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TH Köln (University of Applied Sciences)

ITT- Institute for Technology and Resources Management in the Tropics and Subtropics

Faculty of Spatial Development and Infrastructure Systems

Assessing NGO's engagement in WASH: The contributions of school sanitation projects to just transition

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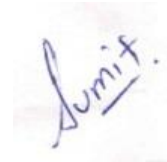
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Signature

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Abstract

Human civilization has a great history of managing Water, Sanitation, and Hygiene (WaSH) services. But such services in rural areas have been neglected throughout our history. Numerous multimillion dollars WaSH interventions have been implemented in rural areas to eradicate open defecation, but most of them failed to create a demand for sanitation. Lack of equity and fair participation in approaches to change behavior and mindset, rather than habits, has made it hard for governments to achieve their WaSH related targets. Participatory rural sanitation approaches that focus on behavior change and ownership building among the community members have helped in the transition to open defecation free (ODF) societies. A justice-focused sanitation approach shows potential in fast-tracking this transition. Just transition is a concept that has not been endured in the sanitation discussion yet but shows the potential of sustainable WaSH solutions. This social empirical research has explored the feasibility of a justice-based sanitation approach guiding a transition towards societies with universal access to sanitation services. A just sanitation transition framework was adapted from the considered theoretical foundations and was used to map the capability and justice dimensions of two rural sanitation approaches being implemented in schools in the Mukuyu community in Trans-Nzoia county, Kenya. The adapted framework has been able to compute both sanitation approaches on a scoring tool, quantitatively assessing the productivity and justice dimensions of both approaches. This research has helped in establishing the viability of a just sanitation transition framework to produce an informed understanding of the potential of rural sanitation approaches to produce desired results while being just. Study findings help in filling research gaps and laying the foundation to the just transition debate in the sanitation sector and opens a window to further researches on the same, in the future.

Key words: Water, Sanitation, and Hygiene, rural sanitation approaches, just transition, School WaSH, just sanitation transition framework, justice, equity.

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Abbreviation

JTI	Just Transition Initiative
WaSH	Water, Sanitation, and Hygiene
MDG	Millennial Development Goals
NCCHPP	National Collaborating Centre for Healthy Public Policy
NGO	Non Governmental Organization
ODF	Open Defecation Free
SDG	Sustainable Development Goals
CLTS	Community Led Total Sanitation
UN	United Nations
UN Woman	United Nations Women
WASH	Water Sanitation and Hygiene
WASREB	Water Services Regulatory Board
WHO	World Health Organization
MOE	Ministry of Education
MOPHS	Ministry of Public Health and Sanitation
PHAST	Participatory Hygiene and Sanitation Transformation
CHAST	Child Hygiene and Sanitation Training
SLTS ^	School-led Total Sanitation
CHC	Community Health/Hygiene Clubs
CIDP	County Integrated Development plan
KCHP	Kenya community Health Policy
KNSHP	Kenya National school Health Strategy
KISSP	Kenya Countywide Inclusive Sanitation Strategic Planning
MOH	Ministry of Health
MWS	Ministry of Water and Sanitation (MWS),
WASREB	Water Services Regulatory Board
WRMA	Water Resource management authority

1 Introduction

1.1 Background and context

In order to thoroughly understand a concept it is important to have its background knowledge and an overview of the context. This sub-chapter embraces how the debate of sustainable WaSH, WaSH in Kenya context and a just transition started.

1.1.1 Water, Sanitation and Hygiene (WaSH)

Human civilization has a great history of managing WaSH services. It dates back to 4000 BCE when Mesopotamia first used pipes made of clay to transfer sewage, also sewerage and drainage structures found in ancient Hellas in the Bronze age (ca. 3200 – 1100 BC) (Yannopoulos *et al.*, 2017), in the Indus valley (2500 BCE) (Avvannavar and Mani, 2008), also in ancient Rome door-to-door access to water was given through indoor plumbing, to relatively recent usage of flush systems in the industrial revolution in Europe (Naylor and Gordon, 2020), and until today using decentralized systems in rural settings around the world (Moses *et al.*, 2019).

Access to improved WaSH facilities is a fundamental human right that was recognized by the United Nations (UN) in 2010, and it recommended that efforts should be made to make it universally accessible (UNDESA, 2010). To spread the awareness about the importance of WaSH facilities in keeping us healthy, World Water Day is celebrated on 22 March (UN Water, 1993), World Toiled Day on 19 November (UN Water, 2001), and World Hand-Hygiene Day on 5 May (WHO, 2009), every year. WaSH services throughout our history have improved our health, aided in developing societies to move forward, and has made us prosperous (Naylor and Gordon, 2020). WaSH services at a household level involve access to clean water, safe handling and disposal of human excreta (urine and feces), and washing hands with soap and water (WHO, 2021; Avvannavar and Mani, 2008).

