ☐ Audio recording	
12. Consent / Anonymization	*Consent/anonymization: Did you take an official picture? can it be shared in official report or just within team work*	☐ Yes ☐ No	
13. School population		• Boys:….. • Girls:…... • Total Student:….. • Male teachers:….. • Female teachers:…. • Total Teachers:…..	
14. School management		☐ Public ☐ Private ☐ Religious	
15. School type		☐ Day school ☐ Boarding school ☐ Other:……	
16. Student with physical disabilities		• Number of girls: … • Number of boys : … • Total: …	
17. Does the school has some institutional	*Multiple answers are possible*	☐ None (**skip to 20**) ☐ Parents association	

link with the community?		☐ Management committee (**skip to 20**) ☐ Other:…….(**skip to 20**)	
18. If the school has a Parent Association, what is/are their role(s) ?	*Multiple answers are possible* *Explain each possible answers to the school principal if needed*	☐ Financial management ☐ Planning ☐ Monitoring activities ☐ Providing materials ☐ Other:….. ☐ Other:….. ☐ Other:….. ☐ Other:….. ☐ Other:…..	
19. Do you think that the parent association does what it is supposed to do and in an efficient way	*This is an open question, here, try to assess the opinion of the school principal about the Parent association (importance, influence)*		
20. Does the school has some student association(s) ?	*Associations, clubs …*	☐ Yes ☐ No : **skip to 20**	
21. Is the student association(s) involved in supporting WASH in school ?		☐ Yes ☐ No	
22. Do you have any plan for improvement of water supply, sanitation and hygiene in your school ?	*Explain to the school principal if needed*	☐ No ☐ Yes : ……	
Water Supply			
23. How many water sources does the school has?	*If there is more than one source, specify the number* *confirm through observation*	☐ Only one ☐ More than one : ……	
24. Major water source for the school	***Check only one answer*** *Assess the **state** of the water source in the notes section :* *corrosion signs, cracks , leaks, absence/presence of protection* *If children need to bring water from home because water is not provided by the school "no water source" should be selected* *Write in the note section the **location** of the water source (**inside**, **close to**,*	☐ Piped water into dwelling ☐ Piped water to yard ☐ Public tap ☐ Protected well ☐ Unprotected well ☐ Tubewell/borehole ☐ Protected spring ☐ Unprotected spring ☐ Rainwater collection ☐ Surface water ☐ Tanker truck ☐ Bottled water ☐ No water source : (**skip**	

	far** from the school) and the **cleanliness of its surroundings	**to next part**) ☐ Other : ……	
25. Is there one or several water tank(s) in school	*If yes write down their number, approximate volume and location*	☐ No ☐ Yes:…… …… …… ……	
26. What is the water source used for	*Multiple answers are possible*	☐ Drinking ☐ Handwashing ☐ Anal cleansing ☐ Flushing toilets ☐ Cooking for student or teacher ☐ Other:……..	
27. In general, how often is water available	*If there is several sources that are not available at the same time, mention it in the note section*	Within the week : ☐ 5-7 days per week ☐ 2-4 days per week ☐ Fewer than 2 days per week Within the day : ☐ All time ☐ If not: …. hours per day from …. to ….	
28. In general, when water is available, the pressure at the main water outlet(s) is		☐ Insufficient ☐ Sufficient ☐ There is too much pressure	
29. Is the main water source functional at the time of your visit	*If partially try to assess why in the note section*	☐ No ☐ Yes (**skip to 31**) ☐ Partially	
30. If the main water source is either not or partially functional now, how long has it been the case		☐ Less than one day ☐ Between one day and one week ☐ Between one week and one month ☐ More than one month	

31. If the water source is functional, does it provides enough water for the needs of the school (including drinking and handwashing)	*If possible, make a rough estimate if the school meets 5L/person/day*	☐ Yes for the teachers ☐ No for the teachers ☐ Yes for the students ☐ No for the students ☐ Don't know	
32. Is there an acceptable alternative school water supply if the currently used water source(s) become non-functional	*The alternative source should also meets both basic drinking and handwashing needs. Please note that students bringing water from home is not an acceptable alternative* *Assess the **state** of the water source in the notes section : corrosion signs, cracks , leaks, absence/ presence of protection*	☐ Yes : …… ☐ No	
33. Is there any kind of water treatment system already available for the school?	*Filter, boiling equipment…*	☐ Yes:…… ☐ No	
34. Is the water from the source used at school treated in any way to make it safer to drink?		☐ Always (**skip to 36**) ☐ Sometimes ☐ Never	
35. Is there a reason why the water is not always treated?	*Multiple answers are possible*	☐ The source is considered safe ☐ The school does not have filters or sufficient purification chemicals ☐ Nobody at the school knows how to treat water ☐ The school principal does not know if it is necessary or not ☐ School staff do not have time to do it ☐ Most students drink bottled water from shop or from home ☐ Other:……	
36. If water from the source is always or sometimes treated, how is it treated	*Check **only one** (choose the method most used by the students)*	☐ Boiling ☐ Chlorination ☐ Cloth filtration ☐ Water filter (sand, ceramic, composite…) ☐ Solar disinfection	

		☐ Flocculation agent ☐ Letting it stand and settle ☐ Other:……	
37. Water distribution	*Assess the state of the taps and the efficiency of their locations in the note section* *Assess the general state of the distribution network if any*	Total number of taps in the school :…….. Number of water taps in the school per location : ……. ……. ……. Small tanks/dispensers for handwashing or drinking? …… Water network mounted inside or outside the walls?	
38. Water losses	*If losses are suspected : shut off all the water intakes and see if the water meter is still running and ask for records if any to estimate since when there is losses and if losses losses are superior or inferior to 20%* *Observe if there is any trace of water losses in the surrounding of the school*	☐ Water meter recording :…..	
39. Are drinking water facilities easily accessible to younger children or ones with physical disability	*Answer yes if the student can get a drink of water from the facility without the help of a teacher or other students*	☐ Yes for younger children ☐ Yes for students with physical disability ☐ No	
Sanitation			
40. Type(s) of toilets	*Multiple answers are possible* *Write your eventual observations in the note section* *if pit latrine with slab, write in the note section the type of slab (ceramic, wood, etc.)*	☐ Cistern flush toilet (connected to water supply network) : …. ☐ Pour flush toilet (flushed with water bucket):… ☐ Pit latrine with slab:…. ☐ Open Pit latrine:…. ☐ Ventilated Improved pit latrine (VIP):…	

