Handwashing Facilities

Overview and Decision Support Tool with Case Studies from Uganda

University of Applied Sciences and Arts Northwestern Switzerland

sustainable sanitation alliance

eawag aquatic research

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A first test of the decision support tool described in this publication was undertaken in Uganda by Swaib Semiyaga (Makerere University Kampala, Uganda). We look forward to further test reports from around the globe in the future.

The publication is built on a long-standing collaboration between the Swiss Water Research Institute (Eawag), University of Applied Sciences and Arts Northwestern Switzerland (FNHW) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and another result of our collaboration in SuSanA. We are thankful to a range of colleagues from these organisations, that have contributed beyond the group of authors!

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Swiss Agency for Development and Cooperation SDC

University of Applied Sciences and Arts
Northwestern Switzerland

Manual refilling of a group handwashing faciity, Philippines.
Source: GIZ Fit for School, 2017.

Contents

Tippy Tap, Indonesia.
Source: GIZ Fit for School, 2018.

Foreword

Handwashing with water and soap is one of the most effective actions to protect oneself and others from harmful pathogens. It is an evidence-based practice to prevent and reduce the spread of viruses and bacteria causing diarrhea, common colds, flu, and pneumonia, as well as health care-associated infections and antimicrobial resistance. The COVID-19 pandemic has reminded us once again about the importance of effective hand hygiene. Increasing access to handwashing facilities equipped with water and soap is therefore not only an immediate response to control the COVID-19 pandemic. It is a long-term investment in improving overall access to better hand hygiene for the future with positive impact on overall health, pandemic resilience, education, equity and economic development.

Germany and Switzerland have been strongly advocating the importance of universal access to handwashing with water and soap. Our shared goal is the achievement of Sustainable Development Goal 6 on Clean Water and Sanitation, which includes access to adequate and equitable hygiene for all. Together, we are supporting the Sustainable Sanitation Alliance (SuSanA), which has been promoting handwashing with water and soap, particularly in the context of improving access to adequate water, sanitation and hygiene (WASH). The Swiss Water Research Institute (Eawag) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH are active members and have joined forces to develop the publication at hand on "Handwashing facilities – overview and decision support tool with case studies from Uganda". It aims to contribute to addressing the challenges we are still facing of enabling access to handwashing facilities, particularly in public and commercial places and buildings where hand hygiene is often limited. Especially in humanitarian settings and in poorer settlements improved hand hygiene can be an important contribution to protect public health.

Selecting an adequate facility that meets local demands is a key step for success. Thus, this publication provides systematic guidance on "how to select" and "what to take into account" during the decision-making process. It gives a comprehensive overview on the wide range of handwashing facilities from around the world and can be used as a decision support tool with a stepwise approach for facility identification.

We therefore hope that this publication will inspire readers through the variety of options presented and help them in the decision-making process.

We remain committed to our global fight against the pandemic. Enabling handwashing with water and soap as part of daily hygiene will remain a cornerstone in our efforts. Scaling-up related activities shall contribute not only to improved pandemic resilience, but overall health and well-being and ultimately, to human dignity for all.

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Group handwashing activity, Guinea.
Source: GIZ Fit for School.

Preface

The central role of hygiene is firmly anchored in the 2030 Agenda for Sustainable Development. As part of Sustainable Development Goal 6 on Water and Sanitation, target 6.2 calls to achieve access to adequate and equitable sanitation and hygiene for all, including basic handwashing facilities with soap and water.

The sobering truth is that universal access is far from being a reality. In 2020, about 2.3 billion people, equaling to one third of the world's population, did not have access to a handwashing facility with water and soap at home. Looking at schools globally, more than 800 million students had only limited access to basic hygiene services in the school setting. One third of health care facilities lack infrastructure or supplies to ensure hand hygiene for health care providers. Most people without or limited access live in low- and middle-income countries. Vulnerable population groups including those living in conflict or disaster-afflicted areas or fragile settings like informal settlements and refugee camps, are disproportionally affected.

These staggering service gaps and inequalities became very evident with the onset of the COVID-19 pandemic. As effective handwashing is one of the key interventions to reduce the spread of SARS-CoV-2, the World Health Organization (WHO) called upon its Member States to step up efforts on hand hygiene including handwashing with water and soap. Recommendations comprise providing universal access to hand hygiene at public and commercial buildings and places, particularly schools, health care facilities, market places and transport hubs. Also, placing a handwashing facility with water and soap within 5m distance to all private and public toilets is advised.

While national governments are in the lead, everyone has a role to play – intergovernmental organizations, international development partners, non-governmental organizations, private sector, civil society, and academia. Making handwashing facilities with soap and water universally accessible for all is a joint effort. This publication aims to make a contribution by presenting options that are available and an approach to facilitate the process of identifying a facility that meets the needs of a specific setting and context.

UNICEF & WHO, 2021; WHO & UNICEF, 2021

Introduction

Handwashing with soap and water is one of the most effective measures to reduce the transmission of pathogens that cause infectious diseases. While proper hand hygiene has already been proven as essential in preventing diarrhoeal and respiratory diseases, as well as infections in healthcare settings, the critical role of handwashing became very evident again in the fight against COVID-19.

Handwashing is only effective if done regularly and correctly at critical points in time. Key moments for handwashing are after using a toilet, before having contact with food, eating or feeding someone, before and after caring for persons in need of care, and after contact with animals. During the COVID-19 pandemic, handwashing with water and soap is also advised after sneezing or coughing, after visiting public places and touching surfaces outside of the home, and before, during and after caring for an infected person.

Facility on a school premise in Guinea: manually refillable, separate greywater bucket and tap with an extended handle.
Source: GIZ Sector Programme Sustainable Sanitation, 2019.

Universal access to handwashing facilities is a fundamental prerequisite for handwashing with water and soap at critical times. However, access to basic handwashing services is not a given. Around the world, households, public institutions such as schools and health care facilities, as well as at public places lack access to this basic public health intervention.

In the context of the Sustainable Development Goals, governments have committed to address these deficits and achieve universal access to hygiene, including handwashing with soap and water until 2030. The need to accelerate efforts became very apparent with the onset of the pandemic.

Governments, development partners, non-governmental organizations, private sector and others are working to improve access to basic handwashing services: developing relevant policies and programming, increasing dedicated budgets, improving management and monitoring as well as developing and implementing adequate handwashing facilities are among the activities to create an enabling environment. This publication focuses on the area of handwashing facilities and available designs and considerations that need to be taken into account to provide sustainable services.

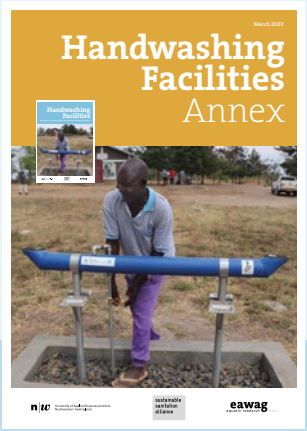
A number of national and international organizations have published technical guides, manuals and overviews of handwashing facilities (Coultas, Iyer & Myers, 2020; GIZ, 2016; UNICEF, 2020; WHO, 2020; WaterAid, 2020a; WaterAid, 2020b; Knight et al, 2020).

Building on the wealth of existing information, this publication provides an overview of common facility types and a stepwise guidance for selecting appropriate optionss for a given setting and context.

Objectives

The objectives of this publication are twofold. The first objective is to give an overview of common types of handwashing facilities with a number of key aspects that need to be considered during the planning stage. Focus is placed on handwashing facilities that are generally suitable for installation at public and commercial buildings and places in low- and middle-income and humanitarian contexts. These comprise specifically settings such as schools, health care facilities, markets, commercial and public offices, transport hubs, places of worship and camps.

The second objective is to provide a tool to facilitate decision-making. It was developed to guide the user through a step-by-step process to identify handwashing facilities appropriate for a specific setting and context.



An annex document is available online. It presents additional handwashing facilities with their key characteristics and complements the publication at hand. For more information with the latest updates please visit the website of the Sustainable Sanitation Alliance (SuSanA): *https://bit.ly/3s1IuQ0*

Structure and use

A range of different types of handwashing facilities are used around the world with local variations and adaptations. The type of handwashing facility most suitable for a specific setting requires advance assessment of the local context and related needs and requirements. To facilitate the orientation and selection process, this publication comprises two chapters.

Chapter 1 provides a general overview on types of handwashing facilities. It comprises facilities from low to high cost, basic to more complex technology, for single as well as multiple users. Focus is placed on public places and institutions, though some of the facilities are also suitable for households. The set of facilities is categorized based on their type of water access (connection to water network or tank, refilled manually, or water recycling) and type of installation (permanent, mobile or semi-mobile). Key aspects that should be taken into account during the assessment and planning phase as well as related options are discussed. While the publication presents some of the most common types of facilities used, the overview is not exhaustive.

Chapter 2 looks into the process of selecting appropriate handwashing facilities. The user is guided through a stepwise process to assess a specific context, identify related needs and requirements and prioritize options. It can also be used as a tool to guide conversations among a group of people in the identification of needs and priorities. The key aspects of consideration and related options presented in chapter 1 are the basis of scoring. As the list is not exhaustive, other key aspects or specific options may be added or deleted depending on the context. To provide some practical examples on how to apply the decision tool, scenarios of common settings from Uganda are presented as case studies.

SCENARIO 1: Rural school in a water-scarce area not connected to a piped water network

SCENARIO 2: Handwashing next to shared public toilets in informal settlements

SCENARIO 3: Health care facility in a rural or peri-urban setting

This publication was developed for all those involved in decision-making, planning and implementation around handwashing with water and soap for public and commercial buildings and places in various settings. By presenting available types of handwashing facilities and pointing out key aspects of consideration, the publication aims to orient and assist readers in navigating available options and identifying hand-washing facilities that meet the needs and context as best as possible. The publication is neither intended as a technical construction guide nor as a training tool how to operate facilities. Thus, it is not intended a standalone resource for planning, constructing, installing and maintaining handwashing facilities but rather a tool for orientation and informed decision-making.

1.
Handwashing facilities
Key aspects

A basic handwashing facility can be defined as any device that allows a person to wash hands effectively with clean, running water and soap. However, it is more than a simple infrastructure or a sum of its parts. It is rather a system in which a number of different key aspects are combined in a way to provide a good interplay that ensures handwashing with water and soap in the long term.

These key aspects can be summarized along certain categories as listed in table 1. They comprise type of installation, scale and intended use, water supply system, greywater management and drainage, user interface and technical specifications. The following sub-chapters provide more information and detail.

Group handwashing activity in a primary school in Guinea.
Source: GIZ Sector Programme Sustainable Sanitation, 2019.

TABLE 1
Overview key aspects

SCALE AND INTENDED USE

- Serving an entire public space or institution
- Serving a specific area of a public space or an institution
- Serving one household

TYPE OF INSTALLATION

- Permanent
- Semi-mobile
- Mobile

WATER SUPPLY

- Connected to a piped water network or a storage tank
- Container with manual refilling
- A facility that has an integrated water recycling system

GREYWATER MANAGEMENT AND DRAINAGE

- Connected to functional greywater/ wastewater management system
- Integrated greywater collection tank
- With direct soil infiltration
- No system in place

USER INTERFACE

- Number of taps/outlets per unit
- Type of tap/outlet
- Number of users washing hands at the same time
- Accessibility for children, elderly, and people with disabilities
- Availability and type of soap dispenser

TECHNICAL SPECIFICATIONS

- Water use efficiency
- Production: type of materials and location
- Installation: time, skills and costs
- O&M requirements: time, skills and costs
- Durability and expected lifespan
- Risk of vandalism and theft

SCALE AND INTENDED USE

One of the first questions to clarify when planning the installation of a new handwashing facility is the scale and intended use. This is dependent on the prospective setting, as health care facilities, schools, transportation hubs, places of worship, households, public places and buildings, markets, food vending locations and others come with specific conditions and requirements. Aspects to take into account include the number of users and demand for handwashing over time. If the number of users is low and distributes evenly, a facility with a few taps may be sufficient. For a high demand in a short amount of time or placements in densely populated areas, facilities for multiple users and groups are more appropriate to accommodate demand and to reduce queuing time.

TYPE OF INSTALLATION

Handwashing facilities can be installed as infrastructure that is:

- Permanent
- Semi-mobile
- Mobile

The decision for a respective type of installation is context-specific and should take into account a number of considerations. Aspects include the availability of space, durability of material, number of users and frequency of use, type of water supply, risk of vandalism and theft among others.

WATER SUPPLY

Besides soap, the availability of water is key to enable effective handwashing. Continuous water supply in sufficient quantities is therefore critical.

It can be differentiated between three different water supply systems:

- Connected to a piped water network or a storage tank
- Container with manual refilling
- A facility that has an integrated water recycling system

The easiest way to supply a handwashing facility with water is if a reliable piped water network is available.

If the water network is unreliable or interrupted frequently, a local water storage tank is required to bridge the period of water shortages. Handwashing stations may have an integrated water storage container or a connection to an external central storage tank (table 3, p. 16).

For areas facing water scarcity or long distances to water sources, facilities with integrated water recycling units are viable alternatives. Some water recycling systems are operated manually and can be constructed locally using only few imported parts. The recycled water from these systems is usually safe for handwashing if a multi-barrier approach combining different technologies is in place.