Globally 2.2 billion people lack access to safe drinking water, over 3.5 billion lack access to safe sanitation, around 673 million people practice open defecation, and three billion people lack access to hand washing facilities with soap and water (UNICEF, 2021). Lack of WaSH for girls reaching puberty causes hindrance in getting an education than boys and is the leading cause for their absenteeism from schools (CDC, 2020). As of 2016 data, 19% of schools (570 million children) lacked basic drinking water service, 23% of schools (620 million children) had no sanitation services, and 36% of schools (850 million children) lacked improved hand washing and hygiene services (UNICEF, 2018).

1.1.2 MDGs and SDGs

The Millennium Development Goals (MDGs) was a declaration signed by 189 countries at the United Nations Millennium Summit in 2000 (MDG Fund, 2000). MDGs were a set of measurable goals in which goal 7C focused on halving the number of people lacking access to safe drinking water and basic sanitation globally by 2015 (UN, 2000). Although the global target was reached, many countries were still not able to reach their individual targets. On 25th September 2015, countries around the world made a shift from MDGs to Sustainable Development Goals (SDGs), in which goal six talks about providing access to improved WaSH services for all, with a special focus on women and children, by 2030 (UN, 2015).

It is to be noted that there is a bigger difference between MDGs and SDGs than just the target population. MDGs focused on provisioning of improved WaSH services but SDGs focus on provisioning of WaSH services and safe management of the generated waste by creating a sustainable sanitation service chain (UN, 2015). Only after the proper management of waste, it will truly be considered a sustainable development. This can be understood with the figure below.

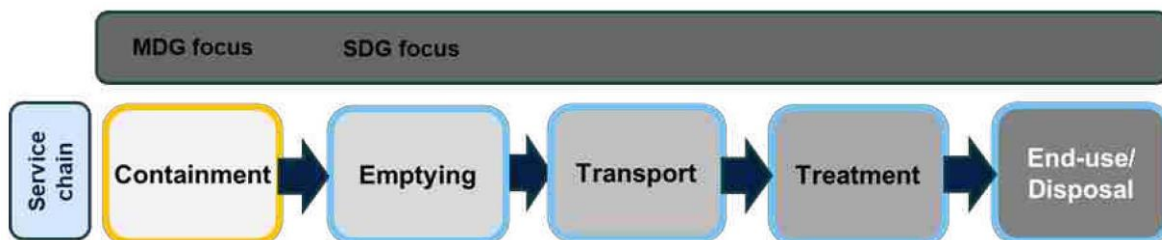


Figure 1: Components of a sustainable sanitation service chain (KISSP, 2019)

1.1.1 WaSH in Kenya

Kenya was unable to reach its MDG target to reach 63% population with improved access to sanitation by 2015. In 2015, Kenya committed to SDGs and Kenya Vision 2030 to provide universal access to improved WaSH services to its citizens by 2030 (KESSF, 2016, Sec1:13). Around 20% of Kenyans lack access to safe drinking water, 14% of the population defecated in the open and only 25% have access to improved hand washing facilities with soap and water (JMP, 2020; UNICEF, 2020).

Table 1 Acceleration required to meet the universal WaSH access targets by 2040 (KESSF, 2016, Sec1:14)

	Annual rate since 1995 to 2011	Years to Gain Universal Access	Date which Universal Access will be achieved by	Additional Annual Rate of acceleration needed to reach 2040 target
Kenya	0.75%	133	2146	2.75%
Africa	0.81%	123	2136	2.69%

The unavailability of proper WaSH infrastructure costs Kenya US\$ 324 million each year which is roughly 0.9% of the country’s GDP (WSP). At the annual rate of 0.75%, it will take 133 years to provide universal access of WaSH facilities to its population (KESSF, 2016, Sec1:13). The situation of WaSH facilities in rural schools in Kenya can be noted in the table below.

Table 2 WaSH services in schools in rural areas in Kenya (JMP, 2020)

WaSH services	Water access			Sanitation access			Hand washing		
	Basic	Limited	No service	Basic	Limited	No service	Basic	Limited	No service
School population (in%)	72	3	25	50	46	4	2	13	85

In the Mukuyu community (the case study of this research), which is located in Trans-Nzoia County in western Kenya, the majority of the community members and students in schools practice open defecation.