		□ Single chamber urine diverting dry toilet □ Double chamber urine diverting dry toilet □ Bucket:…. □ Composting toilet:… □ Hanging latrine:… □ Other: ……. □ No toilet facilities (**skip to next part**)	
41. In case of **flush toilets** : where the flush toilet is connected to		□ Sewer pipe □ Septic tank □ Cesspit □ Soak pit □ Open pit in the yard □ Pipe to field or ditch outside the plot □ Other:……	
42. In case of pit or tank, is the pit (or tank) accessible to an emptying vehicle ?		□ Yes □ No	
43. In case **of pit or tanks** : what will be done when the pit/tank is full	*In case of emptying by a vacuum truck (or by different method if relevant), fill the missing parts in the note section*	□ Emptying by a vacuum truck □ Emptying by different method:…… □ Dig new pit □ Other:…… □ Don't know	Provider:…….. frequency:…….. average cost:…… place of disposal of the faecal sludge:…….. financed by:…….
44. Are there any problems with the toilets facilities in general?		□ No □ It smells □ Often clogged □ Not properly used □ Deteriorated/broken □ Other:…….	
45. Are there any problem with the septic tank /cesspit/soak pit	*Write your eventual observations in the note section*	□ No □ It smells □ Often clogged □ Wastewater is leaking □ Too expensive to be emptied □ Other:……..	
46. If several toilets	*Verify if the ratio of pupils/toilets is sufficient enough* *(25 girls / toilet compartment ; 50 boys/ toilet compartment if urinal*	Total number of toilets : ….. Number of dysfunctional toilets :…… Number of toilets used by period: • All year: ….	

<table>
<tr>
<td></td>
<td>available ; 1 toilet for male staff ; 1 toilet for female staff source: UNICEF/WHO guidelines standards

20 girls /toilet slab ; 13 boys/toilet slabs source: national standards)

Assess the general state of the toilets.
If you identify dysfunctional toilets try to know why, since when and if a reparation is planned and by whom ?

Each toilet should be only counted once

Functional: toilet facilities not physically broken and usable
Partially Functional: usable but at least some problem with physical infrastructure and some repair is necessary (concrete deterioration, doors coming loose, roof deteriorating …)
Not Functional: badly damaged (holes in roof, door missing…), not usable</td>
<td colspan="2">• Only during Winter: ….
• Only during Summer: ….

Number of toilets used by or allocated for :
<table>
<tr><th></th><th>Functional</th><th>Partially Functional</th><th>Not functional</th></tr>
<tr><td>Anyone in the school</td><td></td><td></td><td></td></tr>
<tr><td>only male teachers</td><td></td><td></td><td></td></tr>
<tr><td>only female teachers</td><td></td><td></td><td></td></tr>
<tr><td>Male and female teachers</td><td></td><td></td><td></td></tr>
<tr><td>only boys</td><td></td><td></td><td></td></tr>
<tr><td>only girls</td><td></td><td></td><td></td></tr>
<tr><td>Boys and Girls</td><td></td><td></td><td></td></tr>
<tr><td>People with disabilities</td><td></td><td></td><td></td></tr>
</table>
</td>
</tr>
<tr>
<td>47. If there is some dysfunctional toilets at the time of visit, why are they dysfunctional?</td>
<td>This is an open question. Ask why the toilets are dysfunctional according to the interviewee</td>
<td colspan="2"></td>
</tr>
<tr>
<td>48. Does the school also has urinals ?
if yes how many are there</td>
<td>Continuous urinals: walls/gutters should be characterized by their total length</td>
<td colspan="2">☐ No urinals

Water based urinals :
☐ Boys individual urinals :…..
☐ Male teachers individual urinals……
☐ Boys continuous urinals:……..m
☐ Male teachers continuous urinals:……..m</td>
</tr>
</table>

		Dry urinals : ☐ Boys individual urinals :….. ☐ Male teachers individual urinals…… ☐ Boys continuous urinals:……..m ☐ Male teachers continuous urinals:……..m	
49. Do you have any system for onsite treatment of wastes generated by the sanitation or water facilities ?		☐ No ☐ Yes (specify) :……..;	
50. Do you produce compost at school ?	*Write in the note section if there is any sign of agricultural activity inside the school or around it*	☐ No ☐ Yes	
51. would you be willing to use dry sludge produced from school facilities to produce compost ?		☐ Yes ☐ No, because :……..;	
Hygiene			
52. Is hygiene taught at the school		☐ Yes ☐ No (**skip 57**)	
53. How is hygiene taught at school?		☐ As a component of the core curriculum ☐ Through school sponsored extracurricular programs (eg. clubs) ☐ Only sporadically/informally/occasionally	
54. Is handwashing with soap or ash a prominent part of hygiene lessons?	*This question will require discussion with informants as well as an on-site review of the hygiene education materials available in the school*	☐ Yes ☐ No because:…… ……..	
55. Is the importance of handwashing with soap or ash at critical times stressed in the hygiene education material ?	*Critical time at schools means immediately after defecation and before eating*	☐ Yes ☐ No	

