

Water, Sanitation and Hygiene (WASH) Guidelines



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Abbreviations

ACF	Action Contre le Faim (Action Against Hunger)
CHAST	Child Hygiene and Sanitation Training
CLTS	Community-Led Total Sanitation
CRS	Catholic Relief Services
CSPM	Conflict Sensitive Programme Management
DRR	Disaster Risk Reduction
FAO	Food and Agriculture Organisation
FOAM	Focus on Opportunity, Ability and Motivation
HWTS	Household Water Treatment and Safe Storage
IC	International Cooperation
ICRC	International Committee of the Red Cross
IFRC	International Federation of the Red Cross and Red Crescent Societies
IWRM	Integrated Water Resources Management
KAP	Knowledge Attitude and Practice
LRRD	Linking Relief, Rehabilitation and Development
PCM	Project Cycle Management
PHAST	Participatory Hygiene and Sanitation Transformation
PPPHW	Public-Private Partnerships for Hand-washing with Soap
PRA	Participatory Rural Appraisal
RMNCH	Reproductive, Maternal, Neonatal Child Health
SaniFOAM	Sanitation FOAM
SLTS	School-Led Total Sanitation
VCA	Vulnerability and Capacity Assessment
WASH	Water, Sanitation and Hygiene
WSP	Water Safety Plan

1. Introduction

Clean drinking water and hygiene are essential factors of health, yet 800 million people worldwide continue to live without access to drinking water and 2.6 billion without sanitary facilities. These deficiencies account for 80 per cent of illnesses in developing countries. Functioning and environmentally sound waste water management and garbage disposal remain the exception in rural and poor urban areas.

Swiss Red Cross (SRC) recognises health to be a fundamental right and a prerequisite for decent living conditions. The main mission of SRC International Cooperation is to foster healthy living and improved disaster management capacities among particularly vulnerable people and communities. Improving people's access to safe water, sanitation and hygiene is integral to the SRC' overall mission to prevent and alleviate human suffering in Switzerland and abroad, fostering healthy living and improved disaster management capacities among particularly vulnerable people and communities (mission statement of the SRC International Cooperation from the SRC Strategy 2020 for International Cooperation).

The SRC "Health Policy for International Cooperation 2012-2017" provides a guiding framework for the health programs of the Department of International Cooperation (IC) over the coming years. SRC acknowledges that access to safe water and sanitation and improved hygiene are critical determinants of good health. Thus Water, Sanitation and Hygiene (WASH) is one of the thematic priorities detailed in the health policy as well as in the concept for disaster management.

SRC WASH programs aim to reduce poverty and vulnerability by improving the health status of the population. The WASH programs are contributing to the attainment of the UN Millennium Development Goal 7, Target 3; "halve the proportion of the population without access to safe drinking water and basic sanitation". SRC WASH programs are based on partnerships with the National Red Cross/Red Crescent Society and relevant agencies from government and civil society in the country of operation. Capacity building of partners is a key component. The fundamental importance of "software" to the success of a WASH program is recognised; development of water and sanitation infrastructure is always associated with hygiene promotion and capacity building.

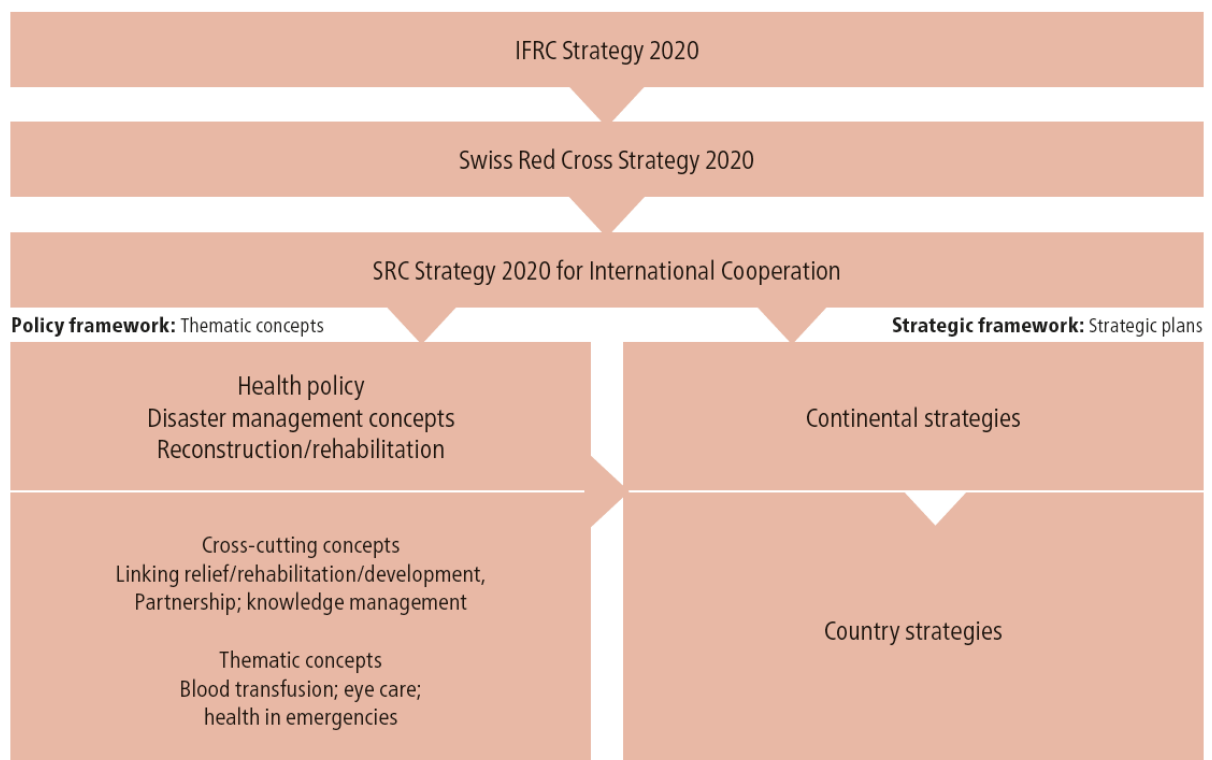
SRC has significant experience in the implementation of WASH projects in communities as part of health development programs and as part of rehabilitation programs. A number of delegates and headquarter personnel have wide experience in WASH and can be contacted in cooperation with the respective Program Coordinators. In addition, SRC has connections – via platforms for exchange and learning on WASH – with other organisations, in Switzerland and internationally and in particular with the Global Water and Sanitation Initiative of the International Federation of the Red Cross and Red Crescent Societies (IFRC). A variety of approaches and methods are used and there are many kinds of tools available in the broader WASH sector.

2. Purpose of these guidelines

The purpose of this document is to provide basic knowledge about the SRC approach to implementing WASH activities. It sets out a general context for working in the WASH sector without seeking to diminish the flexibility necessary for implementing programs in varying circumstances, cultural contexts and locations.

This document should be read in conjunction with the full range of SRC International Cooperation strategy documents, including the SRC strategy 2020 for International Cooperation, the Health Policy and the continental strategies and thematic concept papers and fact sheets. All of these documents are available online as annexes to the SRC Field Manual. An overview of their scope and interconnections is provided here.

Figure 1: SRC Policy framework for IC strategies and concepts



3. Areas of Intervention

The activity of the SRC abroad concentrates on the poorest countries of the world and particularly on areas which are the least provided for with goods and basic services.

3.1. Intervention in Different Phases

The continuum of international aid is generally divided into three stages; emergency relief, reconstruction and rehabilitation, and development cooperation. In addition, SRC endeavours to link the three intervention phases through its Linking Relief, Rehabilitation and Development (LRRD) approach. WASH programs can play an important role in each of them.

- **Emergency Relief:** Save lives and alleviate suffering by responding to the basic health needs of vulnerable people affected by disasters. SRC aims at meeting the basic needs of people in a crisis, for example in the aftermath of a disaster. The needs for basic WASH-related services in this case can be urgent and profound, such as addressing the available water quantity of the population or improving water quality standards by distributing water purification tablets.
- **Reconstruction and rehabilitation:** Rebuild primary health care systems and reduce vulnerability to future disasters. Empower vulnerable groups and communities to claim their right to health and to act on the determinants of health. WASH activities can be implemented by SRC as part of a broader reconstruction effort; providing water and sanitation systems as part of a housing reconstruction program, for example.
- **Development Cooperation:** Enable access to equitable quality health services for vulnerable groups and communities. Empower vulnerable groups and communities to claim their right to health, to act on the determinants of health, and to reduce their vulnerability to future disasters. SRC strengthens local capacities to ensure sustainability in WASH service delivery. SRC implements WASH programs in a development cooperation context, such as the construction or rehabilitation of community managed water systems, as part of its ongoing strategy to reduce poverty and vulnerability by improving the health status of the supported population.