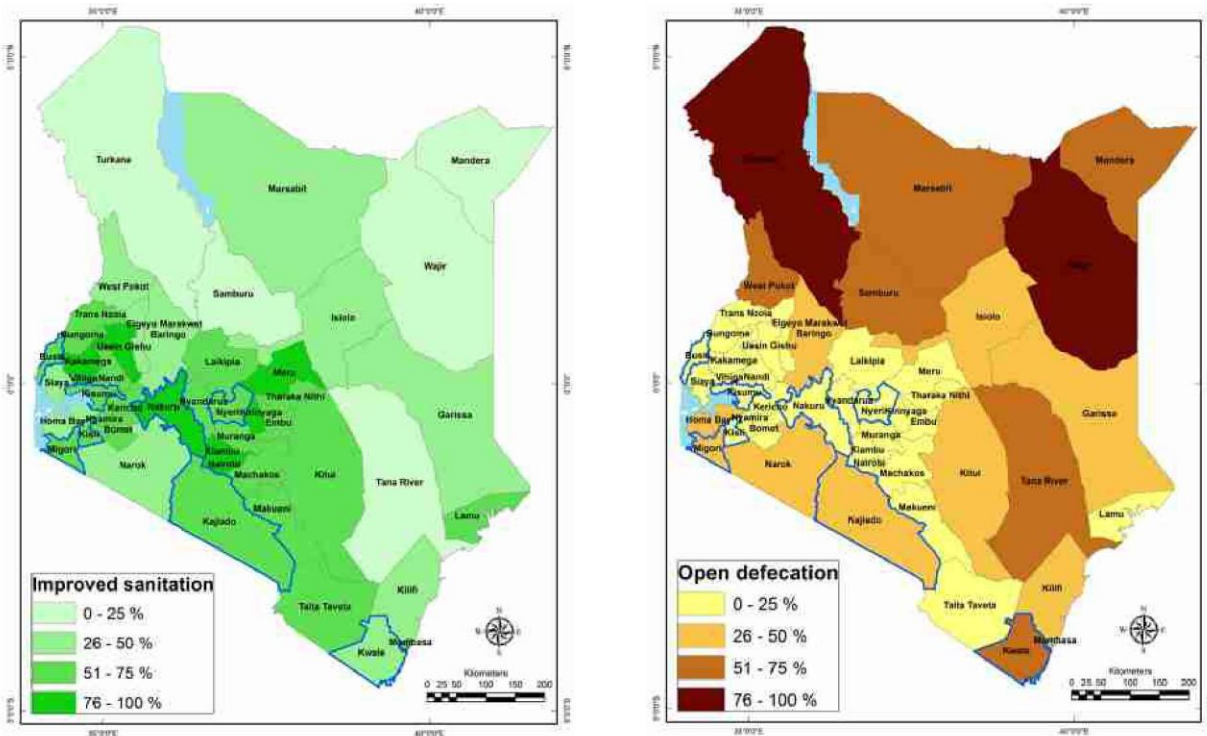


Figure 2: County access to improved sanitation and open defecation situation in Kenya (KESSF, 2016, Sec1:9)

1.1.3 Just Transition

The debate of just transition started in the 1970s when new environmental legislation was passed in the United States of America (USA) to limit the unhealthy and environmental polluting practices of fossil fuel mining, chemical and nuclear industries (Franssen and Holemans, 2020). The US trade unions asked for funds to mitigate the losses faced by the workers and their families to acquire new skills and education to be job-ready (Ben and Mary, 2020). The debate about just transition has evolved since then including a broader set of stakeholders, demands, and the understanding of justice (Harrahill and Douglas, 2019).

Just transition can be defined as a transformation into a sustainable and environmentally beneficial economy incorporating the concept of being socially and economically just to the people traditionally dependent on the previous economy (Christmas and Robinson, 2015; Robins *et al.*, 2018).

1.2 Relevance of the research

Gaining the general background and contextual knowledge asks for the need for this information in the respective research. Thus this sub-chapter embraces the relevance of this research.

1.2.1 Need for a just transition approach in sanitation

Since its inception, just transition as a concept has been adapted into the different sectors for an equitable and just transformation. This includes sectors such as water, education, health, employment inspectorates, fishing, agriculture (Chapman, 2020), among others (ILO, 2014). In different sectors, the just transition concept examines similar problems with different contextual adaptations.

The WaSH sector has been given comparatively less attention than it deserves, and it has been proved during the pandemic Covid-19 when most developing and under-developed countries, that lack improved WaSH and waste management infrastructures, suffered a higher rate of virus transmission than the countries that had improved WaSH and waste management services (WHO, 2020b). So a transition from the present practices in the WaSH sector, towards universal access to WaSH and eradication of unhealthy and unhygienic practices, has already started with MDGs and SDGs, this research discusses how just this transition is and should be.

1.2.2 Forming a knowledge base for just sanitation transition

As just transition stands for an equitable transition to a new sustainable economy, thorough research into untapped resource recovery in the sanitation sector may present a foundation to transform our society into self-sustaining universal access of WaSH services, that is also just. There exists a sanitation economy market opportunity of US\$ 3.2 billion, which projects a promising future for it to reach up to US\$ 6.2 billion by 2030 (TBC, 2020). The benefits of this will only increase with universal access to WaSH services.

