

Clean and Green

A new implementation framework for sustainable rural sanitation



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KEY FEATURES OF CLEAN AND GREEN

Integrates risk and waste resource management: Clean and Green goes beyond human excreta to include management of a wide range of other waste flows. This multiplies the benefits and avoids fragmented efforts.

Sustained engagement: Stepwise certification provides opportunities to celebrate progress while keeping up momentum. Certification can also be periodically reviewed and renewed.

Benchmarking potential: Clean and Green can stimulate friendly competition at different levels.

Locally adaptable: Clean and Green emphasizes participatory approaches to identify waste and residues relevant in the local setting and appropriate ways to deal with risks and resources.

Technology-neutral: By linking certification to outcomes (indicators for reducing risks and managing resources) rather than specific technologies, Clean and Green gives flexibility with regard to preferred technological solutions.

Contributes to a range of SDGs: Managing local risks and resources has the potential to contribute to multiple sustainability goals and targets.

Photo (above): © NELSON EKANE / SEI

Integrating risk and resource management

Sanitation is crucial for the sustainable development of rural communities, with great potential to protect both human health and environments. However, beyond reducing risks, sanitation systems can also bring economic benefits, not least by making use of energy, water and nutrient resources present in wastewater and excreta (Andersson et al. 2016). In this way, “sustainable sanitation” (see Box 1) can be a catalyst of progress towards a wide range of targets under the Sustainable Development Goals (SDGs), going far beyond Goal 6 on clean water and sanitation.

To obtain the full range of co-benefits available, interventions need to emphasize both effective risk *and* resource management, reducing health threats and enhancing productive potential from a range of household wastes. However, no current implementation framework for rural areas supports this kind of integration.

To fill the gap, SEI is developing Clean and Green, a new sanitation implementation framework that aims to promote progress towards safe sanitation and hygiene while encouraging households to benefit from safely recycling resources found in local waste streams (see Table 1). Clean and Green is especially relevant for rural smallholder communities where reliance on local resources is high. An estimated 475 million households in developing countries manage farms smaller than 2 hectares (Lowder et al. 2014). In these circumstances, productive sanitation can make a significant difference (see Box 2).

By promoting resilient communities through improvements in agricultural productivity, human and ecosystem health, Clean and Green offers a way to address multiple SDG targets synergistically and cost-effectively. This fact could be a critical opportunity to attract some of the substantial investment that will be needed to ensure universal access to “safely managed sanitation services”¹

Scale and sustainability: key challenges in rural sanitation

Going to scale while also ensuring sustainability has proved to be a stumbling block for many rural sanitation approaches tried over the years.

When it comes to achieving scale, the Community Led Total Sanitation (CLTS) approach has been successful. CLTS raises awareness of faecal–oral exposure risks through exercises that trigger strong emotional responses. It also recognizes community progress and behaviour change to end open defecation with a certification scheme. With strong institutional support, CLTS has been implemented in 60 countries and an estimated 20–30 million people now live in communities with open defecation-free

¹ The global indicator of progress on SDG target 6.2, “... access to adequate and equitable sanitation and hygiene for all and end open defecation ...” is “Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water” (IAEG-SDGs 2016). Here “safe sanitation services” goes beyond the toilet and includes safe excreta disposal or reuse in situ or treatment off site.

BOX 1: WHAT IS “SUSTAINABLE SANITATION”?

According to the Sustainable Sanitation Alliance (SuSanA), the main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease. In order to be sustainable a sanitation system has to be not only economically viable, socially acceptable, and technically and institutionally appropriate, it should also protect the environment and natural resources.

