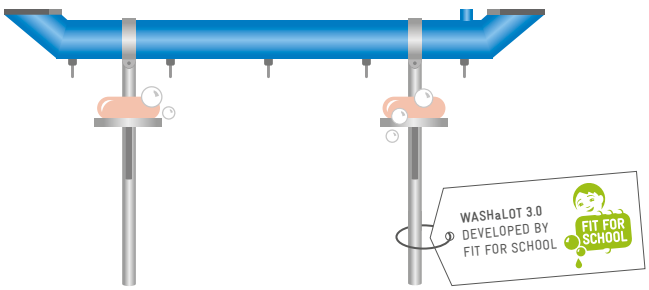
WatSSUP
WATER SUPPLY AND SANITATION FOR REFUGEE SETTLEMENTS AND HOST COMMUNITIES IN NORTHERN UGANDA

HOW IT CAN BE DONE

BRINGING WASHaLOT 3.0 TO SCALE // PRODUCTION, INSTALLATION AND OPERATION IN UGANDA



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GFA CONSULTING GROUP

LIST OF ACRONYMS AND ABBREVIATIONS

ATC	Appropriate Technology Centre
BMGF	Bill and Melinda Gates Foundation
COVID-19	Coronavirus Disease 2019
DdoHS	District Directorate of Health Services
DEO	District Education Officer
DWO	District Water Officer
GI	Galvanized Iron
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
HCF(s)	Health Care Facilities
HDPE	High Density Polyethylene
HPMA	Hand Pump Mechanics Association
INGO(s)	International Non-governmental Organizations
KCCA	Kampala Capital City Authority
M&E	Monitoring & Evaluation
MoES	Ministry of Education and Sports
MoH	Ministry of Health
MoLG	Ministry of Local Government
MoWE	Ministry of Water and Environment
O&M	Operation & Maintenance
PVC	Polyvinyl Chloride
SME(s)	Small and medium enterprises
SOP(s)	Standard Operational Procedures
TAF	Technology Applicability Framework
TSU(s)	Technical Support Units
UGX	Ugandan shilling
UO(s)	Umbrella Organizations
UV light	Ultra-violet light
WASH	Water, Sanitation, and Hygiene
WatSSUP	Water Supply and Sanitation for Refugee Settlements and Host Communities in Northern Uganda Programme
WSDF	Water and Sanitation Development Facility

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EXECUTIVE SUMMARY

The COVID-19 pandemic highlighted the need for regular hand hygiene at a global level. Although the urgency of this context cannot be denied, the benefits from streamlining hand hygiene at a global scale are immense and go beyond the current pandemic response.

WASHaLOT is an innovative group handwashing facility that has been adapted for the Ugandan context. It is a durable, cost effective, water-saving alternative to conventional handwashing devices and can be manufactured and installed using local manufacturers and installers. WASHaLOTs were first developed for schools in the Philippines by the GIZ Fit For School programme in collaboration with University of Applied Sciences Potsdam. Since then, they have been tested and applied in other countries in Asia and Africa, including schools in Kampala and Apac District in Northern Uganda implemented by the GIZ Global Programme Sanitation for Millions. Consequently, the GIZ Water Supply and Sanitation for Refugee Settlements and Host Communities in Northern Uganda Programme (WatSSUP) piloted the installation of 50 WASHaLOTs in 19 locations in the districts of Arua and Yumbe in West Nile.

This report synthesises the lessons learned during the manufacturing, installation and operation of the WASHaLOT 3.0 handwashing technology in West Nile (3.0 stands for the third iteration of the design based on local needs). The report presents the critical issues, the dos and don'ts and provides generic guidance on an up-scaling approach for WASHaLOTs in Uganda. The learnings are based on the practical experience gained by GIZ WatSSUP Programme, GIZ Fit for School Programme and GIZ Sanitation for Millions Programme and valuable insights from the Technology Applicability Framework Assessment (TAF) that was conducted prior to installations of WASHaLOTs in West Nile by GIZ WatSSUP Programme.

This document is specifically developed for organisations and agencies interested in promoting and installing WASHaLOTs in Uganda, namely and not limited to the Ministry of Water and Environment (MoWE), Ministry of Health (MoH), Ministry of Education and Sports (MoES), Ministry of Local Government (MoLG) and relevant structures in the sector at national and regional level (e.g. The Handwashing Committee or Umbrella Organizations), international and local NGOs as well as International Development Agencies and Humanitarian Assistance Agencies.

The document presents in brief the various components of the WASHaLOT 3.0, its designs and alternative designs, material used, production requirements, installation details, requirements for installation, operation and maintenance (O&M) and critical issues to be considered at all stages. Specific details of the above are provided as links and further readings are presented for interested readers. Additionally, the report presents a generic up-scaling approach and a proposed institutional set up based on existing sector structures.

All resource materials are available for free distribution under the Creative Commons attributions. Users of these documents are free to test, try and modify the designs as per local needs, provided key attributes of usability, functionality and durability are duly considered during the manufacturing, installation and use of the WASHaLOTs.

STRUCTURE

The contents of the document present the critical aspects of the manufacturing processes, operation and maintenance procedures and recommendations for up-scaling the WASHaLOT throughout Uganda. The various sections and their contents are structured as follows:

1. Brief introduction to the WASHaLOT technology
2. Presentation of main features of the WASHaLOT and alternative designs
3. Aspects related to the production of WASHaLOTs, including who can manufacture them, what materials, tools and skills are required and critical issues with production
4. Aspects pertaining the installation of WASHaLOTs: who can install them, what materials, tools and skills are required, user training and identifying critical issues with installation
5. Operation and maintenance aspects of the WASHaLOT drawing from the user experience in piloted locations
6. Up-scaling potential of the WASHaLOT from an institutional point of view and proposed steps for the WASHaLOT scale up in the Ugandan context

FIGURE 1 // WASHaLOT handwashing facility in West Nile, Uganda (Source: WatSSUP, 2020 [1])

1. WASHaLOT // INTRODUCTION

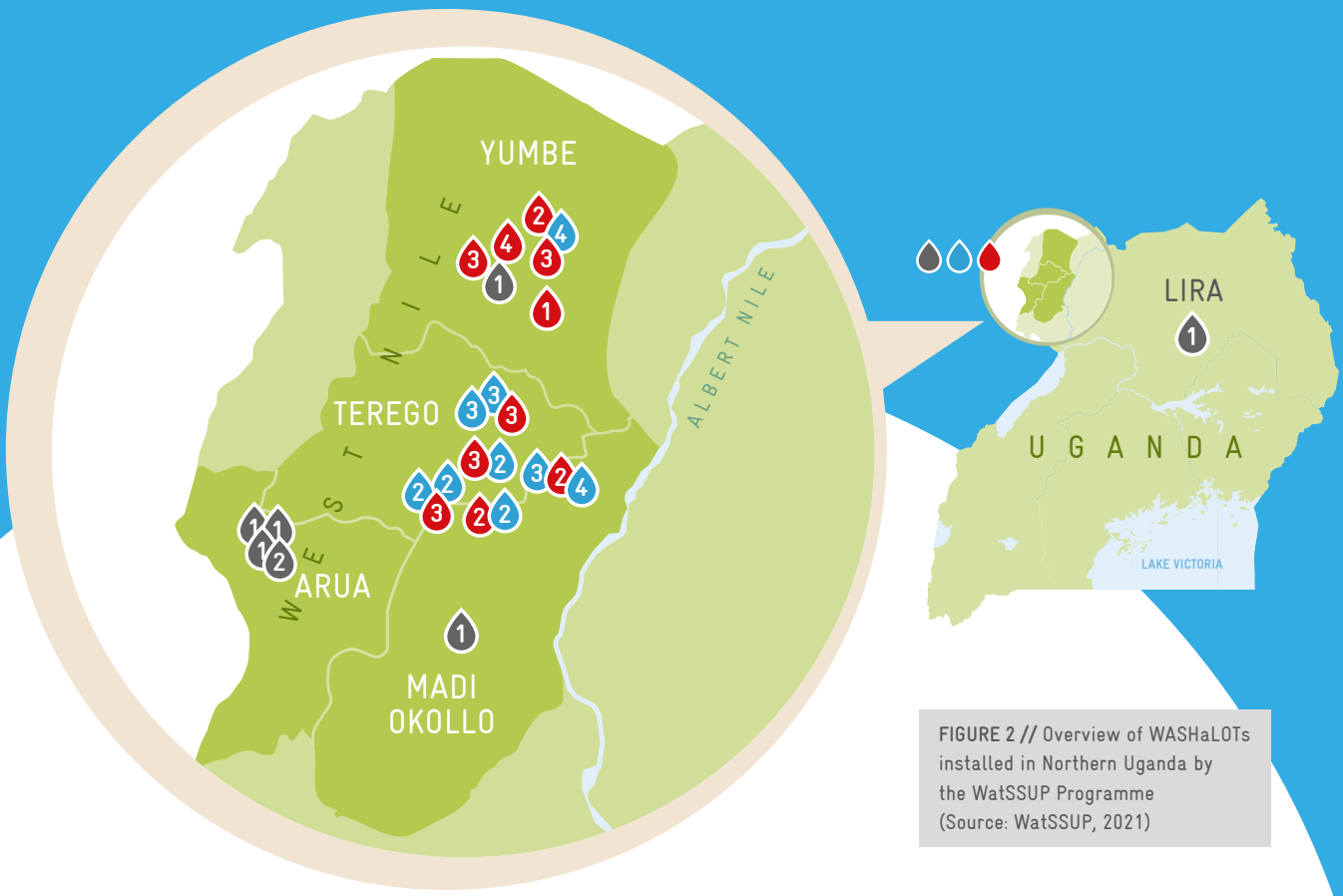


FIGURE 2 // Overview of WASHaLOTs installed in Northern Uganda by the WatSSUP Programme (Source: WatSSUP, 2021)

PUBLIC BUILDINGS
8 WASHaLOTS

- 1 Northern Umbrella for Water and Sanitation, Lira
- 1 District Water Office, Yumbe
- 1 GIZ Rise Office, Arua
- 1 Distric Water Office, Arua
- 1 Distric Health Office, Arua
- 2 Arua Technical Institute, Ragem
- 1 District Water Office, Madi Okollo

SCHOOLS
25 WASHaLOTS

- 4 Barakala Primary School
- 3 Imvepi Primary School
- 3 Imvepi Secondary School
- 2 Siripi Primary School
- 3 Ocea Primary School
- 4 Tika Primary School
- 2 Cinya Primary School
- 2 Ofua Central Primary School
- 2 Oduobo Primary School

HEALTH CARE FACILITIES
27 WASHaLOTS

- 2 BidiBidi Health Centre
- 4 Olujobo Health Centre III
- 3 Barakala Health Centre II
- 3 Kulikulinga Health Centre
- 1 Yoyo Health Centre
- 3 Imvepi Health Centre
- 3 Siripi Health Centre
- 2 Ocea Health Centre II
- 3 Ofua Health Centre III
- 2 Oduobo Health Centre II

The map is a pictorial representation and not to scale.

BACKGROUND

The WASHaLOT was developed as an inexpensive, durable and water saving group handwashing facility by the GIZ Regional Fit for School Programme [1] funded by the German Development Cooperation. Various versions of the technology have since been promoted in schools in the Philippines, Indonesia, Laos, Cambodia, Nepal, South Sudan, Tanzania, Guinea and Uganda. Designed to accommodate both group and individual handwashing, the WASHaLOT was first introduced in Uganda by the German Development Cooperation through the GIZ programme Sanitation for Millions [2,3], with co-funding from the Bill and Melinda Gates Foundation (BMGF) in 2018 as one of the measures to improve water, sanitation and hygiene (WASH) in public schools in Kampala. Since then, Sanitation for Millions has installed over 300 WASHaLOTs, mainly in schools in Kampala and Apac District [4]. The programme also installed WASHaLOTs at the headquarters of the Ministry of Water and Environment (MoWE), the Appropriate Technology Centre (ATC) and at the Kampala Capital City Authority (KCCA) headquarters, to familiarise the institutions with the technology, to demonstrate its benefits and ease of use and also to accelerate the local uptake of the technology at institutional level.

After the outbreak of COVID-19 in 2020, the GIZ Water Supply and Sanitation for Refugee Settlements and Host Communities in Northern Uganda (WatSSUP) programme [6] partnered up with the local governments of the districts Arua, Madi-Okollo, Terego and Yumbe targeting the provision of WASHaLOT handwashing facilities in response to the pandemic. In the programme areas in West Nile Uganda, WatSSUP has been promoting the WASHaLOT 3.0[1]. So far, 50 WASHaLOTs in 19 locations have been installed by the WatSSUP Programme.

[1] For clarity purposes, all further mentions of the WASHaLOT throughout the document will refer to the WASHaLOT 3.0, unless specifically mentioned otherwise.

CHARACTERISTICS

The main feature of the handwashing facility is a 110 mm diameter HDPE pipe (acting as a reservoir) fitted with stainless steel water outlets (further mentioned as nozzles), which release water only when pushed to the side (Figure 3).

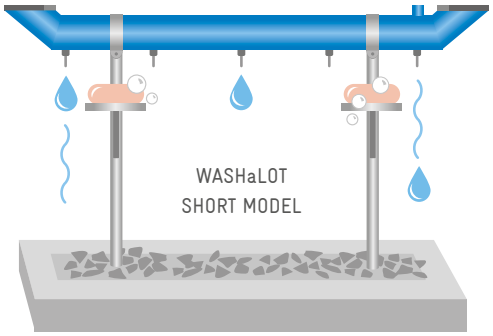
Two variants of WASHaLOT pipes are currently available in Uganda: a 3.0 m long pipe (ten nozzles) and a 1.5 m long pipe (five nozzles). When filled up, the 3.0 m pipe carries up to 28 litres of water and can accommodate over ten people to wash hands at the same time.

The water nozzles release little water when pressed and one pipe filling equates to approximately 150 handwashing activities for the 3.0 m pipe and 80 handwashing events for the 1.5 m one.

Refilling of WASHaLOTs can be done manually with a bucket or with a dedicated piped water connection (Figure 3).

The WASHaLOT was designed to be produced and installed using local resources as well as to be operated and maintained in a simple and cost-effective manner.

The WASHaLOT is promoted as an alternative to other conventional group handwashing facilities in Uganda such as ceramic sinks, tippy taps or simple water containers with tap (Figure 3) addressing the shortcomings of the existing facilities in terms of costs, operation, durability or sustainability of resources.