The market potential of Justice in the WaSH sector is seldomly discussed, whether it is gender justice, environmental justice, social justice, or others. (Murphy, 2021). There exists a demand for justice in the WaSH sector so that no one is left behind. Equal representation of needs of women and children, respectful work and decent pay for sanitation workers, inclusiveness in planning, implementing, and decision making, among others are some of the issues that lack a fair distribution of rights, opportunities, and inclusivity. It is because of not addressing such concerns and not including all the affected stakeholders, towards a wholesome and sustainable transformation to a WaSH equipped society, that many multi-million dollar WaSH interventions have failed in the past (Kar and Chambers, 2008a).

So there exists a need to define what a just transition approach in the WaSH sector means and includes. Thus this research wishes to create such a foundation for future researches.

1.2.3 Addressing gaps in the literature

Although numerous studies have been conducted in different sectors about relevant approaches associated with just transition, in the field of WaSH it is relatively a new concept to be discovered. Thus no previous researches have been conducted, to the best of the researcher's knowledge in this field. There exists a diverse set of WaSH interventions and approaches that focus on improving the provisioning of improved WaSH service to impart a hygienic lifestyle and bring dignity and self-esteem to the community (Venkataramanan and Kwena, 2017). And some of these approaches may also prove to provide a just transition to the target population. But it is impossible to pronounce which approach is just, especially in the absence of a mechanism to define and judge a just sanitation approach. Hence this research wishes to start a conversation of the need for a framework to define a just sanitation approach and pronounce the potentially existing justice-based approach to WaSH related interventions.

1.3 Research objectives

The main objective of this thesis is to analyze how far the school based WaSH projects subscribe to the just transition approach, by

1. Developing a multidimensional scoring tool for a just sanitation approach
2. Identifying deviation of NGO's approach from contextual government policy and sanitation approach, on the basis of Just transition definition framework developed by Just Transition Initiative (JTI).
3. Analyzing the gaps between NGO and Kenyan government WaSH approaches through qualitative analysis and give recommendations towards bridging it.

in order to guide the just transition debate towards the WaSH sector.

1.4 Scope

Due to a disproportionate ratio for access to WaSH services in schools in urban and rural areas, it was decided to map the sanitation approaches that focus on empowering rural communities through WaSH interventions. To obtain detailed and good-quality data, the initial intention was to focus on Europe. However, it was later realized that the coverage of safe and clean water, improved sanitation, and proper handwashing facilities with soap and water in the developed world is almost universal, with not too many cases of open defecation (both urinating and defecating) to be traced. The focus was then shifted to developing and under-developed countries that have robust available data. Considering the language proficiency of the researcher, a country with English as the official language was chosen. Considering the limitation of not being able to travel for data collection a community with access to good internet services was proffered. Given the absence of a robust theoretical foundation for the research question, this research is prone to assumptions. The researcher has tried to keep the scope limited to a sizable area for a deep and comprehensive study.

Taking into account all the considerations, the Mukuyu community in Trans-Nzoia County in Kenya was identified to be the case study for this research. It was done due to the fact that there exists an NGO implementing their sanitation approach in this community and the Kenyan government is also

implementing its own sanitation approach. So get a perspective on two sanitation approaches in one community appeared to provide a favorable outcome. While acknowledging the potential international traction that this study may provide to multinational organizations in the future, expert opinions from experts of some multinational organizations on both sanitation approaches were also received.

So the study focuses on WaSH interventions in the Mukuyu community in western Kenya. The sanitation approaches that are considered are from the NGO, named HOP (HOP), and the Kenyan government's approach. Focus is given to the impact on the target population of both interventions. The research considers both the conceptual and theoretical foundation and the implementation potential of both approaches.

1.5 Structure of Thesis

To have a strong foundation and justification of achieved results, theoretical framework has been incorporated in this thesis as chapter two. It provides a measurable scoring tool for just sanitation approaches adapted from the considered literatures. The process of dealing with data such as data needs, data gathering, data analysis, tool used for it, are shown in Methodology in chapter three. Chapter four provides a detailed description of cases and hence called as mapping of cases. Results achieved are presented and discussed in the chapter five. i.e. Summary of findings. Chapter six defines and interprets to provide a definition and recommendation for a just sanitation approach. Chapter seven highlights the way further and wraps up with discussing the objectives achieved. Chapter eight is consists of research references and chapter nine is Annex.

2 Theoretical Framework

2.1 Utility of the framework

The utility of this theoretical framework is to represent a context to understand the approach to findings and field data. This will help interpreting and synthesizing the underlying necessities of the considerations in this research. The theoretical background for this thesis highlights the importance of considering different aspects while planning for a rural sanitation approach to succeed. It also gives an understanding of what incorporates in a just sanitation approach. The theoretical framework helps this thesis to put different aspects of diverse topics into one thread, hence providing an analytical tool to gauge a WaSH approach on different dimensions of justice.