The WASH sector therefore provides a good illustration of the potential benefits of the LRRD approach to humanitarian aid. Relief and development are interdependent and should be considered as such when planning and implementing projects. Better development can reduce the need for emergency relief and better rehabilitation can provide a basis for successful development. In the WASH sector this means e.g. that the construction of flood proofed toilets can reduce the risk of faecal contamination when the water level rises during an emergency. Likewise the construction of toilets already during the reconstruction phase should go hand in hand with hygiene education in order to secure a long term health impact.

3.2. Intervention Criteria

SRC IC has a thorough quality management manual for field and headquarter staff that includes Project Cycle Management (PCM) tools that should be consulted for further detail. The following criteria should provide the basis for deciding upon a SRC WASH intervention:

- The proposed intervention will have a measureable impact on the health of the targeted beneficiary population
- An adequate needs assessment has been carried out
- Potential partners have been identified and their skills and shortcomings assessed
- A risk assessment has been carried out to assess political and social constraints in the operational area and to check for possible unintended negative consequences of the WASH intervention (see also Conflict Sensitive Project Management and Do-no-harm).
- Adequate financial and human resources are available
- The geographical location meets SRC's need to restrict its activities to a limited number of countries and, if applicable, meets the requirements of the individual country program.
- Where applicable, the proposed intervention meets the requirements of a coordinated multilateral approach in association with the International Federation, International Committee of the Red Cross (ICRC) and the local Red Cross / Red Crescent society
- Appropriate local partners are willing and able (with suitable capacity building activities, as required) to take ownership of the program

4. Key Principles of SRC WASH Interventions

4.1. Empower communities and individuals to take self-determined action and reinforce self-help capacity

The sustainability of WASH interventions is dependent upon the degree of ownership felt by the people in the community, which in turn depends on the level of community participation in planning and implementation. Community groups should have meaningful involvement in all stages of the project. The communities are to take responsibility for their WASH projects beyond the project duration. Care should be taken to seek representative community voices and not assume that a given individual necessarily speaks on behalf of his community.

4.2. Cooperate in Partnership

Capacity building refers to assistance that is provided to local partners to develop certain skills or for general upgrading of performance ability. WASH programs are implemented with local partners: the local Red Cross/Red Crescent National Society, relevant agencies of local government, water supply authorities, community groups and other partners, depending on the context. Capacity building for project partners should be considered at the planning stage and should be aimed at strengthening their ability to contribute to ongoing improvement and sustainability in the WASH sector (refer to the concept for partnership and the field manual).

4.3. Promote gender equality

Consideration of gender issues is essential for successful WASH interventions. "Gender" in WASH programs means ensuring that all people, regardless of gender, benefit from improved water and sanitation services and hygiene practices. In most societies, women are responsible for the majority of water-related tasks: collecting and storing water, cooking, cleaning and maintaining sanitation in the home. Inadequate facilities for sanitation and hygiene are especially detrimental to the dignity and social development of women and girls. Women are most likely to be aware of and understand the WASH-related deficiencies in a community and their active participation in the planning, design and implementation of WASH programs is of utmost importance.

4.4. Ensure Sustainability

Sustainability of water and sanitation interventions is dependant on a) empowering communities to continue their development in terms of health and hygiene on a longer term, b) embedding them into existing country policies; c) engaging and staying engaged with the Government stakeholders right from the project inception and on d) using appropriate technology and functional operation and maintenance systems. Sustainability in healthy behaviour related to WASH is essential to be achieved at community level. This should be taken into consideration at the beginning of any intervention.

Technical solutions should be in conformance with national standards and local maintenance capacities. Successful operation and maintenance depends not only on technology but also on managerial, social, financial and institutional issues. If a committee of users is to take responsibility for operation and maintenance of a system, adequate technical and management training must be provided for them. Having users pay fees, however small, in cash or in kind, to cover the costs of operation and maintenance, is almost always necessary.

4.5. Recognise Integrated Water Resource Management

WASH interventions should include all three elements: water, sanitation and hygiene. The concept of integrated water resources management (IWRM), in which the various uses of finite water resources are recognised as being interdependent, should be applied during the planning and implementation process. SRC WASH activities are mostly concerned with water for drinking and household consumption, including the establishment of family gardens for better nutrition. However, the use of water for other purposes (e.g. agricultural irrigation, livestock, manufacturing, etc.) and the issue of drainage should equally be taken into account. Recognising and applying good governance is essential for a successful IWRM.

4.6. Meet Water Quality Standards

Water quality should meet the requirements of the national standards in the relevant country. The concept of a Water Safety Plan (WSP) should be applied in any water supply project. A Water Safety Plan is a tool for consistently ensuring the safety and acceptability of a drinking water supply through the use of a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer.

5. Objectives and Indicators

5.1. Strategic Objectives

According to the SRC International Cooperation's Impact Model (see Annex 1), the specific outcomes for WASH are identified as the following:

- Safe water and sanitation is used
- Health determining conditions are improved
- Hygiene (health) behaviour is improved

All of them are contributing to an improved health status to enable healthy and safe living for vulnerable groups and communities.

The WASH interventions should focus on:

- Availability of water and sanitation
- Access to water and sanitation
- Appropriate use of water and sanitation
- Appropriate application of hygiene knowledge and skills

5.2. WASH indicators

SRC has defined an indicator tool box for WASH that needs to be referred to when developing indicators for the logframe (see SRC Field Manual or available on request). The toolbox contains recommended indicators, such as those in the UN Millennium Development Goals. The number of indicators should be limited to the minimum amount necessary to show whether the planned outputs and outcomes have been achieved.

For each indicator, the data source and collection method (when, by whom, etc.) must be identified. This information is included in a column in the separate Monitoring Plan (see SRC Field Manual) – in which each indicator is listed along with all the relevant information related to it.

6. WASH Project Cycle Management

The use of Project Cycle Management in SRC is explained in detail in the SRC Field Manual. A WASH project should follow the processes outlined there.

6.1. Identification and Assessment

The purpose of this step is to identify the existing situation in terms of the water and sanitation-related needs of the population and the feasibility of a SRC WASH intervention to address those needs. There are various tools available for use in assessments and those most appropriate to the current context with regard to scale and duration should be employed. A sample of the many resources available is given in table 1.

Table 1: Assessment tools

Assessment tools	Resources
VCA (Vulnerability and Capacity Assessment)	IFRC: How to do VCA¹
	IFRC: VCA toolbox²
	IFRC: VCA Guidelines³
PRA (Participatory Rural Appraisal)	Catholic Relief Services (CRS) PRA Manual⁴
	FAO: PRA Handbook⁵
	UNICEF Sanitation Handbook⁶
KAP (Knowledge Attitude and Practice) Survey	Action contre le Faim (ACF): Guidelines⁷
	WHO/UNICEF: Core questions on drinking water and sanitation for household surveys⁸

The time and resources to be invested in any assessment will depend on a number of variable factors. However, essentially, the assessment of needs should yield approximate but objective information on the following:

- National strategies with reference to water, sanitation and hygiene
- Population size
- Water sources (type and distance from households) for drinking, washing, cleaning, etc.
- Water yield (availability and quantity of water yield during different seasons)
- Ownership of water source and land rights
- Water usage (quantity)
- Water quality (biological and chemical)
- Toilets: quality, availability and usage
- Hygiene knowledge and practices
- Presence of diarrhoea and other faecal-orally transmitted diseases
- Potential costs of water and sanitation at construction and long-term maintenance and use (affordability)

It is very important to assess properly the issues related to land rights, ownership of water sources and rights to water sources, before starting any WASH program. It is important to check and assess all communities surrounded by or possibly benefitting from a particular water source. Careful assessment with involvement of all stakeholders of the water source is important to avoid conflicts right from the project's start. Legal registration or documentation of the rights to the water source may be an important first step to start off a WASH program.

Another important issue to consider is the water yield at different times of the year. One-off assessments are not sufficient to assess the water yield throughout the year because it may fluctuate according to season. Various seasonal assessments need to be conducted and careful calculations of water yield done before settling for a certain type of water supply system.

When it comes to assessing the feasibility of a SRC WASH intervention, input should be sought from potential partners, including:

- Donors (national and international)
- The local Red Cross / Red Crescent National Society
- Sector coordination bodies, e.g. the WASH Cluster
- Beneficiaries in the communities with particular emphasis to include women and girls
- Local government
- Local health Institutions
- Water and Sanitation Departments (and/or Rural Development Departments)

During this feasibility assessment the process of identifying the entities to which the implemented project will be handed over should already be carried out. These will usually be some combination of community groups, local government, service delivery authorities and the private sector. Ideally these entities should be included in the planning phase.

The capacity of the entities to which the project is to be handed over must be taken into account during the planning and design phases. For instance the long-term capacity and willingness of a newly-formed village water committee to collect and manage funds in a manner approved by the entire community should not be over-estimated. In this case, simple water delivery systems such as boreholes with manual hand pumps may be more suitable than a technically complex pumped/piped system.