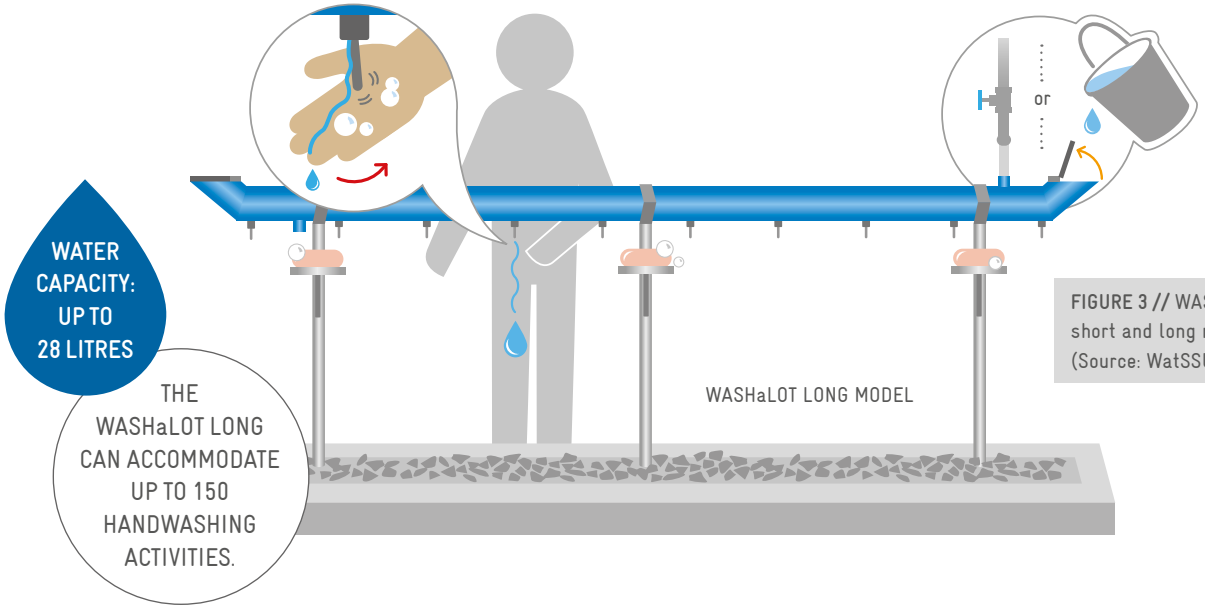


FIGURE 3 // WASHaLOT short and long model (Source: WatSSUP, 2021)

IN SHORT, THE WASHaLOT DISTINGUISHES ITSELF FROM CONVENTIONAL GROUP HANDWASHING FACILITIES THROUGH:

COST EFFECTIVENESS

Although the device comes up with a relatively higher initial investment, the cost effectiveness is eventually drawn from the fact that it can accommodate a significant number of people and handwashing events per day [8]. Most of the required materials for the manufacturing of WASHaLOTs can be sourced locally. The low water consumption and high durability of parts reduces the maintenance & operating costs in the long run [9].

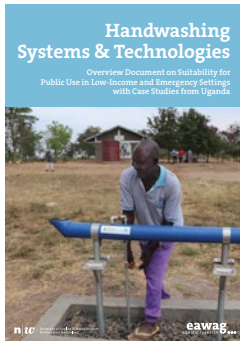
WATER SAVING RESULTS

The WASHaLOT is equipped with stainless-steel water nozzles which only release water when they are manually pushed to the side. By using these nozzles, the amount of water needed per hanwashing with WASHaLOT is almost ten times lower than the average amount of water used for conventional handwashing[2] – 125 ml as opposed to 1200 ml, respectively [10].

EASE OF USE

As opposed to other handwashing facilities, the WASHaLOT can be used regardless of dedicated water supply or drainage and can be installed in many kinds of locations. It is robust and less susceptive to vandalism and theft compared to tippy taps or simple water containers with taps; offers fast access for multiple users at a time – even when observing physical distancing guidelines – and can be installed with a drainage plattform to prevent wash water from pooling or splashing the users.

[2] Handwashing with this amount of water ensures the same levels of cleanliness, hygiene and prevention of vector spreading as conventional handwashing. The low amount of water per handwashing is a result of reducing water wastage.



HANDWASHING SYSTEMS & TECHNOLOGIES OVERVIEW

A more extensive comparison of multiple handwashing devices including the WASHaLOT across several criteria can be found in the Handwashing Systems & Technologies Overview, a document developed by the Swiss Federal Institute of Aquatic Science with support from GIZ. Available in 2022 on: *www.susana.org*

FIGURE 4 // WASHaLOT and conventional group handwashing facilities (Source: photos by S. Semiyaga, 2020 [7])




2. WASHaLOT // COMPONENTS & DESIGN

The WASHaLOT aims to provide an alternative to conventional group handwashing facilities. Thus, each component is designed to improve practicality, increase robustness, offer flexibility and ease of use, while at the same time keeping the operational part simple and cost effective. The WASHaLOT offers flexibility to change the dimensions of components as per local needs and requirements of the users, e.g. the height of the units can be made lower for primary schools, the length of the pipes can be modified based on the number of users and the WASHaLOTs can be developed as fixed or mobile types. Such flexibility offers clear advantages in comparison to conventional handwashing units.

COMPONENTS

The most commonly installed WASHaLOT is the long (3.0 m), fixed version (the pipe stands are fixed in the ground).

THE MAIN COMPONENTS ARE:

- Water pipe – acting as a water reservoir – with water outlets (nozzles)
- Water connection
- Stands
- Soap holder
- Platform

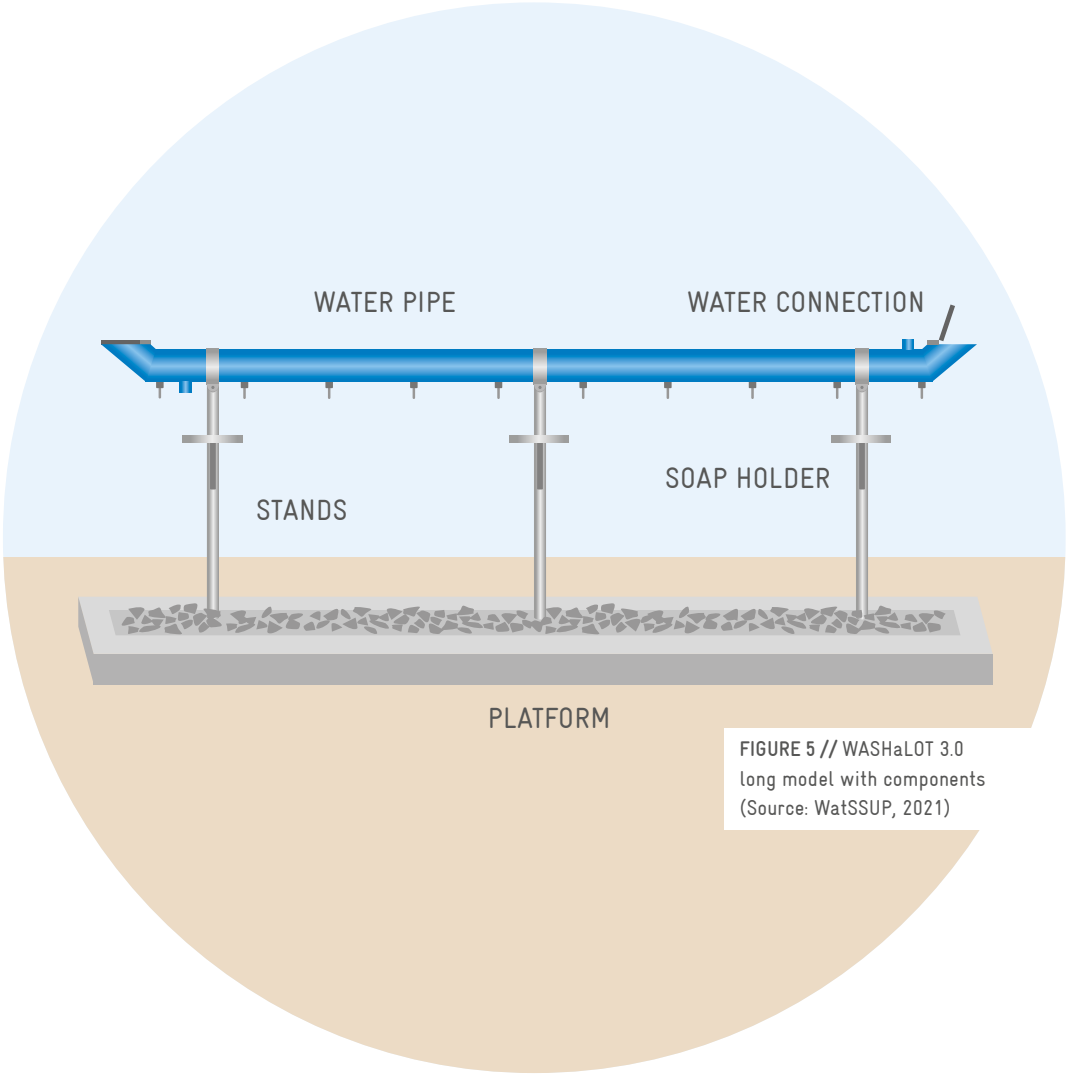


FIGURE 5 // WASHaLOT 3.0 long model with components (Source: WatSSUP, 2021)

COMPONENTS // WATER PIPE

The water pipe is the main component of the WASHaLOT facility and it comes in a long (3.0 m) and a short version (1.5 m). The body of the pipe is made of High-Density Polyethylene (HDPE), a versatile and durable plastic material.

Along the length of the pipe stainless steel water nozzles[3] are screwed in at the required distances (Figure 6). The nozzles are designed to release water only when pushed to the side. The distance at which the water nozzles are placed determines the number of users and this can be adjusted as per the requirements of the users, e.g. children would need less space as their shoulders are narrower and nozzles can be placed at shorter distance in comparison to adults.

The ends of the pipe are angled at 40° to allow easy access for cleaning. The ends are fixed with two HDPE plates that act as covers often fitted with a lock. The water pipe can be manually filled or connected to a water supply through a pipe water connector at hand (Figure 9).

COMPONENTS // WATER CONNECTION

If a WASHaLOT is to be connected to water supply, a polyethylene pipe adapter is necessary, which can be installed at one of the pipe ends (see Figure 9). A dedicated water connection is recommended for WASHaLOTs where the handwashing events are higher, such as schools, health care facilities (HCFs), etc.

[3] Five stainless steel water nozzles for the 1.5 m version of the WASHaLOT.

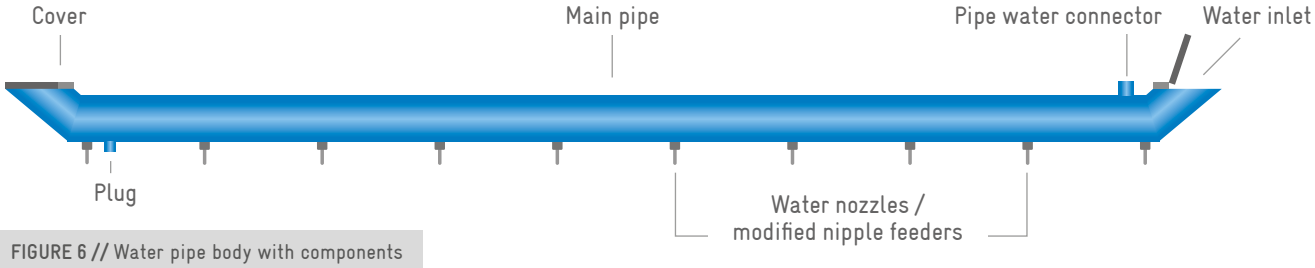


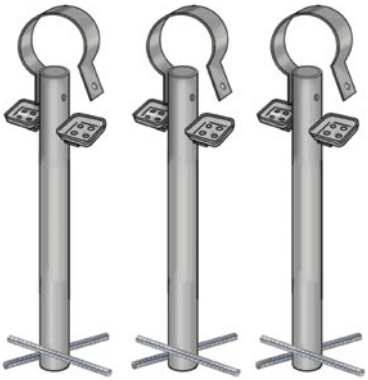
FIGURE 6 // Water pipe body with components (Source: GIZ Fit for School, 2020)

FIGURE 7 // LEFT: WASHaLOT main pipe. LEFT BELOW: Stainless steel water outlets (nozzles) (Source: photos by S. Semiyaga, 2021)
FIGURE 8 // TOP: Manual refill (Source: GIZ Sanitation for Millions, 2020)
FIGURE 9 // BELOW: WASHaLOT with water connection (Source: WatSSUP, 2020)

COMPONENTS // STANDS

The water pipe with integrated water outlets is secured by galvanized iron (GI) stands that are grouted inside the perimeter of the platform base. Each stand is supplied with an easy to open stainless steel clamp, bolted at the top, holding the main pipe in position. Furthermore, each stand has an anchor at the bottom formed from two 20 cm long crossed steel bars to increase the sturdiness of the setup (Figure 10).

The stands can be installed at varying heights depending on the target installation site to accommodate users of different age groups. The number of the stands depends on the WASHaLOT version: three stands for the long WASHaLOT and two stands for the short version.



COMPONENTS // SOAP HOLDER

Each GI stand is equipped at the top with two opposing stainless steel soap holders. The holders are bolted to the pipe stands with mild steel flats plates and present perforations for water drainage.

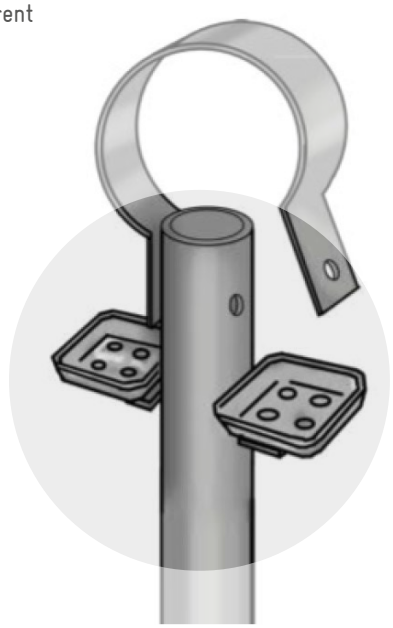


FIGURE 10 // TOP: Design for WASHaLOT stands and the stainless steel soap holders (Source: GIZ Sanitation for Millions, illustrations by D. Egessa, 2020).
FIGURE 11 // MIDDLE LEFT: Handpump Mechanic fixing the soap holder onto stands (Source: WatSSUP, 2020).
FIGURE 12 // MIDDLE RIGHT: Galvanized iron stand produced in Uganda (Source: photo by S. Semiyaga, 2021)
FIGURE 13 // BELOW RIGHT: Soap holders connected to a WASHaLOT (Source: GIZ Sanitation for Millions, 2020)

COMPONENTS // PLATFORM

Current installations in Uganda use a platform built around the handwashing unit – for the 3.0 m long WASHaLOT a 350 x 150 cm and for the 1.5 m long WASHaLOT a 200 x 75 cm brick masonry base (Figure 14). The purpose of this platform is to provide a step and additionally collect and percolate grey water resulted from handwashing (Figure 15). Furthermore, it prevents the grey water from pooling and splashing onto the users and improves the aesthetics of the facility.