2.2 Water, Sanitation and Culture

In the past five decades, numerous sanitation approaches have been introduced and adopted by various organizations and governments with the sole purpose to end open defecation and embrace improved sanitation facilities. Many of these sanitation approaches failed irrespective of the amount of money spent for them to succeed. It has been noted that such an approach failed because it lacked the informed consideration of cultural, political, social, economic, religious, and gender aspects of the society they were being implemented in (Avvannavar and Mani, 2008).

In historical context, every culture has had a distinct approach to sanitation which was developed with time. For example communities in Cameroon defied to embrace latrines as adopting such practices amends ingrained traditional defecation practices (Jenkins and Curtis, 2005). In many cultures around the globe, it is prohibited to defecate inside the household, or relieving oneself anywhere near the kitchen is strictly unacceptable. Because of this people proffered to defecate away from the house, which most of the time mean in the open where any form of privacy can be attained behind the bushes or trees (Avvannavar and Mani, 2008).

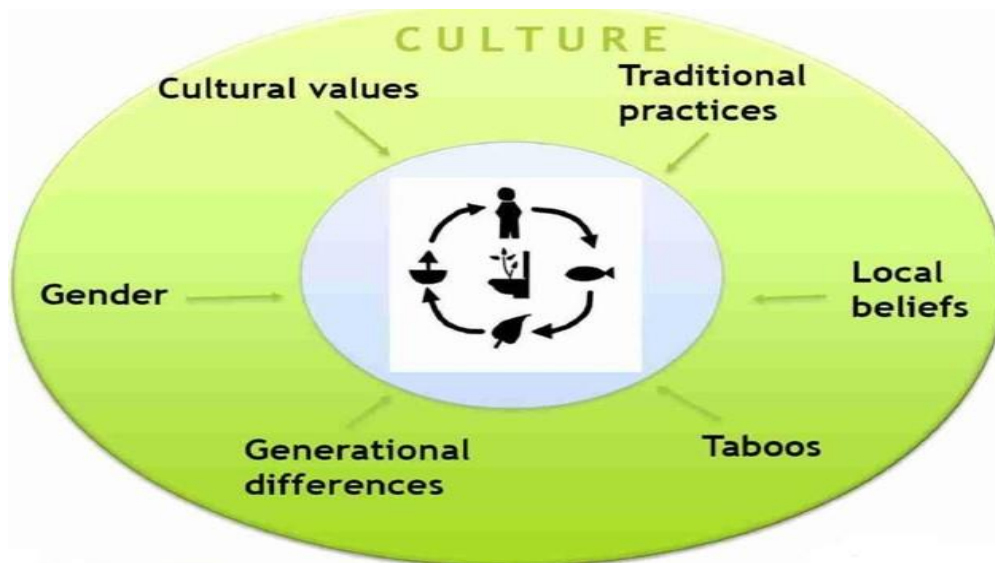


Figure 3: Culture is a decisive factor in water and sanitation projects (Kaiser, 2016)

On the other hand, the Akan community in Ghana despised human excrement so much that they dealt with it in a unique way which some might think is irrational. People resolved to wear blinders on their eyes when walking through a dirty locality when visiting toilets. It was done with the logic that when you see no one, no one sees you (van der Geest, 1998).

According to (Tanner, 1995; Drangert, 1998), every society has a social defecating policy. A culture's social conditioning may prompt someone to distinguish feces related smell which may be grouped as offensive and disrespectful. Some cultures in Eldoret, Kenya believe that a child's feces should not be mixed with that of the adult's as it can be picked up by a witch to be used for witchcraft. So the children's feces are usually deliberately hidden from others. This is also seen in other societies where people with power and wealth believed that feces used by your enemy may bring some kind of danger, so it needs to be hidden from others (Avvannavar and Mani, 2008). Similarly, there are many cultures where open defecating is considered the proper way, and dreadful health outcomes from poor sanitation facilities are considered as 'God's will' against which they are helpless (Jenkins and Curtis, 2005).

Numerous examples can be found around the world where different cultures deal with sanitation practices in their communities differently. To develop culture-specific sanitation approaches, one first needs to specify what is a culture, what does it consist of, and how to involve it in a community-specific sanitation approach. According to (Kaiser, 2016), "Culture is a system of shared values, beliefs, behavior and symbols that the members of social groups use to interact with their social surroundings." (Avvannavar and Mani, 2008) argues that to develop an inclusive contextual sanitation approach three cultural considerations must be acknowledged. This includes the gender issues (associated with social prejudices and biases), psychological issues (associated with handling human waste), and religious influences (associated with rituals, practices, and superstitions).

2.2.1 Gender aspect

With both genders having different physiological needs, WaSH provisions also rely on gender differences (Avvannavar and Mani, 2008). In many places, women and children are asked to fetch water for the family. According to (UNICEF, 2016), in situations where the time to fetch water from a water source takes more than 30 minutes, most of the times women and children are asked to do that work. The opportunity cost of such tasks also includes education for young girls.

