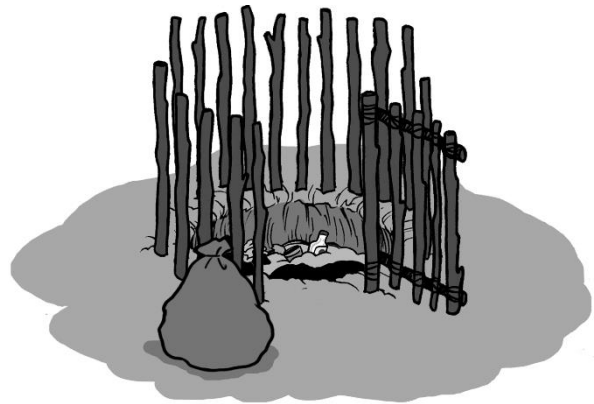
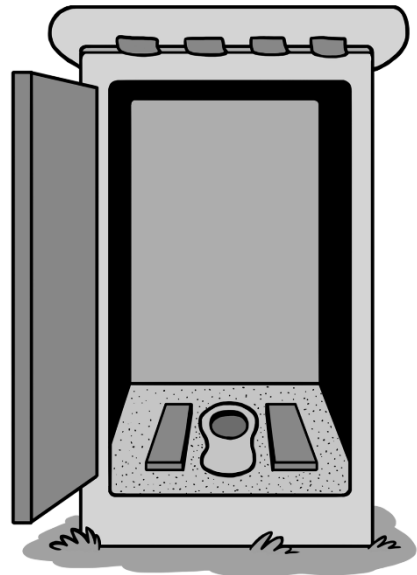
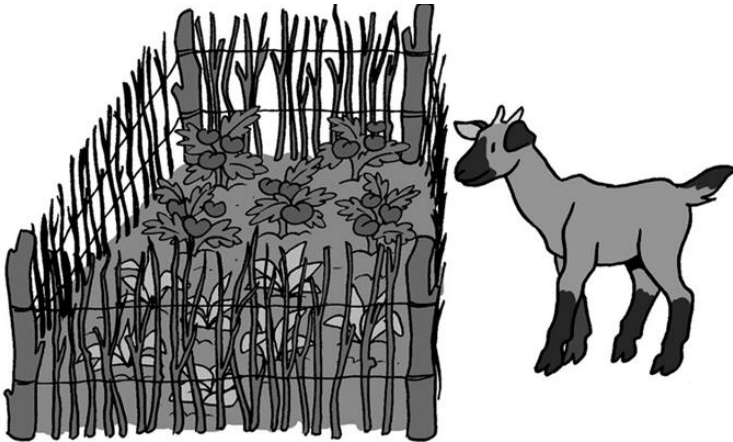


Technical Brief: Introduction to Environmental Sanitation

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1 Introduction

CAWST focuses on the planning, designing and implementing on-site environmental sanitation projects for low-income, non-networked communities. For such communities, household or decentralized sanitation offers a hygienic and affordable solution.

The target audience for CAWST's environmental sanitation education resources and training workshops are individuals and organizations who are:

- Working in water, sanitation and hygiene (WASH), community development or health projects seeking solutions for environmental sanitation
- Project leaders or engineers with the responsibility for organizing projects and making decisions
- Community health promoters or labourers who may be involved in some aspects of environmental sanitation implementation, and who may educate and/or conduct follow up visits with users

CAWST's open content education resources and schedule of international training workshops can be found at: www.cawst.org

This Technical Brief defines the different aspects of environmental sanitation and introduces the importance for environmental sanitation to realize public health, environmental, social and economic benefits. As well, it discusses how to implement low cost environmental sanitation projects in developing countries by using a project framework to ensure that your project is successful and sustainable.

2 What is Environmental Sanitation?

There is no universally agreed definition of sanitation and environmental sanitation. Many different terms and definitions are used depending on the culture, location, organization, and type of work. The following definitions are commonly used in the international development and the water, sanitation, and hygiene (WASH) sectors.