DIMENSIONS AND DETAILS OF THE PLATFORM ARE PROVIDED IN ANNEX 1, PAGE 41 .

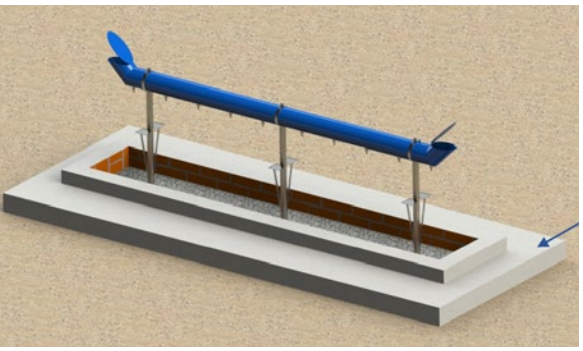


FIGURE 14 // TOP LEFT: Platform for long WASHaLOT.
TOP RIGHT: Cross sectional view of short WASHaLOT platform
(Source: Prit Salian, 2020)
FIGURE 15 // MIDDLE LEFT: Platform for WASHaLOT long
MIDDLE RIGHT: Platform for WASHaLOT short
(Source: photos by S. Semiyaga, 2020 [11])
FIGURE 16 // BELOW: WASHaLOT with reduced platform
(Source: GIZ Fit for School, 2019 [12])

Depending on the setting and the user's needs, the platform can be built in a simplified form. Instead of the brickwork framing, a layer of gravel or simple grass can be placed underneath the facility for drainage (Figure 16 to the left). This ensures that the ground around the WASHaLOT is all at the same level, improving accessibility for people with low mobility or disabilities (e.g. people using wheelchairs).

ALTERNATIVE DESIGNS OF WASHaLOT STANDS

The WASHaLOT design is free to replicate as the production guides and drawings are licensed under Creative Commons (Attribution – NonCommercial – NoDerivatives 4.0 International). Adaptations and alternative designs of the WASHaLOT stands and other fixtures to walls etc leading to a functional and durable WASHaLOT facility are encouraged.

DESIGN // ADAPTATIONS TO THE ORIGINAL DESIGN

Local producers and installers are encouraged to make adjustments to the original design to better suit the local users' needs or for easier production purposes. But any adaptation and alternative design should follow the key principles of the WASHaLOT and be tested before installed at scale.

An adjusted WASHaLOT would usually keep its original shape and principle features and have some adapted parts like different use of material or method of assembly.

FIGURE 17 // Production workshop around mobile WASHaLOT at Arua Technical Institute, Ragem (Source: photo by S. Semiyaga, 2021)

WHEN MAKING ADAPTATIONS TO THE WASHaLOT DESIGN, IT IS IMPORTANT TO CONSIDER THE FOLLOWING ASPECTS:

DURABILITY

The device is meant to service a large number of people on a daily basis. Therefore, it's is important to use parts or materials that can withstand frequent use over a long period of time.

QUALITY OF MATERIALS

There are countless substandard and cheaper products on the market that could be tempting to use in the WASHaLOT assembly. However, these have a negative impact not only on the durability and functionality of the device, but could potentially affect the health and safety of the users: rusted parts, sharp edges, non-working nozzles, etc.

EASE OF USE

All adaptations of the WASHaLOT should be done while maintaining or improving the device's practicality. Modifications that would limit access for users either physically or by overly complicating the operation and maintenance activities should be avoided.

MISTAKES TO AVOID

One of the enterprises which assembled the WASHaLOT components proposed an alternative to reduce cost. They used specially formulated adhesives for HDPE materials to glue the corners of the pipe to the main body, but the prototype is prone to leakages. Some other producers have replaced the HDPE pipes with pipes made from polyvinyl chloride (PVC) because they are cheaper and easier to procure. PVC pipes cannot be fused together and have low resistance to UV light exposure, altering the durability of the WASHaLOT facility [13]. Thus, this is not a recommended alternative.

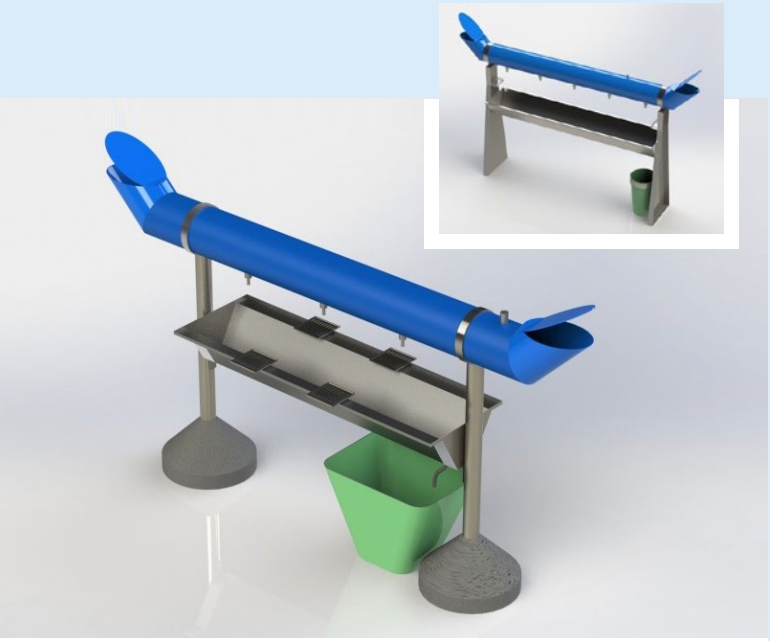


FIGURE 18 // TOP: Mobile version of the short WASHaLOT with concrete base/anchors. TOP RIGHT: Mobile Version with metal base (Source: Prit Salian, 2020)
FIGURE 19 // MIDDLE: Mobile WASHaLOT prototype proposed by Makerere University (Source: Arua Technical Institute, 2021)
FIGURE 20 // BELOW: Mobile WASHaLOT prototype produced by Potsdam University (Source: GIZ Fit for School, 2020)

DESIGN // MOBILE VERSIONS

Another design is thought up for non-permanent settings. A design for a mobile version of the short WASHaLOT (Figure 18) is available with legs that are not anchored to the ground and therefore facilitating transportation to an emergency location, like health care facilities or quarantine stations. The COVID-19 pandemic proves to be an illustration of the need for fast access to handwashing facilities which the mobile WASHaLOT can meet while observing the physical distancing guidelines. Promoting physical distance can be done through stickers and visual instructions and/or by blocking usage of some nozzles at the opposite ends of the device. Mobile facilities are versatile and can be used in various locations and scenarios.

The mobile WASHaLOT can also be used in non-emergency settings such as markets, churches and mosques or public events. Additionally, it can complement a fixed WASHaLOT, if and when user numbers are higher than normally expected (e.g. during vaccination drives at maternity wards and assembly, sports or games in schools). The device can then be stored away after use. The wash water drainage platform is compensated by a metal tray welded underneath the water pipe which allows it to siphon into a container underneath (Figure 18).

ALTERNATIVE DESIGNS OF STANDS

Makerere University proposed an alternative design to the mobile WASHaLOT mentioned above by replacing the pipe stands cast in concrete with mobile stands made from galvanized iron sheets (Figure 19). The main features of the prototype compared to the original design are presented below.

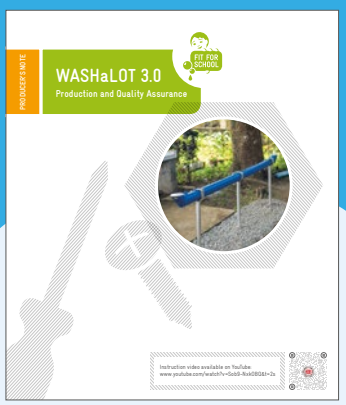
Another alternative design to the mobile WASHaLOT has been proposed by Fit for School designers in Potsdam (Figure 20) for the school context. The main difference from the above-mentioned mobile versions is that the legs of the device are made of stainless steel as opposed to galvanized iron, which makes it lightweight and durable. Nevertheless, the availability of such specific stainless steel components in Uganda could be challenging.

FOR THE DETAILED DESIGN OF THE MOBILE WASHaLOT PLEASE SEE ANNEXES 2 AND 3, PAGES 42 TO 45.

WASHaLOT USER'S GUIDE / FIT FOR SCHOOL PROGRAMME
Guidelines on installation, operation and maintenance for this mobile version can be found here:
www.fitforschool.international/resource/washalot-3-0-users-guide-for-schools

3. WASHaLOT // PRODUCTION

The production process as well as specific details and suggestions based on the GIZ Fit for School Programme with WASHaLOTs are compiled in a Producer's Note [14].



WASHaLOT PRODUCER'S NOTE / FIT FOR SCHOOL PROGRAMME
More details on the production process, required machinery and visual illustrations can be found in the Fit for School WASHaLOT Producer's Note: *www.susana.org/en/knowledge-hub/resources-and-publications/library/details/3878*

MORE RESOURCES ON THE PRODUCTION PROCESS, INCLUDING A VIDEO SHOWCASING THE PRODUCTION PROCESS FOR INTERESTED SMES CAN BE FOUND IN THE ANNEX 'FURTHER READING', PAGES 46–47.

WHO CAN PRODUCE THE WASHaLOT?

The production of the WASHaLOT can be sustained by any small and medium enterprises (SME) with some basic tools and skills. A viable supply chain for primary materials, technology, spares and services exists in Kampala. There is potential to develop viable supply chains and production in other regions of Uganda in case there is increased demand for WASHaLOTs.

Currently there are several SMEs in Kampala that have the required tools, equipment, and since 2018 have been capacitated with experience to produce WASHaLOTs. So far over 400 WASHaLOTs have been produced by SMEs in Uganda.

WHAT IS REQUIRED TO PRODUCE THE WASHaLOT?

THE MATERIALS

The necessary materials for the production of the facility are divided into two categories: Materials required for producing the main pipe and the pipe stands (see table below).

THE TOOLS

To produce the WASHaLOTs, various power tools and equipments are required by the manufactures (see next page).

THE SKILLS

To produce WASHaLOTs, the producers will need the knowledge and skills to operate power tools and an attention for details to assemble the facilities (see next page).

PRODUCTION // MATERIALS

THE FOLLOWING TABLE AND FIGURE SHOW THE COMPONENTS AND MATERIALS THAT ARE REQUIRED FOR PRODUCING AND ASSEMBLING A LONG WASHaLOT DEVICE:

Materials	Unit	Quantity
Main pipe with accessories		
HDPE pipe (110 mm diameter, 8 mm thick)	m	3.0
Stainless steel nozzles	Pcs	10 + 2 spares
Polyethylene pipe adapter and plug	Pcs	1
HDPE plate (110 mm x 170 mm, 6 mm thick)	Pcs	2
Teflon tape	Roll	3
Stainless screws	Pcs	6
Rivets for hinge	Pcs	8
Stainless hinge	Pcs	2
Pipe stands		
Galvanized iron (GI) pipe (1.2 m length, 50 mm diameter, 4 mm thick)	m	3.6
Stainless steel pipe holders (100 mm diameter, 50 mm width, 1.2 mm thick)	Pcs	3
Stainless steel soap dishes	Pcs	6
Mild steel flats (350 mm x 20 mm, 4 mm thick)	Pcs	6
Mild steel flats (150 mm x 20 mm width, 4 mm thick)	Pcs	6
T12 steel bars for anchors	Pcs	6
Bolts M12	Pcs	3

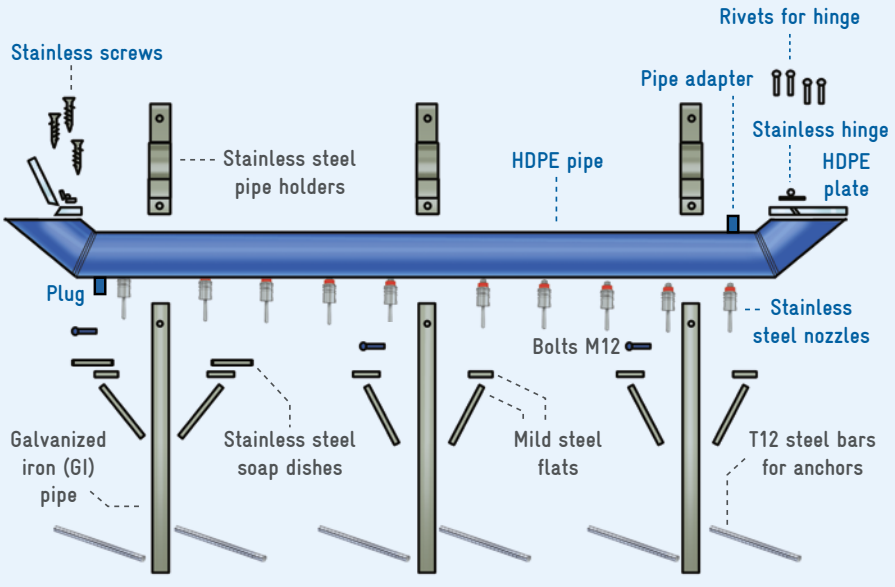


FIGURE 21 // Exploded view of WASHaLOT components (Source: GIZ Sanitation for Millions, illustrations by D. Egessa [15])

PRODUCTION // MACHINERY & TOOLS

THE FOLLOWING TOOLS AND MACHINERY ARE NECESSARY FOR THE PRODUCTION OF WASHaLOTS:

Electric cutting and grinding machine with cutting and grinding disc
Cut-off saw
HDPE butt fusion machine
Steel welding equipment
Drill press with 16 mm drill bit to drill holes on the HDPE pipe
Electric hand drilling machine with 8 mm drill bit for metal
Bending table
M12 x 1.5 size hand tap for threading
Tape measure and protractor
Riveter
Screw driver
Protective gear

PRODUCTION // SKILLS

The producers' staffs are required to have adequate knowledge and experience to operate the tools and machines mentioned above. The SMEs should have the ability to translate technical specifications into concrete measurements and accurately implement them.

IN GENERAL, THE TEAM SHOULD HAVE THE FOLLOWING SKILLS:

Knowledge on how to safely use cutting tools such as angle grinder or cut-off saw
Knowledge on how to operate a drilling machine/press
Ability to operate a steel welding machine and knowledge of the safety requirements when welding activities are undertaken
Knowledge on how to operate a HDPE butt fusion equipment
Experience with tap threading as one poorly tapped thread will ruin the entire pipe

WHAT IS THE PRODUCTION COST OF A WASHaLOT?

The prices for the WASHaLOT production may fluctuate depending on availability of materials, demand, cost of labour, market competition etc.

The WASHaLOT cost depends on the price of its components – primary materials – and can be further reduced when the production of some parts are optimised. However, the price is estimated to get lower once the WASHaLOT production is scaled up.

While there is an increased demand for the device coming especially from institutions, the COVID 19 pandemic has increased the interest in handwashing facilities. However, producers prefer handling bulk orders coming mostly from programmes rather than individual customers, which represents a setback in the outspread of the technology. A greater demand and subsequent larger number of orders to the manufactures will drive the cost down.