This also includes the safety aspects between genders as in many areas young girls and women refrain from using a toilet at night because of the fear of being raped, harassed, or even murdered at or on the way to the toilet (Dellström Rosenquist, 2005; UNESCO, 2014). In some researches it has also been observed that to avoid unhygienic and filthy toilets at workplaces, many women choose not to drink water throughout the day, and suffer severe headaches (Drangert, 2004). So people, specifically women, and children prefer to use safe spaces to relieve themselves. It was for providing safety and dignity for women, children, and poor that stemmed the need for separate public toilets for men and women (Quitza, 1996; Jenssen *et al.*, 2004).

(Kaiser, 2016) argues that the most observable discrimination can be found in the WaSH sector in developing countries where women are expected to look after the WaSH services of the household when their own needs are neglected due to cultural and societal hurdles. Even when the whole family uses the household toilet, in many family settings women in the house are expected to clean it, apart from the other tasks around the house (Avvannavar and Mani, 2008, p. 10).



Figure 4: Gender biases in society (Kaiser, 2016)

As far as the hygiene aspect of WaSH services is concerned, menstrual hygiene management is not given as much attention as it should be given. According to (WHO, 2012), every year one in ten girls in Sub-Saharan Africa has to miss school because of their periods. Inadequate hygienic standards at home and in schools affect girls disproportionately. Young girls sometimes have to carry dirty clothes in plastic bags to throw away after school. It is also because of a lack of awareness in the community towards menstrual hygiene management (Jansz and Wilbur, (2013)). There is a need for women to be included in the decision-making of things that affect them. It is because women value WaSH services more than men as it provides privacy, dignity, safety, and convenience (Jenkins and Curtis, 2005). But they do not hold much decision-making power in society (Jenkins and Sugden, 2006).

2.2.2 Religious aspect

Distinct rituals of dealing with the faeces and performing the act of defecation are seen in different religions around the world. In Christianity where disposing-of of human waste is mentioned only once in the Bible (Warner, 2000), Hindus have a set of scriptures called Artha Veda which tells the rituals to be performed, including extensive use of water for cleanliness. An elaborative procedure and rituals to be performed for different Varnas (castes) while defecating can also be found in Aryan (1500 BCE) scriptures Manusmriti Vishnupuran (Avvannavar and Mani, 2008). The Islamic religion demands from its believers to perform all types of cleaning with water, including the cleaning rituals before praying (Bahadar *et al.*, 2006). The use of human excreta is also explained in detail in Buddhism, where people

are advised to reuse life's treasures and earthly resources, which also includes human faeces, in a harmonious manner (Zimbelmann and Lehn, 2006; Bahadar *et al.*, 2006; Jenssen *et al.*, 2004).

In most of the cultures following the Hindu and Muslim cultures, water is used as an anal cleansing agent and squatting type toilets are observed to be the norm (Münch and Milosevic, 2015; Bahadar *et al.*, 2006). Water as an anal cleansing agent is made available within the sanitation facility either with the help of bidets showers or jugs (Münch and Milosevic, 2015). In the Muslim religion, people are asked to sit in a specific direction. It is as described by the Prophet Mohammed "if you go to defecate, do not face the Mecca nor turn your back towards it. Instead you should turn to your left side or right side" (Bahadar *et al.*, 2006). And reuse of human waste is only allowed when it is free from any kind of impurities (Faruqui *et al.*, 2001). So it becomes important that different religions and their preferences are taken into account when approaching a sanitation solution to different religious societies.

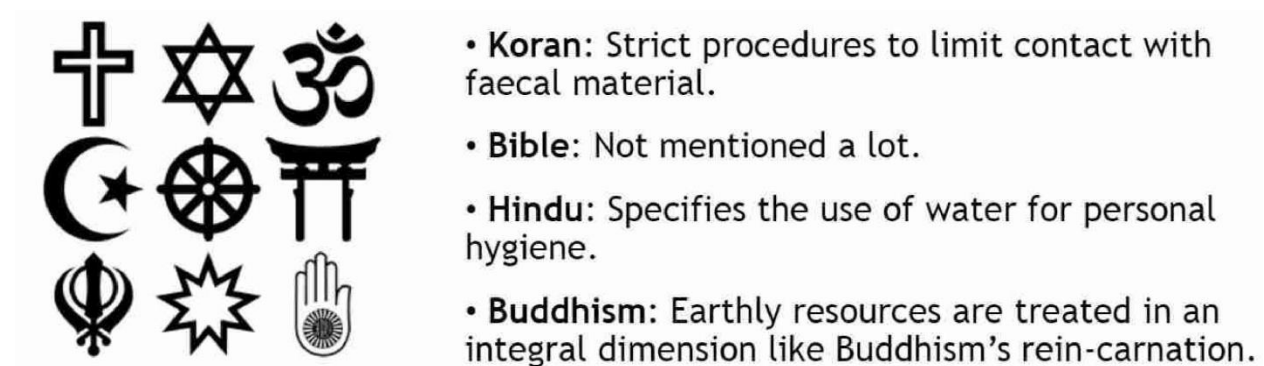


Figure 5: Religions vary considerable in addressing excreta (Kaiser, 2016)