Especially in areas where water needs to be transported to the point of use, is limited or expensive, investments in water recycling systems pay off and are the cheaper alternative even in the short term.

Another source of water for handwashing comprises rainwater harvesting where rain is collected from surfaces such as roofs and redirected to a storage container.

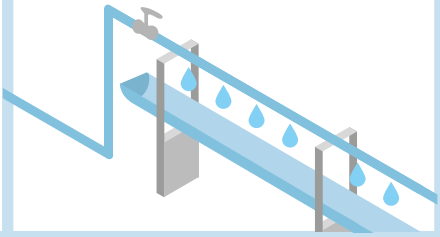
TABLE 2

Water supply and type of installation

Connected to piped water network or storage tank

Permanent facilities with one tap per sink

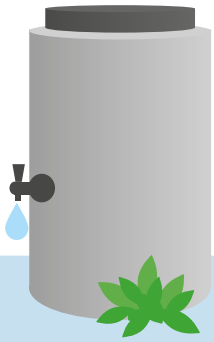
Permanent or semi-mobile facilities with multiple taps/outlets



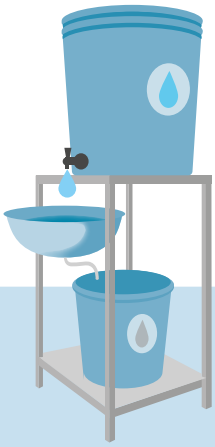
Mobile facilities with integrated water and greywater tanks with one or multiple taps

Container with manual refilling

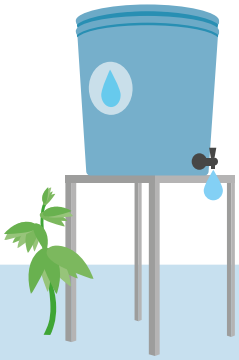
Permanent or semi-mobile facilities with one tap/outlet



Mobile facilities with integrated greywater tank

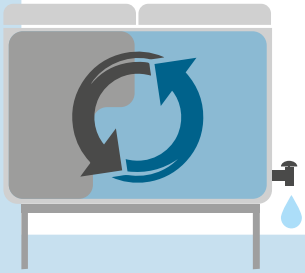


Mobile facilities without drainage or with soil infiltration



Water recycling

Mobile or semi-mobile facilities with water recycling



These illustrations intend to present a selection of available types of handwashing facilities.

TABLE 3

Requirements: water supply

Handwashing facilities connected to an integrated or a central storage tank

STORAGE CAPACITY

Settings without access to a reliable piped water network, that are served by a groundwater pump or a water trucking system are advised to set up a central storage tank. A large central storage tank can bridge interruptions and water shortages. Tanks should have sufficient capacity to meet quantity of water needed to serve all handwashing facilities and water needed for other purposes (e.g. cleaning) during interruptions. Tanks need to be refilled when water is available again.

Estimated quantity of water per handwashing activity:
- Standard taps: Around 1L water per person
- Water-saving taps: as low as 80 ml per person.

MATERIALS

A float valve is required for large tanks connected to a piped network to avoid water overflow and wastage.

Storage tanks should be a closed reservoir or covered with a lid.

Supporting structures of the tank need to be strong enough to carry the weight of the water when the tank is at its full capacity.

MANAGEMENT

Well-established management arrangements with budget allocations and clear responsibilities to regularly inspect tanks for functionality and leakages.

Installation of additional piping might be needed to connect newly established handwashing facilities.

When storage tanks are not connected to a piped water network a or groundwater pump for the refilling, they need to be replenished through an external water source such as a water tanker. In areas with regular rainfall, rain harvesting can be considered. To ensure water is refilled when required, the water level needs to be monitored.

LOCATION

Water storage tanks should be placed on a stable roof or an elevated stand. The location should be safe and protect the tanks from weather events or vandalism.

Handwashing facilities with manual refilling

STORAGE CAPACITY

Sufficient storage capacity to reduce the frequency of refilling.

Estimated quantity of water per handwashing activity:
- Standard taps: Around 1L water per person
- Water-saving taps: as low as 80 ml per person.

MATERIALS

Water containers should have large valves/openings that are easily accessible for replenishing. Containers with small openings that are difficult to reach may not be refilled.

Support structures should be built with materials appropriate for the setting (e.g. climate).

No transparent containers should be used as this promotes algae growth leading to unpleasant “green” walls and water, requiring more frequent cleaning.

Containers must be closed or covered with a lid to reduce the risk of contamination and evaporation in hot climates.

The water level needs to be visible in larger systems, and a low-cost level gauge might be useful for monitoring.

MANAGEMENT

Well-established management arrangement including clearly defined maintenance responsibilities such as regular refilling, cleaning and repair, and access to a reliable water source.

LOCATION

Handwashing stations with refillable containers should be located in the shade and protected from rain when positioned outdoors. This not only protects the users but also increases the lifespan of the handwashing facility.

Handwashing stations with refillable containers should be securely fixed so they cannot be easily tipped over when empty or stolen.

SPECIAL TOPIC

Water quantity

Sufficient quantity of water is needed to wet hands before applying soap and to rinse off foam after lathering and thoroughly cleaning all of the hand's surfaces for at least 20 seconds. Though the effectiveness of handwashing does not depend on the volume of water used, sufficient quantity of water needs to be available for users. For standard taps, water usage for a handwashing event ranges between 0.5 and 2 L. To avoid excessive use or water wastage that increases costs, the need for larger tanks or frequency of refilling, water consumption for handwashing should be reduced as much as possible. Water-saving taps, taps or outlets with a few small openings or a mesh instead of a tap can distribute water efficiently and simultaneously reduce water consumption. Depending on the tap or outlet and soap, quantity of water may be even as low as 80 ml per person.

Overall quantity of water needed per handwashing facility depends on:

- The number of expected users and handwashing events
- The type of tap or outlet and quantity of water used per handwashing event
- Handwashing behaviour of users and their abilities to operate different taps
- Type of water supply and overall availability of water
- Water for other usages such as cleaning

To reduce water consumption and refilling frequency, the following water-saving taps can be installed:

- Dispenser tap
- Self-closing valve
- Self-closing tap
- Swing tap
- Diaphragm pump
- Pedal tap
- Tap with contactless sensor

SPECIAL TOPIC

Water quality

For effective handwashing, soap and clean running water should be used. While the water should be as clean as possible from an improved source (i.e. piped water, public tap, boreholes, protected dug wells, protected springs and rainwater) it does not have to meet drinking water quality standards. Cloudy water, water that might be contaminated with toxins or faecal matters or unprotected water sources should be avoided. In case handwashing facilities do not provide safe drinking water, they must be clearly labelled as such (WHO & UNICEF, 2020).

Brackish water can be used for handwashing with application of soaps specifically designed for salty water. These soaps contain predominantly anionic surfactants (surfactants with negatively charged groups) and are often called anionic soaps. However, they are not yet widely available. Brackish water should only be stored in and piped via plastic hardware to avoid corrosion.

Example of water-saving self-closing valve in the Philippines.
Source: GIZ Fit for School, 2018.

GREYWATER MANAGEMENT AND DRAINAGE

Proper greywater drainage is essential to avoid stagnant water around the handwashing facility. Accumulated water forming puddles might lead to an inconvenient handwashing experience (e.g. wet feet) or lead to breeding grounds for insects and parasites that present potential health risks.

Greywater can be managed in a number of different ways depending on the handwashing facility, the available infrastructure and environmental characteristics.

In some cases, if the quantity of greywater is low, it can be absorbed by the soil under or next to the facility. Adding plants or digging a hole and filling it with gravel can improve absorption of wastewater. Greywater can also be collected in the basin and channeled to a container or storage tank integrated into or attached to the handwashing facility which has to be discharged regularly. Another option is to pipe greywater directly from the handwashing facility into a sewer or greywater network. If the groundwater level and soil properties allow, greywater can be connected to a soil infiltration system (covered soak pit).

When space is available and water level and soil characteristics are favourable, a soak pit is the easiest solution. The soak pit can be located directly below the handwashing station or connected with a pipe taking into account an appropriate slope and diameter for the water to percolate into the ground. Usually, the size of a soak pit is around 2–5 m in depth and 1–2 m in diameter (Tilley et al., 2014). In terms of percolation, coarse and medium sandy soil have the highest water permeability whereas clay soil is unsuitable for soak pits. Soak pits are not appropriate in flood-prone areas or areas with high groundwater table and must have a distance of at least 30 m to drinking water points (WaterAid, 2020b).

Greywater drainage on a school premise, Cambodia.
Source: GIZ Fit for School.

USER INTERFACE

Number of taps per unit

The expected number and distribution of users throughout the day but also at peak times affects the number of taps required. Ideally, long waiting times are avoided.

In the context of COVID-19, sufficient room for physical distancing should be possible either by limiting the number of people to use the facility at a given time through closing taps or by increasing the space between the facilities if they are mobile or newly installed.

Type of tap/outlet

The type of tap/outlet used in the handwashing facilities affects access of user groups, consumption of water and access to water for other purposes.

For children it may be easier to wash hands when the water drips from the outlets of a perforated tube and a supervisor operates the valve to turn the water on and off. Particularly in a pandemic context or places where frequency of use is high, touch-free options should be considered to avoid risk for recontamination. Available options include foot-operated taps or taps which can be turned on or off with the lower arm or elbow. Keep in mind that people who are frail may find it difficult to keep the balance.

Taps need to be at a convenient height so it can be easily reached. The appropriate height differs for children and adults or people with disabilities.

The type of tap/outlet has a big effect on the volume of water needed for a handwashing event. While with a standard tap, the quantity of water may be as high as two litres, a water-saving tap can reduce the amount to as low as 80 ml. Especially in settings with a high number of expected users, the type of tap is key as it impacts the type of water supply, size of a storage tank or container, the frequency of refilling etc.

While the focus is placed on suitability for hand-washing, it should also be considered if the facility is used for any other purposes, such as collecting water for cleaning. In that case, a tap releasing higher volumes of water may also be considered.

Number of users washing hands at the same time

Different types of handwashing facilities can accommodate varying number of users. Facilities with single taps allow one person at a time to wash hands, whereas group handwashing facilities offer more users to wash hands simultaneously. Group handwashing facilities are feasible options for schools where many children need to wash hands in a short window of time such as a break. In a health care facility, there may be less people spread throughout the day and single taps with a sink may be sufficient to meet the demand of handwashing.

TABLE 4

Heights of the basin/tap and reach for children

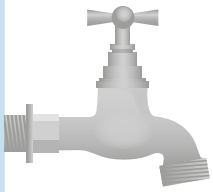
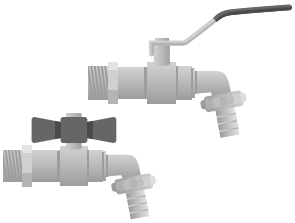
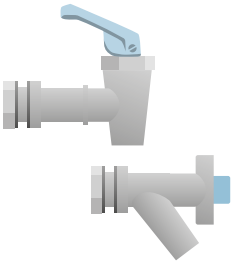
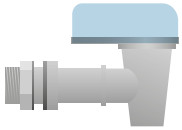
	Maximal heights basin/tap	Maximal reach
YEARS 3–5	60 cm	105 cm
5–9	70 cm	120 cm
9–11	75 cm	140 cm
11–13	75 cm	155 cm
13–16	80 cm	165 cm

Source: Communication with terres des hommes

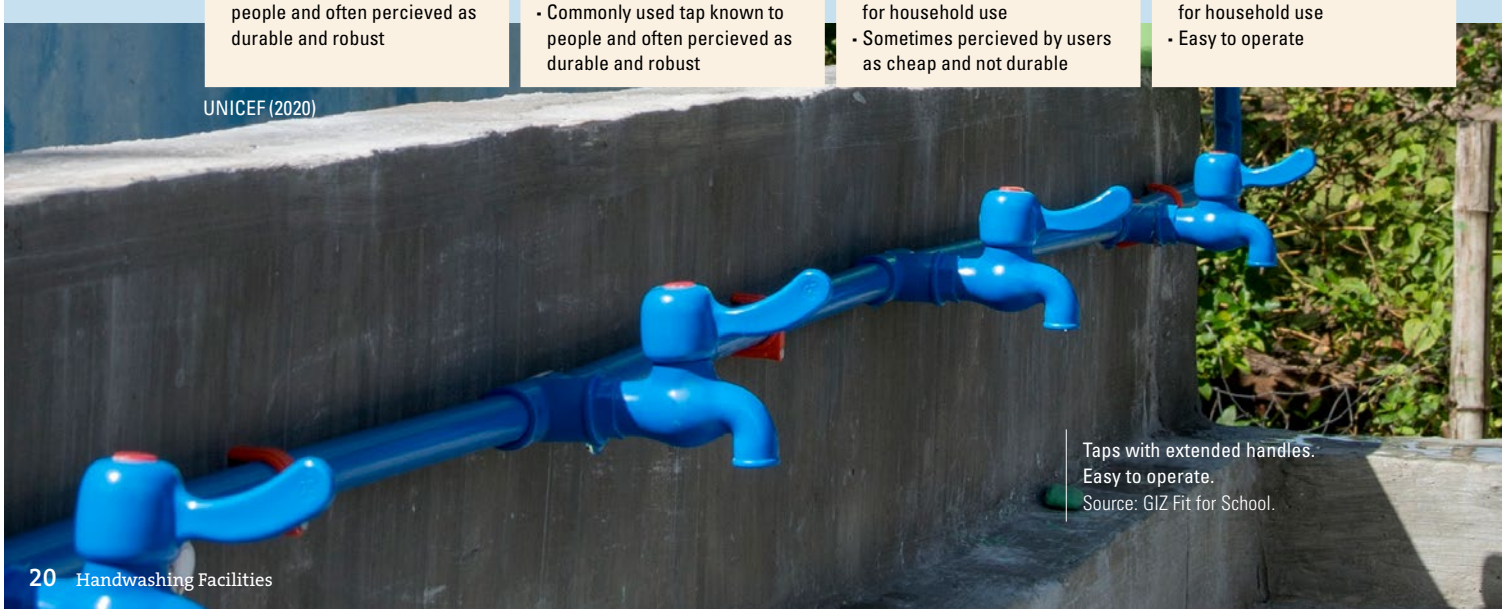
Example of a group handwashing facility for children, Lao PDR.
Source: GIZ Fit for School, 2018.