56. Are students encouraged to transmit hygiene knowledge to their families and communities ?	*Multiple answers are possible*	☐ Yes, through the education material that encourages student to talk about or demonstrate good hygiene practices at home. ☐ Yes, through **regular** school-sponsored events ☐ Yes, but only occasionally ☐ No	
57. Does the school has handwashing facilities?	*To be cross-checked through observation*	☐ Yes ☐ No (**skip to 63**)	
58. What kind of handwashing facilities does the school has?	*If several, check only the system most used by the students*	☐ Bucket/Basin or other container with handwashing done directly in the water ☐ Hand-poured water system (eg. from bucket or ladle) ☐ Running water from a piped system or tank (eg. Faucet+sink, standpost, rainwater tank+ faucet) ☐ Other:…… ……	
59. Does the handwashing facility allows the water to be treated before use?		☐ No ☐ Yes, by boiling ☐ Yes, by chlorine tabs ☐ Yes, by : ……..	
60. Assess the number of handwashing facilities in		• Classroom (average) :…. • Toilet block (average) :… • School ground:… • Other (specify) :… ……	
61. Are the handwashing facilities accessible to young children and children with physical disabilities	*Facilities are considered accessible if the student can have access to it and can reach both the soap/ash and the water.* *if yes, write the number of concerned facilities*	☐ Yes for young children :… ☐ No for young children ☐ Yes for children with physical disabilities :… ☐ No for children with physical disabilities ☐	

62. Are both soap and water currently available at the handwashing facilities?		☐ Yes, water and soap ☐ Water only ☐ Soap only ☐ Neither water or soap	
63. What type of material are generally used by the children for anal cleansing ?			
64. What facilities and programmes are there in the school for promoting safe and private menstrual hygiene for older girls?	*Multiple answers are possible*	☐ Menstrual hygiene education sessions for girls ☐ Private washing facilities for cloth napkins (such as a tap and basin inside a lockable toilet stall) ☐ Private disposal/incineration facilities for disposable napkins ☐ Any kind of napkin distribution programme ☐ Other:……. ☐ None ☐ Don't know	
Operation and Maintenance			
65. According to you what entity has the primary responsibility for **maintenance and repair** of the school's **water system**? Maintenance and repair: All the things needed for the system itself to stay functional (eg: reparation if broken, cleaning…)	*do not orientate the school principal by letting him know the possible choices, if he doesn't know simply check the corresponding answer*	☐ Ministry of land Reclamation and Water Resources ☐ Ministry of education ☐ IMCC (Inter-ministerial coordination council on drinking water supply) ☐ Local authorities (municipality, district..) :……. ☐ The school itself: …… ☐ Other:……. ☐ The school principal doesn't know who is responsible	
66. Who is responsible for repairing the water system if needed ?	*if a particular person is in charge, is it his/her only responsibility ? what else does he/she do ?* *if there is any costs mention them and how they are covered in the note section*	☐ Parents:……. ☐ School:……. ☐ Other:…….	

67. In your opinion, are the school water facilities successfully maintained, and repaired when required? Maintenance and repair : All the things needed for the system itself to stay functional (eg: reparation if broken, cleaning…)		☐ Yes ☐ No ☐ Partially ☐ Don't know	
68. If the answer to the previous question is No or partially, why is/are the reason(s) according to you?			
69. What entity has the primary responsibility for **operation** of the school's water system? Operation: all the inputs needed for the system to stay operational (eg: electricity, fuel for the pump, soap, cleaning equipment , ,etc.)	*do not orientate the school principal by letting him know the possible choices, if he doesn't know simply check the corresponding answer*	☐ Ministry of land Reclamation and Water Resources ☐ Ministry of education ☐ IMCC (Inter-ministerial coordination council on drinking water supply) ☐ Local authorities (municipality, district..) :……. ☐ The school itself: …… ☐ Other:…… ☐ The school principal doesn't know who is responsible	
70. Who is responsible for providing necessary goods for the proper functioning of water facilities?	*if a particular person is in charge, is it his/her only responsibility ? what else does he/she do ?* *if there is any costs mention them and how they are covered in the note section*	**Consumable** / **Person responsible** Electricity/fuel for the pump water soap cleaning equipment	
71. In your opinion, are the school water facilities operated successfully? Operation: all the inputs needed for the		☐ Yes ☐ No ☐ Partially ☐ Don't know	

system to stay operational (eg: electricity, fuel for the pump, soap, cleaning equipment , ,etc.)			
72. If the answer to the previous question is No or partially, why is/are the reason(s) according to you?			
73. If the water supply system is not or only partially functional at the time of your visit (see 29), what are the main reasons?	*Multiple answers are possible*	☐ Unclear responsibilities for Operation and Maintenance (O&M) ☐ Bad/Poor O&M practices ☐ Lack of spare parts ☐ Lack of operation consumables (electricity, fuel, etc.) ☐ Badly designed system ☐ Age of system ☐ Other: …… ☐ Don't know	
74. What entity has the primary responsibility for **maintenance and repair** of the **sanitation facilities**? Maintenance and repair : All the things needed for the system itself to stay functional (eg: reparation if broken, cleaning…)	*Question to be asked to the school principal.* *do not orientate the school principal by letting him know the possible choices, if he doesn't know simply check the corresponding answer*	☐ Ministry of land Reclamation and Water Resources ☐ Ministry of education ☐ IMCC (Inter-ministerial coordination council on drinking water supply) ☐ Local authorities (municipality, district..) :……. ☐ The school itself: …… ☐ Other:…… ☐ The school principal doesn't know who is responsible	
75. Who is responsible for cleaning the toilet facilities	*Multiple answers are possible* *if there is any costs mention them and how they are covered in the note section*	☐ Cleaning staff ☐ Students ☐ Teachers ☐ Other: ……; ☐ Don't know / unclear	
76. In your opinion, are the sanitation facilities successfully maintained, and		☐ Yes ☐ No ☐ Partially ☐ Don't know	

<table>
<tr><td>repaired when required?

Maintenance and repair : All the things needed for the system itself to stay functional (eg: reparation if broken, cleaning…)</td><td></td><td></td><td></td></tr>
<tr><td>77. What entity has the primary responsibility for operation of the sanitation facilities?