6.2. Planning and Preparation

Joint Planning

Planning is the process of combining the findings of the assessment with the SRC WASH objectives and available resources to work out the most suitable intervention. The output of the planning process will include a project logical framework, as described above. It should be developed in a joint planning process with representatives of all the project partners with involvement of the most vulnerable and women and girls in the process. Decisions that have to be made at this stage (if they haven't already been made) include the following:

- In which location(s) will the interventions take place
- What type of interventions will be implemented
- What will be the objectives, outputs and activities

Baseline Information

It is important that information to describe the current (pre-intervention) situation be obtained in order to allow comparisons to be made and progress to be assessed. Establishing a baseline makes it possible to identify the achievements of the program and demonstrate the extent to which the objectives have been accomplished. Measuring the objectives against a baseline will also allow for lessons to be learned for future projects.

The indicators used in the program logical framework must be measured during the baseline survey.

More information on the implementation of baseline surveys can be obtained from the health advisor at SRC headquarters.

6.3. Implementation

In this section, brief details are given on the implementation components of the WASH program. Some of these components, e.g. selection of technical options, will be covered to some extent during the planning and proposal writing stages but as they also constitute part of the project implementation they are included here.

6.3.1. Design criteria for WASH

Apart from technical designs, there are several design criteria that should be taken into consideration in any WASH project. The following examples are not exclusive.

Table 2: Technical design criteria

Design Criteria	Details / Examples
Input from users	<ul style="list-style-type: none"> • Users should be guided to recommend solutions • Take into account local conditions and needs • Potential for better solutions and acceptance
Appropriate locations for toilets and water points	<ul style="list-style-type: none"> • Land rights and ownership is clarified and appropriate • Avoid pollution of water source • Security from harassment and dangerous animals • Privacy (for toilet and washing facilities) • All-weather access • Accessible and safe for young children to use • Minimise risk of vandalism • Away from disaster prone area (DRR mainstreaming)
Encourage Hygienic Behaviour	<ul style="list-style-type: none"> • Facilities close to houses • Availability of water and soap for hand washing • Sufficient water (or appropriate material) for cleansing
Roles and needs of women	<ul style="list-style-type: none"> • Location of facilities: culturally appropriate and safe • Adequate facilities for menstrual hygiene • Adequate facilities for pregnant women (with handle bars)
Appropriate dimensions for children	<ul style="list-style-type: none"> • Height of taps, doorknobs, steps, hand washing facilities • Size of squatting holes (avoid risk of falling in)
Needs of people with disabilities or chronic diseases	<ul style="list-style-type: none"> • Guiding systems for blind and poor-sighted people • Elevated toilets, ramps, wide doors, handles etc. for people with disabilities
Operation and Maintenance (O&M)	<ul style="list-style-type: none"> • Appropriate to the ability and willingness to pay • O&M plans, including operational business plans, developed and agreed before facilities are constructed • Training and initial maintenance equipment provided as required • Involvement of male and female community members
Minimise harm to the environment	<ul style="list-style-type: none"> • Consider possibility of soil and groundwater contamination • Discharge of wastewater • Environmental sustainability in construction and operation
Integrated Water Resource Management	<ul style="list-style-type: none"> • Consider all sources of water • Consider all uses of water

Design Criteria	Details / Examples
Cross cutting themes	<ul style="list-style-type: none"> • Gender and WASH • Disaster Risk Reduction (DRR) and WASH • Conflict Sensitive Programme Management (CSPM) and WASH • Nutrition and WASH

A checklist for assessing the feasibility of a WASH project (adapted from the WHO “Checklist for Rapid Assessments”) is included in the Annex 2.

Other helpful checklists for minimum standards in water and sanitation are developed by Swiss Solidarity (see Annex 3 and Annex 4). If a WASH project is submitted to Swiss Solidarity for funding, the application of these minimum standard checklists is compulsory!

6.3.2. Water Supply

Everybody needs water for drinking, food preparation, personal hygiene, cleaning and laundry. Other requirements for water, depending on the context, include flushing toilets, irrigation of gardens and drinking water for livestock. Every household uses an existing source of water. The reasons for implementing the water supply program should be clearly expressed before embarking on it. They should be reflected in the objectives of the programme logical framework. Reasons for better water supply could be:

- The quality of the water from the existing source may be inadequate/unsafe
- The existing source of water may not function properly and needs to be improved/repared
- The existing source may provide an inadequate quantity of water
- The existing source may be inconvenient, e.g. it is too far away from the home.

The [SPHERE standards](#)⁹ (link to personal download) outline the basic principles of water supplies from page 79 to 139.

Water Supply Technology

The type of water supply technology to be selected will depend on the hydro-geological conditions, the existing situation, the resources available to the program and the willingness of the community to contribute. Water sources can be divided into three categories: groundwater, surface water and rainwater.

Table 3: Water sources and relevant technology

Water Source	Technology		Details / Examples
	Collection	Distribution	
Ground water	Spring catchment	Outlet pipe from catchment	No pumping required
		Tap-stand at catchment	
		Piped distribution system	
	Shallow (hand-dug) wells	Rope and bucket	Susceptible to contamination
		Hand-pump	
		Power pump (Possibility for piped distribution system)	Ongoing operation costs
Boreholes: hand-drilled or machine-drilled	Hand-pump		
	Power pump (Possibility for piped distribution system)	Ongoing operation costs	
Surface water	Direct collection from rivers, lakes, etc.	No distribution system	Requires water treatment
		Pumped storage/piped system	Requires water treatment. Ongoing operation costs
Rain water	Roof gutter and storage tank	Direct collection from tank	Feasibility dependant on amount and frequency of rain; construction of roofs
		Pumped piped system	

Some links to resources for detailed technical designs are as follows:

- [Sustainable technologies – water supply: WaterAid](#)¹⁰
- [Rainwater Harvesting: Global Water Community](#)¹¹
- [Water supply options for arsenic affected areas](#)¹²
- [Protection of spring sources: WaterAid](#)¹³

Water Quality and its testing

Water quality concerns three aspects:

- **Microbiological:** The most important aspect of water quality is freedom from microbiological contamination, especially by pathogens of human and animal faeces (*Escherichia coli*). Surface water sources are more likely to be contaminated than ground water sources but with all systems there is a possibility of contamination of the water before it is used. Contamination can occur at three key points: at the source, during collection and transportation and during storage.
- **Chemical:** Chemical contamination of water can also be a health concern. Chemical contamination can be natural (e.g. arsenic, fluoride), or can result from human activity (e.g. pesticides, detergent, nitrate).
- **Physical:** Undesirable physical quality (e.g. colour, taste, temperature, odour) may not make water unsafe but it may be unacceptable to users and result in them using alternative water sources that may in fact be less safe. Further physical criteria are turbidity, conductivity, pH and hardness.

Table 4: Water testing procedures

Type of testing	Test procedure	Test kits	Reliability and results
Microbiological	Laboratory testing		Most reliable. Sending samples from the field to a central Government laboratory in universities or public health institutions.
	Field incubation	Oxfam/DEIAqua kit ¹⁴ Wagtech Potaflex kit ¹⁵	False negative results can be obtained easily, which bias the overall result.
	Field rapid test	H₂S strip test ¹⁶	Simple and low cost. Measures only presence and absence of hydrogen sulphide producing organisms existing in faeces. Does not conform to the conventional standards of bacteriological testing of water samples
Chemical	Field testing	Wagtech CP 1000 ¹⁷	Most important is arsenic testing and nitrate testing, as this negatively affects health.
Physical		Conductivity meter ¹⁸ Turbidity meter ¹⁹ pH test strips	

Test kits which do both biological and chemical testing are also available (see Wagtech website). Before procuring water quality test kits, ensure that their costs are justified in the WASH project and that field staff and communities are able to handle the test kit.

It is necessary to test water quality to identify contamination in existing water sources and to check potential new sources during the initial assessment. In existing systems, testing samples of water taken from the source and comparing the results with tests of samples taken from the point of use (e.g. a household water container) can help to identify causes of contamination during collection, transportation and storage of water.

In locations that are known to be arsenic endemic, the presence of arsenic must be tested for before developing any proposed source. Relatively inexpensive and easy to use field test kits are available for reliable and accurate arsenic testing.

Water quality tests need to be carried out in a regular interval. Ideally, the water quality testing is performed by the local water authorities as part of their regular duty. However, in settings where these authorities are not existing or not functional, the project has to determine the time frame and the testing agent as part of the project plan. Furthermore a sustainable community based testing model has to be developed in order to sustain water quality testing beyond the project duration.

- [Guidelines for Drinking Water Quality: WHO](#)²⁰
- [Guidelines for Water Quality Assessment and Monitoring: UNICEF](#)²¹

Water Treatment

For piped water distribution systems, water treatment is best implemented by the local authority responsible for the system. Such treatment systems will typically involve filtration and chlorination of the water. The system must be designed so that its level of complexity and its running costs are within the capacity of the community to maintain.

When water is collected by the users directly from the source, e.g. wells, boreholes, it may be necessary to implement some form of household water treatment.