TABLE 5

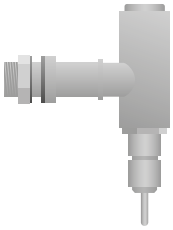
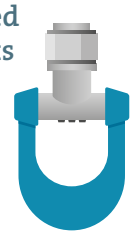
Overview: types of taps/outlets

	Taps requiring hand contact for operation			
	Standard tap with screw valve 	**Ball valve tap** with butterfly or extended handle 	**Dispenser tap** 	**Drum tap** 
WATER-SAVING	• No	• No	• Yes, water runs when pressed only	• No
REDUCTION OF CROSS-CONTAMINATION	• No, as the handle needs to be turned several times to turn on the water	• No (butterfly handle) • Possibly. Extended handle could be operated with elbow	• No	• No
USER-FRIENDLINESS	• Might be difficult to use for people with disabilities and children	• Easy to use as handle only needs to be turned by 90 degrees • May be more difficult to use for people with disabilities and children (butterfly handle) • Easier to use for people with disabilities (extended handle)	• Might be difficult to use for people with disabilities and children	• Might be difficult to use for people with disabilities and children
DURABILITY	• More than 5 years, when well-maintained • Calcium deposits and corrosion might be an issue and need to be cleaned regularly	• More than 5 years, when well-maintained • Frequent use might lead to loosing of the holding nuts • Calcium deposits and corrosion might be an issue and need to be maintained regularly	• Less than 1 year • Breaks easily when used frequently	• Less than 1 year • Breaks easily when used frequently
AVAILABILITY	• Commonly available as standard household tap in hardware stores around the world	• Commonly available as standard household tap in hardware stores around the world	• Locally available • Commonly used in drinking water dispensers and filters	• Locally available in most hardware stores
SUITABILITY	• Suitable for permanent or stable semi-mobile structures • Can be installed also on mobile stations made out of stable plastics	• Suitable for permanent or stable semi-mobile structures • Can be installed also on mobile stations made out of stable plastics	• Suitable for mobile stations with a limited lifespan	• Suitable for mobile stations with a limited lifespan
EXPERIENCES	• Commonly used tap known to people and often percieved as durable and robust	• Often made of brass • Commonly used tap known to people and often percieved as durable and robust	• Simple low-cost taps for household use • Sometimes percieved by users as cheap and not durable	• Simple low-cost taps for household use • Easy to operate

UNICEF (2020)

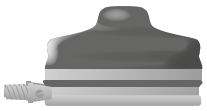


Taps with extended handles. Easy to operate.
Source: GIZ Fit for School.

	>> Taps requiring hand contact for operation		
	Self-closing valve 	**Self-closing tap** 	**Swing tap and other alternative designed products** 
WATER-SAVING	• Yes, handwashing with 80 ml or less possible	• Yes, water running time is fixed	• Yes, low water use
REDUCTION OF CROSS-CONTAMINATION	• No	• No, but can if operated with the elbow	• No
USER-FRIENDLINESS	• Easy to use after familiarization	• Might be difficult to use for young children when water pressure is strong	• Easy to use after familiarization • Might be difficult to use for people with disabilities and children
DURABILITY	• More than 5 years, when well maintained • Calcium deposits and corrosion might be an issue and need to be cleaned regularly	• Calcium deposits and corrosion might be an issue and need to be cleaned regularly	• Insufficient information on durability available
AVAILABILITY	• Through Oxfam supply centre • Locally available sometimes	• Commonly available as standard household tap in hardware stores around the world	• Example from Kenya, not yet in mass production
SUITABILITY	• Can be installed in all types of gravity-fed systems especially when water-saving is important • Usually not suitable for systems under pressure comparable to tap pressure (2–4 bar)	• Permanent infrastructure requires sufficient tap pressure for operation (usually a minimum of 2 bar)	• Suitable for systems with two containers – needs to be installed at the bottom of the container
EXPERIENCES	• Usually used on tap stands • Recontamination issue might be a problem, but needs to be further evaluated	• Should have a time delay or short operating time providing users with enough time to rinse the hands	• Requires further evaluation and experiences

Dispenser Tap.
Source: GIZ Fit for School.

Taps with reduced hand contamination

	Ball valve tap elbow operated 	**Diaphragm pump** foot or elbow operated 	**Pedal taps** foot operated 
WATER-SAVING	• No	• Yes, runs only when the pump is pressed	• Yes, connects to a water-saving tap or runs only when pressed
REDUCTION OF CROSS-CONTAMINATION	• Yes, due to elbow operation	• Yes, due to foot or elbow operation	• Yes, due to foot operation
USER-FRIENDLINESS FOR DIFFERENT USER GROUPS	• Recommended for people with disabilities • Users may require guidance to operate tap with elbow	• Might be difficult to use for young children and people with disabilities • Requires familiarization	• Might be difficult to use for young children and people with disabilities • Requires familiarization
DURABILITY	• More than 5 years, when well-maintained • Calcium deposits and corrosion might be an issue and need to be cleaned regularly	• Up to 5 years, depending on use and maintenance • The pump is durable and easy to repair • Flexible connections (hose) is prone to damage	• Up to 5 years, depending on use and maintenance • Durable and easy to repair when the principle is understood
AVAILABILITY	• Usually available in most countries	• May not be available everywhere • Possible to build locally, but usually less durable	• Can be made locally • Usually not available as a ready-made product
SUITABILITY	• Suitable for permanent robust facilities • Not suitable for mobile facilities made out of plastics due to the high risk of damage at the interface with the container	• Suitable for any gravity-fed systems, there is no need for elevation of the water tanks, which might simplify the design	• Suitable for gravity-fed systems
EXPERIENCES	• Often recommended for health care facilities • Offers hands-free operation which is a great advantage to reduce recontamination (hands-free operation is however not used by everyone)	• Offers hands-free operation which is a great advantage to reduce recontamination • No need for elevated water tanks and support structures • Cannot be attached directly to pipe fittings	• Offers hands-free operation which is a great advantage to reduce recontamination

Contactless taps

	Tap with contactless sensor with battery or power supply 	Outlet/ hole in the pipe 
WATER-SAVING	• Yes, water runs when needed	• Yes, depends on the size of the hole
REDUCTION OF CROSS-CONTAMINATION	• Yes, due to sensor	• Yes, due to hands-free operation
USER-FRIENDLINESS FOR DIFFERENT USER GROUPS	• Easy to use • Recommended for people with disabilities	• Easy to use
DURABILITY	• Does not operate if power is cut or the battery empty • Battery lifetime is given at 10 years but might be considerably lower in hot climates and at intensive use	• More than 5 years • Calcium deposits and corrosion might lead to clogging of the outlet
AVAILABILITY	• Might not be available in low-income markets	• Outlets can be built with a variety of locally available materials (PVC and PE, PP and brass pipes, jerry cans, plastic, and metal containers)
SUITABILITY	• Suitable for permanent high-quality infrastructure	• Suitable for gravity-fed systems with integrated flow control mechanism or in combination with a footpump or central valve
EXPERIENCES	• Attractive design with good water efficiency, but more expensive because of costs for sensor technology and battery • Offers hands-free operation which is a great advantage to reduce cross-contamination	• Offers hands-free operation which is a great advantage to reduce cross-contamination • Simple, low-cost and robust • Requires reliable flow control system (tilting, footpump, limited water storage volume) • The outlet is open, increasing risk of contamination of water inside the piping

Contactless handwashing.
Low-cost solution, manually refillable.
Source: GIZ Fit for School.

Accessibility for children, elderly, and people with disabilities

Access to handwashing facilities needs to be universal and allow all users to wash hands effectively with water and soap. Depending on the respective user group, specific aspects need to be taken into account to make a handwashing facility accessible, acceptable and comfortable to use to foster handwashing with soap and sustain proper hand hygiene behaviour. Based on the needs of the respective user group, the facility design, space, location and other factors need to be tailored to as best as possible.

DESIGN

Handwashing facilities should be easy and intuitive to use including reaching, opening and closing of taps and locating the soap. Number of taps should match the expected volume of users to reduce waiting time and queues.

To allow different user groups to wash hands conveniently, adaptations need to be made to the height and design of the tap and basin. User groups may comprise children of different ages, elderly and frail people, or people with disabilities including physical, mental or sensory impairments. The height of the basin should take into account the maximal reach of children (table 4, p. 19, based on data from the UK). For wheelchair users, the height of the basin should not exceed 85 cm and the maximal reach should not be higher than 140 cm. Placing the soap, tap or foot pump consistently at a well accessible and agreed location facilitates use and help visually impaired users to locate them.

Handwashing facilities should be inviting to users, so choosing attractive colours and accessories, such as mirrors and soap dispensers may encourage use.

SPACE REQUIREMENTS

The amount of space needed to install a handwashing station requires advance assessment and planning. This is particularly important in crowded settings, including informal urban settings or refugee camps. Sufficient space for the installation of the facility as well as the space needed for users queuing, including physical distancing required during a pandemic to prevent transmission of pathogens, needs to be taken into account.

LOCATION

Placing handwashing facilities in close proximity to where they are needed such as at the entrance to buildings and the exits of toilets, makes it easier for users to locate them and encourages usage. Ensure good lighting during day and evening/night.

The ground on which the facility is built should be level, and non-slippery. If the facility is built outdoors, a roof can protect users from rain and sun. Flood-prone areas should be avoided. In case theft or vandalism may be an issue, the location where the facility is installed should be protected (e.g. fence).

The locations should be accessible for everyone, including people who are frail or with disabilities. If the facility is elevated a ramp with a gentle slope ensures access for wheelchair users. The door width needs to be at least 80 cm (ideally the width of the wheelchair with additional 20 cm) to allow wheelchair users to enter. If there is sufficient space a ramp and steps equally sized and distanced should be build. Cross-hatching markings on the surface and handrails might reduce the risk of people slipping.

Installation in locations that require long walks or that are dark and away from the main paths should be avoided. Not only may it discourage use but it may even bear a risk of vandalism of facilities or a risk for users through violence or bullying especially for women and children.

OTHER CONSIDERATIONS

Superstructures e.g. used for water storage tanks/ containers should be constructed with robust materials to ensure the hardware is stable enough to carry the full weight of the water tank without risk of breaking and to increase lifespan of the overall facility.

Children should not be able to climb up facilities or superstructures.

Availability and type of soap dispenser

Soap is the key ingredient to remove pathogens and make handwashing effective. Different kinds of soap can be used, including bar soap (solid soap), liquid soap, foam soap and soapy water. Antibacterial soap does not provide any additional benefits. Which type of soap to use depends on the context. Some considerations to facilitate the decision on a suitable option are shown in table 6. In cases, where no water and soap are available or in health care settings, alcohol-based hand rubs can be used on dry hands with a minimum of 60% alcohol (WHO & UNICEF, 2020).

SPECIAL TOPIC

Hand drying

Drying hands after washing them is important to prevent transmission of pathogens from contaminated surfaces to hands and the other way around.

Disposable paper towels can be used to dry hands and are particulalry recommended for health care facilities.. A bin with lid is required for paper towel disposal. Take into consideration that disposable paper towels add to environmental waste.

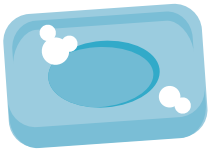
Hands can be airdried by carefully shaking them to avoid splashing.

Reusable towels are not recommended in public places or buildings as they present a risk for recontamination.

WHO, 2020; UNICEF, 2020; WaterAid, 2020

TABLE 6

Overview: types of soap

	Types of soap			
	Bar soap (solid soap)	**Liquid soap**	**Foam soap**	**Soapy water**
				
EXPERIENCES	• Usually the cheapest and most available option • Easy to transport, store and distribute • May be prone to theft if not fixed to the facility, e.g. with a string • Bar soaps have high-fat content and clog soak pits easier or lead to the formation of unpleasantly smelling films in greywater storage containers (compared to other soap types)	• Liquid soap can be adapted to hands-free operation • Does not cause the formation of precipitates and fat layers in greywater tanks and soak pits • May be prone to theft if not attached to facility • Regular refilling required • Large lockable containers for storing liquid soap are recommended • More expensive and not always available	• Foam soap is cheaper as it uses only 1/3 of the liquid soap with the same efficiency • Greywater generated is rather stable and clear and can be easily stored and infiltrated • Few low-cost foam dispensers are available on the market • Foam soap is produced at the point of use from liquid soap mixed with water at proportion 1:3 usually by a special dispenser that sucks air and builds foam	• Low-cost as it can be made up out of water, bar soap or detergent used for washing clothes and dishes • Reduces water consumptions as hands do not necessarily have to be wetted with water prior to lathering • When low cost detergents are used, it might cause skin irritation

WHO & UNICEF, 2020; UNICEF, 2020; WaterAid, 2020b

SPECIAL TOPIC

Designing handwashing facilities to encourage use

Overall, it is important to create an environment that invites and encourages people to wash hands with water and soap.