Operation: all the inputs needed for the system to stay operational (soap, toilet paper, cleaning equipment etc.)</td><td>Question to be asked to the school principal.

do not orientate the school principal by letting him know the possible choices, if he doesn't know simply check the corresponding answer</td><td>☐ Ministry of land Reclamation and Water Resources
☐ Ministry of education
☐ IMCC (Inter-ministerial coordination council on drinking water supply)
☐ Local authorities (municipality, district..) :…….
☐ The school itself: ……
☐ Other:……
☐ The school principal doesn't know who is responsible</td><td></td></tr>
<tr><td>78. Who is responsible for providing necessary goods for the proper functioning of sanitation facilities?</td><td>if a particular person is in charge, is it his/her only responsibility ? what else does he/she do ?

if there is any costs mention them and how they are covered in the note section</td><td colspan="2"><table><tr><th>Consumable</th><th>Person responsible</th></tr><tr><td>Toilet paper</td><td></td></tr><tr><td>water</td><td></td></tr><tr><td>soap</td><td></td></tr><tr><td>cleaning equipment</td><td></td></tr><tr><td></td><td></td></tr></table></td></tr>
<tr><td>79. In your opinion, are the school sanitation facilities operated successfully?

Operation: all the inputs needed for the system to stay operational (eg: electricity, fuel for the pump, soap, cleaning equipment , ,etc.)</td><td></td><td>☐ Yes
☐ No
☐ Partially
☐ Don't know</td><td></td></tr>
</table>

80. In the case in which students have toilet cleaning responsibilities, what are the respective responsibilities for girls and boys?	*Multiple answers are possible*	☐ Girls usually clean their own toilets ☐ Boys usually clean their own toilets ☐ Girls usually clean boys' toilets ☐ Boys usually clean girls' toilets ☐ Girls usually clean teachers' toilets ☐ Boys usually clean teachers toilets ☐ Other:……	
81. Are the toilet duties assigned to students as punishment?		☐ Yes ☐ No ☐ Sometimes ☐ Don't know	
82. Do you have some equipment for maintenance of both toilet and water supply facilities?	*e.g: scrubbing brush, cleaning products, tools if needed, spare parts, unclogging equipment…*	☐ No ☐ Yes	
83. Who is responsible for providing those equipment ?	*if a particular person is in charge, is it his/her only responsibility ? what else does he/she do ?* *if there is any costs mention them and how they are covered in the note section*	☐ Parents:……. ☐ School:……. ☐ Other:…….	

If needed finish the questionnaire with an open discussion with the school principal about the WASH management and financing scheme in his/her school.

Key Quotes, Stories & Observation Notes

(It is not a full 1:1 transcript but presents all statements relevant to the research.)

To be filled in while you interview:

"Quote."

"Stories."

"Observations."

Survey on WASH in schools Tajikistan

PART II : School Teachers

Preliminary information to be given to interviewee

"My name is (*adapt*). I assist in a research project on WASH (Water, Sanitation and Hygiene) in schools. This research is being conducted by *OXFAM GB in Tajikistan* with the research department of Sanitation, Water and Solid Waste for Development(Sandec) from the Swiss Federal Institute of Aquatic Science and Technology (Eawag).

We would like to include you in this investigation. The purpose of this study is to learn about your personal experiences, your needs and priorities related to the existing sanitary facilities in the present school and how this impacts you. The main objective of this study is to learn and inform about the specific needs of users with regards to water, sanitation and hygiene in Tajikistani schools as well as highlight the general framework governing their operation, management and maintenance.

We will be asking you a range of questions. All information you provide will be confidential and will not be used or shared with anyone except those involved in the study. We will not collect any information that could be used to identify you. You are free to skip any questions which makes you feel uncomfortable. Your personal views, experiences and critical comments are very important and welcome. They help to get a better understanding of the existing situation and will form the basis for recommendations for improvements regarding infrastructure as well as for adjustments at operational level.

The interview will take about 20 minutes .

Do you have any questions?

NB : Key quotes, words, stories & observation if any can be reported at the end of this document (words that stood out and may connect with other interviews)-

Topic	Comments	Answer(s)	Notes
General Information			
1. School Name			
2. School identification			
3. School location			
4. School level		☐ Primary ☐ Middle ☐ Secondary ☐ Mixed ☐ Other:……..	
5. Participant Location	*Where did you talk to this person*		
6. Interview Type		☐ In person ☐ Phone ☐ Other:…….....	
7. Interview Length	*How much did the interview last (minutes)*	……..	
8. Interviewer(s)	*People in your team who conducted the interview*		
9. Date/Time of interview			
10. Date/Time of observation (if different)			
11. Multimedia		☐ None ☐ Pictures ☐ Video ☐ Audio recording	
12. Consent / Anonymization	*Consent/anonymization: Did you take an official picture ? can it be shared in official report or just within team work*	☐ Yes ☐ No	
13. If the school has a Parent association , what is their role ?		☐ Financial management ☐ Planning ☐ Monitoring activities ☐ Providing materials ☐ Other:…..	
14. What do you think about the Parent association ?	*This is an open question, here, try to assess the opinion of the school principal about the PA (importance, influence)*		

Water Supply			
15. In general, how often is water available	*If there is several sources that are not available at the same time, mention it in the note section* *Assess in the note section the pressure at the main water outlets.*	Within the week : ☐ Always ☐ 5-7 days per week ☐ 2-4 days per week ☐ Fewer than 2 days per week Within the day : ☐ All time ☐ If not: .. hours per day from … to ….	
16. Is there an access or storage for water in the classroom?	*If yes specify the type* *Assess its state in the note section (functional, partially functional, not functional)*	☐ No ☐ Yes:…….	
17. Do student bring water to the classroom?	*If yes specify how they do it and for what purpose (handwashing, fill the class tank, drinking, etc.)*	☐ No ☐ Yes:…….	
18. What is the most common source used by the student for drinking water ?			
19. If the main water source is either not or partially functional now, how long has it been the case		☐ Less than one day ☐ Between one day and one week ☐ Between one week and one month ☐ More than one month	
20. If the water source is functional, does it provides enough water for the needs of the school (including drinking and handwashing)	*If possible, make a rough estimate if the school meets the WHO/UNICEF guideline of 5L/person/day*	☐ Yes for the teachers ☐ No for the teachers ☐ Yes for the students ☐ No for the students ☐ Don't know	