PRODUCTION
// CRITICAL ISSUES

There is a general positive attitude from the producers towards the prospects of the WASHaLOT technology and towards their own ability to satisfy the demand for the product. Nevertheless, there are some critical issues that should not be overlooked during the production of WASHaLOTs. These issues are listed as:

MATERIALS

› Primary materials are available in Kampala. However, producers admit that in the regions beyond Kampala, there are currently no viable supply chains, which makes the production more expensive due to transportation costs and centralized production.

› HDPE pipe and inlet covers are mostly sold in bulk by suppliers; since demand is not that high, some producers resort to using PVC instead of HDPE, which is however brittle and has lower durability and should thus be avoided.

› Sub-standard, cheaper water nozzles and soap dishes are commonly found on the market. Because they are not from stainless steel, they are prone to rust and water leakage, affecting the device's functionality and durability.

› The high cost of HDPE and quality stainless steel nozzles necessary to ensure durability in the tropical outdoor setting raises the overall production cost and market price of the WASHaLOT.

› The unit price of WASHaLOTs can be reduced if bulk orders are placed with the manufactures.

› It is necessary to conduct due diligence checks, with regards to quality of materials used, precision of the fitments and an eye for details to ensure the best quality of the products.

FIGURE 22 // The WASHaLOT is used by touching the nozzles (Source: GIZ Fit for School, 2020)

QUALITY OF WORKMANSHIP

› The production of the WASHaLOTs requires moderate technical capabilities. Parts of the production process only demand a general knowledge and experience on using basic tools and safety procedures. Other parts of the WASHaLOT necessitate more experience and skills., e.g. the production of the water reservoir (blue pipe), that include butt fusing, operating a band saw or a pipe fusion machine as well as operations involving great precision, – for example, one poorly tapped thread can render the entire water pipe obsolete.

› Producers did not express concerns about a lack of skilled labour, but admitted the need for minimal training of their staff for the WASHaLOT production.

4. WASHaLOT // INSTALLATION

THE WASHaLOT PACKAGE DELIVERED BY THE MANUFACTURES SHOULD INCLUDE THE FOLLOWING COMPONENTS:

1 x main pipe system with water nozzles, inlet covers and the pipe adapter already installed on the pipe.
3 x galvanized iron pipe stands for the 3 m WASHaLOT (2 x pipe stands for the 1.5 m WASHaLOT), which have steel bar anchors, pipe holders and soap dishes welded on them.
2 x spare stainless steel water nozzles
Cleaning tools – brush or sponge attached to a flexible long rod
Spanners for coupling/decoupling the water connection
Stickers with instructions and indications for use and e.g. for physical distancing

WASHaLOT USER'S GUIDE / WatSSUP PROGRAMME
For more details on the installation of the WASHaLOT facility please check the User's Guide for Installation, operation and maintenance [17] developed by GIZ's WatSSUP programme. The guide also provides details and guidance on operation & maintenance activities as well as tips on choosing the best location for the device, common problems and troubleshooting as well as pandemic adjustments:
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4377

WHO CAN INSTALL THE WASHaLOT?

The installation process of WASHaLOTs is simple. Qualified masons can undertake installations with relative ease. It is recommended that the installers have a local presence as their quick availability for any future repairs would be beneficial. For in and around Kampala, the manufactures can provide installation services themselves. For regions beyond Kampala, it is recommended to use established structures, such as the Hand Pump Mechanics Association (HPMA) or local mason to provide installation services.

The HPMAs are registered associations of professional technicians, plumbers, and electricians and are present in all districts in Uganda. Each HPMA has internal structures for quality control and assurance and is accountable to their Local Government Water Officer, who ensures accountability. The HPMAs can also provide technical support after installation and a regular monitoring of the functionality of the facilities, although such repairs and service will attract charges to the customers.

Specifically in the West Nile region (Northern Uganda), HPMAs have provided the basic installation of handwashing facilities, the HPMAs have also been involved in promotional campaigns for the technology and have sent members to participate in trainings on WASHaLOT installations at the Arua Technical Institute Ragem.

Currently, there are a limited number of trained personnel that have the knowledge and capacity to install WASHaLOTs in Northern Uganda. The number of installers will evolve naturally together with the number of producers and when the demand for the facility increases. Every producer has the potential to establish its own team and provide these services.

WHAT IS THE INSTALLATION COST OF A WASHaLOT?

The installation cost will greatly vary depending on the site location. Sites further away from regional centres will warrant higher material transportation costs. Also, cost of material varies beyond Kampala/ commercial centres depending on local availability of materials.

FIGURE 23 // WASHaLOT installed by Hand Pump Mechanic Association in West Nile (Source: WatSSUP, 2021)

WHAT IS REQUIRED TO INSTALL THE WASHaLOT?

INSTALLATION // MATERIALS

The focal point of the WASHaLOT installation is casting of WASHaLOT stands in concrete, building the drainage platform and the soak pit as it requires most of the resources. To reduce costs, the installers usually have to source the materials locally.

FROM WATSSUP AND SANITATION FOR MILLIONS PROGRAMMES' EXPERIENCE IN UGANDA AND ACCORDING TO THEIR INSTALLATION METHODOLOGY, THE MATERIALS NEEDED FOR INSTALLING A LONG WASHaLOT WITH A DRAINAGE PLATFORM ARE THE FOLLOWING:

Materials	Unit	Quantity
Drainage platform and soak pit		
Portland cement (50 kg per bag)	Bags	5
Aggregates	Wheel barrows	7
Sand	Wheel barrows	12
Clay bricks	Pcs	280
Timber (12" x 1")	Pcs	8
Hardcore	Wheel barrows	3

Source: S. Semiyaga, 2021

INSTALLATION // MACHINERY & TOOLS

The installation of the WASHaLOT facility is relatively straightforward and does not require complex tools.

THE INSTALLERS WILL NEED:

Hand shovel or spade
Wheel barrow
Trowel
Container for plaster or screed
Plastering float
Measuring tape
Hand saw
Screwdriver
Hammer
Spanners
Protective gear

INSTALLATION // SKILLS

The WASHaLOT installation does not require special abilities. Basic masonry knowledge to build the drainage platform and basic plumbing skills to ensure the water connection are sufficient for a successful setup of the facility.

INSTALLATION // CRITICAL ISSUES

The following subchapters describe the critical elements that should be taken into consideration when installing the WASHaLOT.

LOCATION OF DEVICE

› In order to achieve its purpose, the handwashing facility should be installed in a highly frequented area, e.g. near entrances of building and toilets.

› Access should be made available to both sides of the device.

› It is also recommended to install the WASHaLOT in a shaded, clean and hygienic area, as close to the water source as possible.

FIGURE 24 // Discussing the location of the WASHaLOT at a Health Center in West Nile (Source: photo by S. Semiyaga, 2020)

OPERATION & MAINTENANCE TRAINING AND FOLLOW-UP

In piloted locations where the technology has been recently introduced the evidence suggest that the unique design of the device is not fully understood and users do not know how to use it or clean it.

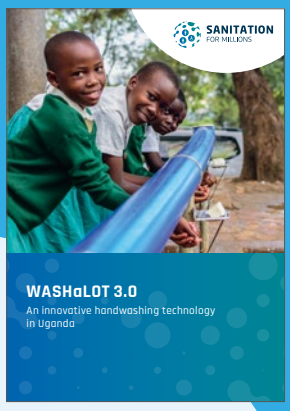
› When handing over the installed WASHaLOT to a receiving institution, a written guide explaining operation and maintenance procedures should be provided to ensure the smooth functioning and integration of the handwashing facility in the daily routines of the institution.

› After setting up the WASHaLOT, the installers are required to do a functionality check and provide the first operation & maintenance (O&M) training to assigned maintenance/cleaning staff. At this point, a contact line can be established between the beneficiaries and installers for any follow-up questions, comments and feedback related to the technology, its operation, maintenance and repair.

› In the context of the COVID pandemic, stickers and visual instruction materials should be provided together with the WASHaLOT User's Guide and User's Handbook (see page 24), to help users comply with the physical distancing guidelines.

5. WASHaLOT // USE AND MAINTENANCE

The following chapter presents some of key lessons learned from the Sanitation for Millions and WatSSUP Programme in Uganda.



WASHaLOT USER'S GUIDE / WatSSUP PROGRAMME
This document contains information on how to check the installation of the facility, states the basic O&M activities and offers solutions for the most commonly appearing problems. All the O&M activities are valid for both short and long version of WASHaLOT:
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4377

USER HANDBOOK / SANITATION FOR MILLIONS PROGRAMME
A more comprehensive User Handbook compiled by the Sanitation for Millions programme that includes background on the WASHaLOT technology and also guidance for manufacturers can be found here:
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/3927

WHERE CAN WASHaLOTs BE USED?

The benefits of hand hygiene to the public health are well documented in literature and extend beyond the current pandemic response. Settings like schools, institutions, healthcare facilities, markets, places of worship, public events, refugee-related infrastructure (transit centres, reception centres, food distribution areas) etc. are suitable places to install WASHaLOTs, fixed versions as well as mobile ones. However, the technology should be complemented with hand hygiene education to create meaningful attitude and behavioural change. When people learn and understand the benefits of hand hygiene and how it impacts them, they are more likely to use the handwashing technologies correctly and in a sustained manner.

WHO CAN USE WASHaLOTs?

The WASHaLOT handwashing facility is designed to easily adapt to a wide range of settings in order to provide access to all categories of people and vulnerable groups. Depending on the types of users, the installers will make adjustments to the height of the pipe stands and the type of platform (brick-built or reduced) at the moment of installation. Thanks to these adjustments and the simplicity of the water nozzles, the device can be successfully used by children, adults and older people with low mobility and by people with disabilities.

HOW SHOULD WASHaLOTs BE USED AND MAINTAINED?

The long version of the WASHaLOT has a water capacity of up to 28 litres and is provided with three soap dishes on either side. The operation of the device consists of refilling the water pipe every day (manually or through the piped connection) and making sure that soap bars or liquid soap dispensers are available in the specific holders. If needed, soap bars in nets could be suspended along the length of the pipe to increase efficiency.

Regular maintenance activities are required in order to safely use the device and to benefit from its durability. A main rule is to avoid algal proliferation within the WASHaLOT. Thus, the facility should be regularly cleaned with the supplied equipment. Additionally, water should be flushed out before each weekend or period of holidays and the device cleaned thoroughly before resuming its use. Cleaning of the WASHaLOT (also exterior pipe surfaces and stands) should be done at least once a month. Regular checks should be performed to ensure that all the nozzles and bolts are in place and working properly; the installer should be informed in case of lost water nozzle or damage. Also, drainage and soak pits should be inspected for clogging on a regular basis.

WASHaLOT POSTER CLEANING & MAINTENANCE / WatSSUP PROGRAMME
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4377

WHAT ARE THE PANDEMIC ADJUSTMENTS?

In the current pandemic context, the WASHaLOT operation needs to be slightly adjusted to conform to existing physical distancing guidelines. This can be done by:

COVERING WATER NOZZLES

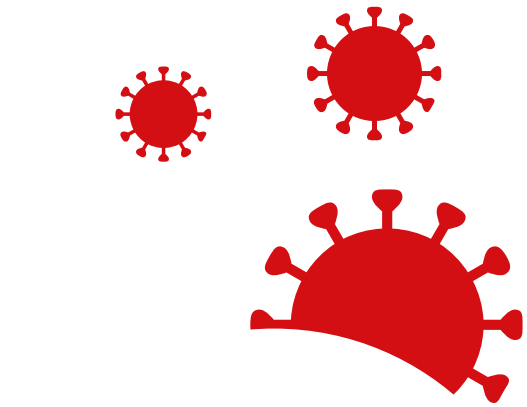
Covering every other water nozzle with rubber sleeves or foil to ensure proper distance between users

LIMITING THE NUMBER OF USERS

Limiting the number of simultaneous device users to two people per short and four people for long WASHaLOT respectively.

PROVIDE VISUAL CUES

Provide visual cues such as stickers and floor markings for orientation (Figure 25 & 26).



PANDEMIC RECOMMENDATIONS:

4 PEOPLE PER WASHaLOT LONG

2 PEOPLE PER WASHaLOT SHORT

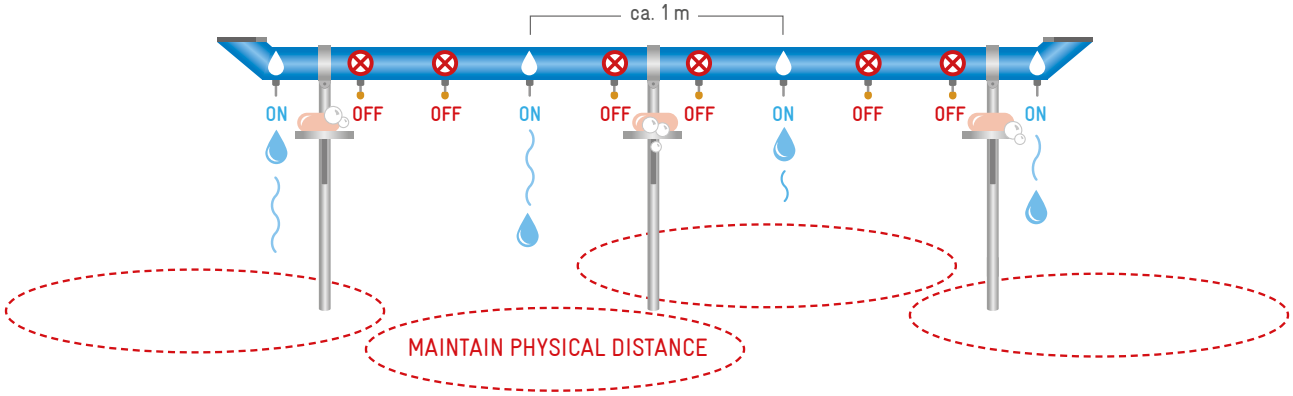


FIGURE 25 // TOP: COVID-19 distancing guidelines applied to the long WASHaLOT (Source: WatSSUP, 2020 [18])
FIGURE 26 // BELOW: COVID-19 distancing stickers applied to the mobile WASHaLOT (Source: photo by S. Semiyaga, 2020)

USE AND MAINTENANCE
// CRITICAL ISSUES

WASHaLOTs HANDOVER TO INSTITUTIONS

› To ensure the proper functionality and durability of the device, it is important to assign the operational and maintenance responsibilities to a specific staff member or group from the very beginning.

› To ensure constant and reliable O&M activities it is recommended to set up a schedule and checklists.

› In places where O&M responsibility is delegated to users (e.g. schools), a system of rotation or a simple reward scheme for volunteers can help to provide functional O&M. Of course, this implies that the entire group is familiar with the specific tasks.