Making handwashing facilities look attractive by using colours, appealing materials, paintings, motivating messages, and maintaining a clean surrounding encourages use and fosters handwashing behaviour.

Involving users, especially children, in the decoration and beautification process, might increase acceptance and sense of ownership.

Supplying handwashing facilities with soap that looks, smells and feels pleasant is likely to be used by children and adults compared to brown and badly smelling soap that dries out hands.

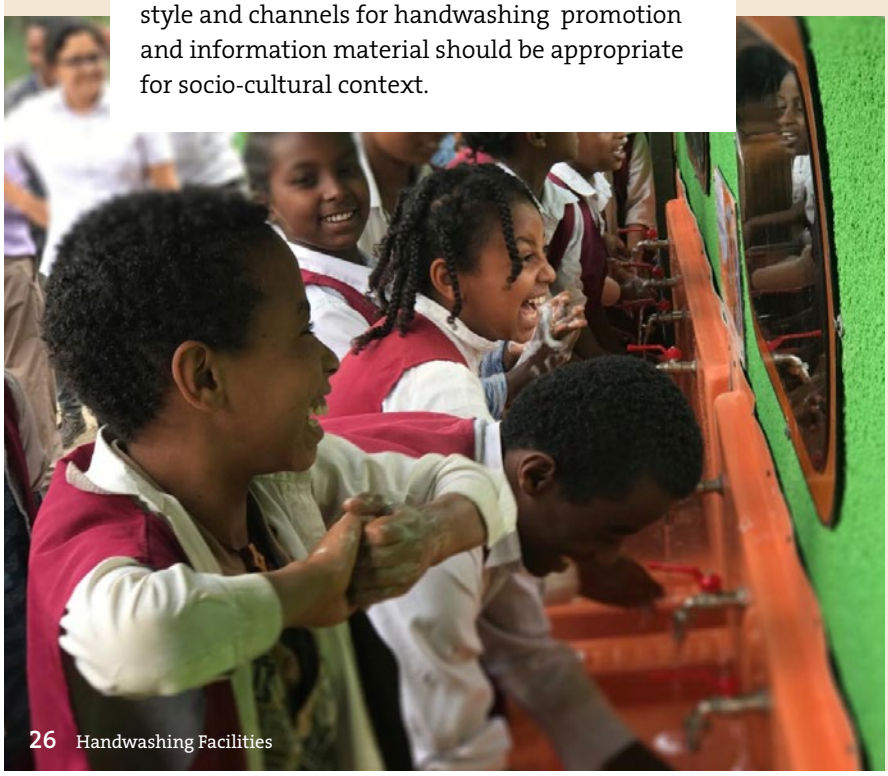
To remind, encourage and guide users to wash hands, environmental design clues, also called nudges, are useful tools. In addition, placing mirrors or images of eyes above the handwashing station can remind and motivate users to wash hands longer.

Positive messaging and use of communication style and channels for handwashing promotion and information material should be appropriate for socio-cultural context.

TOP: Nudges to encourage washing hands with soap: stickers on the ground guiding to the facility, mirrors, smiling soap dispensers.
Source: London School of Hygiene and Tropical Medicine, WASH in Schools Network, 2020.

BELOW LEFT: Group handwashing station with mirrors.
Source: Eric Stowe at Splash International, Washfunders.

BELOW RIGHT: Example of beautification of the group handwashing facility 'WASHaLOT' in Uganda.
Source: GIZ, Sanitation for Millions, 2020.



TECHNICAL SPECIFICATIONS

Water use efficiency

Water is a valuable resource and should not be wasted. High water consumption will not only increase costs and ecological impact, but also result in the need to have larger water tanks, require more frequent refilling, and larger soak pits.

Using water-saving taps is a good way to reduce water consumption and increase efficiency. Water-saving taps are available that decrease water quantity to as low as 80 ml per handwashing event. If available, water recycling systems provide a way to minimize water wastage as well as keep the need for refilling and discharging low.

Production: type of materials and location

Handwashing facilities should be constructed from materials that are durable and available locally. Regular maintenance and repairs are facilitated if equipment, tools and spare parts can be procured nearby. Material and parts should be adequate for a respective setting and usage to increase durability of facility and related infrastructure (e.g. UV-resistant plastics in areas exposed to sunlight, quality of material prone to corrosion and wear-off due to frequent use etc.).

Installation: time, skills and costs

Similarly, as the availability of material, it is critical, that capacities and budget for installation can be covered locally.

Costs can vary based on the type of installation but also depending on which hardware parts are integrated. For the purpose of providing an indication, a rough assessment along the following categories is used:

low (< $100) / medium ($100–500) / high (> $500)

O&M: time, skills and costs

Once the handwashing facility is installed, it is essential to conduct regular O&M to ensure that it remains functional and replenished with needed consumables. Without regular maintenance and repairs, the facility will deteriorate over time resulting in loss of initial investments and access to handwashing. Also, a facility in a bad condition may discourage use. Refilling the facilities with supplies, particularly water, can also result in considerable operational effort and needs to be considered with regard to available human resources. To ensure access to a functional facility with water and soap, it is crucial to take into account the resources needed to cover time, skills and costs for O&M from the very beginning. A clear O&M protocol that is realistic and easy to follow needs to be developed. It assigns roles, defines responsibilities and accountability for tasks such as regular cleaning and refilling of consumables, monitoring, procurement of parts, etc. Checklists may be useful to monitor the conditions and identify shortcomings that require action.

Ideally, capacities, spare parts and tools to maintain and repair a handwashing facility should be available locally. Facilities that require spare parts or technical capacity that is difficult to get are likely to become dysfunctional and unusable.

Designated budget lines for operating costs such as procurement of essential consumables and supplies (soap, water, disposable towels, cleaning equipment), and expenses for human resources for cleaning, refilling, regular maintenance and repairs need to be assessed during the planning phase to make sure the facility can be sustained over time.

Durability and expected lifespan

While it is important to accelerate the availability of handwashing facilities, particularly in pandemic contexts, it is also key to consider durability and expected lifespan to ensure that people have contiuous access.

As resources are often a restrictive factor, it should be taken into account that investments in more durable material may pay off in the long term.

Risk of vandalism and theft

Handwashing facilities installed in public places or buildings are at risk to be damaged or even stolen, particularly if they are freely accessible. Facilities that are more likely to be vandalized, include those with buckets or made out of metal or ceramic. Mobile options that are not attached to a permanent structure can be removed. Fixed and more solid constructions or those made out of plastic are more difficult to steal or vandalize. Similarly, supplies like soap or hardware parts of the facility can be stolen.

To prevent vandalism and theft, certain precautions may be considered. Placing a handwashing facility in an area that is protected (e.g. with a fence, supervision), securing mobile facilities to a permanent structure or placing them in a lockable room when it is not used. Supplies such as soap dispensers and bars can be attached to the facility.

SPECIAL TOPIC

Specific considerations in the context of the COVID-19 pandemic

During a pandemic such as COVID-19, additional considerations come into play. These apply particularly to facilities that are to be installed but also to those that already exist.

ENCOURAGE USE

Use of nudges to remind and motivate people to wash hands with water and soap and to navigate them to handwashing facilities.

PHYSICAL DISTANCING

Installation of new handwashing facilities in locations with sufficient space to observe physical distancing while queuing (visual indications may help to remind users to keep apart).

Installation of new handwashing facilities that allow sufficient physical distancing while washing hands. Alternatively, partition walls can be added. Visual indications on the facility or the ground may help to remind users to keep sufficient distance.

Adaptation of existing handwashing facilities by increasing the spacing between taps/outlets, reducing the number of taps/outlets available. Alternatively, partition walls can be added. Visual indications on the facility or the ground may help to remind users to keep sufficient distance.

DESIGN

Modification of existing handwashing facilities to minimize the risk of cross-contamination, for example by extending the handle of the ball valve taps to allow elbow operation or add pedal-operated structures made locally out of Polyvinyl chloride (PVC) or metal.

Installation of new handwashing facilities operated with elbow or foot pumps and self-closing taps, especially in institutional or public settings.

Use of materials and parts that are easy to clean and to repair locally.

SOAP

Ensure that the soap dish drains well, so that the soap does not get soggy. For liquid soap, dispensers that are sensor- controlled or large enough to operate with the lower arm should be considered.

SURFACE CLEANING AND DISINFECTION

Implementation of regular cleaning (water and soap or detergent) and/or disinfection (e.g. chlorine-based solution) to reduce transmission risks according to guidelines of national authorities and international recommendations (for more information see WHO, 2020; WaterAid 2020).

Number of cleaning cycles with soap and water and/or disinfection depends on the frequency of use and should be done at least once up to multiple times a day, particularly of frequently touched surfaces.

DRAINAGE AND WASTEWATER MANAGEMENT

Ensure proper drainage and wastewater management.

Current evidence indicates limited risks of COVID-19 transmission via greywater generated by handwashing stations.

WaterAid, 2020b; WHO & UNICEF, 2020

Overview of handwashing facilities and their key aspects

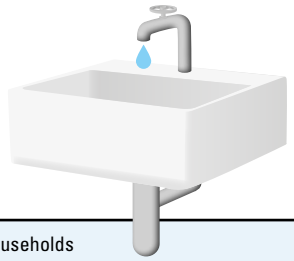
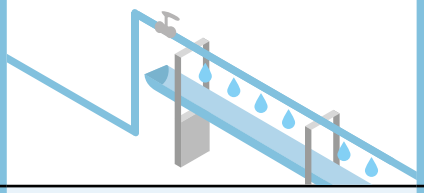
Building on the information presented in chapter 1, the following table 7 combines the range of facilities along with the key apsects of consideration. The handwashing facilities are categorized based on the type of water supply and installation. The key aspects of the respective handwashing facilitiy are based on experiences and assessments from settings where the respective facility was installed.

While table 7 provides a comprehensive overview of common examples, the display of handwashing facilities is not exhaustive or claims completeness. Variations and adaptation or additional types and designs exist that are not included.

Example of an elevated water storage tank in the Philippines.
Source: GIZ Fit for School, 2018.

TABLE 7

Overview of handwashing facilities and their key aspects

	Connected to piped water network or storage tank		
TYPE OF INSTALLATION	**Permanent facilities** with one tap per sink 	**Permanent or semi-mobile facilities** with multiple taps/outlets 	**Mobile facilities** with integrated water and greywater tanks with one or multiple taps 
SCALE AND INTENDED USE	• Single households • Community institutions (e.g. schools, health care facilities) • Public toilets	• Public spaces (e.g. toilets, markets) • Community institutions (e.g. schools, health care facilities) • Camps	• Community institutions (e.g. schools, health care facilities) • Camps
WATER SUPPLY	• Piped water network • External water storage tank filled through a piped network, borehole with a motorized pump, water tanker	• Piped water network • External water storage tank filled through a piped network, borehole with a motorized pump, water tanker	• Piped water networky • Integrated water storage tank filled through a piped network, borehole with a motorized pump, water tanker or manually
GREYWATER MANAGEMENT AND DRAINAGE	• Basin, drain, connected to functional greywater/wastewater management system	• Basin, drain, connected to functional sewege or greywater management system or soil infiltration	• Basin, integrated greywater collection tank, manual transport or drainage, subsequent soil infiltration or greywater/ wastewater management system
USER INTERFACE			
Number of taps/outlets per unit	• 1 tap per sink	• 4–20 taps/outlets	• 1–4 taps/outlets
Type of tap/outlet	• Standard tap, ball valve, self-closing taps, taps with contactless sensors, pedal tap	• Standard tap, ball valve, self-closing taps, perforated pipe with one valve	• Standard tap, dispenser tap, drum tap, self-closing valve, self-closing tap
Number of users washing hands at the same time	• Flexible number of sinks with taps usually multiple sinks installed for multiple users	• 4–20 users per one facility at a time	• 1–4 users per facility at a time
Accessibility for children, and people with disabilities	• Appropriate design options available	• Appropriate design options available	• Appropriate design options available
Availability and type of soap dispenser	• Usually no, but easily possible	• Often – yes	• Often – yes
TECHNICAL SPECIFICATIONS			
Water use efficiency	• No	• Designs with standard and water-saving taps available	• Devices with water-saving taps exist
Production: type of materials and location	• Common hardware: pipes, fittings, taps, basin • Local production	• Common hardware: pipes, fittings, taps or perforated tubes, basin • Designed structures mass-produced by rotational moulding or fibreglass • Brick/masonry structures with multiple taps	• Freestanding water tanks with taps • Designed structures mass-produced by rotational moulding or fibreglass
Installation: time, skills, costs	• 3–5 days • Advanced skills • High costs	• 1–3 days • Basic skills • Low costs	• 1–3 days • Basic skills • Usually high costs
O&M: time, skills, costs	• Monthly • Advanced skills • Medium costs	• Monthly • Basic skills • Low costs	• Monthly • Basic skills • Low costs
Durability and expected lifespan	• 5–10 years	• 5–10 years	• 2–5 years
Risk of vandalism and theft	• High	• Low	• High