2.2.3 Socio-political aspect

Social status according to the wealth someone has also played a difference in providing for sanitation facilities. (Münch and Milosevic, 2015) argues that in some cultures remarkable class differences are observed with the way people approach sanitation. Where high-income areas prefer sitting-type toilets over squatting in contrary to the lower classes in the culture where using squatting toilets is the norm. Similar differences were observed in rural and urban areas in their study in Sub-Saharan Africa, where sitting toilets were more common in urban areas (wealthier) rather than rural areas (poorer). Similar differences can also be seen in choosing the anal cleansing method of using toilet paper or water. Such is the behavior of different groups towards WaSH facilities.

According to (Avannavar and Mani, 2008), the Muslim invasion into east and south Asia brought with them a certain social norm in which women are asked to wear Burkha (veils) and were not allowed to defecate in the open. So for them, buckets were designed to provide the comfort and privacy to defecate within the house. And slaves were used to cleaning those buckets. Different cultures also have a different hierarchical social structure where the people with the lowest societal status were forced to clean the human excrement of the society. In western countries, it was slaves who used to do such kind of work, in some cultures in India it was the lowest caste people. And these people were kept away from society so that they do not spread diseases.

In the absence of sewers in some areas, there existed a need for pits of latrines to be emptied. And until the late 90s, this task was performed manually in most societies of the world. The manual ‘scavengers’ are still visible in many societies specifically in India, where it is the job of a member of a lower caste who takes the waste out of the pits and sewers and dumps them far from the households and villages (Prasad and Ray, 2019). Sanitation workers protect the communities from various diseases while getting affected by them themselves. In many places, they are not provided with proper protective gear to safeguard them from diseases while dealing with human excrement (Sklar *et al.*, 2021). According to an estimate around 22,000 manual scavengers lose their lives every year emptying the pits and sewers in India. As doing such work manually is against the law, the numbers go unreported (Tyagi, 2017). Looking at the sanitation practices in these societies doing such work can appear to be unfair.

In many settings where open defecation is practiced, a hardware subsidy has been offered under numerous projects thinking that people do not use toilets because they do not have them. But those subsidies rarely worked, as there was no demand for it. Sanitation comes with a cost, even if the initial subsidy is provided it requires resources to operate and maintain, which people are not willing to pay if they do not feel there is a need for it (Jenkins and Sugden, 2006). A society’s preferences are also visible in its governing policies. In many developing and under-developed countries a lack of WaSH facilities in households as well as in institutions such as schools and universities are observed (UNICEF, 2012). And the schools that have sanitation facilities cannot sustain it for a long time (Snel, 2004; Bolt *et al.*, 2006). The same practices can also be seen with the provisioning of public toilets by governments around the world.

It has been noticed in societies high population densities that in the subsidy based sanitation projects by governments when a pit latrine gets filled, people get into situations where there is no space to build new latrines, people do not have money to get the pit emptied, people start using neighbor’s latrines that later causes disputes, waste gets washed with the rain and spreads diseases, vacuum tankers cannot come in narrow streets, or the end people start opting for open defecation again (Jenkins and Sugden, 2006). That is how most of the subsidy-based unplanned projects where stakeholders are not involved and demand is not generated, end up (Jenkins and Sugden, 2006).

2.2.4 Need for contextual solution

It can be noticed that it is imperative to consider different aspects of a culture while planning a strategy to provide WaSH services to the community members. WaSH can be a sensitive topic for different stakeholders in a society, so it is important to provide space for people to express their concerns. Otherwise, the money spends without appreciating the context of the situation does not achieve desired results (Dwipayanti *et al.*, 2017).

The attitude of a community is a combined form of knowledge (cognition), perception (feeling), and behavior (action) (Krech *et al.*, 1962). Some societies prioritize religion, some have political, economical, cultural, and social barriers in reusing human excreta (Khalid, 2018). According to (Douglas and Wildavsky, 1982), it is because people pursue sanitation through cultural lenses, it becomes crucial to understand the community’s sanitation approach to develop a healthy, inclusive, and context-based sanitation approach.



Figure 6: Importance of cultural context to water and sanitation (Kaiser, 2016)

In many societies, it is still common to see the hereditary job of cleaning the human excreta from the society (Avannavar and Mani, 2008). Some think it is women's responsibility to take care of the health and hygiene of the household (Kaiser, 2016). In some even though there is enough water for everyone but poor people are systematically discriminated against and excluded. Such discrimination is also visible in other sectors which are influenced due to inadequate wash services. For example, the poor children who cannot attend schools because they get sick more often due to the inappropriate WaSH services (UNDP, 2006). Hence it becomes important to provide equality of opportunities and participation and context-based solutions in pursuing the provisioning of WaSH services in a society. Also to keep in mind that different context responds differently to different behavior change techniques (Venkataramanan and Kwena, 2017).