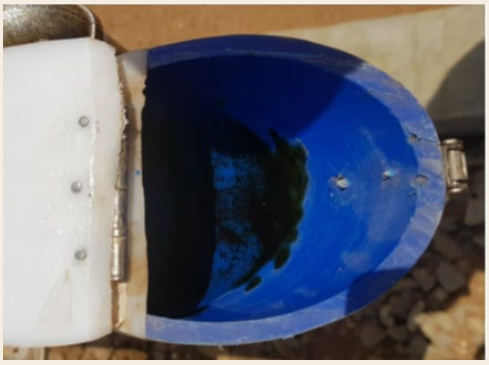
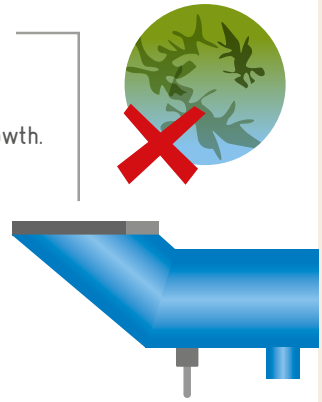


FIGURE 27 // TOP: Cleaning inside of the WASHaLOT with a brush (Source: GIZ Fit for School, photo by David Weyand, 2020)
FIGURE 28 // LEFT: Examples of algae proliferation and mineral deposits due to poor maintenance (Source: photo by S. Samiyaga, 2021)

TIP: BLACK COVER

› A black cover stops the sunlight reducing algae growth.



TRAINING // HOW TO WASH HANDS WITH WASHaLOTS

There is a noticeable difference between locations with one-time users and locations where the WASHaLOTs are frequently used by the same user group (HCFs vs. schools). Same user groups become very familiar with the device and use it frequently, while one-time users may overlook the WASHaLOT, because it does not resemble conventional handwashing technologies. Installers should take this into consideration and provide recommendations to the assigned staff on how to properly train users:

FOR REGULAR GROUP USERS

› Focused training on O&M practices to the assigned maintenance staff.

FOR ONE-TIME USERS

› Training on O&M practices to assigned maintenance staff with focus on device cleaning, combined with the installation of a set of visual cues and indications like boards, signs, directions, illustrations or stickers (Figure 29) to help new users understand the purpose of the device and how to use it.

A WASHaLOT DOES NOT SPREAD COVID-19

› Another critical issue is that WASHaLOT users in HCFs expressed concerns about the safety of touching the water nozzles regarding transmission of diseases during the COVID-19 pandemic.

› However, studies indicate no such transmission due to the use of WASHaLOTs. The COVID-19 Hygiene Hub[4] states clearly that touching the nozzles during handwashing presents no risk of COVID-19 transmission.

› It's more important for users to respect the distancing guidelines when using the group handwashing facility [19].

[4] The COVID 19 Hygiene Hub is housed at the London School of Hygiene & Tropical Medicine. More information about the initiative can be found here: *https://hygienehub.info/en/about*

STOCK VITAL SPARE PARTS

› In terms of maintenance, besides keeping the site and facility clean, the most critical issue is the lack of local supply chains for spares in some parts of the country. It is foreseeable, that this will improve once the demand for the facility is more widespread.

› For now, installers should be encouraged and incentivized to carry WASHaLOT spare parts from places of availability.

FIGURE 29 // Examples of stickers to put on WASHaLOTs as visual cues (Source: WatSSUP, 2021)

6. WASHaLOT // GUIDELINES UP-SCALING

The following section provides some suggestions for prospective up-scaling efforts, a proposed institutional setup for up-scaling based on existing sector structures and also presents the general steps required for scaling up WASHaLOTs in Uganda.

RATIONALE FOR THE UP-SCALING CONCEPT

The WASHaLOT handwashing technology has been field tested in several countries in South-East Asia over the last eight years (since 2013). As part of the pandemic response, production and implementation is currently scaled up in Philippines and Indonesia.

As of mid-2021, there are approximately 400 operational WASHaLOTs in Uganda, namely 300 by Sanitation for Millions, 50 by WatSSUP and 50 by Engineers Without Borders. The type of installation for the WASHaLOT has been specifically adjusted for the Ugandan context based on user preferences and is being manufactured and installed by local companies and agencies. Additionally, the TAF assessment performed specifically for the WASHaLOT in the Ugandan context, reveals that in piloted locations, the majority of users are satisfied with the use and operation of the technology and appreciate its simplicity, robustness and low cost of operation [20].

The current institutional setup for handwashing initiatives is suitable for the promotion, production, and installation of WASHaLOTs in Uganda (with some minor capacity building measures that are required).

INSTITUTIONAL SETUP

The current institutional setup and actors are well positioned for the scale up of the technology in Uganda. Using the existing structure and without introduction of any new entities, the up-scaling process could be initiated with relative ease. The following figure (Figure 26) presents the current institutional setup specifically for up-scaling WASHaLOTs in Uganda.

POTENTIAL ROLES OF EACH OF ACTORS SPECIFIC TO TAKE WASHALOTS TO SCALE:

NATIONAL LEVEL

The Ministries of Water and Environment (MoWE), Health (MoH) and Education and Sports (MoES) undertake programming of the uptake of WASHaLOTs and finance its installation in public places, health centres and schools, respectively in collaboration with Development Partners.

Development partners provide financial contributions to procurement of WASHaLOTs, either via the line ministries or directly under their supervision, but in collaboration with the line ministries; and capacity building and technical assistance for setting up business models and supply chains.

The National Hand-Washing Secretariat[5] is a multi-actor platform comprising content of MoWE, MoH, MoES and Development Partners promoting handwashing in Uganda. The secretariat could be the lead agency to promote WASHaLOTs at a national level, amongst sector actors as well at the regional and local level through their structures and regional offices.

REGIONAL LEVEL

Water and Sanitation Development Facilities (WSDFs) promote WASHaLOTs and install them in line with new public infrastructure projects. Additionally, WSDFs could provide the technical specifications and guidance on production and installation of WASHaLOTs in their respective regions.

Umbrella Organisations provide training and guidance to Hand Pump Mechanic Associations on the use, installation, operation and maintenance of WASHaLOTs.

DISTRICT / LOCAL LEVEL

District Local Government promote and procure WASHaLOTs, provide monitoring and data collection

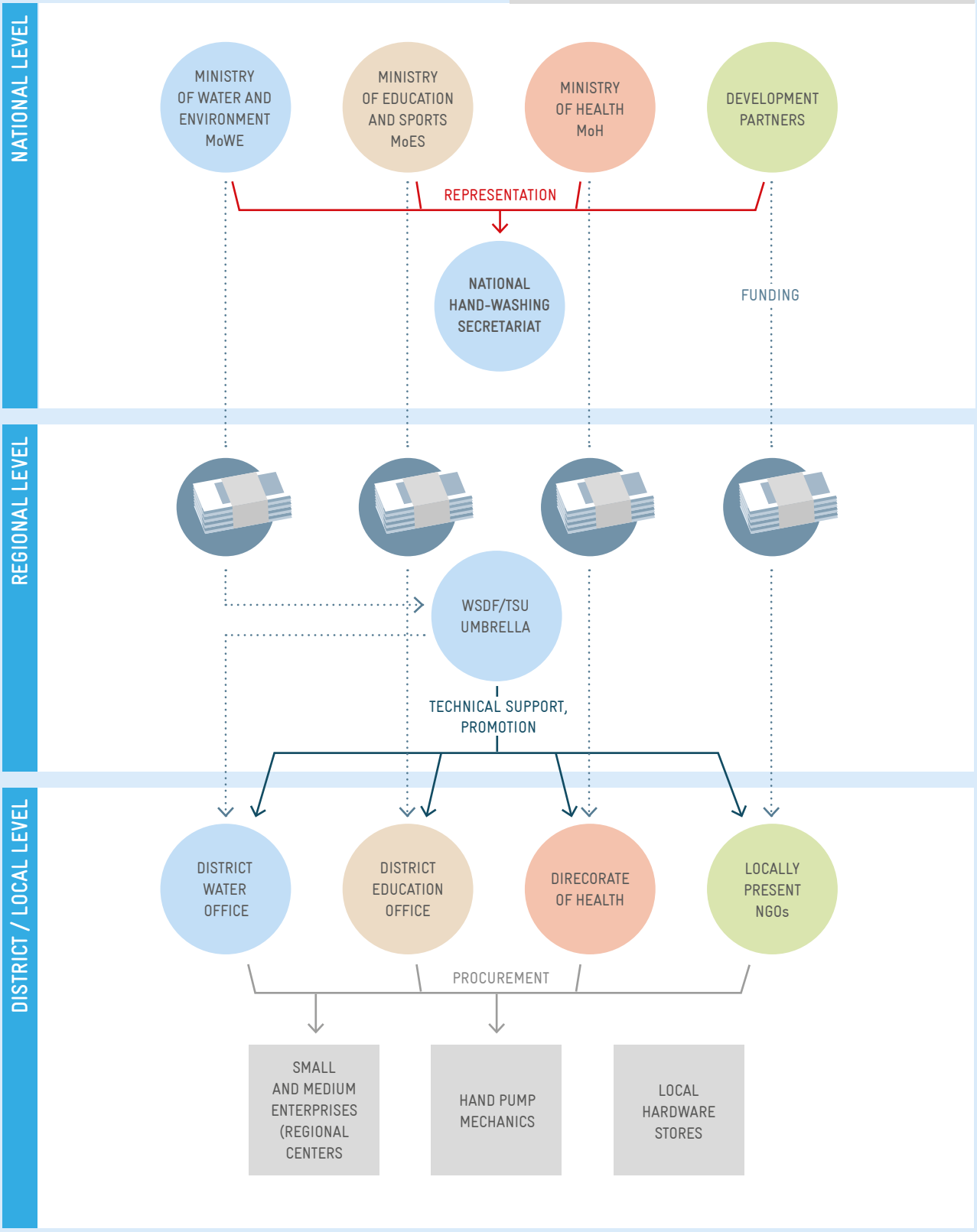
Private enterprises produce and sell WASHaLOTs.

Hand Pump mechanics install WASHaLOTs, provide training on operation and maintenance to the receiving institutions and users and provide repairs and rehabilitation support to the recipients.

Locally present NGOs provide support to local governments in promotion, procurement, and installation of WASHaLOTs. Include WASHaLOTs in their infrastructure / WASH projects in coordination with local authorities and National Hand-Washing Secretariat.

[5] The National Hand-Washing secretariat is currently chaired by the MoWE. The chair is rotational amongst the ministries over a period of 4 years.

FIGURE 30 // Potential institutional setup for WASHaLOT up-scaling



SCALING UP PROCESS

The following presents generic steps towards the WASHaLOT up-scaling that could be undertaken by the responsible entity in Uganda.

STEP 7
MONITORING & EVALUATION

STEP 6
USE AND MAINTENANCE OF WASHaLOTs

STEP 5
INSTALLATION & REPAIR SERVICES

STEP 4
PRODUCTION & DISTRIBUTION BY PRIVATE SECTOR

STEP 3
PROJECT PREPARATIONS

STEP 2
PROMOTION // DEMAND CREATION

STEP 1
CERTIFICATION OF THE TECHNOLOGY

STEP 1

CERTIFICATION OF THE TECHNOLOGY

WHY?

› For functional and durable WASHaLOTs key aspects such as materials, production techniques and quality control are required. Thus, WASHaLOTs would have to undergo a certification process by a competent authority to promote standards for the materials and production techniques.

WHO?

› The Appropriate Technology Centre (ATC) through MoWE

HOW?

Main certification steps include:

› Informing the ATC about the features of the WASHaLOT technology, context of use and potential contributions to the sector.

› ATC assigns a team to test the technology on the ground. Once testing is completed, the ATC will elaborate an assessment report and present its findings and recommendations to the steering committee at MoWE.

› The MoWE approves the technology at ATC's recommendation and adopts the technology for up-scaling.

› ATC also develops standard specifications and designs for the manufacturing and installation of WASHaLOTs for further dissemination.

WHAT WOULD IT TAKE?

› Ownership from the side of the institution taking up the up-scaling.

FIGURE 31 // WASHaLOT presentation at the Global Handwashing Day, 2020 (Source: WatSSUP, 2020)

STEP 2

PROMOTION // DEMAND CREATION

WHY?

› As the WASHaLOT is a new, but growing technology, promotion and demand creation are the most crucial steps of the up-scaling process. The sensitization of WASHaLOTs both at national, regional and local level should enable potential users and other interested parties to get familiar with the device and develop interest. Once potential users and local partners are aware of the benefits, scaling up process will become more dynamic.

WHO?

› **National level:** The National Hand-Washing Secretariat with support from line ministries and development partners.

› **Regional local level:** WSDFs; local authorities.

› **Private enterprises** working regionally.

HOW?

The promotion process should be carried out at both national and regional level and could include the following indicative activities:

› Organize workshops with development partners and ministries to promote the technology at national level via their programmes/projects.

› Organize workshops for the committee of religious leaders to promote WASHaLOTs at religious places and events.

› Conduct workshops for the four WSDFs and Umbrella Organisations to promote the WASHaLOTs.

› Establish 20 demonstration WASHaLOTs per region or any new water projects implemented by WSDFs.

WHAT WOULD IT TAKE?

› Strong coordination between institutions at national, regional and district level.

› Support from development partners to streamline the process.

STEP 3

PROJECT PREPARATIONS

WHY?

› The analysis of the existing situation on the ground will inform the MoWE and partners of the magnitude of the intervention in terms of resources. It will also create a baseline which will serve as a comparison point to follow the progress of implementation and ascertain the impact of the up scaling.

WHO?

› This activity could be taken up by entities interested in scaling up WASHaLOTs, which could be ministries or development partners.

HOW?

Main activities carried out at this step:

› Assessment of demand at regional level through data collected by District Offices, with support from the National Hand-Washing Secretariat.

› Comprehensive project appraisal based on demand assessment and realistic costs.

› Tendering and procurement of WASHaLOTs as per standard specifications and designs developed by ATC.

WHAT WOULD IT TAKE?

› Public budgeting and/or financial support from development partners towards the assessment, appraisal and procurement of WASHaLOTs.

STEP 4

PRODUCTION & DISTRIBUTION BY PRIVATE SECTOR

WHY?

› For reasons of sustainability, quality and price competitiveness via bulk procurement, the private sector is most suitable to produce and manufacture the WASHaLOTs at scale. Private sector competitiveness will ensure that the procuring agency will get the most economical price for WASHaLOTs and provide the quality assurance.

› Currently, the manufacturing costs are considered relatively higher in comparisons to other handwashing facilities, however the long-terms savings on water use and operational costs will outweigh the investment costs. Additionally, higher demands for increased number of WASHaLOT should bring down the unit cost.

WHO?

› Namely SMEs based in Kampala or in regional centres across Uganda.

HOW?

› Interested private sector companies are provided with training on how to produce WASHaLOT.