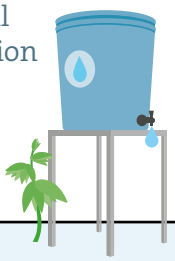
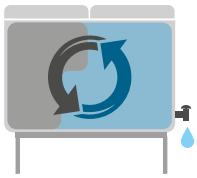
	Container with manual refilling			Water recycling
TYPE OF INSTALLATION	**Permanent or semi-mobile facilities** with one tap/outlet 	**Mobile facilities** with integrated greywater tank 	**Mobile facilities** without drainage or with soil infiltration 	**Mobile or semi-mobile facilities** with water recycling 
SCALE AND INTENDED USE	• Community institutions (e.g. schools, primary health care facilities) • Single or multiple households • Often outdoor	• Institutions at point of use (e.g. toilets, classrooms in schools, wards in clinics, mobile clinics, primary health care facilities, religious buildings) • Camps • Single households	• Institutions (e.g. schools, primary health care facilites) • Emergency contexts • Single households • Outdoor	• Institutions at point of use (e.g. toilets, classrooms in schools, wards in clinics, mobile clinics, primary health care facilities, religious buildings) • Camps
WATER SUPPLY	• Manual refilling • Rainwater harvesting • Tanker trucks	• Manual refilling • Rainwater harvesting • Tanker trucks	• Manual refilling	• Water recycling and re-use • Manual refilling once in 2–4 weeks depending on the frequency of use and designed capacity of the system
GREYWATER MANAGEMENT AND DRAINAGE	• Direct soil infiltration	• Basin, integrated greywater collection tank, subsequent soil infiltration or greywater/ wastewater management system	• Direct soil infiltration	• Wastewater collection and discharge once in 2–4 weeks (direct soil infiltration or grey-water/wastewater management
USER INTERFACE				
Number of taps/outlets per unit	• 1 tap/outlet	• 1–4 taps/outlets	• 1 tap	• 1–4 taps/outlets
Available type of tap/outlet	• Standard tap	• Standard tap, dispenser tap, drum tap, self-closing valve, swing tap, foot pump, pedal	• Outlet, standard tap, dispenser tap, drum tap, self-closing valve, swing tap	• Foot pump
Number of users washing hands at the same time	• 1 user per facility at a time	• 1–4 users per facility at a time	• 1 user per facility at a time	• 1–4 users per facility at a time
Accessibility for children, and people with disabilities	• Usually no	• Appropriate design options available	• Usually no	• Yes
Availability and type of soap dispenser	• Usually no, solid soap is possible	• Often – yes	• Usually no, solid soap is possible	• Yes
TECHNICAL SPECIFICATIONS				
Water use efficiency	• No	• Usually no, but designs with water-saving taps available	• No	• Up to 95%
Production: type of materials and location	• Containers integrated into permanent concrete, metal or stone structures	• Two container systems with a tap and/or a foot pump • Designed structures mass-produced by injection moulding or rotational moulding	• Container with a tap • Tippy tap • Plastic bag with tap or lid	• Local tanks and supporting structure • Designed structures for mass production by rotational moulding
Installation: time, skills, costs	• 1–3 days • Basic to advanced skills • Usually high costs	• 0.5 day • Basic skills • Low costs	• 0.5 day • Basic skills • Low costs	• 0.5 day • Basic skills • High costs
O&M: time, skills, costs	• Daily • Basic skills • Medium costs	• Daily • Basic skills • Medium costs	• Daily • Basic skills • Medium costs	• Once in 2–4 weeks • Basic to advanced skills • Low costs
Durability and expected lifespan	• 2–5 years	• 1–5 years	• 1–2 years	• 2–5 years
Risk of vandalism and theft	• Low	• High	• High	• Low

TABLE 8

Experiences: types of water supply and installation

	Connected to piped water network or storage tank		
	Permanent facilities with one tap per sink	**Permanent or semi-mobile facilities** with multiple taps/outlets	**Mobile facilities** with integrated water and greywater tanks with one or multiple taps
EXPERIENCES	• Convenient to use • Familiar to users • Can be connected to a piped water network or a storage tank ——— • Commonly requires sewer or greywater system connection • Mostly used with standard taps resulting in higher water use • Higher costs for materials and installation • Once installed, no flexibility to reposition or adapt to other potential user needs	• Enables simultaneous handwashing for multiple users • Water-saving taps/outlets can be integrated to reduce water consumption • Can be built locally with local supplies • Low-cost models exist • Can be connected to a piped water network or a storage tank ——— • For physical distancing, some taps may have to be closed for use to ensure sufficient space between users	• Highly flexible, can be easily relocated • Fast installation and usually intuitive use • No fixed sewer or greywater connection is required • High flexibility regarding design of the tap – water-saving devices can be used • Integrated water tank reduces vulnerability to interruptions of water supply ——— • Water refilling and greywater management need to be established and well managed • Might not be locally available, or might need to be redesigned to be built locally • Stability and durability is usually lower than for permanent systems • Less flexible regarding the design of the environment (changing mirrors, soap type, etc.)

Permanent installed group handwashing facility with contactless outlets and piped water supply. Philippines. Source: GIZ, Fit for School, 2017.

	Container with manual refilling			Water recycling
	Permanent or semi-mobile facilities with one tap/outlet	**Mobile facilities** with integrated greywater tank	**Mobile facilities** without drainage or with soil infiltration	**Mobile or semi-mobile facilities** with water recycling
EXPERIENCES	• More robust facilities, less prone to vandalism and theft • Local construction and materials • Requires manual refilling ——— • Some skills required for installation and construction	• Very flexible, can be located at point of use and repositioned easily • Easy installation without skilled staff • Can be easily adapted to local needs and context (heights, size, tap design) • Different designs suitable for local production available ——— • Need for manual refiling and (sometimes) greywater/ wastewater management • Can be easily stolen, and subjected to vandalism • Relatively low durability and robustness compared to permanent facilities	• Simple and usually easy to install and use • Low cost • High flexibility outdoor • Requires another container when used indoor ——— • Requires manual refilling • Water may accumulate and result in unpleasant handwashing experience and breeding ground for insects and parasites • Low robustness and durability • Not applicable to all tap designs as large handles can easily break plastic housing	• High water-saving (up to 10,000 L per month for 1,000 children in school) • No need for regular refilling, saving staff costs and efforts • High flexibility of design to adapt to local needs, size and context ——— • Recycled water should only be used for handwashing • Trained operator for maintenance required • New technology, not yet long on the market, may not be available everywhere • Requires import of few key elements. The support structure can be constructed locally

Manually refill. Uganda.
Source: GIZ, Fit for School, Sanitation for Millions, 2019.

2.
Handwashing facilities
Selection of suitable systems

Steps of making a decision

A vast number of different handwashing facilities exist around the world, often with adaptations to specific settings and related requirements.

The identification of a handwashing facility and that is most suitable for a given context can be challenging. The selection process may not be systematic or be the result of personal preferences.

There are different ways to approach the selection of a handwashing facility. The following decision tool aims to guide the user through a stepwise process. The objective is to identify handwashing facilities that are appropriate for a specific context and related needs. With all the requirements and restrictions of a setting, there is no one perfect solution. The objective of the decision tool is to identify the handwashing facilities and key aspects that are feasible and appropriate options and that match the needs as much as possible.

The decision tool follows the subsequent steps:

STEP 1: Characterize your context and scenarios using table 10.

STEP 2: Screen the types of facilities and narrow down options using the typology presented in table 7.

STEP 3: Identify the facilities available for each type considering different options..

STEP 4: Prioritize the options applying a user-centred approach. If possible, pilot your options.

STEP 4: Explore scaling-up by analysing the supply chain and potential management system.

TABLE 9

Approach to select a handwashing facility

STEP 1 CHARACTERIZING CONTEXTS AND DEVELOPING SCENARIOS

Characterizing your context and developing scenarios is the first step to narrow the options of potential handwashing facilities. To do so, you need to collect information related to your context and review it using the decision criteria for selecting handwashing facilities in table 10. Cross out the options that are not relevant for your context. The list of key aspects and related options presented is not exhaustive. It can be modified depending on the context. You might also add exclusion criteria, which are essential for your context or prioritize indicators by adding weights.

Use the list of decision criteria in table 10 on page 36.

STEP 2 SCREENING OF OPTIONS

The screening step will narrow down your options considerably. Thus, as the second step, you need to evaluate which types of facilities from those presented in table 7 are most suitable for your context and which are not. You can rank them for each key aspect you identified during the characterization of your context.

More information on page 37.

STEP 3 IDENTIFYING POSSIBLE FACILITIES

Identifying the options available for each facility type and finding the best matches.

More information on page 38. Information on different facilities are available online: *https://bit.ly/3s1IuQ0*

STEP 4 PRIORITIZING THE OPTIONS

Prioritize the options applying a user-centred approach. There are different ways to prioritize your options, depending on resources available and time pressure. Providing the prototypes to users and piloting them for technical feasibility and user acceptance is recommended. When this is not possible, the factsheets with the drawings of the different designs and the relevant technical information can be presented and discussed with the major stakeholders and users. Collect as much information as possible for each of the key aspects in the list. The results of this step are one to three facilities which match the requirements as best as possible.

STEP 5 EXPLORING THE OPTIONS FOR SCALING UP

Explore scaling-up by analysing the supply chain and potential management system.
The last step involves collecting further technical information relevant to the design and your context.
The outcome usually would be the invitation to tender for a specific design or detailed implementation plan.

RESULT: APPROPRIATE HANDWASHING FACILITY IS IDENTIFIED

TABLE 10 | Decision criteria for selecting feasible handwashing facilities

	KEY ASPECTS		OPTIONS	SUITABLE FACILITY	MATCHES AVAILABLE FACILITIES			
SCALE AND INTENDED USE	Capacity: number of users and handwashing events per day		1 – 10 people, up to 20 events per day					
			2 – 50 people, up to 200 events per day					
			50 – 500 people, up to 1000 events per day					
	Intended use		Serving entire public space or entire institution					
			Serving specific area of a public space or an institution					
			Serving one household					
WATER SUPPLY	Type of water supply system and water source used		Piped water supply					
			Storage tank refilled through piped water supply, tanker truck, rainwater					
			Storage tank refilled manually					
GREYWATER MANAGEMENT AND DRAINAGE	Type of drainage system		Direct soil infiltration					
			Direct connection to sewer network					
			Wastewater storage container with subsequent disposal					
USER INTERFACE	Number of taps/outlets per unit		1					
			2 – 4					
			5 – 10					
			> 11					
	Type of tap/outlet		Taps requiring hand contact for operation					
			Reduced hand contamination					
			Contactless tap/outlet					
	Number of users washing hands at the same time		1					
			2 – 4					
			5 – 10					
			> 11					
	Accessibility		Children					
			People with disabilities					
	Availability and type of soap dispenser		Soap dispenser					
			Tray					
TECHNICAL SPECIFICATIONS	Water use efficiency: water used per handwashing		Standard: 500 – 1000 ml					
			Water-saving: 250 – 500 ml					
			Water-saving: 30 – 50 ml					
			Water-recycling: 5 ml					
	Production: type of materials and location		On-site production					
			On-site assembly					
			Prefabricated: produced locally					
			Prefabricated: produced centrally					
			Prefabricated: imported					
	Installation	Time	> 3 days					
			1 – 3 day					
			< 1 day					
		Skills	Advanced					
			Basic					
		Costs	High costs					
			Low costs					
	O&M	Time	Daily					
			Weekly					
			> Weekly					
		Skills	Advanced					
			Basic					
		Costs	High costs					
			Low costs					
	Durability and expected lifespan		5 – 10 years					
			2 – 5 years					
			1 – 2 years					
			< 1 year					
	Risk of vandalism and theft		High risk					
			Low risk					
ADDITIONAL SPECIFICATIONS								

STEP 1

Adjust key aspects and options if necessary:

Cross out the options not relevant. Add relevant key aspects and options, e. g. emergency settings, pandemic adjustments.