Table 5: Water treatment

Type of treatment	Device used	Advantages (A)/ disadvantages (D) in a nutshell	Remarks
Boiling	Boiling with firewood, kerosene, gas etc.	A: fast D: environmental damage; costs	Bringing water 3 minutes to a boiling roll is sufficient for safe water quality!
	Solar cookers	A: low cost; D: acceptability; takes longer time to get to boiling roll	
Filtering	Sand filter	A: biological filtering D: requires space; slow flow	
	Ceramic filters	A: availability D: difficult for water with high turbidity	Regular maintenance and cleaning are essential for good results.
Solar disinfection (SODIS ²²)	PET bottles	A: low costs D: long term acceptability; change of PET bottles; sunshine hours	
Chemical disinfection (chlorine)	Chlorine tablets	A: low costs D: availability and sustainable supply; long term affordability	
	Chlorine production (WATA ²³)	A: Production in community; investment costs high D: Short shelf life; requires electricity	
	Piped water chlorination	A: Centrally done by Government or community operator in water kiosk	Requires good and regular monitoring of the water parameters.

Every system of water treatment has advantages and disadvantages and a range of suitability to different situations. Advantages and disadvantages of different water treatment options can be found here:

[IFRC Household water treatment and safe storage manual \(9 languages\)^{24\)}](#)
[EAWAG presentation on water treatment options](#) (available in SRC on request)
[OXFAM^{25\)}](#)

If water treatment is to be included in a WASH project, a comparative analysis of different options should be conducted and documented and the reasons for selecting any form of treatment should be made clear. Piloting different water treatment options in the community is important to check for acceptance, suitability and user-friendliness. In the end the users need to select the best possible treatment option.

Waste water and waste water disposal

Already during the planning of the water supply systems, the disposal of the waste water must be taken into account considering that waste water can be a valuable resource.

Table 6: Use of waste water

Type of waste water	Use of the waste water	Details/remarks
Fresh water (e.g. from water tank overflow or water taps overflow)	<ul style="list-style-type: none"> • Water for animals • Irrigation • Kitchen gardening; fruit trees (homes or schools/Blue schools) 	When used for animals, the drinking trough needs to be away from the water source and fenced off the water reservoir or tap stand in order to avoid contamination.
Grey water (e.g. from handwashing; washing dishes; shower and bathroom)	<ul style="list-style-type: none"> • Kitchen gardening (homes or schools/blue schools) • Flush water (toilet flushing) only if toilet is connected to a communal drainage system 	Needs to be carefully assessed in each context. Detergents can be detrimental to plants and hamper the de-composting of the faeces in the septic tank!
Storm water (e.g. from rainwater, rainwater harvesting)	<ul style="list-style-type: none"> • Water for animals • Irrigation • Kitchen gardening; fruit trees (homes or schools/ Blue schools) • Flush water • Household water/drinking water 	Water from first and second flush can be used. Water from second flush only!
Black water	<ul style="list-style-type: none"> • Can not be used 	

Most importantly, waste water needs to be drained properly and should not stagnate, in order not to become breeding places for vectors.

For the larger scale communal water and sanitation system, constructed wetlands may be considered for the biological waste water treatment.

[Waste Water Management: Water Aid^{26\)}](#)
[EAWAG compendium of sanitation systems and technologies^{27\)}](#)

Water system operation and maintenance

Since most of the SRC constructed water systems are small communal or individual water systems, operation and maintenance is in most cases the responsibility of the community or the individual household. In order to enhance responsible management and longevity of the water systems, the following aspects are important:

- training of local water user committee, water caretakers or individual household members in operation and maintenance of the water system
- developing the technical capacity and skills of the water system caretakers
- providing necessary equipment and spare parts to the water system caretaker to ensure minimum time-lag between damage and repair.
- deciding and training the water user committee and community in the implementation of a system on how to raise and collect funds to finance the operation and maintenance. Options need to be discussed in a participatory manner and decisions taken by the respective water system owners.

If water systems are handed over to the Government, the operation and maintenance of the water system should be in the hands of the local Government, who will then be responsible and pay for regular service and repair.

6.3.3. Sanitation

In a WASH program the term “sanitation” usually refers to human excreta disposal. However, it should also take into account environmental sanitation issues such as solid waste disposal, disposal of animal excreta, wastewater control and vector control. The benefits of good sanitation can include convenience, dignity, status, but the most important benefit from the point of view of a WASH program is health. The fundamental purpose of sanitation is to block the faecal-oral route of disease transmission.

The emergency sanitation project, a consortium of the IFRCs, Waste and Oxfam UK, are experimenting different sanitation options, sludge management, hygiene practises particularly geared for emergency settings. However, their findings and innovations are applicable in other settings too.

[Emergency sanitation project](#)²⁸ (IFRCs, WASTE and Oxfam)

Latrine designs and technology

There are various types of latrines with varying degrees of suitability for different circumstances. The broad categories are shown in this table. Technical designs are available from several resources. When constructing a sanitary latrine, an important criteria is to opt for dry or water-sealed.

Table 7: Latrine designs and technology

Category	Application	Type of Latrine	Details
Dry	Insufficient water available for a flush toilet	Direct single pit	Basic pit latrine. Should include a vent pipe with insect screen. The sludge is not safe when the pit is emptied.
		Direct double pit	Two pits, used alternately. Pits should be big enough to take at least a year to fill.

Category	Application	Type of Latrine	Details
			Sludge is safe to use as fertiliser.
		Ecological toilet (ECOSAN)	Separation of urine and faeces. Only successful if socially acceptable.
Water flush	Hygienic water seal incorporated. Will only work if water is available for flushing all year round.	Offset single pit	Flexibility in location of pit. Toilet can be inside the house.
		Offset double pit	Two pits, used alternately. Pits should be big enough to take at least a year to fill. Sludge is safe to use as fertiliser.
		Septic tank with secondary treatment	Effective but expensive. Secondary treatment can be leach field, wetland, etc.

The major criterion regarding the choice of technology is the availability of water for flushing. For flush latrines to function, water must be available (at least 2.5 litres per flush) all year round. Some links to resources for detailed technical designs are provided here:

- [Information on Improved Latrine Options: WSP-EAP](#)²⁹
- [Toilet Options – Pour Flush Toilets: The World Bank](#)³⁰
- [Low-cost Toilet Options: WEDC/WaterAid](#)³¹
- [Pour-flush latrines factsheet: WHO](#)³²
- [Sanitation technology: WaterAid](#)³³
- [Technical Guidelines for School Latrines: UNICEF](#)³⁴
- [EAWAG compendium of sanitation systems and technologies](#)³⁵
- [Contemporary Toilet designs \(WECD, EOOS\)](#)³⁶

Household latrines

For new latrines to be sustainable the users must feel ownership of them. The degree of ownership felt by the users is generally dependant on the level of their input to the design and construction process. Beneficiary participation is essential, and should be obtained via a hygiene promotion and social mobilisation program. Having a latrine is not always seen as a high priority. Households that could afford latrines often allocate their resources to things that are considered more important. Creating demand can be an essential part of a sanitation program.

There is an ongoing debate about the degree to which household sanitation should be subsidised by aid agencies and by government. The possibilities range from 100% of funding being provided, through various levels of beneficiary cost/labour sharing, to having all the costs borne by the beneficiary households with only “software” input from the WASH program. No one approach is suitable for all applications. Approaches require adaptation to the local context and the most appropriate one must be selected for each set of circumstances.

Farming households, which keep a substantial amount of animals in their vicinity may look at the option to establish a biogas system. It is worth looking at the different country policies and subsidies offered for biogas constructions.

It is important that even before the toilet construction, households allocate a space for hand washing with soap close to the toilet. During construction a hand washing basin and place for the soap may be already installed alongside one toilet wall.

Public latrines and latrines in public facilities

In emergency settings and in urban areas, the construction of public latrines is an option to meet sanitation needs for a larger size of population, or where the population density is high and space limited. Other than household latrines, mostly public latrines and latrines in public facilities such as schools and medical centers, are constructed by a company elicited through a tender. During the planning, partners and stakeholders need to be clearly identified and assigned their specific role. Furthermore access to water supply and electricity, proper drainage and land rights need to be assured. In urban areas, urban development plans need to be taken into account and responsibility for operation and maintenance (particularly sludge management and regular cleaning) settled with a written and signed Memorandum of Understanding. Public latrines can be either run by a contractor or be community-managed through a sanitation committee charging user fees.

For latrines in public facilities, such as schools and in medical centers, maintenance and cleaning requires to be regulated with the local health staff and school management committees and/or the respective local authorities. The design of these latrines needs to take user needs into account, e.g. including child friendly and disability friendly access and use, catering for the disposal of sanitary pads in female toilets (particularly important in schools) and meeting the needs of pregnant women. It is important not to forget the hand washing facilities in the immediate vicinity of the toilet.

WASH in schools and school latrines ([link to various resources on IFRCs WASH Mission Assistant](#))³⁷

Sludge management

When designing and offering different toilet options to the individual households and public stakeholders, the management of sludge needs to be discussed. This depends on the toilet design (e.g. single-pit versus double pit; ECOSAN versus pour-flush latrines). In rural areas, it is difficult however to practice sludge management in the community, as mostly the first pits will require emptying long after the project has been completed. However, capacity building and allocation of responsibility on how to do the sludge management and where and when to dispose the sludge are helpful.