› Production of WASHaLOTs is undertaken by firms in accordance with the standards, specifications and production guidelines developed by ATC.

› The clients (procuring agency) conduct appropriate due diligence checks, prior to awarding the contract, and carry out the required quality assurance on the material, workmanship, and specified designs criteria as per the tender documents.

› The WASHaLOTs are distributed to specified locations by the manufactures for further installation.

WHAT WOULD IT TAKE?

› Transparent tendering process.

› Centralized demand to ensure financial gain prospects for SMEs enterprises.

› Establishment of regional distribution networks.

STEP 5

INSTALLATION & REPAIR SERVICES

WHY?

› The Hand Pump Mechanics (HPMs) are trained to install and carry out periodic maintenance/repairs for hand pumps. Their local structures are well established and they have been working with relative success all over Uganda. Using the HPMs and their structure ensures that little training/capacity building will be required for installations and repairs of the WASHaLOTs as the mechanics are already qualified plumbers and masons.

› In addition, local hardware stores in regional centres can be encouraged to procure, stock, supply, install and provide repairs to the WASHaLOTs. Local hardware stores usually have good connections to masons, who can install WASHaLOTs with little training. Furthermore, when the demand for WASHaLOTs increases, hardware stores can stock and supply WASHaLOTs and component spares (nozzles, covers, etc.), to cater to the local demand.

WHO?

› Hand Pump Mechanics and or local Hardware Stores.

HOW?

› Installation is done according to the standard operational procedures (SOP) and follows all due diligence measures and checklists prior to the installations, especially taking into consideration: location of the WASHaLOTs, water supply connection, etc.

› Installers provide training on use and maintenance of the WASHaLOTs to the assigned O&M staffs at each installation site.

› The installers establish a communication line with the users/O&M staff for future repairs and technical support.

› The HPM or hardware stores provide (paid) repair services to the users as and when required.

WHAT WOULD IT TAKE?

› Supply chains for WASHaLOT spares established at district level.

› Training of installers.

STEP 6

USE AND MAINTENANCE OF WASHaLOTs

WHY?

› The WASHaLOTs is the most economical group handwashing facility – over the long run – currently in the market. This is primarily because of its water saving characteristics, which significantly reduces the operational costs. Although the initial investment costs per units are currently higher in comparison to other handwashing facilities, the long terms savings on water use and operational costs will outweigh the investment costs.

› Like any other handwashing facility, regular maintenance of WASHaLOTs is required to provide a clean and hygienic handwashing facility to the users. The regular maintenance of WASHaLOTs is easy and can be conducted in a short period of time.

WHO?

› Cleaning and maintenance staff, users, namely in schools, health facilities and public places.

HOW?

› The use and maintenance of the WASHaLOTs is carried out accordance to the SOPs and O&M procedures (see details in Step 5).

› The facilities are regularly inspected for hygienic conditions by a responsible supervisor at the site.

WHAT WOULD IT TAKE?

› Tailored O&M training according to type of user.

› Assigning and training O&M responsible staff for every installation site.

STEP 7

MONITORING & EVALUATION

WHY?

› Monitoring and evaluation (M&E) are crucial to assess the use, maintenance, and impact of the intervention. Furthermore, the M&E process provides insight to issues and problems faced and alternative mitigating measures can be initiated if the interventions are not effective.

WHO?

› **At the local level:** District Local Governments, Municipal/Town Councils

› **At a regional level:** WSDFs & Umbrella Organisations

› **At a national level:** The National Hand-Washing Secretariat

HOW?

› The monitoring activities can be carried out using the existing structures at the local government level, namely the District Water Officer (DWO), District Education Officer (DEO), District Directorate of Health Services (DDoHS). Although the monitoring activities carried out by these offices/personnel are not specific to handwashing and are general in nature, data collection on group handwashing facilities (among which the WASHaLOT) can also be included in the monitoring and reporting activities and no additional/new M&E system needs to be introduced. As such, mapping of the WASHaLOTs can be conducted using existing monitoring frameworks.

› The information collected is taken-up by the regional WSDFs/Umbrella Organisations and is aggregated by the Hand-washing Secretariat at the national level.

WHAT WOULD IT TAKE?

› Strong coordination between institutions at national, regional and district level.

KEY CONSIDERATIONS FOR UP-SCALING

Expanding the WASHaLOT handwashing technology across Uganda is a significant undertaking which requires, besides notable financial resources, good coordination and communication between governmental and non-governmental partners as well as sustained efforts from the executing agency. The large number of potential locations where WASHaLOT can be installed indicates that scaling up the technology is a medium-term prospect. The magnitude of the proposed scale up combined with the current administrative, financial and social context is bound to create challenges along the way.

THE MOST ANTICIPATED IMPEDIMENTS TO UP-SCALING ARE LISTED BELOW:

PROMOTION

The coordination of promotion activities at the national, regional, and local level will require considerable resources. Promotion is a critical leverage point for the up-scaling the WASHaLOTs and key agencies like the ministry and donors need to buy-in to the adoption and roll out of the technology.

STANDARDISING PRODUCTION MATERIAL, PROCESS, AND QUALITY ASURANCE

One of the key features of the WASHaLOTs is its durability. Establishing quality assurance mechanisms for standard materials, process and workmanship is critical to be established with the private sector. The certification process will provide a basis for standards but procuring agencies will need to have due-diligence checks for quality assurance during the production and installation of WASHaLOTs.

FINANCING

Although most components and materials in the production of WASHaLOTs are available in Uganda, some components, such as nozzles, are imported from manufactures in Kenya, China, and India. Additionally, the use of premium materials such a HDPE pipes keeps the cost of WASHaLOTs high. But bulk procurement of WASHaLOTs is a key aspect that can reduce the cost per unit considerably, but this also implies that projects and programmes will need larger budgets.

SUPPLY CHAIN FOR SPARES

Adequate stock of spares and materials for repairs should be established that installers such as Hand Pump Mechanics have access to parts to sustain operations at local level.

MONITORING AND EVALUATION

Currently, M&E of handwashing facilities is limited in Uganda. It would be essential to establish a standardised M&E mechanism, based on existing structures, to evaluate the impact of WASHaLOTs. Establishing a baseline for group handwashing could be a starting point to improve M&E for hand hygiene.

FIGURE 32 // WASHaLOT monitoring visit by GIZ consultant, hand pump mechanic and head and staff, Barakala Primary School (Source: WatSSUP, 2021)

SUMMARY OF CONCLUSIONS

The WASHaLOT 3.0 provides a suitable alternative to other group handwashing facilities in Uganda. The lessons learned from the piloting of 50 WASHaLOTs in West Nile as well as other installations in Uganda, have demonstrated its benefits and have received positive feedback from the users and beneficiaries. The key conclusions are as follows:

FLEXIBILITY FOR MODIFICATION AS PER USER NEEDS

WASHaLOTs as a group handwashing unit can be designed to suite various needs, users, and locations. They can be installed with shorter legs for use in schools by children of varying age groups; WASHaLOTs can be installed in institutional buildings, public places, and markets, where the need for handwashing is required. The mobile versions can be installed in health centres, in case of emergencies, or in religious places, weekly markets, etc. for occasional use during events. Its use in pandemic setting has been particularly noticeable as it can be modified based on physical distancing norms and can be installed with relative ease as and when required. The key issues here are to understand and consider the users' needs and preferences prior to procurement and installations of WASHaLOTs.

PRODUCTION OF WASHaLOTs

The production process for the WASHaLOT technology can be sustained by several manufacturers in Uganda. Viable supply chains for primary materials, equipment, spares, and services exist in larger regional centres and have the potential to be developed in other regions as well, if the demand of WASHaLOTs increases. Technical details such as detailed drawings, guidance of production and installation process are all available and reproduction of the various components can be easily established in Uganda.

Alternative materials can be used to produce WASHaLOTs. However, when making adaptations to the WASHaLOT materials, it is important to consider the following aspects:

› DURABILITY

The device is meant to service many people every day. Therefore, it is important to use parts or materials that can withstand frequent use over a long period of time.

› QUALITY OF MATERIALS

There are countless substandard and cheaper products on the market that could be tempting to use in the WASHaLOT assembly. However, these have a negative impact not only on the durability and functionality of the device, but could potentially affect the health and safety of the users: rusted parts, sharp edges, non-working nozzles, etc.

› EASE OF USE

All adaptations of the WASHaLOT should be done while maintaining or improving the device's practicality. Modifications that would limit access for users should be avoided.

INSTALLATION OF WASHaLOTS

The WASHaLOTs can be installed by any person or team with basic knowledge and experience with masonry or plumbing skills. As per our experience, the use of Hand Pump Mechanics, who have an established structure and presence in most districts are ideal to conduct installation and repairs of WASHaLOTs. The critical challenges might be around supply chains to keep adequate spares for future repairs.

COST OF PRODUCTION

The comparatively higher investment costs due to the use of quality material will be outweighed by the extremely low operational costs of WASHaLOTs considering their durability, low maintenance costs and the large water saving potential.

USE, WATER SAVING FEATURES AND MAINTENANCE

The users rate the WASHaLOT positively for its ease of operation. As a group handwashing facility, WASHaLOTs can provide access to up to ten users at the same time. In addition, its huge water saving benefits are particularly noticeable as a long (3.0 m) version can provide up to 150 handwashing activities and a short (1.5 m) version up to 80 handwashing events.

Water can be supplied to the WASHaLOTs either by piped water supply or it can be filled up manually with the use of buckets and jerry cans. Additionally, the operation and maintenance activities can be conducted by any cleaning staff with little training. Nevertheless, regular cleaning and maintenance of the unit is critical to provide safe and unhindered hand hygiene to the users.