TABLE 10 | Decision criteria fo

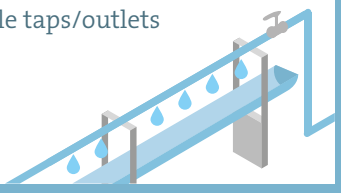
STEP 2 feasible handwashing facilities

	KEY ASPECTS		SUITABLE FACILITY	MATCHES AVAILABLE FACILITIES
SCALE AND INTENDED USE	Capacity: number of users and handwashing events per day			
	Intended use			
WATER SUPPLY	Type of water supply system and water source used			
GREYWATER MANAGEMENT AND DRAINAGE	Type of drainage system			
USER INTERFACE	Number of taps/outlets per unit			
	Type of tap/outlet			
	Number of users washing hands at the same tim			
	Accessibility			
	Availability and type of soap di			
TECHNICAL SPECIFICATIONS	Water use efficiency: water used per handwashing			
	Production: type of materials and location			
	Installation	Time		
		Skills		
		Costs		
	O&M	Time		
		Skills		
		Costs		
	Durability and expected lifespa			
	Risk of vandalism and theft	High risk		
		Low risk		
ADDITIONAL SPECIFICATIONS				

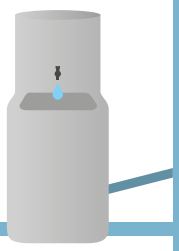
A)
Select a suitable handwashing facility according table 7 (page 30):

Permanent facilities
with one tap
per sink

Permanent or semi-mobile facilities
with multiple taps/outlets



Mobile facilities
with integrated water
and greywater tanks
with one or multiple taps

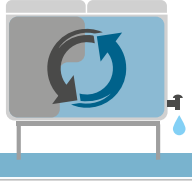


Permanent or
semi-mobile faciities
with one tap/outlet

Mobile facilities
with integrated
greywater tank

Mobile facilities
without drainage or
with soil infiltration

Mobile or semi-mobile facilities
with water recycling



B)
Rank to prioritize suitable handwashing facilities

Partially well: +
Rather well: ++

TABLE 10 | Decision criteria for selecting feasible handwashing facilities

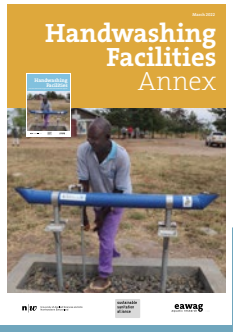
	KEY ASPECTS		OPTIONS	SUITABLE FACILITY	MATCHES AVAILABLE FACILITIES			
SCALE AND INTENDED USE	Capacity: number of users and handwashing events per day		1–10 people, up to 20 events per day					
			2–50 people, up to 200 events per day					
			50–500 people, up to 1000 events per day					
	Intended use		Serving entire public space or entire institution					
			Serving specific area of a public space or an institution					
			Serving one household					
WATER SUPPLY	Type of water supply system and water source used		Pipe					
			Stor… rough piped water supply, tank					
			Stor…					
GREYWATER MANAGEMENT AND DRAINAGE	Type of drainage system		Dire…					
			Dire…					
			Was…					
USER INTERFACE	Number of taps/outlets per unit		1					
			2–4					
			5–1…					
			>11					
	Type of tap/outlet		Taps					
			Redu…					
			Cont…					
	Number of users washing hands at the same time		1					
			2–4					
			5–1…					
			>11					
	Accessibility		Child…					
			Peop…					
	Availability and type of soap dispenser		Soap…					
			Tray					
TECHNICAL SPECIFICATIONS	Water use efficiency: water used per handwashing		Stan…					
			Wat…					
			Wat…					
			Wat…					
	Production: type of materials and location		On-s…					
			On-s…					
			Pref…					
			Prefabricated: produced centrally					
			Prefabricated: imported					
	Installation	Time	>3 days					
			1–3 day					
			<1 day					
		Skills	Advanced					
			Basic					
		Costs	High costs					
			Low costs					
	O&M	Time	Daily					
			Weekly					
			>Weekly					
		Skills	Advanced					
			Basic					
		Costs	High costs					
			Low costs					
	Durability and expected lifespan		5–10 years					
			2–5 years					
			1–2 years					
			<1 year					
	Risk of vandalism and theft		High risk					
			Low risk					
ADDITIONAL SPECIFICATIONS								

STEP 3

Identify appropriate facilities according to your ranking.

The ranking might vary depending on the context, specific features of the type or design and personal views or stakeholder experiences.

More information about suitable handwashing facilities on SuSanA.org: *https://bit.ly/3s1IuQ0*



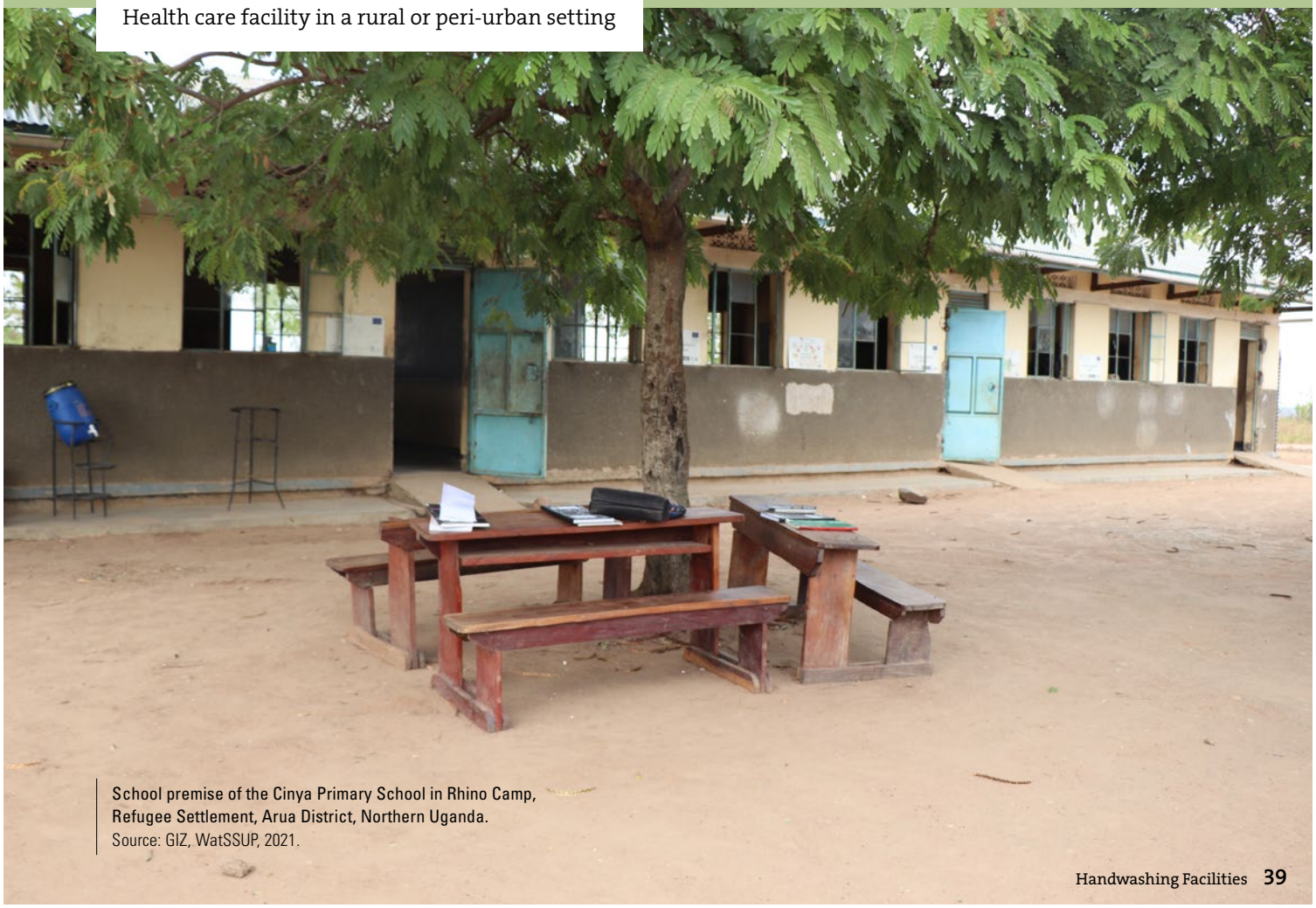
Then proceed with step 4 and 5

Application of the decision criteria
Scenarios in Uganda

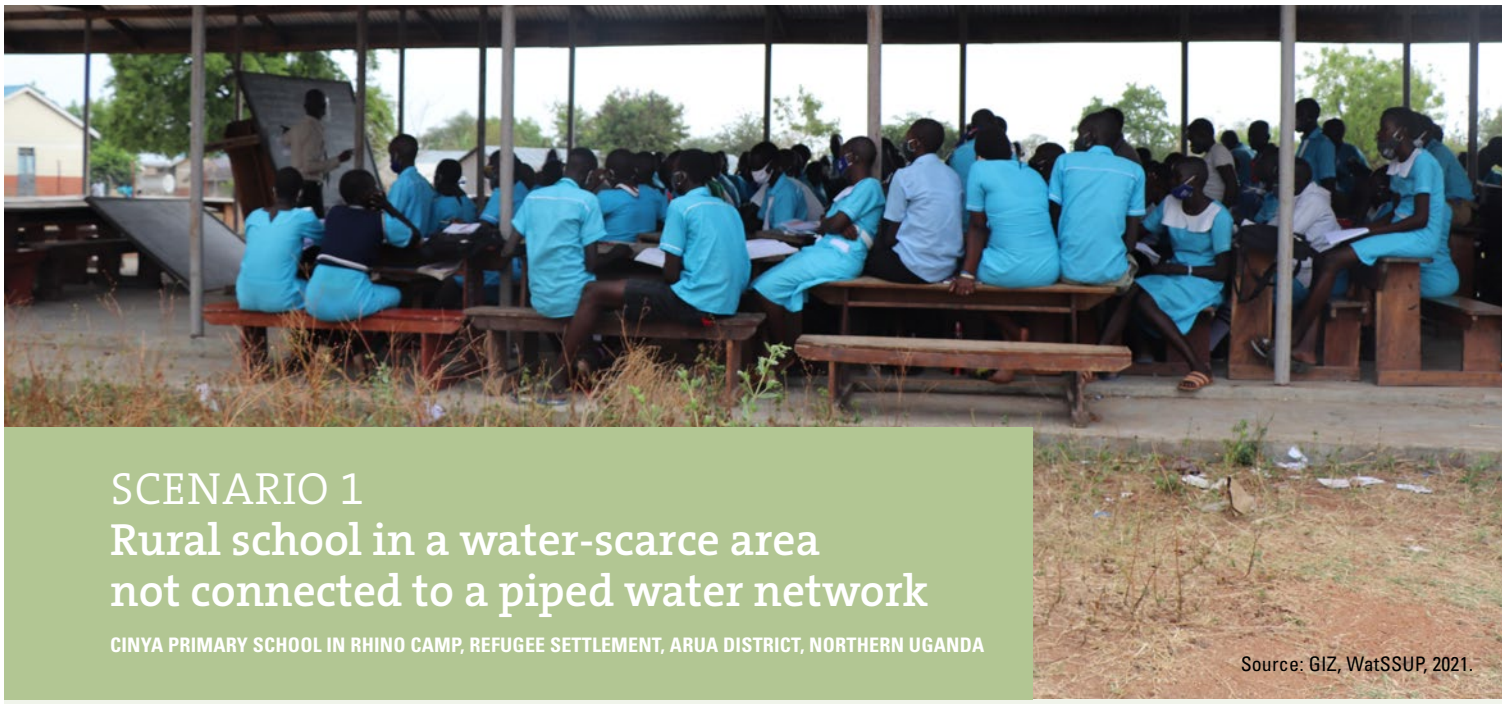
SCENARIO 1
Rural school in a water-scarce area
not connected to a piped water network

SCENARIO 2
Handwashing next to shared public toilets
in informal settlements

SCENARIO 3
Health care facility in a rural or peri-urban setting



School premise of the Cinya Primary School in Rhino Camp, Refugee Settlement, Arua District, Northern Uganda.
Source: GIZ, WatSSUP, 2021.



Source: GIZ, WatSSUP, 2021.

SCENARIO 1
Rural school in a water-scarce area not connected to a piped water network

CINYA PRIMARY SCHOOL IN RHINO CAMP, REFUGEE SETTLEMENT, ARUA DISTRICT, NORTHERN UGANDA

The first scenario characterises a context found in many (rural) schools in countries of Sub-Saharan Africa. Often, these schools do not have access to a piped water network. Water is carried by students and staff members from a borehole/dug well less than 30 minutes walking distance away or delievered in jerry cans by water vendors directly to school. Water quantity is often insufficient with the result that handwashing is practiced irregularly or not at all. In such water scarce contexts, implementation or improvement of technologies needs to be complemented by well-designed behaviour change interventions (Mosler & Contzen, 2016).

An example under scenario 1 is a primary school setting, where we applied the approach to select handwashing facilities summarized in the table 11. We identified the following facts/conditions to characterize the context (step 1). Screening of the type of the facilities (step 2) based on table 8 revealed that the "mobile facility with manual refilling" is most suitable for this context. For this type of handwashing facility, four types have been identified and were analysed in more detail to find the best match (step 3). Table 11 summarizes the main technical decision criteria relevant for scenario 1 – rural schools in a water-scarce area and shows the most suitable handwashing facilities.

FACTS | CONDITIONS
500 children attend the school, 500 – 1000 handwashing events per day are needed
A borehole/dug well is the main water source located less than 30 min away from school
Water-scarce area, water is transported manually or by small vendors
Manual refilling efforts should be kept as low as possible
No wastewater system in place, good soil in-filtration capacity
High risk of transmission of diseases through surfaces/COVID context. Distance between taps is required.
Mainly used by school children
Low resource setting
Remote area, no skilled staff is available

RESULT

Table 11 provides the summary of scores for each facility for this scenario. In this example, no weighting is used. However, this can be done if there are clear preferences about the most relevant technical decision criteria. Additionally, exclusion criteria can be used. In schools, this is often the suitability of facilities for use by children (e.g. height of taps). For scenario 1, the WASHaLOT, manually refilled mobile facilities with integrated wastewater collection tanks (e.g. Oxfam, Povu Pova), bucket facilities with a stand (e.g. WaterAid), as well as water recycling systems (Gravit`eau) show the highest score, i.e. potential for implementation (step 4). These facilities should be further evaluated using a more detailed evaluation tool, such as the Technology Applicability Framework (TAF, please see p. 47 for more information). The further evaluation should focus on user acceptance, supply chain, management systems and additional information needs to be collected.