In urban areas, the sludge management should be discussed during the planning stage with all the stakeholders. Local Governments and municipalities are responsible for waste management. They also operate trucks for faecal collection. Depending on the environment, the construction of different types of wetlands can be alternative for centralised biological treatment of the black water.

The social and cultural habits in regards to sludge management are very important and need to be assessed carefully in the local context in order to know what type of management is appropriate and who will do it.

[EAWAG: Compendium of sanitation systems and technologies](#)³⁸ with guidelines on sludge management from page 75 onwards.

[IFRCs: WASH Mission Assistant for sludge management](#)³⁹

Latrine operation and maintenance

Similar to the water supply, operation and maintenance of latrines also requires capacity building of individual household members and the “operators” of the public toilets.

It is important to emphasise the need of cleanliness, while hinting on the detrimental effects of the use of detergents. Possibilities for securing necessary financial resources for the operation and maintenance of public toilets, as well as the regular cleaning and incineration of sanitary pads needs to be discussed and determined with the owners of the public toilets.

Sanitation marketing and supply chains

Creating demand for toilets is the main pillar of a successful sanitation initiative. In order to meet this demand, the supply side in terms of material as well as construction skills needs to be built up in the following manner:

- developing technical skills among already existing or new masons or small scale providers in the community.
- supporting the set-up of their sanitation supply business to sustainably be able to meet the demand of the local population. These businesses can be in permanent locations or deliver material through so-called “mobile SaniMart shops” bringing materials directly to the households to enhance access mostly in the rural areas.
- training these sanitation providers in management and business skills, such as cost calculations, developing offers and material stock management profit.

The take-up of toilet construction as well as operation and maintenance increases, if supplies are already available in the vicinity.

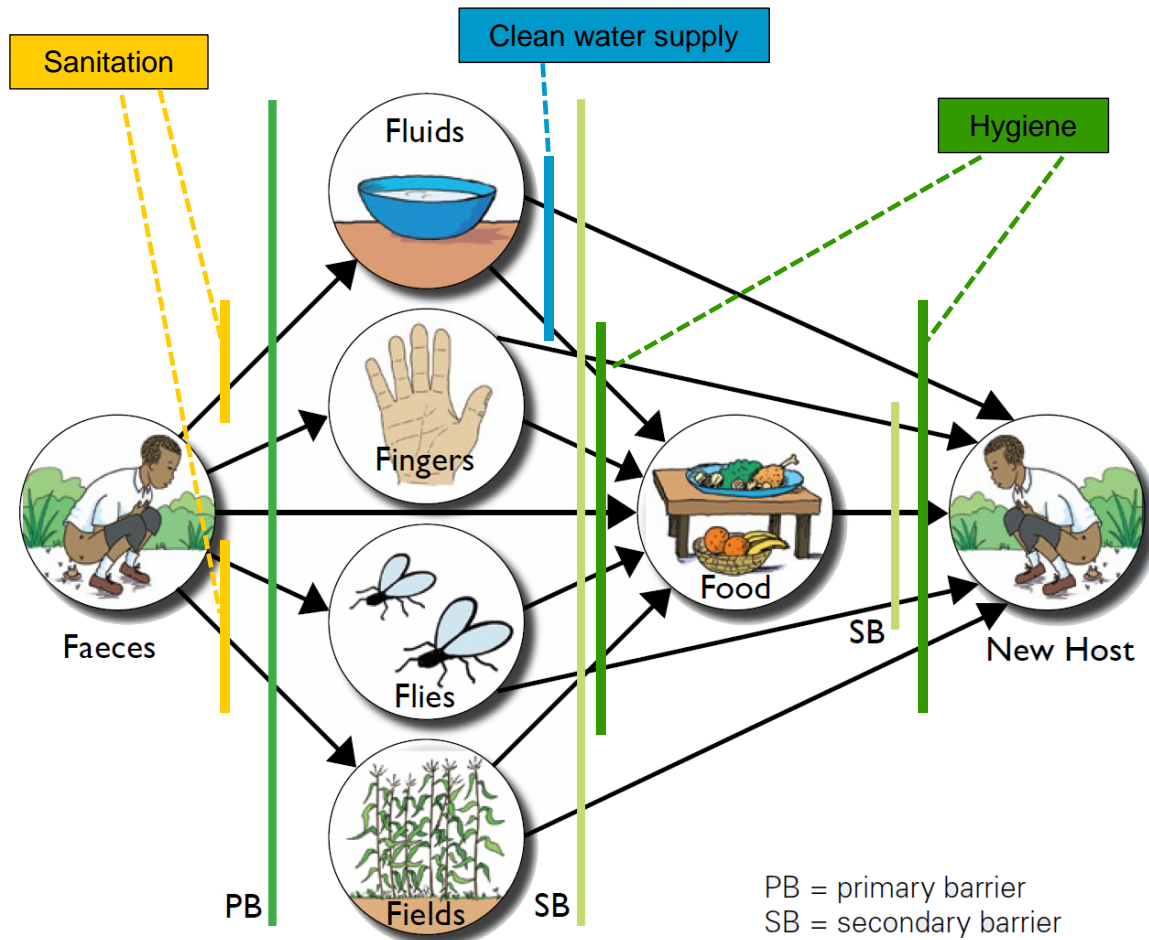
[Tapping the market: Sanitation marketing for the poor: World Bank⁴⁰](#)
[SaniMarts⁴¹](#)

6.3.4. Hygiene Promotion

The purpose of Hygiene Promotion is to prevent the spread of water and sanitation-related diseases by the adoption of safe hygiene practices. Hygiene promotion should have a measurable impact on the target population. In general, a small number of hygiene-related behaviours – the ones with the biggest overall health impact – should be identified and targeted. Several studies have indicated that the element of WASH projects that contribute most to a reduction of diarrhoea is not improvement in water quality or water quantity but is actually improvement in [hand washing practices](#)⁴². The act of washing hands with soap and water at key times can have a profound impact on the rate of diarrhoeal disease in a community where it wasn’t previously practiced. Thus all SRC WASH projects need to ensure a strong promotion on behaviour change in favour of hand washing.

The “F-Diagram”, in its various formats, shows the faecal-oral transmission routes of diseases and control barriers and gives a good overall view of the importance of hygiene and sanitation.

Figure 2: The F-Diagram: Routes of faecal disease transmission and protective barriers (Source: World Bank)



There are several hygiene promotion tools that have been developed by various agencies and used successfully in relief and development contexts. One important lesson that has been learned is that for hygiene promotion to be successful, it must be a participatory process. The beneficiary groups must be empowered to recognise any deficiencies in the existing situation and to decide on what steps need to be taken to improve it.

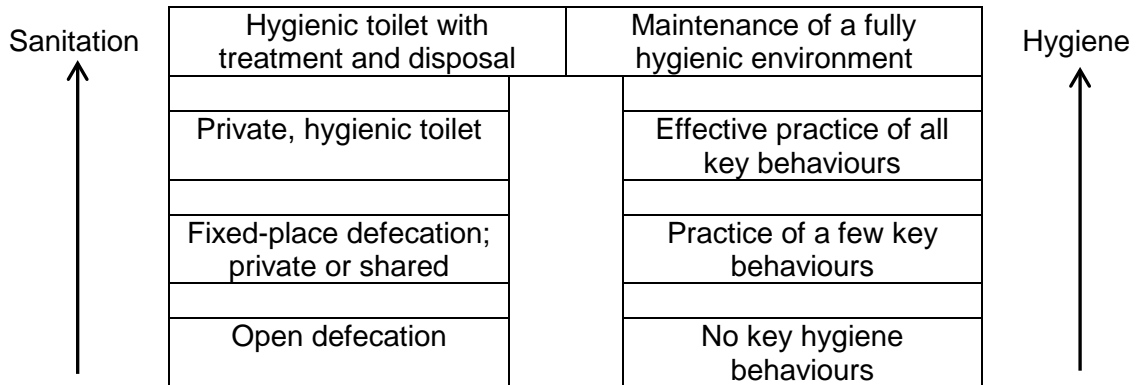
The table below lists the most widely used software tools, divided into categories to show their role in comparison to each other. This information is adapted from the “Water Supply and Sanitation Collaborative Council’s” publication called “[Hygiene and Sanitation Software: an Overview of Approaches](#)”⁴³ which provides detailed comparable information on each of these software tools.