Sanitation can be defined as the "conditions that lead to good human health", but it also means more specifically the management of human excreta (feces and urine). The main objective of excreta management is to protect and promote human health by providing a clean environment and breaking the cycle of disease (SuSanA, no date).

Environmental sanitation is a broader definition of sanitation and tries to include all aspects which may affect human health and well-being. It typically includes the following aspects:

- Human and animal excreta management
- Domestic wastewater management
- Stormwater drainage
- Solid waste management
- Vector control

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As well, drinking water is sometimes included in the definition, as sustainable environmental sanitation cannot be planned and implemented in isolation from water supply (Schertenleib *et al.*, 2005).

The different aspects of environmental sanitation are interconnected and require a broader look at the entire community. Planning and actions to improve environmental sanitation should be considered in a holistic manner so that improvements in one aspect are not undermined by neglecting another, and to prevent the problem from being transported elsewhere (e.g., collecting solid waste from one community, but then dumping it in stormwater drainage channels which can lead to flooding).

2 The Importance of Environmental Sanitation

Health can be compromised when pathogens – microorganisms that cause disease such as bacteria, viruses, protozoa and helminths – are transmitted due to poor environmental sanitation practices. As shown in the following table, there are numerous diseases related to poor environmental sanitation.

Some Diseases Associated with Poor Environmental Sanitation

Possible Diseases	How We Get Sick	How to Stop Getting Sick
Diarrhea, cholera, typhoid, shigellosis, hepatitis A and E, amoebic dysentery, cryptosporidiosis, giardiasis, guinea worm	Fecal pathogens in water and food are ingested or passed through person-to-person contact	<ul style="list-style-type: none"> • Use sanitation to prevent feces from contaminating water and food sources • Treat water to make it safe to drink • Wash hands after defecation and before touching food
Schistosomiasis, fasciola	Fecal pathogens in water enter through the skin	<ul style="list-style-type: none"> • Use sanitation to prevent feces from contaminating water sources • Do not bath or swim in water that is known to be contaminated
Ascariasis, hookworm infection	Fecal pathogens in soil are ingested or enter through the skin	<ul style="list-style-type: none"> • Use sanitation to prevent feces from contaminating soil • Wash food with safe water before eating • Wash hands after contact with soil (especially for children playing outside) • Wear protective footwear
Trachoma, scabies	Pathogens touch the skin or eye	<ul style="list-style-type: none"> • Provide enough water for basic hygiene • Improve hygiene practices
Malaria, dengue fever, yellow fever, filariasis, river blindness, sleeping sickness	Pathogens are passed on by insects, such as mosquitos, that breed or live in water	<ul style="list-style-type: none"> • Manage domestic wastewater and stormwater to prevent insects from breeding in standing water • Use pesticides to control insect populations • Prevent insects from biting by using bed nets and wearing long clothes

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Possible Diseases	How We Get Sick	How to Stop Getting Sick
Leishmaniasis	Pathogens are passed on by insects that breed or live in animal feces, rodent nests, garbage, mud-plastered houses and bushes	<ul style="list-style-type: none"> • Reduce insect breeding and resting sites through rodent control, animal excreta management, solid waste management, domestic wastewater management and stormwater management • Use pesticides to control insect populations • Prevent insects from biting by using bed nets and wearing long clothes
Typhus, bubonic plague, hantavirus, leptospirosis	Pathogens are passed on by rodents through: <ul style="list-style-type: none"> • Direct contamination from dirt and feces carried on their bodies • Bites or scratches • Fleas carried on their bodies • Urine and feces 	<ul style="list-style-type: none"> • Manage solid waste to reduce food supplies that attract rodents • Use rodent-proof food storage containers • Design rodent-proof buildings • Deter rodents with cats and dogs • Use rodenticides and traps to reduce rodent populations

Out of all the diseases related to environmental sanitation, diarrhea is the leading disease that causes death and illness, especially for children. Globally, an estimated 2,000 children under the age of five die every day from diarrheal diseases, and of these deaths 1,800 are linked to sanitation, water and hygiene (UNICEF Canada, 2013). For every child that dies from diarrhea, countless others suffer from poor health and lost educational opportunities leading to poverty in adulthood.