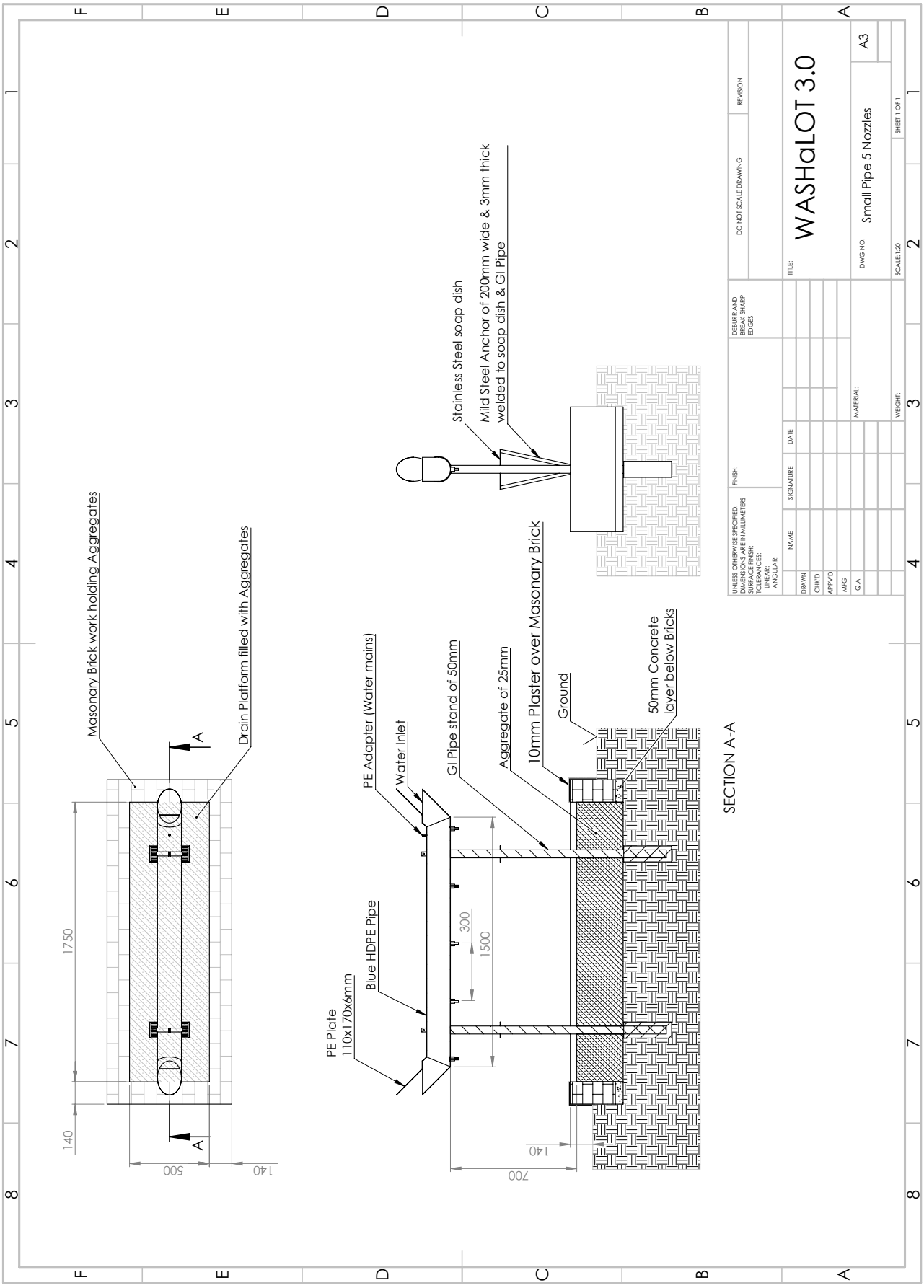
UP-SCALING

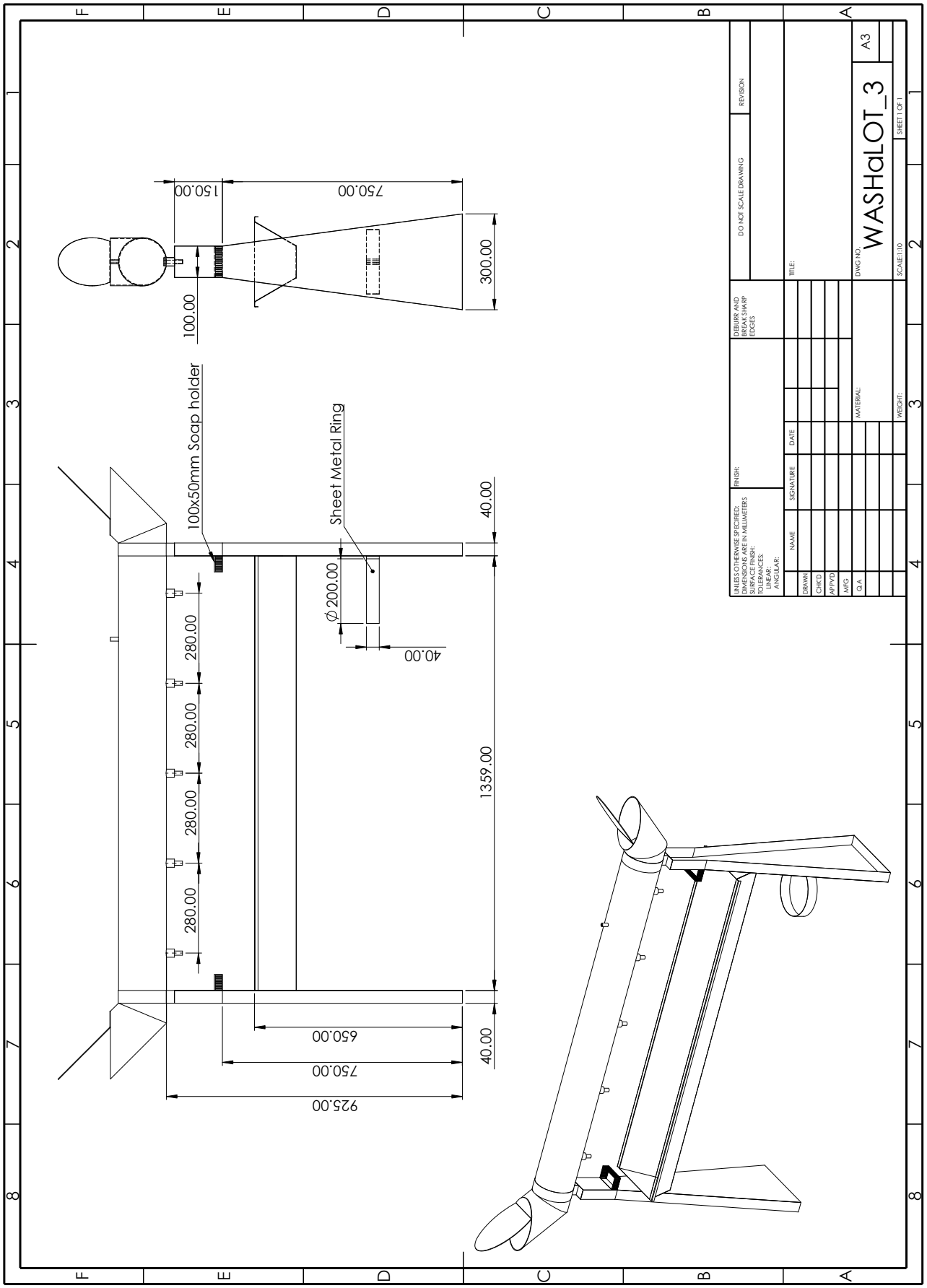
The up-scaling of WASHaLOTs can be achieved using existing structures and institutions in Uganda.
A generic approach and key agencies proposed for the up-scaling process are as follows:

UP-SCALING STEPS	AGENCIES INVOLVED
STEP 1 // CERTIFICATION OF THE TECHNOLOGY	› Appropriate Technology Centre
STEP 2 // PROMOTION AND DEMAND CREATION	› Hand-Washing Secretariat (at a national level) and the WSDFs and Local governments (Regional and local level)
STEP 3 // FINANCING	› Public funding/donor agencies/ INGOs/NGOs in close cooperation with Ministry of Water and Environment and Ministry of Health
STEP 4 // PRODUCTION AND DISTRIBUTION	› Private sector – small and medium enterprises
STEP 5 // INSTALLATION AND REPAIRS	› Hand Pump Mechanics and/or local hardware stores
STEP 6 // USE AND MAINTENANCE	› User & beneficiaries
STEP 7 // MONITORING AND EVALUATION	› Local level: District Local Governments, Municipal/Town Councils, › Regional level: WSDFs & Umbrella Organisations › National level: The National Hand-Washing Secretariat

Key considerations for up-scaling are increased promotion, standardising production material, process, and quality assurance, higher budget for financing, establishing supply chain for spares and materials, improved M&E of group hand hygiene facilities.

ANNEXES


Masonary Brick work holding Aggregates
Drain Platform filled with Aggregates
A
A
1750
140
500
140
Stainless Steel soap dish
Mild Steel Anchor of 200mm wide & 3mm thick welded to soap dish & GI Pipe
PE Adapter (Water mains)
Water Inlet
GI Pipe stand of 50mm
Aggregate of 25mm
10mm Plaster over Masonary Brick
Ground
50mm Concrete layer below Bricks
PE Plate 110x170x6mm
Blue HDPE Pipe
300
1500
140
700
SECTION A-A
WASHaLOT 3.0
Small Pipe 5 Nozzles
A3
DO NOT SCALE DRAWING
REVISION
DEBURR AND BREAK SHARP EDGES
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:
NAME
SIGNATURE
DATE
DRAWN
CHK'D
APPV'D
MFG
Q.A
MATERIAL:
WEIGHT:
SCALE: 1:20
SHEET 1 OF 1


150.00
750.00
300.00
100.00
100x50mm Soap holder
Sheet Metal Ring
40.00
Ø200.00
40.00
280.00
280.00
280.00
280.00
1359.00
650.00
750.00
925.00
40.00
DO NOT SCALE DRAWING
REVISION
DEBURR AND BREAK SHARP EDGES
FINISH:
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:
NAME
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DRAWN
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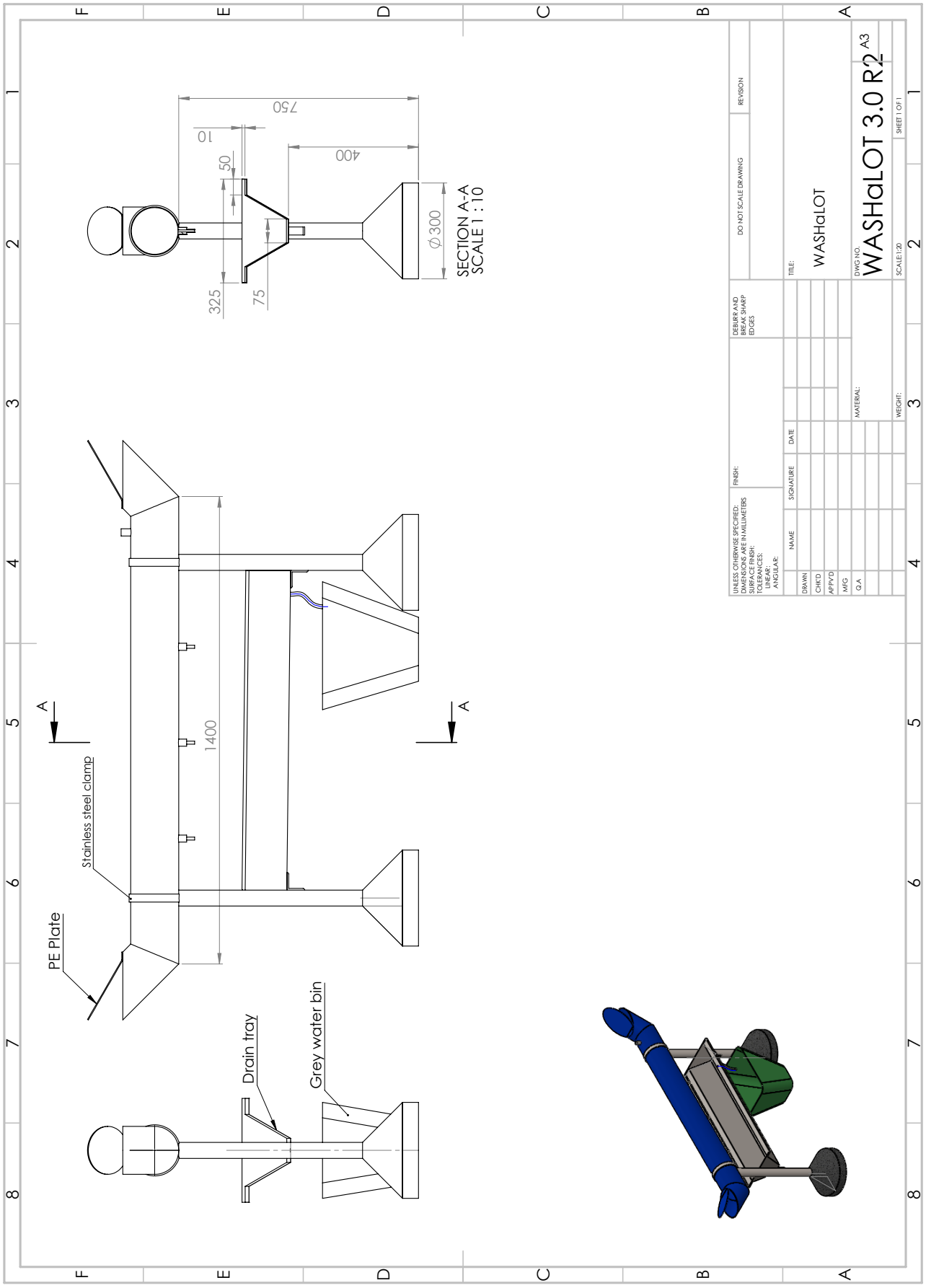
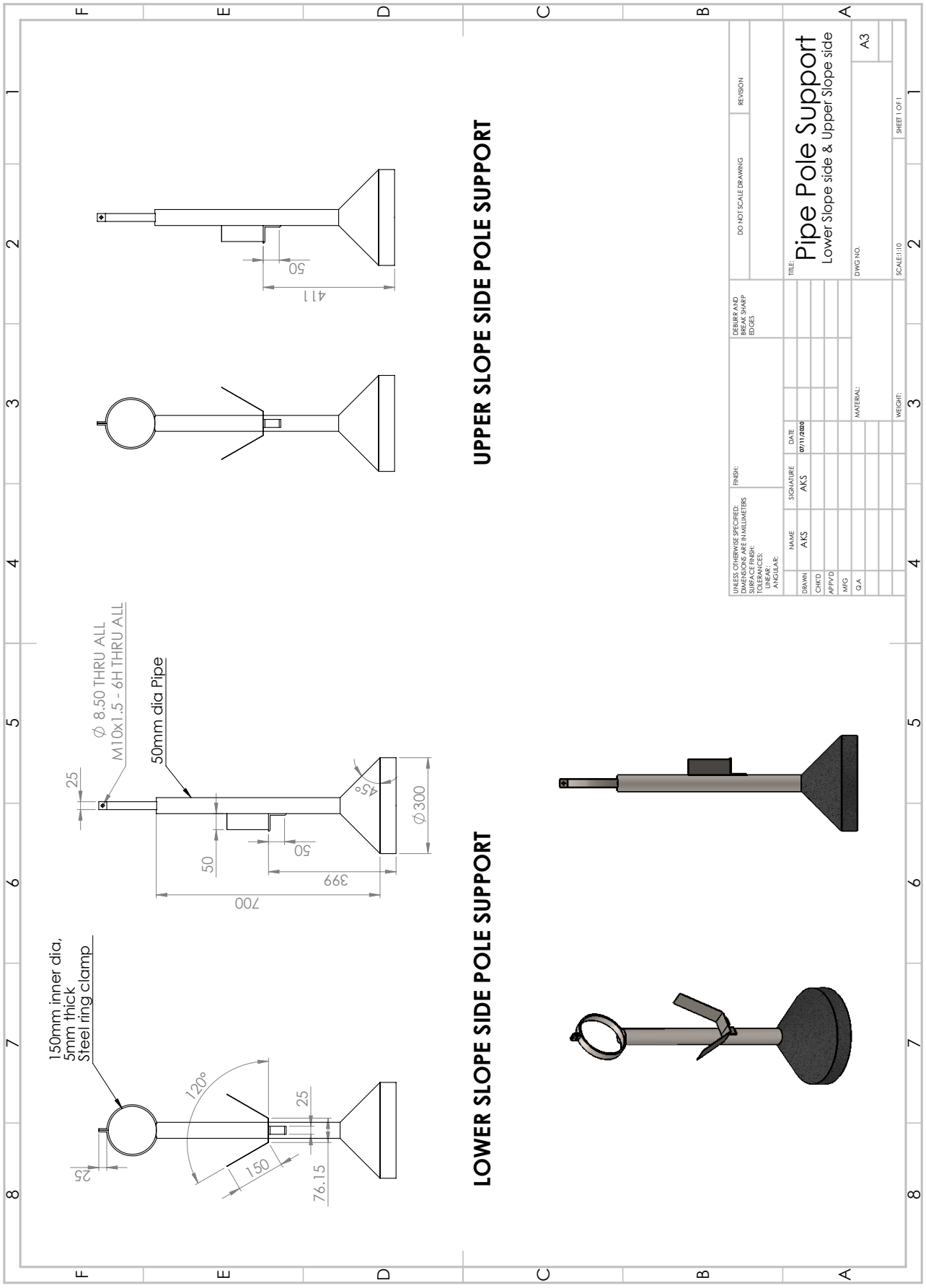
MFG
Q.A.
MATERIAL:
WEIGHT:
TITLE:
DWG NO.
WASHaLOT_3
A3
SCALE:1:10
SHEET 1 OF 1


750
10
50
400
325
75
Ø300
SECTION A-A
SCALE 1 : 10
A
A
1400
Stainless steel clamp
PE Plate
Drain tray
Grey water bin
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:
FINISH:
DEBURR AND BREAK SHARP EDGES
NAME
SIGNATURE
DATE
DRAWN
CHK'D
APP'V'D
MFG
Q.A.
MATERIAL:
WEIGHT:
DO NOT SCALE DRAWING
REVISION
TITLE:
WASHaLOT
DWG NO.
WASHaLOT 3.0 R2
A3
SCALE:1:20
SHEET 1 OF 1