Table 8: Hygiene promotion tools

Category	Full Name	Resource
Participatory Planning Tools	Participatory Rural Appraisal (PRA)	IRC Library ⁴⁴
	Self-esteem, Associative strengths, Resourcefulness, Action-planning and Responsibility	World Bank ⁴⁵
	Methodology for Participatory Assessments	World Bank ⁴⁶
	Community Action Planning	
Inducing Behaviour Change: Hygiene Promotion	Participatory Hygiene and Sanitation Transformation (PHAST)	PHAST Handbook (WHO) ⁴⁷
	Child Hygiene and Sanitation Training (CHAST)	IRC Library ⁴⁸
	Community Health Clubs	Africa AHEAD ⁴⁹
	WASH in Schools	IRC WASH Library ⁵⁰
	Child to Child Approach	Child to Child ⁵¹
	Saniya	UNICEF ⁵²
	Public-Private Partnerships for Hand-washing with Soap (PPPHW)	PPPHW website ⁵³
Creating Demand and Supply Chains: Sanitation Promotion	Household Water Treatment and Safe Storage (HWTS)	WHO website ⁵⁴
	Community-Led Total Sanitation (CLTS)	CLTS Approach ⁵⁵
	School-Led Total Sanitation (SLTS)	WASH in schools ⁵⁶
	Support to Small Scale Independent Providers	WSP Report ⁵⁷
Programming Frameworks	SaniMarts	WaterAid website ⁵⁸
	Strategic Sanitation Approach / Strategic Sanitation Planning	IWA Water Wiki ⁵⁹
	Sanitation 21	Sanitation 21 ⁶⁰
	Household Centred Environmental Sanitation	HCES ⁶¹
	Hygiene Improvement Framework	HIF ⁶²
Focus on Opportunity, Ability and Motivation (FOAM) and SaniFOAM (Sanitation FOAM)	WSP SaniFOAM paper ⁶³	

When deciding which tool to use, the local context is the most important thing to consider. The target community's current positions on the "sanitation and hygiene ladder" should be central to the decision making process.

Figure 3: The sanitation and hygiene ladder



The enabling environment, i.e. the prevailing conditions under which the program will operate, is also critical in deciding which approach is most appropriate.

[Hygiene and health: systematic review](#)⁶⁴

Hand washing

Hand washing with soap is the most effective way to avoid diarrhoeal diseases and has the highest impact to an improved health status. The promotion of hand washing should encompass the following:

- practising the [seven steps of hand-washing](#)⁶⁵
- knowing and practising hand washing at the most crucial times (before meals, after toilet, before feeding baby and after dealing with animals)
- producing soap from local material
- marketing of soap through hygiene promoters (social marketing of hygiene articles)

Hand washing is considered a central element of school hygiene, where students bring home new habits and teach their family members as peers. Making the difference of clean and dirty hands visible to others has a lasting impact (e.g. check colour of water before and after hand wash; make bacteria visible).

The selection of hand washing places, including material to wash hands (e.g. jerry can, water container with tap, water can, tippy tap) with soap stand needs to be integral part of each WASH project. Because of its antibacterial effect, soap is the preferred element to be used, followed by ashes.

[Construction and use of Tippy Taps](#)⁶⁶

[Production of soap](#)⁶⁷

[Soap-making: Practical Action](#)⁶⁸

Menstrual hygiene

Menstrual hygiene should be an integral part of the hygiene promotion for females in the community as well as in schools. Caring for menstrual hygiene needs is important to avoid recurring chlamydia infections, pelvic inflammatory diseases and missing school days. The use and safe disposal of sanitary pads is part of the hygiene promotion. In areas, where disposable sanitary pads are not available or not affordable, safe alternatives need to be propagated. Where possible, male members of the community should be involved to explain the importance of good hygiene during menstruation, particularly since men are often the budget holders in the family. Promotion to dry menstruation cloth in the open air and sun is also an important element of menstrual hygiene which requires sensitisation of male and female household members.

[Menstrual hygiene: what's the fuss?](#)⁶⁹: IFRC

[Menstrual hygiene matters](#)⁷⁰: Water Aid

Environmental hygiene

Keeping animals at distance from the household and particularly the kitchen of a family, as well as disposing rubbish in safe place are other important hygiene messages in order to avoid contamination. Applying the 4R's (reducing, reusing, recycling, replacing) can reduce rubbish significantly. Depending on the local context, the recyclables can be sold and turned again into money.

Next to solid waste disposal, it is important to eliminate breeding places for mosquitoes, which contract dengue, chikungunya or malaria. Drying the breeding places of these vectors are other important measures of environmental hygiene, which help to significantly reduce the cases of infectious diseases.

6.3.5. Cross cutting issues

When working in the WASH sector, there are different cross-cutting issues to consider.

Table 9: Cross-cutting themes

Cross-cutting issue	Important considerations	Guidelines
Disaster Risk Reduction (DRR) and WASH	<ul style="list-style-type: none"> site selection with low disaster risks choosing a design and construction which minimizes the impact of disaster risks (such as constructing elevated toilets in areas with regular flooding) 	To be published
Gender and WASH	<ul style="list-style-type: none"> always involving women and girls in planning, decision making and implementation of WASH projects site selection in areas which are safe for women and safe from (sexual) harassment 	<p>Checklist to check for gender equity in WASH programs: UNICEF⁷¹</p> <p>Gender based violence and WASH Toolkit: IBORO⁷²</p>

Cross-cutting issue	Important considerations	Guidelines
Social inclusion and HIV/AIDS and WASH	<ul style="list-style-type: none"> ensuring equal access to water points and latrines for all strata of the population, such as socially marginalized, HIV positive people, disabled persons etc. 	
Nutrition and WASH	<ul style="list-style-type: none"> creating awareness about the positive impact of safe drinking water, sanitation and in particular hand-washing on nutritional status of the children. using waste water for kitchen gardens, fruit tree plantations etc. 	Under-nutrition and WASH: Water Aid ⁷³
Reproductive, maternal and Newborn Child Health (RMNCH) and WASH	<ul style="list-style-type: none"> menstrual hygiene access to water for clean delivery improving infant excreta disposal access to safe drinking water decreases diarrhoea risk 	WASH and RMNCH ⁷⁴

7. Monitoring and Evaluation

The WASH projects require a regular monitoring based on the monitoring plan, which is developed in line with the project logical framework and the selected indicators. Good monitoring procedures are participative and include the beneficiaries and communities of the project intervention into gathering the information and analysing the effects. Women, girls and the most vulnerable and marginalized persons must be part of the monitoring and evaluation process.

An evaluation should be done for every WASH project/program. There are various different approaches to evaluations depending on the size and type of project or program. The evaluation can be internal or it can be carried out by external evaluators. Its size and scope should be proportional to the scale of the WASH program. An evaluation of a WASH program should identify what impact the program has had, i.e. what has changed as a result of implementing the program compared to what the situation would be if it hadn't been implemented. It should have the scope to identify unintended changes as well as planned ones. It is important to use the same indicators in the evaluation than in the baseline survey in order to make comparisons.

For the reliability of data and result verification, a quantitative and qualitative survey approach for data triangulation is recommended. The findings of the impact evaluation should inform decisions regarding expansion or modification of WASH programs, and importantly, should generate information that will help the process of designing future programs. Every WASH project or program should include an allowance in terms of cost, resources and time, for a meaningful impact evaluation.