Consequently the WASH sector’s primary focus is on reducing the incidence of diarrheal disease. Establishing the relative impact (and thus relative importance) of different environmental sanitation interventions is difficult. But it is generally accepted that to reduce the risks of diarrheal disease, priority should be given to the following three interventions which break the transmission of pathogens from feces (Peal *et al.*, 2010).

- Using sanitation to prevent feces from contaminating water and food sources
- Treating water to make it safe to drink
- Washing hands after defecation and before touching food

However, other environmental sanitation practices (such as properly disposing garbage, preventing mosquito bites and reducing rodent populations) are important as well. The “ranking” of risks may vary from one community to another. For example, the risks due to poor insect control may be greater in some communities than those risks associated with poor household water quality (Peal *et al.*, 2010).



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There is very little research on the ranking of different environmental sanitation risks, especially since it is specific to the local circumstances. Possible sources of information on local diseases can be found at health clinics and by speaking to community members. There may be many different local names for different diseases so it is also important to find out what they are called in your community.

3 Project Framework

There are many approaches or ways you can implement an environmental sanitation project. How do you choose? What will ensure your project is successful and sustainable? Regardless of the approach that you choose, the following five project framework components must be addressed:

1. **Creating Demand** – Various projects have failed because they were supply driven. For example, people will only use latrines that they really want to use (demand driven). Demand for sustainable systems is only created when people have the motivation, opportunity and ability to invest in environmental sanitation which suits their needs and aspirations.
2. **Supplying Products and Services** – Households need both the sanitation “hardware”, as well as support services, to ensure proper and consistent use over the long-term. For example, latrines are not a passive resource; they require ongoing management and maintenance by users. Therefore, like mobile phones, after-sales support is essential for sustainable use of latrines.
3. **Monitoring for Improvement** – Monitoring helps to create a feedback loop for making ongoing improvements within a project. It is particularly important for measuring a project’s impact and success, especially if an organization wants to scale up.
4. **Building Human Capacity** – Developing people’s knowledge and skills is part of building the capacity required for implementation. The ultimate objective of environmental sanitation projects should be to build the local capacity to meet the needs of local populations.
5. **Program Financing** – Implementers need adequate, consistent and long-term funding to ensure that all of their project activities are executed without disruption. It is essential to determine the capital and ongoing costs for environmental sanitation, and who is going to pay for them.

These five project framework components can be addressed using different approaches that fit the local context and achieve the specific aims of the project. A few examples of popular approaches include Community-Led Urban Environmental Sanitation (CLUES), Community-Led Total Sanitation (CLTS), School-Led Total Sanitation (SLTS), behaviour change communication (BCC), sanitation marketing and Water and Sanitation Users Groups.

Different approaches can be combined to make sure all five project framework components are addressed. For example, CLTS may be used to ignite a community and create demand for latrines. But using CLTS alone will not support the community in accessing sanitation products and services (such as latrine emptying). To address this component, you may choose to also

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use an approach that supports small-scale sanitation businesses (such as masons and latrine emptiers).

CAWST's materials about implementation approaches can help you understand many of the common methods used in environmental sanitation projects. They will help you to determine which approaches to use in your project, which project framework component(s) each approach addresses and how different approaches can work together.

4 Additional Resources

CAWST resources on low cost sanitation. Available at: www.cawst.org/resources

- CAWST offers free and open content education and training resources on a variety of sanitation topics including environmental sanitation, domestic wastewater management, solid waste management, menstrual hygiene management, animal excreta management, vector control, the sanitation chain, latrine technologies, latrine construction and latrine project implementation.

Eawag: Swiss Federal Institute of Aquatic Science and Technology. Strategic Environmental Sanitation Planning. Available at:

www.eawag.ch/forschung/sandec/publikationen/sesp/index_EN#Bellagio

- This website provides a variety of resources on environmental sanitation guidelines and planning.

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