21. Is there an acceptable alternative school water supply if the currently used water source(s) become non-functional	*The alternative source should also meets both basic drinking and handwashing needs. Please note that students bringing water from home is not an acceptable alternative* *Assess the **state** of the water source in the notes section : corrosion signs, cracks, leaks, absence/presence of protection*	☐ Yes : ……. ☐ No	
22. Is the water from the source used at school treated in any way to make it safer to drink ?		☐ Always (**skip to 24**) ☐ Sometimes ☐ Never	
23. Is there a reason why the water is not always treated?	*Multiple answers are possible*	☐ The source is considered safe ☐ The school does not have filters or sufficient purification chemicals ☐ Nobody at the school knows how to treat water ☐ The school principal does not know if it is necessary or not ☐ School staff do not have time to do it ☐ Most students drink bottled water from shop or from home ☐ Other:……..	
24. If water from the source is always or sometimes treated, how is it treated	*Check **only one** (choose the method most used by the students)*	☐ Boiling ☐ Chlorination ☐ Cloth filtration ☐ Water filter (sand, ceramic, composite…) ☐ Solar disinfection (sodis) ☐ Flocculation agent ☐ Letting it stand and settle ☐ Other:……	

Sanitation ***If the information concerning sanitation obtained from the principal are not good enough, ask other questions from the questionnaire to the principal.***			
25. Do you think the school toilets facilities are adapted for the needs of the student and the school employees ?		☐ Yes for the school employees ☐ No for the school employees ☐ Yes for the student ☐ No for the student	
26. If not adapted for the school employees, why ?	*What about distance? Are they reachable in the time of the breaks? Waiting time at toilets?*		
27. If not adapted for the student, why ?	*What about distance? Are they reachable in the time of the breaks? Waiting time at toilets?*		
28. What is the general opinions of the student about the sanitation facilities ?		☐ Good ☐ Student do not care about sanitation facilities ☐ Bad ☐ The teacher doesn't know	
29. What is the general opinions of the parents about the sanitation facilities ?		☐ Good ☐ Parents do not care about sanitation facilities ☐ Bad ☐ The teacher doesn't know	
30. If any, are there any problem with the septic tank /cesspit/soak pit		☐ No ☐ It smells ☐ Often clogged ☐ Wastewater is leaking ☐ Too expansive to be emptied ☐ Other:……..	
Hygiene			
31. What is your personal perception of student hygiene and knowledge about hygiene matters?			

32. What is your personal perception about students handwashing in particular?			
33. What vessel (cup, glass, etc.) is commonly used by the students for drinking at school	*Check **only one** (choose the method most used by the students)*	☐ Their own reusable drinking vessel ☐ A disposable drinking vessel (one time use : e.g paper cup) ☐ A shared drinking vessel (e.g shared cup or flask) ☐ Directly from the water source ☐ Other:……..	
34. Is hygiene taught at the school		☐ Yes ☐ No (**skip to 41**)	
35. Have you read any documentation on promoting WASH at school ?	*If yes mention the reference of the documentation in the note section*	☐ Yes ☐ No (**skip to 37**)	
36. If yes, do you find it useful ?		☐ Yes because ……. …… …….. …… ……... ☐ No because …… ….. …… …… …… ……	
37. How is hygiene taught at school?		☐ As a component of the core curriculum ☐ Through school sponsored extracurricular programs (eg. clubs) ☐ Only sporadically/informally/ occasionally	
38. Is handwashing with soap or ash a prominent part of hygiene lessons?	*This question will require discussion with informants as well as an on-site review of the hygiene education materials available in the*	☐ Yes ☐ No because: …… …..	

	school		
39. Is the importance of handwashing with soap or ash at critical times stressed in the hygiene education material ?	*Critical time at schools means immediately after defecation and before eating*	☐ Yes ☐ No	
40. Are students encouraged to transmit hygiene knowledge to their families and communities?	*Multiple answers are possible*	☐ Yes, through the education material that encourages student to talk about or demonstrate good hygiene practices at home. ☐ Yes, through **regular** school-sponsored events ☐ Yes, but only occasionally ☐ No	
41. Is there a designated time period allotted for students to wash their hands before eating?		☐ Yes ☐ No because: ……..	
42. What facilities and programmes are there in the school for promoting safe and private menstrual hygiene for older girls?	*Multiple answers are possible*	☐ Menstrual hygiene education sessions for girls ☐ Private washing facilities for cloth napkins (such as a tap and basin inside a lockable toilet stall) ☐ Private disposal/incineration facilities for disposable napkins ☐ Any kind of napkin distribution programme ☐ Other:……. ☐ None ☐ Don't know	
43. Do you think that girls often miss school due to a lack of menstrual hygiene adapted facilities ?		☐ Yes ☐ No	
44. Do the students often miss school due to water-born diseases (diarrhea, hepatitis, typhoid)	*If yes ask if the teacher has some numbers related to absenteeism due to water-born diseases*		