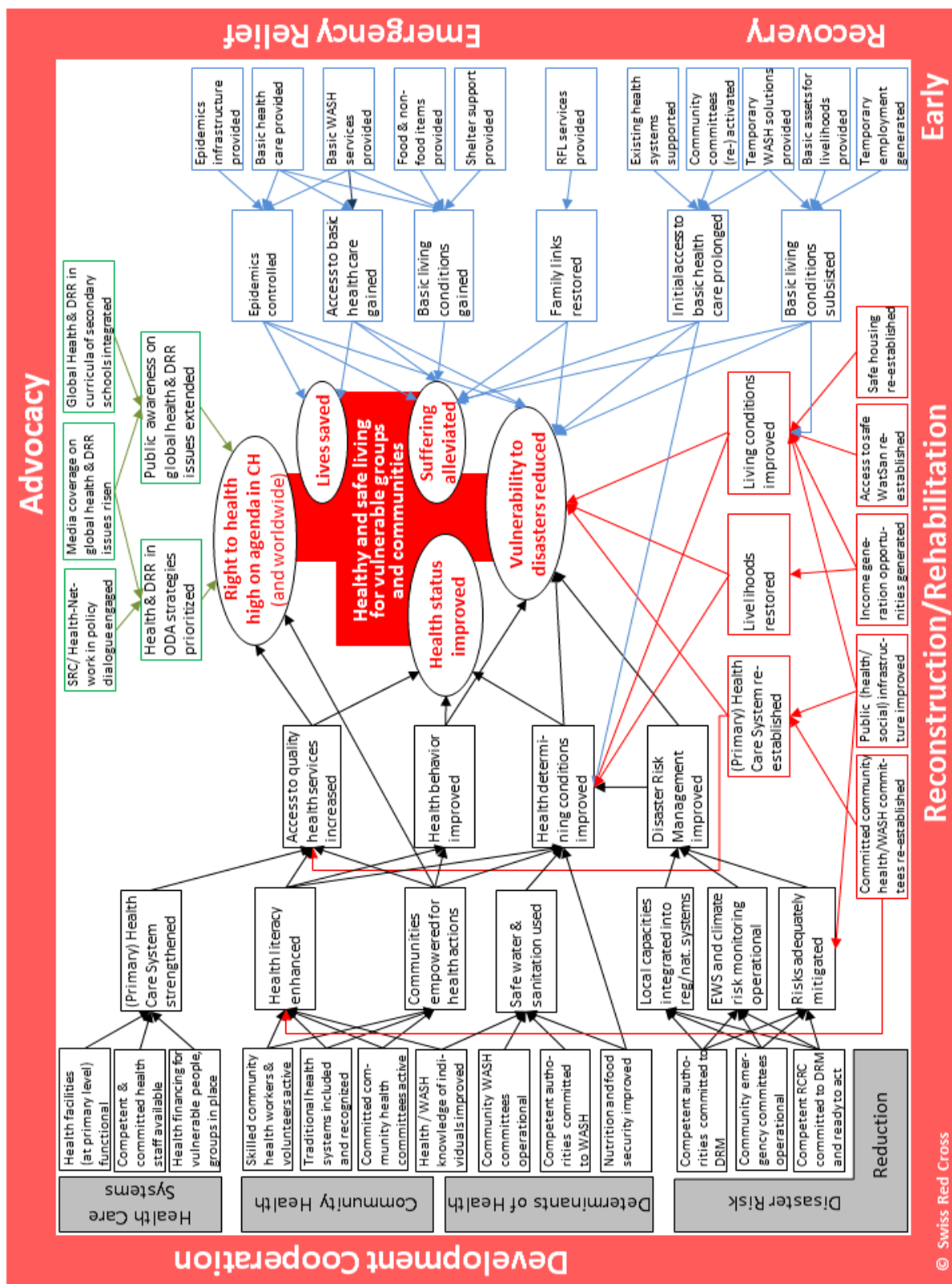
8. Phase Out

The objective of phasing out from a WASH project is the complete independence of the implemented systems from project funding. Most WASH project interventions – e.g. a water supply system – will require an ongoing source of funding for operation and maintenance. It is important to recognise this during the technical design phase. For example, a system of measuring water usage might help to facilitate the process of fair and transparent cost recovery.

The WASH project will be handed over to the entity (e.g. local authorities, community etc.) as already identified in the assessment and planning phase taking into account the capacity the entity has proven within the project implementation cycle.

Where possible, the phasing-out strategy should involve handing over the management of the new systems to existing entities with proven ability. These should ideally be the local water board or appropriate office of local government, or, where that isn't possible, existing community development committees. Other institutions such as schools or mosques will usually have existing systems for collecting and managing funds too.

Annex 1: SRC Impact Model



Annex 2: Checklist for WASH Projects

1. Water

General:

1. Describe the current situation with regard to water supply.
2. What is the population being targeted? How are they distributed? Are they displaced?
3. What is the input from local authorities?
4. What is the input from other agencies?

Quantity:

1. How much water is available per person per day?
2. Is there equitable access to it?
3. How much water is available at the sources? Is it enough for long term needs?
4. Is the current water supply reliable? What may affect this (e.g. seasonality)?
5. Does a provision for drinking water for livestock need to be considered?

Quality:

1. What are the water sources?
2. Is the water source contaminated or at risk of contamination? By what?
3. Is treatment required? Is treatment possible? What type of treatment is necessary?
4. Is water likely to be contaminated during transportation and/or storage? If so, why?

Accessibility:

1. How far are water collection points from where people live?
2. Are there any problems of accessibility for vulnerable groups, e.g. elderly, disabled, women?
3. Are there possible alternative sources? What? Where are they?
4. Are there any legal or other obstacles to using the existing or new sources? What are they?

Storage:

1. What do people use to transport water? Do people have enough suitable water containers?
2. Is there a possibility of contamination during transport and storage due the containers currently in use?

Technical options:

1. Why is the existing water supply situation inadequate?
2. What do the local people believe is the best technical solution? Why?
3. Is there a piped network that can be expanded?
4. Is rain water harvesting feasible, in terms of rainfall abundance and cultural acceptance?
5. Are there any springs that can be used?
6. What other options are available?

2. Sanitation

Excreta disposal

General Description:

1. What is the population being targeted? How are they distributed? Are they displaced?
2. Describe the current situation with regard to excreta disposal
3. What facilities already exist?
4. What is the local preferred method of anal cleansing?

Facilities:

1. Are there any existing facilities for excreta disposal? Are they functional and in use? Can they be extended?
2. Is there equitable access to the existing facilities?
3. Are there facilities for hand-washing?
4. Are there any problems of accessibility for vulnerable groups, e.g. elderly, disabled, women?
5. Are the current defecation practices a threat to health? If so, how?
6. Is there sufficient space for new facilities?

Practices:

1. What are the current beliefs and traditions concerning excreta disposal especially regarding women's habits and attitude towards child excreta?
2. What material/water is used for anal cleansing? Is it available?
3. Are both men and women prepared to use communal latrines or family latrines?
4. Are there any people familiar with the construction of latrines?
5. How do women deal with menstruation? Are there materials or facilities they need for this?

Technical Aspects:

7. How does the land slope and what are the drainage patterns?
8. What is the depth and permeability of the soil, and can it be dug easily by hand?
9. What is the level of the groundwater table?
10. What local materials are available for constructing toilets?
11. When does the seasonal rainfall occur? Will it affect the construction or functionality of new latrines?

Solid waste disposal:

1. Is solid waste a problem?
2. How do people dispose of their waste?
3. What type and quantity of solid waste is produced?
4. Can solid waste be disposed of on site, or does it need to be collected and disposed of off site?
5. Are there medical facilities and activities producing waste? How is this being disposed of? Who is responsible?

Wastewater disposal

Drainage:

1. Does flooding occur? What impact does it have?
2. Do people have the means to protect their shelters and latrines from local flooding?
3. Are there any stagnant pools of standing water?
4. What are the existing methods of disposing of water from: water points, domestic waste water from washing utensils, bathrooms, laundry etc, and livestock?
5. Is there enough slope or drainage facilities for disposal of storm water?

3. Hygiene and Public Health

1. What behaviors might be contributing to risks to public health?
2. What are the current practices on the key hygiene behaviors like:
 - Washing hands after defecation.
 - Method of disposal of children's feces.
 - Practices for storage and handling of water.
 - Practices of storage and handling of food.
3. How do people dispose their solid waste?
4. Is there an understanding of the relationship between water/sanitation and disease?
5. Do the people have access to:
 - Lidded water containers
 - Cooking utensils
 - Bathing facilities
 - Soap
 - Menstrual sanitary protection
 - Mosquito nets
6. Are the users involved in the management and maintenance of water sources and latrines?
7. What hygiene promotion media are available / accessible to the affected population?

Annex 3: Swiss Solidarity Minimum Standards Sanitation

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MINIMUM STANDARDS Sanitation

These standards apply to household as well as public sanitation facilities.

If a project aims at the improvement of sanitation or has such a component, it needs to meet the following standards explicitly. If it does not comply with a standard, explain why.

At the end of this document is a list of compulsory annexes to funding requests for sanitation projects or projects with a sanitation component, and references that you may find useful.

A) Standards

Standard 1. Choice of sanitation typology

- Select a technology that respects as much as possible existing habits of defecation.
- Choose a system that constitutes improved sanitation. Unimproved facilities such as pit latrines without a slab or platform, hanging latrines and bucket latrines are not acceptable.
- If you opt for single dry pit latrines, give preference to ventilated improved pit latrines (VIP).

Standard 2. Social and cultural appropriateness

- Use participatory methods to consult users regarding their needs and demands related to the type and specific design of sanitation facilities. Respect their anal cleansing methods (dry materials or water), defecation position (sitting or squatting) and preference for water flushed or dry systems.
- Provide for gender-specific needs such as discreet laundering or disposal of menstrual hygiene materials and separated facilities in shared and public systems.
- Make sure sanitation facilities are accessible to people with disabilities, in particular public sanitation facilities.

Standard 3. Design of sanitation facilities

- Consider the minimum and maximum temperatures of the specific geographical location, and guarantee best possible comfort for users. In hot climates, you may need to have the roof covered with a vegetation layer to reduce radiant heat.
- Always provide facilities (including water) for washing hands after defecation.
- Provide for the evacuation of other, non-excreta related, wastewater (e.g. greywater, handwashing water, rainwater drainage, etc.) to prevent interference with the functioning of the sanitation facility.

Standard 4. Site selection

- Avoid natural risk areas including risks of flooding, landslides and waterlogging. If they cannot be avoided, include measures to protect against these natural hazards in the design, e.g. elevated toilets in areas subject to flooding.
- If the sanitation typology relies on infiltration into the subsurface, indicate highest groundwater levels and the infiltration capacity of the soil in your proposal. As overall guidance, ensure a minimum distance of 1.5 m between the bottom of the infiltration pit and the highest groundwater level. Furthermore, make sure that the distance to wells and surface water bodies is at least 30 metres (see Sphere minimum requirements).
- Clarify and secure land tenure for each structure.