TABLE 11 | Scenario 1: decision criteria, preferred facility and matches

	KEY ASPECTS		OPTIONS	SUITABLE FACILITY: mobile facility manual refilling	MATCHES AVAILABLE FACILITIES: WASHaLOT	Povu Pova	WaterAid foot operated	Gravit˚eau water recycling
SCALE AND INTENDED USE	Capacity: number of users and handwashing events per day		1–10 people, up to 20 events per day			+		+
			2–50 people, up to 200 events per day		++	++	++	++
			50–500 people, up to 1000 events per day	++	++			++
	Intended use		Serving entire public space or entire institution	++	++			
			Serving specific area of a public space or an institution			++	++	++
			Serving one household			+	+	+
WATER SUPPLY	Type of water supply system and water source used		Piped water supply		++			
			Storage tank refilled through piped water supply, tanker truck, rainwater		++			+
			Storage tank refilled manually	++	++	++	++	+
GREYWATER MANAGEMENT AND DRAINAGE	Type of drainage system		Direct soil infiltration	++	++	+	+	
			Direct connection to sewer network		+			
			Wastewater storage container with subsequent disposal		+	++	++	+
USER INTERFACE	Number of taps/outlets per unit		1	++		++	++	
			2–4					++
			5–10		++			
			>11					
	Type of tap/outlet		Taps requiring hand contact for operation		++	++		++
			Reduced hand contamination		+		++	
			Contactless tap/outlet	++				
	Number of users washing hands at the same time		1	++		++	++	
			2–4		+			++
			5–10		+			
			>11		++			
	Accessibility		Children	++	++	++	++	
			People with disabilities			++	++	
	~~Availability and type of soap dispenser~~		~~Soap dispenser~~	–		+	++	
			~~Tray~~	–	++		++	
TECHNICAL SPECIFICATIONS	Water use efficiency: water used per handwashing		Standard: 500–1000 ml					
			Water-saving: 250–500 ml					
			Water-saving: 30–50 ml	++	++	++		
			Water-recycling: 5 ml	+				++
	Production: type of materials and location		On-site production	++				
			On-site assembly	++	++		++	
			Prefabricated: produced locally		+			++
			Prefabricated: produced centrally		++	+		
			Prefabricated: imported		+	+		+
	Installation	~~Time~~	~~>3 days~~	–				
		not applicable	~~1–3 day~~	–	+		+	
			~~<1 day~~	–		+		
		~~Skills~~	~~Advanced~~	–				
			~~Basic~~	–				
		Costs	High costs					+
			Low costs	++	++	++	++	
	O&M	Time	Daily			+	+	
			Weekly	++	+			
			>Weekly					+
		Skills	Advanced					
			Basic	++	++			
		Costs	High costs				+	
			Low costs	++	++	++		+
	Durability and expected timespan		5–10 years	++				
			2–5 years		+			+
			1–2 years			+	+	
			<1 year					
	Risk of vandalism and theft		High risk			+	+	
			Low risk	++	+			+
ADDITIONAL SPECIFICATIONS								

Source: GIZ, WatSSUP, 2021.

SCENARIO 2
Handwashing next to shared public toilets in informal settlements

SHARED PUBLIC TOILET, BANDA PARISH, KAMPALA DISTRICT, UGANDA

The second scenario focuses on handwashing facilities that need to be installed next to public toilets in informal settlements. At the toilets, water supply is often not (directly) available, especially when pit latrines or other types of dry toilets (without flushing) are used. In these cases, piped water supply needs to be installled or extended to supply toilet and handwashing facilities. In water-scarce areas, water might be interrupted and not available 24/7. In such cases, the installation of storage tanks is a pre-requisite to establish a reliable system.

When water supply is not reliable or available and risk of vandalism high, manually refilled piped facilities will in general receive higher scores.

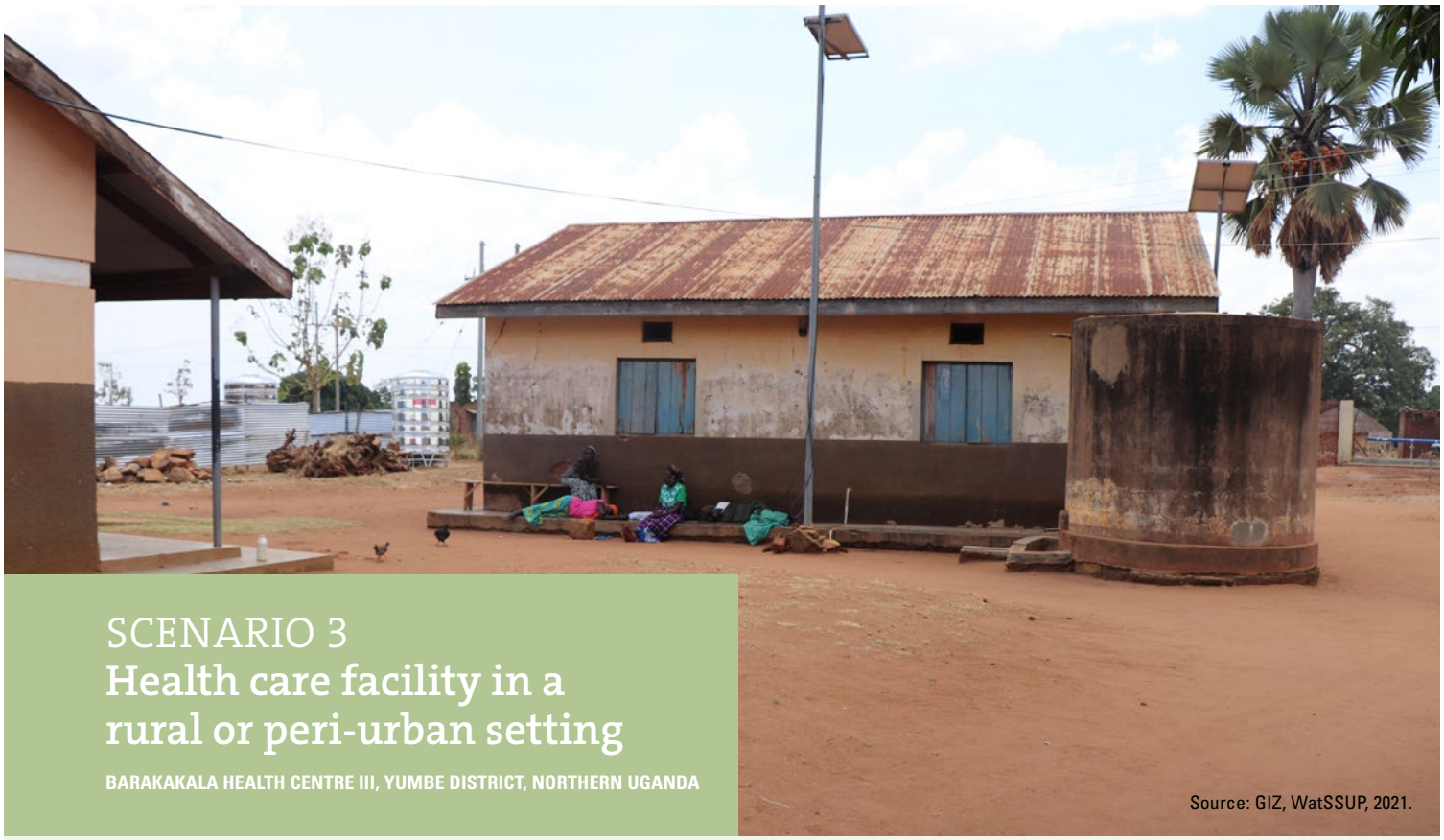
FACTS | CONDITIONS
Up to 50 people per day use the public toilet, 200 handwashing events per day are needed
Piped water supply available, interruptions are common
Greywater management system in place
High risk of transmission of diseases through surfaces / COVID context
Should be accessible for people with disabilities
Low-resource settings
The area is not protected, and vandalism and theft of hardware parts is a problem
Efforts for O&M should be kept as low as possible

RESULT

Table 12 provides a summary of a few options for this context. In informal settings, free standing facilities that are mobile and manually refilled (such as bucket with tap and ICRC communal WASH station) are more suitable at shared public toilets to limit vandalism. In areas connected to piped water supply, mobile facilities with integrated water and greywater tanks (such as UNHCR/Oxfam in camps) can be used. Permanent facilities (such as WaterAid facility for bus stops) are applicable in informal areas with a high number of people accessing the shared public toilets.

TABLE 12 | Scenario 2: decision criteria, preferred facility and matches

	KEY ASPECTS		OPTIONS	SUITABLE FACILITY: mobile facility manual refilling	MATCHES AVAILABLE FACILITIES: WaterAid facility for bus stops	UNHCR/ Oxfam in camps	Bucket with tap	ICRC Communal WASH station
SCALE AND INTENDED USE	Capacity: number of users and handwashing events per day		1–10 people, up to 20 events per day			+		+
			2–50 people, up to 200 events per day	++	+	++	++	++
			50–500 people, up to 1000 events per day		++			
	Intended use		Serving entire public space or entire institution			+		
			Serving specific area of a public space or an institution	++	++	++	++	++
			Serving one household				++	+
WATER SUPPLY	Type of water supply system and water source used		Piped water supply		++	+		+
			Storage tank refilled through piped water supply, tanker truck, rainwater	++	++	++		++
			Storage tank refilled manually			+	++	+
GREYWATER MANAGEMENT AND DRAINAGE	Type of drainage system		Direct soil infiltration		+	++	+	+
			Direct connection to sewer network	++	++	+		
			Wastewater storage container with subsequent disposal			+	++	++
USER INTERFACE	Number of taps/outlets per unit		1			++	++	++
			2–4		++			
			5–10					
			>11					
	Type of tap/outlet		Taps requiring hand contact for operation					++
			Reduced hand contamination	+		++		
			Contactless tap/outlet	++	++	+		+
	~~Number of users washing hands at the same time~~ not applicable		~~1~~	~~–~~		~~++~~	~~++~~	
			~~2–4~~	~~–~~				~~++~~
			~~5–10~~	~~–~~	~~+~~			
			~~>11~~	~~–~~	~~++~~			
	Accessibility		Children		++			++
			People with disabilities	++	++	++	++	
	~~Availability and type of soap dispenser~~		~~Soap dispenser~~	~~–~~	~~++~~	~~+~~	~~++~~	~~+~~
			~~Tray~~	~~–~~	~~++~~	~~+~~	~~++~~	~~+~~
TECHNICAL SPECIFICATIONS	Water use efficiency: water used per handwashing		Standard: 500–1000 ml		+			
			Water-saving: 250–500 ml		++			++
			Water-saving: 30–50 ml	++			++	
			Water-recycling: 5 ml	+				
	Production: type of materials and location		On-site production	++	++			
			On-site assembly	++		++		
			Prefabricated: produced locally				++	
			Prefabricated: produced centrally				+	++
			Prefabricated: imported					+
	Installation	Time	>3 days		++			
			1–3 day	++				
			<1 day			+	+	+
		~~Skills~~	~~Advanced~~	~~–~~				
			~~Basic~~	~~–~~				
		Costs	High costs		++			
			Low costs	++		++	++	++
	O&M	~~Time~~	~~Daily~~			~~+~~	~~+~~	~~+~~
			Weekly					
			>Weekly	++	~~+~~			
		~~Skills~~	~~Advanced~~	~~–~~				
			~~Basic~~	~~–~~				
		Costs	High costs		+	+		
			Low costs	++			++	+
	Durability and expected timespan		5–10 years	++	+			
			2–5 years			+		
			1–2 years				+	+
			<1 year					
	Risk of vandalism and theft		High risk				+	
			Low risk	++	+	+		+
ADDITIONAL SPECIFICATIONS								



Source: GIZ, WatSSUP, 2021.

SCENARIO 3
Health care facility in a rural or peri-urban setting

BARAKAKALA HEALTH CENTRE III, YUMBE DISTRICT, NORTHERN UGANDA

The third scenario targets primary health care facilities (HCF). In HCF, there are typically several areas where a functional handwashing facility must be present: e.g. the reception area, the consultation room, the maternity ward, the toilets, etc. The number of handwashing facilities per area depends on the size of the HCF. For primary health care facilities serving about 20 to 40 patients per day, in the reception area the demand can be limited to 20 to 40 handwashing events. For HCF comprising of maternity and consultation wards, the handwashing facility will be used more often especially by staff, which results in roughly 200 to 400 handwashing events per day.

FACTS | CONDITIONS
20 to 40 people per day visit the health care facility, 200 to 400 handwashing events per day are needed
Borehole on premises or close to the facility
Water supply interruptions are common
Greywater management system is not existent. Water needs to be disposed safely to prevent risk of spreading infections
Should be accessible for people with disabilities
Soap dispenser is required
High risk of transmission of diseases through surfaces, and from person to person / COVID context
A few taps are used by many people throughout the day
Low-resource setting
Efforts for O&M should be kept as low as possible
Durability of material should be high as few taps are in frequent use
The area is protected, vandalism and theft are not a problem

RESULT

Table 13 summarizes the scores for two areas – the consultation room and reception area of the health care facility in the scenario 3. In both cases, similar criteria are used. However, the reception area requires smaller handwashing facilities which potentially can also be refilled manually. Less durable options can also be appropriate considering the smaller number of uses. These adaptations change the results of scoring. Smaller, lighter mobile facilities with high water-saving potential become more attractive (such as the Oxfam station or WaterAid foot operated stations).