Operation and Maintenance ***If the information concerning operation and maintenance obtained from the principal are not good enough, ask other questions from the questionnaire to the principal.***			
45. In your opinion, are the school water facilities successfully maintained, and repaired when required? Maintenance and repair : All the things needed for the system itself to stay functional (eg: reparation if broken, cleaning…)	*Try to assess the general opinion amongst the teachers*	☐ Yes ☐ No ☐ Partially ☐ Don't know	
46. In your opinion, are the school water facilities operated successfully?	*Try to assess the general opinion amongst the teachers*	☐ Yes ☐ No ☐ Partially ☐ Don't know	
47. If the water supply system is not or only partially functional at the time of your visit what are the main reasons?	*Multiple answers are possible*	☐ Unclear responsibilities for Operation and Maintenance (O&M) ☐ Bad/Poor O&M practices ☐ Lack of spare parts ☐ Lack of operation consumables (electricity, fuel, etc.) ☐ Badly designed system ☐ Age of system ☐ Other: …….. ☐ Don't know ☐	
48. In your opinion, are the school sanitation facilities successfully maintained, and repaired when required ? Maintenance and repair : All the things needed for the system itself to stay functional (eg: reparation if broken, cleaning…)		☐ Yes ☐ No ☐ Partially ☐ Don't know	
49. In your opinion, are the school sanitation facilities operated successfully? Operation: all the inputs needed for the system to stay operational (eg: electricity, fuel for the pump, soap, cleaning equipment , ,etc.)		☐ Yes ☐ No ☐ Partially ☐ Don't know	

50. Who is responsible for cleaning the toilet facilities	*Multiple answers are possible*	☐ Cleaning staff ☐ Students ☐ Teachers ☐ Other: ……; ☐ Don't know / unclear	
51. In the case in which students have toilet cleaning responsibilities, what are the respective responsibilities for girls and boys?	*Multiple answers are possible*	☐ Girls usually clean their own toilets ☐ Boys usually clean their own toilets ☐ Girls usually clean boys' toilets ☐ Boys usually clean girls' toilets ☐ Girls usually clean teachers' toilets ☐ Boys usually clean teachers toilets ☐ Other:……	
52. Are the toilet duties assigned to students as punishment?		☐ Yes ☐ No ☐ Sometimes ☐ Don't know	

Key Quotes, Stories & Observation Notes

(It is not a full 1:1 transcript but presents all statements relevant to the research.)

To be filled in while you interview:

"Quote."

"Stories."

"Observations."

Survey on WASH in schools Tajikistan

PART III : Students

"Hello, my name is … . Would you answer some questions about water, sanitation and hygiene? It would take about 15 minutes, it is not an exam and the results are confidential"

Remarks:

- *If possible find a place where you can interview the pupil without having a crowd of other children around you*
- *For the students/pupils, it is needed to explain well and reformulate orally the question in a way that the pupil exactly know what you are talking about*
- *Key quotes, words, stories & observation if any can be reported at the end of this document (words that stood out and may connect with other interviews)-*

Topic	Comments	Answer(s)	Notes
General Information			
1. School Name			
2. School identification			
3. School location			
4. School level		☐ Primary ☐ Middle ☐ Secondary ☐ Mixed ☐ Other:……..	
5. Participant Location	*Where did you talk to this person*		
6. Interview Type		☐ In person ☐ Phone ☐ Other:…….....	
7. Interview Length	*How much did the interview last (minutes)*	……..	
8. Interviewer(s)	*People in your team who conducted the interview*		
9. Date/Time of interview			
10. Age of student/pupil			
11. Gender of student/pupil		☐ Boy ☐ Girl	
12. Multimedia		☐ None ☐ Pictures ☐ Video ☐ Audio recording	
13. Consent / Anonymization	*Consent/anonymization: Did you take an official picture ? can it be shared in official report or just within team work*	☐ Yes ☐ No	
Water Supply			
14. What do you use water for at school ?			
15. Where do you get water for :	*If the student/pupil doesn't know, simply write doesn't know* *fill the section "other" only if the student/pupil mentioned another water needing activity in the previous question*	☐ Drinking :…….. ☐ Handwashing :…….. ☐ Anal cleansing:…….. ☐ Flushing toilets:……. ☐ Cooking for student or teacher:……. ☐ Other: …….	
16. Do you feel that the water from school is good for drinking?		☐ Yes ☐ No, because ……..	

17. In general, how often is water available	*If there is several sources that are not available at the same time, mention it in the note section*	Within the week : ☐ 5-7 days per week ☐ 2-4 days per week ☐ Fewer than 2 days per week Within the day : ☐ All time ☐ If not: … hours per day from …. to ….	
18. If the main water source is either not or partially functional now (see 29 Q1) , how has it been the case	*Try to confirm the answer by asking some student*	☐ Less than one day ☐ Between one day and one week ☐ Between one week and one month ☐ More than one month	
19. Do you often bring water from home?		☐ Yes, bottled water ☐ Yes, other: …… ☐ No (**skip to 21**)	
20. You bring water from home for:		☐ Drinking ☐ Handwashing ☐ Anal cleansing ☐ Flushing toilets ☐ Cooking for student or teacher ☐ Other: ……..	
21. Do you know any water treatment methods?	*Ask the student to explain each of the methods he or she mention*	☐ Yes, 1 :…… ☐ Yes, 2:…….. ☐ Yes, more than 2 :….. ☐ No	
22. Do you treat water at home for drinking ?		☐ Yes:….. ☐ No	
Sanitation			
23. Do you often use the toilets at school?		☐ Yes ☐ No	
24. Do you like to use the toilet in the school?		☐ Yes ☐ No	
25. Are there reasons for **not** using the school toilets ?		☐ There is no toilet ☐ The toilet is broken ☐ The toilet is locked ☐ Too dirty ☐ Too smelly ☐ Too far away ☐ Too dark inside ☐ Not enough time ☐ Too many other users/ long queue ☐ Not private enough ☐ I am scared to use it	

		☐ There are no reasons ☐ Other	
26. What are the causes for diarrheal diseases?	*Let the student explain the cause and check the selection that matches the explanation best*	☐ Faecal pathogens which were transmitted through hands, water or food ☐ Dirty hand, water or food ☐ Some pathogens ☐ Explanation does not correspond with a real cause	
Hygiene			
27. Did you learned how to wash properly your hands in school?	*If yes, ask the student to show you how he does it*	☐ Yes ☐ No	
28. Do you know when do you have to wash your hands when you are in school and why ?	*Here you have to discuss with the student to determine if he or she knows the critical times for hand washing and its utility*		
29. Where do you usually wash your hands ?			
30. Is there a designated time period allotted for you to wash hands before eating?		☐ Yes ☐ No because:…… ……..	
31. Do you think that the other students always wash their hands after defecation?		☐ Yes ☐ No because:…… …….. …… ……	
32. Do you think that the other students always wash their hands before eating?		☐ Yes ☐ No because:…… …….. …… ……	