Standard 5. Maintenance and excreta storage

- Clearly define measures and responsibilities for maintenance of sanitation facilities, in particular for shared and public facilities where cost recovery mechanisms cover the costs of maintenance.
- If you construct new pits, specify procedures and responsibilities with regard to the emptying of faecal sludge or rehabilitation of the pits once they are full.



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Standard 6. Capacity building Assure or enhance local technical capacity related to the construction and maintenance of sanitation facilities.
Standard 7. Hygiene promotion a) Carry out as part of the project a survey (such as a KAP survey) that covers health risk knowledge, perceived benefits and barriers, social and cultural norms, and practices concerning handwashing, the hygienic handling of water and excreta. b) Base hygiene promotion activities on the results of the survey. Make them participatory and include all relevant target groups. c) The objective of hygiene promotion is the improvement of hygiene practices. The focus shall be on improving conditions and changing behaviour. Awareness raising is necessary but not sufficient.
Standard 8. Compliance with policies and Sphere Confirm compliance with government policies, cluster recommendations (if applicable) and Sphere standards.

B) Compulsory annexe

Submit complete construction drawings of the sanitation facilities.

C) References

You may want to consult the following sources:

- a) UNHCR Handbook for emergencies, 3rd Edition, pp. 260 – 284
<http://www.unhcr.org/471db1092.html>
- b) Engineering in Emergencies - A Practical Guide for Relief Workers, Jan Davis & Robert Lambert - 2nd Edition, 2002
- c) Franceys R, Pickford J, Reed R. A guide to the development of on-site sanitation. Geneva, World Health Organization, 1992. <http://www.bvsde.paho.org/bvsacd/who/guide.pdf>
- d) Peter Morgan (2007) Toilets that make compost. Low-cost, sanitary toilets that produce valuable compost for crops in an African context.
http://www.ecosanres.org/toilets_that_make_compost.htm
- e) The Sphere Project. Humanitarian Charter and Minimum Standards in Humanitarian Response. Chapter: Minimum Standards in Water Supply, Sanitation and Hygiene Promotion, 2011.
<http://www.sphereproject.org/content/view/full/720/200/lang.english/>
- g) EAWAG Water and Sanitation in Developing Countries - Compendium of Sanitation in Developing Countries, 2008.
http://www.eawag.ch/forschung/sandec/publikationen/compendium_e/index_EN
- i) Emergency Sanitation WEDC - Assessment and programme design .Peter Harvey and al., 2002.

Annex 4: Swiss Solidarity Minimum Standards Water



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MINIMUM STANDARDS Water Supply

If a project aims to improve the water supply or has such a component, it needs to meet the following standards explicitly. If it does not comply with a standard, explain why.

At the end of this document is a list of compulsory annexes to funding requests for water supply projects or projects with a water supply component, and references that you may find useful.

A) Standards

<p>Standard 1. Choice of water source</p> <ol style="list-style-type: none">The project must ensure the protection of the water source against depletion. Avoid over-pumping of groundwater and maintain sufficient river water flow during all seasons.Comply with Sphere minimum standards and national water regulations with regard to water quantity and access to water sources.Do not affect existing use of water resources, in terms either of quantity or of quality. Respect existing water rights.Describe how any additional grey and wastewater will be treated and disposed of.
<p>Standard 2. Community approach / participatory planning</p> <ol style="list-style-type: none">Involve local communities and authorities from the planning phase through to the operation & maintenance of the completed project. Promote local ownership.Ensure equitable distribution of water and accessibility for all members of the community, especially the most vulnerable. Pay special attention to the project's benefits for women.The water source and the taste and colour etc. of the water should be acceptable to the local population.
<p>Standard 3. Choice of technology / design</p> <ol style="list-style-type: none">Respect country specific construction codes and regulations.Adapt the chosen technology in line with the final use of water : human consumption, animals or irrigation.<ul style="list-style-type: none">For human consumption, give priority to improved water supply systems such as protected wells, springs or rainwater harvesting systems over treated surface water.Provide for separate human and animal water points. If this is not possible, include separate troughs for animals in shared water points.Protect wells and spring catchments against environmental hazards by means of e.g. fenced protection zones or flood protection walls.The following specific standards apply:<ul style="list-style-type: none">Water trucking: is acceptable as a temporary measure in emergency situations. However, you need to include a clear exit strategy.Boreholes: A hydro-geological survey including an assessment of sustainable yield and water quality, source development, pumping test and regular groundwater level measurements is required for groundwater exploration.Piped water supply systems: Whenever possible, use gravity flow systems.Water pans, surface and subsurface dams: Give preference to water extraction through recharged groundwater from shallow wells along the reservoir banks over surface water extraction.Irrigation systems: Include a detailed assessment of the capital and operating costs to ensure long-term sustainability. Prefer higher capital costs rather than high operating costs, e.g. choose gravity systems rather than pumping systems. Choose techniques that are appropriate to climatic conditions, to avoid causing soil infertility.



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Standard 4. Water quality and quantity

- a) Make sure that the water source is safe from environmental pollution - latrines, industry and agriculture - and geogenic contamination, e.g. arsenic, fluoride, etc. Respect Sphere minimum distances between water sources and potential sources of contamination.
- b) Water quality shall be ensured through regular water testing, respecting national limit values (if any) and WHO standards.
- c) In case of contamination, the project shall include an intervention plan. Ensure an efficient and sustainable water treatment system at a household level. Piped water shall be treated at reservoir level.
- d) Wastewater for reuse in irrigation systems shall be treated to WHO standards before release into the environment to avoid health risks and maintain soil quality.
- e) Water quantity and accessibility to water sources shall comply with Sphere minimum standards and national water regulations.

Standard 5. Operation and maintenance

- a) Provide a clear and sustainable operation and maintenance plan that includes the following elements: basic operational monitoring, availability of human resources, spare parts and materials, tools and equipment and a cost recovery scheme. For bigger water supply schemes, implement a water safety plan drawn up according to WSP-WHO standards.
- b) The communities must either be capable of managing, operating and maintaining the improved water supply system, or this capacity must be created. This applies to both technical and managerial aspects.

Standard 6. Hygiene promotion (if relevant)

- a) Include in the project a survey such as a KAP survey that covers health risk beliefs, perceived costs and benefits, social and cultural norms, perceived barriers and habits concerning the hygienic handling of water.
- b) Design hygiene promotion activities according to the results of the survey. Make them participatory and include all relevant target groups.
- c) The aim of hygiene promotion is the hygienic handling of water. The focus shall be on changing behaviour and improving conditions. Awareness raising is required but not sufficient.

B) Compulsory annexes

If the project includes piped water supply systems, provide construction drawings of the system including source, reservoir, pumping stations (if applicable), distribution scheme and end user interface

C) References

You may want to consult the following sources:

- a) Engineering in Emergencies - A Practical Guide for Relief Workers, Jan Davis & Robert Lambert - 2nd Edition, 2002
- b) The Sphere Project. Humanitarian Charter and Minimum Standards in Humanitarian Response. Chapter: Minimum Standards in Water Supply, Sanitation and Hygiene Promotion, 2011 <http://www.sphereproject.org/content/view/full/720/200/lang,english/>
- c) Guidelines for drinking-water quality, fourth edition, World Health Organisation 2006; http://www.who.int/water_sanitation_health/dwq/gdwq3rev/en/
- d) Water safety plan manual (WSP manual): Step-by-step risk management for drinking-water suppliers
- e) http://www.who.int/water_sanitation_health/publication_9789241562638/en/index.html

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- f) Water Irrigation Guidelines, FAO
<ftp://ftp.fao.org/agl/AGLW/Morini/Guidelines.pdf>
- g) Guidelines for the safe use of wastewater, excreta and greywater. Volume 2: Wastewater use in agriculture, World Health Organization, 2006

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- 2 <http://www.ifrc.org/Global/Publications/disasters/vca/vca-toolbox-en.pdf>
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- 11 http://www.iwawaterwiki.org/xwiki/bin/view/Articles/RainwaterHarvesting_0#HLiteratureandlinks
- 12 http://phys4.harvard.edu/~wilson/arsenic/conferences/Feroze_Ahmed/Sec_3.htm
- 13 <http://www.wateraid.org/.../Protection-of-spring-sources.p>
- 14 <http://www.delagua.org/>
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- 17 <http://www.wagtech.co.uk/products/water-and-environmental/water-test-kits/potatest%C2%AE-emergency-rapid-response-kit-physico-chemical-microbiological>
- 18 <http://hannainst.com/usa/subcat.cfm?id=003>
- 19 <http://www.hach.com/turbidityguide>
- 20 http://www.who.int/water_sanitation_health/dwg/gdwg3rev/en/index.html
- 21 http://www.unicef.org/.../Water_Quality_Assessment_Mo...
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- 24 <https://fednet.ifrc.org/en/resources/health-and-care/water-and-sanitation/global/water-and-sanitation-tools-and-publications-ifrc/>
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