BOX 2: RELEVANCE OF COMBINED RISK AND RESOURCE MANAGEMENT – THE CASE OF RURAL SUB-SAHARAN AFRICA

- Some 23% of the population of sub-Saharan Africa (SSA) was estimated to be undernourished in 2014, the highest for any world region (FAO et al. 2015), while 77% of the rural population did not have access to improved sanitation, contributing to a large burden of disease (WHO and UNICEF 2015).
- Per capita crop production has decreased in several regions in SSA, and many countries need to find new ways to boost crop and livestock productivity (Pretty et al. 2011). Safe reuse of various local wastes could be part of the solution to productivity shortfalls. The nutrients found in a year’s worth of excreta from a family of 10 in Burkina Faso roughly corresponds to 50kg of commercial urea and 50kg of commercial NPK (14-23-14) fertilizer, worth around 80 USD (Dagerskog and Bonzi 2010), a significant quantity of fertilizer in the African smallholder context.

(ODF) status as a result, but follow-up studies have found variable long-term commitment to use and maintenance of toilets and handwashing in many areas (Bongartz et al. 2016).

Another rural sanitation approach is the Community Health Club (CHC), model which uses a mobilization strategy focused on creating a strong demand for safe sanitation and hygiene. This approach also addresses other environmental health challenges, such as nutrition and vector control, but has not so far emphasized waste resource recovery. CHC has been carried out in fewer countries than CLTS, and there is thus less information on its long-term sustainability.

Even where such approaches focusing on health outcomes have resulted in sustained use of a sanitation system, a lack of attention to resource recovery and environmental protection from waste can lead to degradation of surrounding ecosystems, making the interventions unsustainable from a wider systems perspective.

Conversely, several rural sanitation initiatives, mainly implemented at pilot scale, have promoted ecological sanitation² systems designed for safe resource recovery and reuse of resources in excreta. However, many have not achieved sufficient uptake, scalability or long-term use because they have not addressed important social, technical, economical and institutional issues. For example, they have not dealt with cultural barriers to resource recovery; they have offered a limited choice of technologies to households; they have depended on high subsidies; or they have not engaged sufficient agricultural expertise.

Clean and Green

The Clean and Green framework draws on the positive aspects of these sanitation approaches, but goes beyond a narrow focus on sanitation-related exposure pathways. In particular it builds on the benefits of ecological sanitation, but goes beyond productive reuse of human excreta to include a range of local wastes and residues.

Clean and Green has two parallel but integrated tracks, as illustrated in Figure 1. It combines a step-wise approach for sanitation and hygiene risk management (Clean) with a parallel resource management track (Green) that encourages safe and productive reuse of various local wastes. It uses a certification scheme to motivate and reward villages and households that make and maintain progress in the two tracks.

The Clean track

The Clean track includes actions that protect health from risks related to human excreta as well as to other wastes generated in the village (such as animal manure, other organic waste and wastewater). This track draws on a step-wise approach to CLTS that is being implemented in several contexts (see e.g. Robinson and Gnilo 2016).

A first Clean certification step could be Basic Sanitation Village, awarded when open defecation has been eliminated in the community, for example through a CLTS intervention. A second Clean step could be Sustained Sanitation Village, awarded when safe and improved sanitation is available to and used by all households in the community, along with handwashing with soap. Subsidies could be appropriate at this stage to enable all households to reach an acceptable standard.

A third Clean step could be Total Sanitation Village, where risks associated with solid waste, animal excreta and wastewater are also safely managed, and water sources are protected from contamination.

Complementary Clean components related to health could be added, similar to CHCs; for example, linked to malaria prevention, nutrition, maternal health visits.

The Green track

The Green track deals with the safe reuse of local waste and residue streams for productive purposes, mainly in agriculture. The choice of Green components is based on the local context – what waste

² Ecological sanitation systems are systems which allow for the safe recycling of nutrients to crop production in such a way that the use of non-renewable resources is minimized. These systems have a strong potential to be sustainable sanitation systems if technical, institutional, social and economic aspects are managed appropriately.