33. Do you talk with your family about what you learn at school about hygiene?	*If needed reformulate for the child to understand. Hygiene: handwashing, anal cleansing,etc….*	☐ Yes ☐ No	
34. Do the rest of your family wash their hands at home like you learned at school ?		☐ Yes ☐ No	
Operation and Maintenance			
35. In the case in which students have toilet cleaning responsibilities, what are the respective responsibilities for girls and boys?	*Multiple answers are possible*	☐ Girls usually clean their own toilets ☐ Boys usually clean their own toilets ☐ Girls usually clean boys' toilets ☐ Boys usually clean girls' toilets ☐ Girls usually clean teachers' toilets ☐ Boys usually clean teachers toilets ☐ Other:……	
36. Are the toilet duties assigned to students as punishment?		☐ Yes ☐ No ☐ Sometimes ☐ Don't know	
37. Are the toilet duties assigned to student perceived as punishment?	*Question to be asked to students, check only the most encountered answer*	☐ Yes ☐ No ☐ Sometimes ☐ Don't know	
38. Observe the toilets facilities. If misuse is observed (for example, clogging with stones, defecation outside of the toilets,…), try to understand why from them			

Key Quotes, Stories & Observation Notes

(It is not a full 1:1 transcript but presents all statements relevant to the research.)

To be filled in while you interview:

"Quote." "Stories." "Observations."

Survey on WASH in schools Tajikistan

PART IV : Parents

Preliminary information to be given to interviewee

"My name is (*adapt*). I assist in a research project on WASH (Water, Sanitation and Hygiene) in schools. This research is being conducted by *OXFAM GB in Tajikistan* with the research department of Sanitation, Water and Solid Waste for Development(Sandec) from the Swiss Federal Institute of Aquatic Science and Technology (Eawag).

The purpose of this study is to learn about your personal experiences, your needs and priorities related to the existing sanitary facilities in the this community schools and how this impacts you. The main objective of this study is to learn and inform about the specific needs of users with regards to water, sanitation and hygiene in Tajikistani schools as well as highlight the general framework governing their operation, management and maintenance.

We will be asking you a range of questions. All information you provide will be confidential and will not be used or shared with anyone except those involved in the study. We will not collect any information that could be used to identify you. You are free to skip any questions which makes you feel uncomfortable. Your personal views, experiences and critical comments are very important and welcome. They help to get a better understanding of the existing situation and will form the basis for recommendations for improvements regarding infrastructure as well as for adjustments at operational level.

The interview will take about 20 minutes

Do you have any questions?

"

NB : Key quotes, words, stories & observation if any can be reported at the end of this document (words that stood out and may connect with other interviews)-

Topic	Comments	Answer(s)	Notes
General Information			
1. Village Name			
2. Number and age of Children			
3. Children's school(s) name(s)			
4. Participant Location	*Where did you talk to this person*		
5. Interview Type		□ In person □ Phone □ Other:……....	
6. Interview Length	*How much did the interview last (minutes)*	……..	
7. Interviewer(s)	*People in your team who conducted the interview*		
8. Date/Time of interview			
9. Date/Time of observation (if different)			
10. Multimedia		□ None □ Pictures □ Video □ Audio recording	
11. Consent / Anonymization	*Consent/anonymization: Did you take an official picture ? can it be shared in official report or just within team work*	□ Yes □ No	
12. Are you a member of a Parent association ?		□ Yes □ No	
Water Supply			
13. Major water source for home	*Check only one answer* *Assess the **state** of the water source in the notes section : corrosion signs, cracks , leaks, absence/presence of protection* *If there is a water tank, assess its volume in the note section*	□ Piped water into dwelling □ Piped water to yard □ Public tap □ Protected well □ Unprotected well □ Tubewell/borehole □ Protected spring □ Unprotected spring □ Rainwater collection □ Surface water □ Tanker truck □ Bottled water □ No water source : (**skip to next part**) □ Other : …… □	□ Water tank: …… m3

14. In general, how often is water available at home ?	*If there is several sources that are not available at the same time, mention it in the note section*	Within the week : ☐ 5-7 days per week ☐ 2-4 days per week ☐ Fewer than 2 days per week Within the day : ☐ Everytime ☐ Other: ……	
15. If the main water source is either not or partially functional now, how has it been the case		☐ Less than one day ☐ Between one day and one week ☐ Between one week and one month ☐ More than one month	
16. If the water source is functional, does it provides enough water for the needs of the home (including drinking and handwashing)	*If possible, make a rough estimate if the school meets the WHO/UNICEF guideline of 5L/person/day*	☐ Yes ☐ No ☐ Don't know	
17. Is the water from the source used at home treated in any way to make it safer to drink ?		☐ Always (**skip to 19**) ☐ Sometimes ☐ Never	
18. Is there a reason why the water is not always treated?	*Multiple answers are possible*	☐ The source is considered safe ☐ The parents/community do not have filters or sufficient purification chemicals ☐ Nobody at home knows how to treat water ☐ The parents do not know if it is necessary or not ☐ Nobody at home has time to do it ☐ Bottled water from shop is used instead ☐ Other:…….	
19. If water from the source is always or sometimes treated, how is it treated	*Check **only one** (choose the method most used)*	☐ Boiling ☐ Chlorination ☐ Cloth filtration ☐ Water filter (sand, ceramic, composite…) ☐ Solar disinfection (sodis) ☐ Flocculation agent ☐ Letting it stand and settle ☐ Other:…….	