UPPER SLOPE SIDE POLE SUPPORT
LOWER SLOPE SIDE POLE SUPPORT
50mm dia Pipe
Ø 8.50 THRU ALL
M10x1.5 - 6H THRU ALL
150mm inner dia,
5mm thick
Steel ring clamp
Pipe Pole Support
Lower Slope side & Upper Slope side
DO NOT SCALE DRAWING
DEBURR AND BREAK SHARP EDGES
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR
ANGULAR:
DRAWN AKS 07/11/2020
CHK'D
APP'D
MFG
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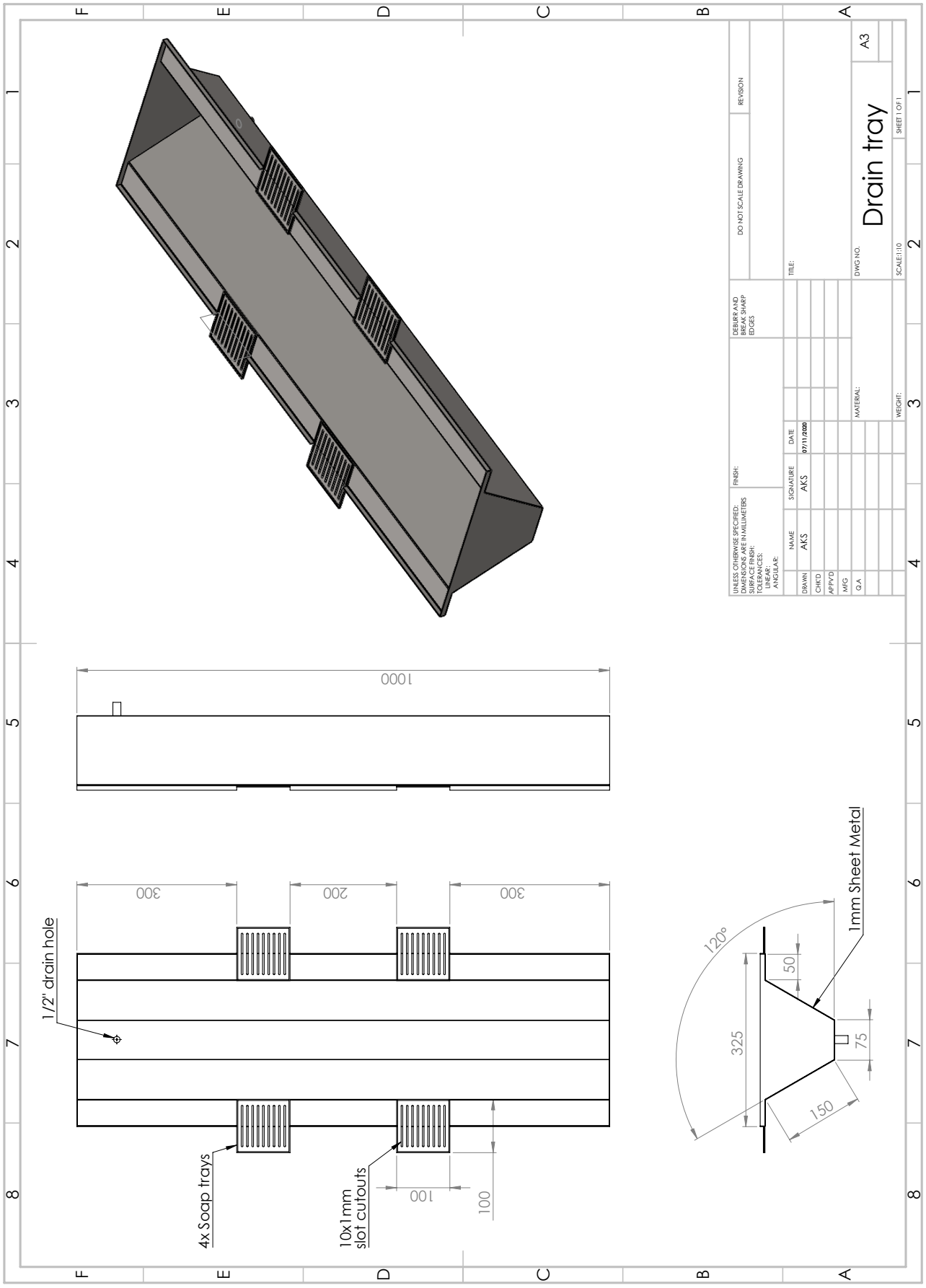
MATERIAL:
WEIGHT:
DWG NO.
A3
SCALE:1:10
SHEET 1 OF 1

TECHNICAL DRAWING OF THE METAL WATER TRAY



INFORMATION AND DATA SOURCES

1 Fit for School Programme website: → *www.fitforschool.international/washalot-3-0-a-unique-prefabricated-washing-facility-design* – last accessed 13.05.2021.

2 Sanitation for Millions in Uganda: → *www.giz.de/de/downloads/giz2021_en_Factsheet%20Sanitation%20for%20Millions%20Uganda.pdf* – last accessed 13.05.2021.

3 Sanitation for Millions publication on WASHaLOT technology: → *www.susana.org/en/knowledge-hub/resources-and-publications/library/details/3927* – last accessed on 14.05.2021.

4 Information extracted from the Technology Applicability Framework // TAF Assessment Washalot 3.0. GIZ, published in 2021: → *www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4019*

5 WatSSUP's User's Guide for WASHaLOT 3.0 Installation, Operation & Maintenance: → *www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4377*

6 GIZ website: → www.giz.de/en/worldwide/89336.html – last accessed on 31.03.2021.

7 Figure extracted from "WASHaLOT 3.0: Handwashing technology in Uganda – Volume 1 – User guide" elaborated by Dr. Swaib Semiyaga from Makerere University in 2020.

8 Handwashing Systems & Technologies Overview Document on Suitability for Public Use in Low-Income and Emergency Settings, Eawag for GIZ. March 2021. P. 29, Table 9.

9 Information extracted from the Technology Applicability Framework // TAF Assessment Washalot 3.0. GIZ, published in 2021: → *www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4019*

10 Siewert, M. Low Cost Group WASH Facilities: A scalable Solution for Hygiene Promotion in Primary Schools? – Functionality Assessment of a new Design Approach. TU Berlin, Department of Health Care Management. 2015. P. 35: → *www.susana.org/_resources/documents/default/3-3395-7-1534235194.pdf*

11 Figure extracted from "WASHaLOT 3.0: Handwashing technology in Uganda – Volume 1 – User guide" elaborated by Dr. Swaib Semiyaga from Makerere University in 2020.

12 Figure extracted from Fit for School Programme: WASHaLOT 3.0: Production and Quality Assurance – Producer's Note. 2019: → *www.susana.org/_resources/documents/default/3-3878-7-1592485204.pdf* – last accessed on 08.06.2021.

13 Information extracted from „WASHaLOT Volume 2 – Fabricator guide", page 5.

14 Fit for School Programme: WASHaLOT 3.0: Production and Quality Assurance – Producer's Note. 2019: → *www.susana.org/_resources/documents/default/3-3878-7-1592485204.pdf* – last accessed on 13.05.2021.

15 Figure adapted from the „WASHaLOT 3.0 Volume 2 – Fabricator guide" elaborated by Dr. Swaib Semiyaga from Makerere University in 2020.

16 Table adapted from the „WASHaLOT 3.0 Volume 2 – Fabricator guide" elaborated by Dr. Swaib Semiyaga from Makerere University in 2020.

17 GIZ website: → *www.giz.de/de/downloads/WatSSUP-WASHaLOT-final-2020.pdf* – last accessed 14.05.2021.

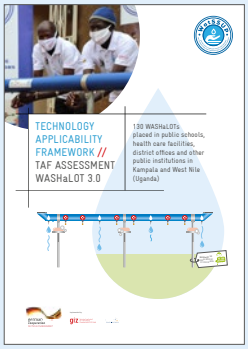
18 Figure extracted from WatSSUP's User's Guide for WASHaLOT 3.0 Installation, Operation & Maintenance: → *www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4377*

19 Information extracted from the Technology Applicability Framework // TAF Assessment Washalot 3.0. GIZ, published in 2021: → *www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4019*

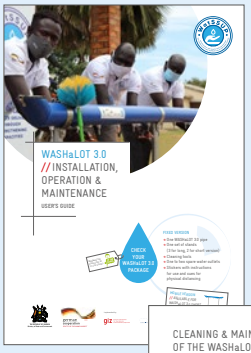
20 Information extracted from the Technology Applicability Framework // TAF Assessment Washalot 3.0. GIZ, published in 2021: → *www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4019*

FURTHER READING

WatSSUP PROGRAMME



TECHNOLOGY APPLICABILITY FRAMEWORK – TAF ASSESSMENT WASHaLOT 3.0
The assessment analyses the Ugandan context with regards to the potential for WASHaLOT production and use at scale.
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4019



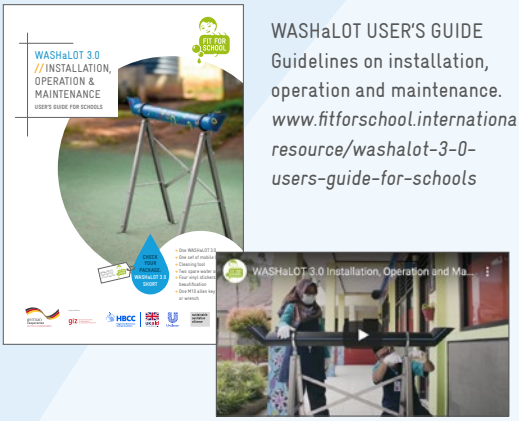
WASHaLOT USER'S GUIDE
This document contains information on how to check the installation of the facility, states the basic O&M activities and offers solutions for the most commonly appearing problems. All the O&M activities are valid for both short and long version of WASHaLOT.
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4377

WASHaLOT POSTER CLEANING & MAINTENANCE
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/4377

SANITATION FOR MILLIONS PROGRAMME

WASHaLOT USER HANDBOOK
A more comprehensive User Handbook compiled by the Sanitation for Millions programme that includes background on the WASHaLOT technology and also guidance for manufacturers.
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/3927

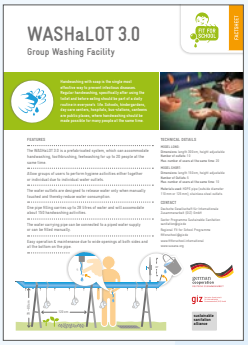
FIT FOR SCHOOL PROGRAMME



WASHaLOT USER'S GUIDE
Guidelines on installation, operation and maintenance.
www.fitforschool.international/resource/washalot-3-0-users-guide-for-schools

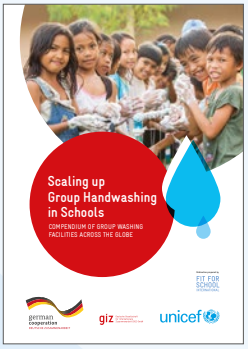
VIDEO WASHaLOT INSTALLATION, OPERATION AND MAINTENANCE
www.fitforschool.international/resource/washalot-3-0-installation-operation-and-maintenance-video

VIDEO WASHaLOT INSTALLATION, CAMBODIA
www.fitforschool.international/resource/washalot-installation-video-cambodia



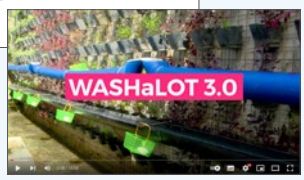
FACTSHEET: WASHaLOT 3.0 WITH PANDEMIC ADJUSTMENT
This factsheet presents technical details of short and long models, and also shows adjustments due to the pandemic.
www.fitforschool.international/resource/factsheet-washalot-3-0-group-washing-facility-2

WASHaLOT – FIELD GUIDE
The Field Guide showcases the key features of WASHaLOT and how it addresses practical issues with respect to the design, functionality, and durability of group washing facilities in schools.
www.fitforschool.international/resource/washalot-prefabricated-group-washing-facility-for-schools

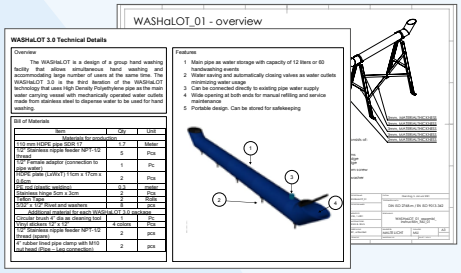


SCALING UP GROUP HANDWASHING IN SCHOOLS – COMPENDIUM OF GROUP WASHING FACILITIES ACROSS THE GLOBE
The publication is a collection of designs for group washing facilities, presented in different settings and contexts.
www.susana.org/_resources/documents/default/3-3846-7-1593605169.pdf

WASHaLOT PRODUCER'S NOTE
The guide gives detailed steps on the manufacturing and assembly of all the WASHaLOT components and provides a checklist for producers to document quality assurance.
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/3878



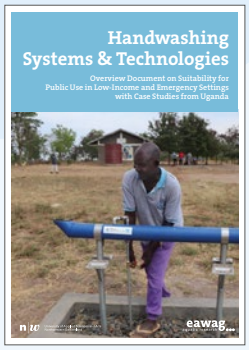
VIDEO WASHaLOT PRODUCTION
www.fitforschool.international/resource/washalot-3-0-production-process



WASHaLOT 3.0 TECHNICAL DETAILS – 2021 UPDATE
To support the adaption of the WASHaLOT 3.0, the technical documents are made available to the public to guide in the production process of the WASHaLOT 3.0.
www.fitforschool.international/resource/washalot-3-0-technical-details-2021-update

TECHNOLOGY APPLICABILITY FRAMEWORK – TAF ASSESSMENT WASHaLOT 3.0 PHILLIPINES
This report captures the findings of an evaluation of the WASHaLOT 3.0 in the Province of Batangas, Phillipines after four months of operation.
www.fitforschool.international/resource/technology-applicability-framework-taf-assessment-washalot-3-0

EAWAG / SUSANA



HANDWASHING SYSTEMS & TECHNOLOGIES OVERVIEW
A more extensive comparison of multiple handwashing devices including the WASHaLOT across several criteria can be found in the Handwashing Systems & Technologies Overview, a document developed by the Swiss Federal Institute of Aquatic Science with support from GIZ. Available in 2022 on: *www.susana.org*

IMPRINT

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Water Supply and Sanitation for Refugee Settlements
and Host Communities in Northern Uganda (WatSSUP)
Plot 128, Luthuli Avenue, Bugolobi
P.O. Box 10346, Kampala, Uganda

Sector Programme Water Policy
Postfach 5180, 65726 Eschborn, Germany
www.giz.de/en // www.fitforschool.international

Authors:
Prit Salian, Ana Bucovineanu

Reviewers:
Anna Kristina Kanathigoda, Bella Elisabeth Monse, Fred Nuwagaba, Frederick Madrid, Jan Schlenk, Lena Loechte, Nana Odoi, Patrick Mass, Raymond Lukwago, Swaib Semiyaga, Shobana Srinivasan

Design and Layout:
Christine Lüdke, büro lüdke, Germany

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The GIZ WatSSUP programme implements measures to improve water supply and sanitation services in selected refugee settlements and host communities in Northern Uganda in line with national and international refugee and sector strategies. The GIZ Sustainable Sanitation programme and the Water Policy Sector Programme support WatSSUPs COVID-19 pandemic response measures, particularly the implementation of the handwashing facilities and the development of better planning orientation for sustainable sanitation.

Bringing WASHaLOT 3.0 to scale – production, installation and operation in Uganda – was developed for organisations and agencies interested in promoting and installing WASHaLOTs in Uganda.

The development of the WASHaLOT is one outcome of the collaboration of the GIZ Regional Fit for School Programme (realized in the Philippines, Indonesia, Cambodia and Lao PDR) with the GIZ Sustainable Sanitation Programme. The Water Policy Sector Programme supports the global roll-out of the "Fit for School" approach (including innovations such as the WASHaLOT) by offering expertise to bilateral and global programmes predominantly in Africa. GIZ is grateful to Jens Nowag, Axel Schäfer (University of Applied Sciences Potsdam), Hille von Seggern and Sabine Rabe (Studio Urbane Landschaften) and Hergenhahn Product Design as well as Franke Steinert GmbH, Michael Bauer & Rainer Holthues GbR and OXYD GmbH for the fruitful collaboration in developing the WASHaLOT 3.0.

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For more Information please contact:
Nana Odoi, nana.odoi@giz.de or
Arne Panesar, arne.panesar@giz.de

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