Table 1. Examples of different waste products in a typical rural village

Waste products	Main resources available			
	Nutrients	Water	Organic matter	
Ash				Rich in vital plant nutrients especially potassium, phosphates and calcium. As ash is alkaline, it can also raise the pH of acidic soils
Organic waste				Important soil amendment that improves soil fertility and structure
Animal excreta				Important local source of nutrients and organic matter for crop production. Often available in significant quantities.
Human faeces				Relatively small quantities, but rich in phosphates and micronutrients.
Human urine				Contains most of the nutrients excreted by the human body. Can be used directly in subsistence farming or after storage (to minimize risks). Also valuable when added to composts as a source of nutrients and humidity.
Greywater				Household wastewater from sources other than a toilet. Can be important resource for irrigation or water reuse in dry areas or during dry periods. Quantity and quality varies with household habits and water access.

streams are available, and what demand exists for different reuse options – although the major waste streams are likely to be similar in most villages in a region or country (see Table 1 for some examples).

Appropriate reuse activities will depend on the agricultural context and what practices are culturally acceptable and economically viable. Complementary Green components could be added that reduce pressure on local resources, such as use of efficient cookstoves and rainwater harvesting.

In contrast to the Clean steps, the benefits of Green waste management steps are felt more at the household level and are less dependent on neighbours’ practices. Thus, the Green steps are primarily assessed and certified at the household level. However, village-level Green certification could be based on the proportion of households achieving Productive Household certification and could include productive use of waste streams from public areas as well (e.g. Productive Village and Green Village in Figure 1).

In the case of potential hazardous waste streams such as excreta (human and animal), food waste and greywater, there is overlap between the Clean and Green tracks that requires specific management practices. To ensure that resource reuse does not compromise health, criteria need to be established for what constitutes safe reuse. These should entail the use of exposure barriers such as appropriate treatment, crop choices, as well as appropriate timing, dose and location of waste application.

Some household waste resources are not linked to risks (like ash), while some interventions targeting health risks have no direct link to recovery and reuse activities, but in many instances there is an overlap of resources and risks which requires specific management.

The parallel risk and resource focus of Clean and Green can be seen as complementary, with opportunities for recycling and production acting as “pull factors” for sanitation adoption – as long as health aspects are considered.

Certification

Achievement of Clean or Green steps is assessed and recognized using a certification process, which verifies and celebrates progress. Once a village has achieved the highest levels in both certification tracks, it could receive a Clean and Green Village certificate with, for example, a highly publicized award ceremony, featuring prominent figures.

Besides its motivational value, the certification process also facilitates monitoring and comparison between villages, and tracking achievements in relation to SDG targets.

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Figure 1. A schematic representation of the Clean and Green framework, with some example certification steps, components and criteria



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Putting Clean and Green into practice

Because of its integrated approach, Clean and Green requires collaboration between actors in the water and sanitation, environment, agriculture and health sectors. Among other things, this provides the expertise needed to develop national implementation strategies, including certification criteria.

Practical guidelines and tools also need to be developed to enable local implementation. They should cover, among others, methods for participative identification of risks and resources and ways to manage them safely in a culturally appropriate and economically viable way.

Clean and Green implementation strategies should focus on the desired *outcomes* (e.g. reducing risks of human and ecosystem exposure to untreated excreta; productive and safe reuse of resources), rather than specific *technologies* or *modes of reuse*, in order to allow identification of the most locally appropriate, sustainable solutions. Also, the strategy must specify how communities will be supported, in terms of sanitation promotion, capacity development, financial and technical requirements to ensure sustainability.

The certification system requires careful consideration based on the local context. It is critical to decide how communities' or households' progress will be assessed and monitored – both during and after certification. This process requires ongoing support from government authorities and facilitators, who can also link monitoring to tracking progress on a number of SDG targets. Sharing practices and comparing progress between communities and households will also help to cross-fertilize ideas and motivate change.

Next steps

Our research to operationalize Clean and Green involves case studies to develop participatory methods for collecting information at community and households levels on health risks and waste resource pathways, and forming stakeholder working groups. If your organization works in contexts where sanitation and resource recovery could help to achieve sustainable development objectives, SEI would be interested to discuss the potential for Clean and Green research and pilot testing.

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