Sanitation			
20. Do you have any sanitation facility at home?		☐ Flush toilet with water from pipe connection : …. ☐ Flush toilet flushed with water bucket:… ☐ Pit latrine with slab:…. ☐ Open Pit latrine:…. ☐ Ventilated Improved pit latrine (VIP):… ☐ Bucket:…. ☐ Composting toilet:… ☐ Hanging latrine:… ☐ Other: ……. ☐ No toilet facilities	
21. Do you know if members of the community tend to use school's sanitation facilities ?		☐ Yes ☐ No	
22. Do you have any system for onsite treatment of wastes generated by the sanitation or water facilities at home or within your community?		☐ No ☐ Yes (specify) :……..;	
23. Do you produce compost at home or within your community ?	*Write in the note section if there is any sign of agricultural activity inside the school or around it*	☐ No ☐ Yes	
24. would you be willing to use dry sludge produced from school facilities to produce compost ?		☐ Yes ☐ No, because :……..;	
Hygiene			
25. Does your child ever told you about hygiene lessons at school ?		☐ Yes ☐ No	
26. Do you know when do you have to wash your hands and why?	*Discuss with the parent to determine if he or she knows the critical times for hand washing and its utility*		
27. What are the causes for diarrheal diseases?	*Let the parent explain the cause and check the selection that matches the explanation best*	☐ Faecal pathogens which were transmitted through hands, water or food ☐ Dirty hand, water or food ☐ Some pathogens Explanation does not correspond with a real cause	

28. Do you know if students are encouraged to transmit hygiene knowledge to their families and communities?	*Multiple answers are possible*	☐ Yes, through the education material that encourages student to talk about or demonstrate good hygiene practices at home. ☐ Yes, through **regular** school-sponsored events ☐ Yes, but only occasionally ☐ No	
29. Do the students often miss school due to water-born diseases (diarrhoea, hepatitis, typhoid)	*If yes ask if the teacher has some numbers related to absenteeism due to water-born diseases*		
Operation and Maintenance			
30. If the interviewed parent is part of a parent association or similar organization. Was the parent association created by : If the interviewed parent is not part of a parent association (or similar organization, **skip to 36**)	*Choose only one answer*	☐ The school ☐ The parents themselves ☐ The state ☐ Other:…….	
31. Why was created the parent association?			
32. What is the role of the PA/organization concerning Water supply?	*Multiple answers are possible*	☐ Providing funds ☐ Providing work ☐ monitoring ☐ implementing ☐ other:……	
33. what is the role of the Parent association/organization concerning sanitation in school?	*Multiple answers are possible*	☐ Providing funds ☐ Providing work ☐ monitoring ☐ implementing ☐ other:……	
34. how decisions are made within the parent association?	*Here discuss with the parent and try to assess the decision-making scheme used within the association*		

35. How would you define the state of the parent association's relationship with the school?			
36. Does the school makes request to the parent association or is it the opposite?		☐ The school makes request to the parent association ☐ The parent association makes request to the school ☐ Other:…….. ☐ Don't know	
37. In your opinion, are the school water facilities successfully maintained, and repaired when required? Maintenance and repair : All the things needed for the system itself to stay functional (eg: reparation if broken, cleaning…)	*If no or partially try to assess why in the note section*	☐ Yes ☐ No ☐ Partially ☐ Don't know	
38. Did you participate in the construction of the school water facilities?	*If yes : specify the type of water facility (source, tank, handwashing station)*	☐ Yes, by providing construction materials ☐ Yes by providing labour ☐ Yes, by providing money ☐ Yes by helping with the planning ☐ Yes, other: …….. ☐ No	
39. Do you participate in the Operation and maintenance of the school water facilities?	*Multiple answers are possible* *If yes : specify the type of water facility (source, tank, handwashing station)*	☐ Yes, by providing construction materials ☐ Yes by providing labour ☐ Yes by providing consumables ☐ Yes, by providing money ☐ Yes by helping with the planning ☐ Yes, other:……. ☐ No	

40. For improving and maintaining the water facilities of your child's school would you be interested to:		☐ Provide labour ☐ Provide money ☐ Provide construction materials ☐ Provide consumables (fuel for the pump, soap, etc.) ☐ Helping with the planning ☐ Not interested	
41. In your opinion are the school sanitation facilities successfully maintained, and repaired when required? Maintenance and repair : All the things needed for the system itself to stay functional (eg: reparation if broken, cleaning…)	*If no or partially try to assess why in the note section*	☐ Yes ☐ No ☐ Partially ☐ Don't know	
42. Do you know who is responsible for cleaning the toilet facilities at school ?	*Multiple answers are possible*	☐ Cleaning staff ☐ Students ☐ Teachers ☐ Other: ……; ☐ Don't know / unclear	
43. What is your general opinion about the sanitation facilities at school ?		☐ Good ☐ Parents do not care about sanitation facilities ☐ Bad ☐ The teacher doesn't know	
44. Did you participate in the construction of the school sanitation facilities?	*If yes : specify the type of water facility (source, tank, handwashing station)*	☐ Yes, by providing construction materials ☐ Yes by providing labour ☐ Yes, by providing money ☐ Yes by helping with the planning ☐ Yes, other: …….. ☐ No ☐	
45. Do you participate in the Operation and maintenance of the school sanitation facilities?	*Multiple answers are possible*	☐ Yes, by providing construction materials ☐ Yes by providing labour ☐ Yes by providing consumables ☐ Yes, by providing money ☐ Yes by helping with the planning ☐ Yes, other:…… ☐ No	

46. For improving and maintaining the sanitation facilities of your child's school would you be interested to:		☐ Provide labour ☐ Provide money ☐ Provide construction materials ☐ Provide consumables (toilet paper,etc..) ☐ Helping with the planning ☐ Not interested	

If there is time, finish the interview with an open discussion with the parents about possible ways of improvement for wash management in schools considering all the problems that were previously highlighted during the school visit.

Also try to understand with the interviewee what is the best solution for the parent to participate in the domain.

Key Quotes, Stories & Observation Notes

(It is not a full 1:1 transcript but presents all statements relevant to the research.)

To be filled in while you interview:
"Quote."
"Stories."
"Observations."