TABLE 13 | Scenario 3: decision criteria, preferred facility and matches

	KEY ASPECTS		OPTIONS	SUITABLE FACILITY: mobile facility manual refilling	MATCHES AVAILABLE FACILITIES: WaterAid facility for bus stops	UNHCR/ Oxfam in camps	WaterAid foot operated	Gravit'eau water recycling
SCALE AND INTENDED USE	Capacity: number of users and handwashing events per day		1–10 people, up to 20 events per day			+		+
			2–50 people, up to 200 events per day		+	++	++	++
			50–500 people, up to 1000 events per day	++	++			++
	Intended use		Serving entire public space or entire institution	++		+		
			Serving specific area of a public space or an institution	+	++	++	++	++
			Serving one household				+	+
WATER SUPPLY	Type of water supply system and water source used		Piped water supply		++	+		
			Storage tank refilled through piped water supply, tanker truck, rainwater	++	++	++		+
			Storage tank refilled manually			+	++	+
GREYWATER MANAGEMENT / DRAINAGE	Type of drainage system		Direct soil infiltration		+	++	+	
			Direct connection to sewer network		++	+		
			Wastewater storage container with subsequent disposal	++		+	++	+
USER INTERFACE	Number of taps/outlets per unit		1	++		++	++	
			2–4					++
			5–10					
			>11					
	Type of tap/outlet		Taps requiring hand contact for operation					++
			Reduced hand contamination			++	++	
			Contactless tap/outlet	++	++			
	~~Number of users washing hands at the same time~~ not applicable		1	–		++	++	
			2–4	–				++
			5–10	–	+			
			>11	–	++			
	Accessibility		Children		++		++	
			People with disabilities	++	++	++	++	
	Availability and type of soap dispenser		Soap dispenser	++	++	+	++	
			Tray		++	+	++	
TECHNICAL SPECIFICATIONS	Water use efficiency: water used per handwashing		Standard: 500–1000 ml		+			
			Water-saving: 250–500 ml		++			
			Water-saving: 30–50 ml	++				
			Water-recycling: 5 ml	+				++
	~~Production: type of materials and location~~		On-site production	–	++			
			On-site assembly	–		++	++	
			Prefabricated: produced locally	–				++
			Prefabricated: produced centrally	–				
			Prefabricated: imported	–				+
	Installation	~~Time~~	>3 days	–	++			
			1–3 day	–			+	
			<1 day	–		+		
		~~Skills~~	~~Advanced~~	–				
			~~Basic~~	–				
		Costs	High costs		++			+
			Low costs	++		++	++	
	O&M	~~Time~~	Daily	++		+	+	
			Weekly	+				
			>Weekly	–	+			+
		~~Skills~~	~~Advanced~~	–				
			~~Basic~~	–				
		Costs	High costs		+	+	+	
			Low costs	++				+
	Durability and expected timespan		5–10 years	++	+			
			2–5 years	++		+		+
			1–2 years				+	
			<1 year					
	Risk of vandalism and theft		High risk				+	
			Low risk	++	+	+		+
ADDITIONAL SPECIFICATIONS								

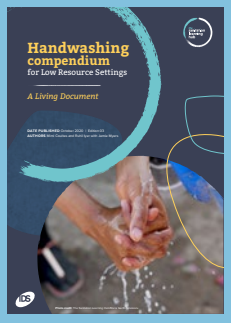
Further reading

The Handwashing Handbook
Source: Global Handwashing Partnership

https://bit.ly/3I2y3kM

Handwashing Stations and Supplies for the COVID-19 response
Source: UNICEF

https://uni.cf/3GRuVHf



Handwashing Compendium for Low Resource Settings: A Living Document
Source: The Sanitation Learning Hub

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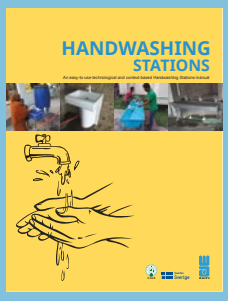
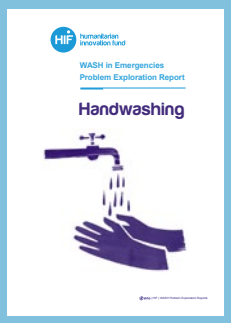


Handwashing Stations – An easy-to-use Technological and context-based Handwashing Stations Manual
Source: WaterAid Bangladesh

https://bit.ly/3rMjdcH



Handwashing. WASH in Emergencies Problem Exploration Report.
Source: humanitarian innovation fund

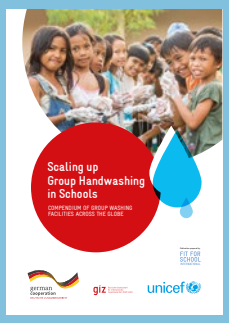
https://bit.ly/3LvkBZ0

Technical Guide for handwashing facilities in public places and buildings
Source: WaterAid

https://bit.ly/3LxxCRO

Using Environmental Nudges to Improve Handwashing with Soap among School Children
Source: WASH in Schools Network

https://bit.ly/3oNsaAE



Scaling up Group Handwashing in Schools
Source: UNICEF and GIZ

https://bit.ly/2x5qNWj

Bringing WASHaLOT 3.0 to Scale // Production, Installation and Operation in Uganda
Source: GIZ

Example for scaling up a handwashing technology in Uganda:

https://bit.ly/3pyrRKh

Online platforms

Hygiene Hub:
www.hygienehub.info/en/covid-19

Sanitation Learning Hub:
https://sanitationlearninghub.org

Sustainable Sanitation Alliance (SuSanA):
www.susana.org/en

Global WASH in Schools Network:
www.winsnetwork.org

Recommendation

Technology Applicability Framework (TAF)

Approach which can be applied for the selection of handwashing facilities

The TAF is a viable assessment tool when conventional facilities need to be compared to new technologies or products that have only recently come onto the market or are available as pilots to assess their potential for future scale-up. TAFs four major steps include:

Screening

Assessment against 18 indicators from six major groups:
· social
· economic
· environmental
· institutional & legal
· skills & know how
· technology

Results analysis

Exploration for scaling-up specifically for innovative technologies and processes

The screening step is necessary to identify suitable options that fit the local context and needs. Once the screening is done, the remaining handwashing options can be further assessed against the 18 indicators in more detail.

TAF Assessment WASHaLOT 3.0
Source: GIZ

https://bit.ly/3uNXcvQ // https://bit.ly/3gHTbB7

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Abbreviations

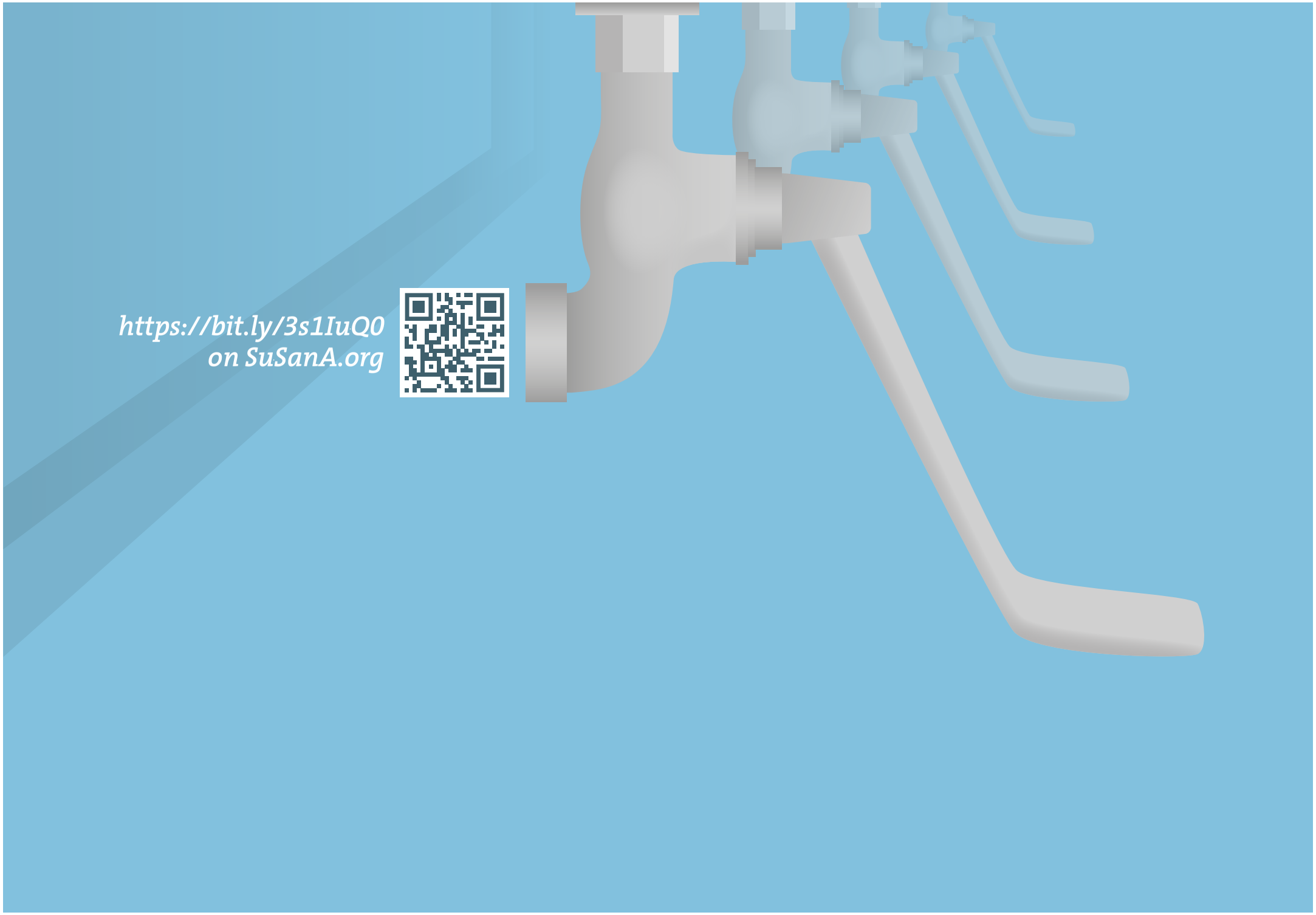
HCF	Health Care Facility
JMP	Joint Monitoring Programme for Water, Sanitation and Hygiene (UNICEF and WHO)
O&M	Operation and Maintenance
PE	Polyethylene
PP	Polypropylene
PVC	Polyvinyl chloride
SDGs	Sustainable Development Goals
SuSanA	Sustainable Sanitation Alliance
UNICEF	United Nations Children's Education Fund
WASH	Water, Sanitation, Hygiene
WHO	World Health Organization

Source: GIZ Fit for School, 2021.

TEMPLATE | TABLE – DECISION CRITERIA FOR SELECTING FEASIBLE HANDWASHING FACILITIES

	KEY ASPECTS		OPTIONS	SUITABLE FACILITY	MATCHES AVAILABLE FACILITIES			
SCALE AND INTENDED USE	Capacity: number of usersand handwashing events per day		1–10 people, up to 20 events per day					
			2–50 people, up to 200 events per day					
			50–500 people, up to 1000 events per day					
	Intended use		Serving entire public space or entire institution					
			Serving specific area of a public space or an institution					
			Serving one household					
WATER SUPPLY	Type of water supply system and water source used		Piped water supply					
			Storage tank refilled through piped water supply, tanker truck, rainwater					
			Storage tank refilled manually					
GREYWATER MANAGEMENT AND DRAINAGE	Type of drainage system		Direct soil infiltration					
			Direct connection to sewer network					
			Wastewater storage container with subsequent disposal					
USER INTERFACE	Number of taps/outlets per unit		1					
			2–4					
			5–10					
			>11					
	Type of tap/outlet		Taps requiring hand contact for operation					
			Reduced hand contamination					
			Contactless tap/outlet					
	Number of users washing hands at the same time		1					
			2–4					
			5–10					
			>11					
	Accessibility		Children					
			People with disabilities					
	Availability and type of soap dispenser		Soap dispenser					
			Tray					
TECHNICAL SPECIFICATIONS	Water use efficiency: water used per handwashing		Standard: 500–1000 ml					
			Water-saving: 250–500 ml					
			Water-saving: 30–50 ml					
			Water-recycling: 5 ml					
	Production: type of materials and location		On-site production					
			On-site assembly					
			Prefabricated: produced locally					
			Prefabricated: produced centrally					
			Prefabricated: imported					
	Installation	Time	>3 days					
			1–3 day					
			<1 day					
		Skills	Advanced					
			Basic					
		Costs	High costs					
			Low costs					
	O&M	Time	Daily					
			Weekly					
			>Weekly					
		Skills	Advanced					
			Basic					
		Costs	High costs					
			Low costs					
	Durability and expected lifespan		5–10 years					
			2–5 years					
			1–2 years					
			<1 year					
	Risk of vandalism and theft		High risk					
			Low risk					
ADDITIONAL SPECIFICATIONS								

NOTES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