2.3 State of the art participatory rural sanitation approaches

Although society as a whole benefit, better health, and prosperity, from household access to improved sanitation, for an individual the reason to invest in WaSH facilities is different from that of the society (Evans *et al.*, 2004). The factors that motivate the desires of a society or government to opt for improved sanitation facilities are generally different from that of individuals (Jenkins and Sugden, 2006). So it can be said that society's approach to sanitation is different from the individual sanitation approach. Thus it requires a community-based sanitation approach that includes every stakeholder and provides them space where they can share their views and needs.

The global proportion of people using safely managed water services for urban and rural areas are 86% and 60%. Eight out of ten people lacking basic water services are living in rural areas in the least developed countries (WHO, 2020a). Similar trends are seen with access to sanitation services as 92% of the population practicing open defecation lives in rural areas (UNICEF, 2019). It is because of this

disproportionate access to WaSH services in urban and rural areas most of the sanitation approaches focus on increasing access to WaSH related services in rural areas through different approaches.

In most rural settings sewer coverage are not present and it provides governments fewer incentives to invest such a huge amount (Moses *et al.*, 2019). That is why most community-based approaches promote decentralized sanitation management. That is because it is mostly built by the locals using the local resources, which makes it affordable, repairable, and feasible for the context and it also creates decision making among stakeholders (Nguyen, 2010).

“The key to going to scale with rigor probably lies in decentralized systems with local ownership” (Kar and Chambers, 2008a)

As many countries have set goals to provide improved sanitation services to their citizens, numerous sanitation approaches have come into existence. These approaches can be classified into different categorized based on rural or urban setting, supply or demand-driven, participatory or non-participatory, behavior change or incentive focused, among others. As the proportion of people using sanitation facilities is comparatively higher in the urban areas than the rural areas, most sanitation approaches target the rural population.

(Venkataramanan and Kwena, 2017) has classified some relevant state-of-the-art rural sanitation approaches into three categories namely: behavior change, market, and supply chain, and financial mechanisms.

1. The rural sanitation approaches focusing on behavior change towards WaSH services through community mobilization methods are:
 - i. Participatory Hygiene and Sanitation Transformation (PHAST)
 - ii. Child Hygiene and Sanitation Training (CHAST)
 - iii. Community Health/Hygiene Clubs (CHC)
 - iv. Community-led Total Sanitation (CLTS)
 - v. School-led Total Sanitation (SLTS)
2. The rural sanitation approaches focusing on developing market and supply chain of WaSH technologies are:
 - i. Sanitation as a Business (SAAB)
 - ii. Sanitation Marketing (SanMark)
 - iii. Developing Markets for Sanitation (DMS)
3. The rural sanitation approaches focusing on providing financial mechanism to boost the supply and demand of WaSH technologies are:
 - i. Sanitation microfinance
 - ii. Targeted hardware subsidies prior to construction
 - iii. Output-based Aid (OBA)

The approaches that are driven through financial mechanisms and market and supply forces come with an assumption that there already exists a demand for sanitation services in the community (Tremolet and Evans, 2010). Hence where the financial mechanism approach provides credits or incentives to people, the market-based approach work on strengthening the supply or value chain (Wei *et al.*, 2017). Although both categories of approaches are participatory in nature, they focus more on the supply side of the equation than the demand side (Pedi and Jenkins, 2013). On the other hand, the sanitation approaches focused on behavior change are participatory community mobilization with the intent to raise demand for WaSH facilities.

Governments and multinational development organizations prefer not to implement just one type of rural sanitation approach; it is rather common to see a mixture of approaches compiled together, taking into account the context and implementation. For example, UNICEF composed CLTS, SLTS, and some supply-side approaches with incentives and subsidies and called it Community Approaches to Total Sanitation (CATS) program (Galbraith and Thomas, 2009). The Zimbabwean government approach involves PHAST, CLTS, CHS, with government-specified sanitation technology (Ahmad *et al.*, 2016).

2.3.1 Holistic solutions through participation

Numerous fascinating experiences have been reported by field practitioners of various participatory approaches, where people have changed their lifelong sanitary habits and opted for improved sanitation solutions. Community-centered participatory approaches have succeeded where others have failed. Although behaviors change rural sanitation approaches are participatory and demand-driven, but they are very distinct in implementation.

1. Participatory Hygiene and Sanitation Transformation (PHAST)

PHAST is a behavior change rural sanitation approach developed by the World Bank and the WHO in 1998, after implementing many participatory approaches in the early 90s in Sub-Saharan Africa. PHAST is an adaptation of another participatory methodology called Self-esteem, Associative strengths, Resourcefulness, Action-planning, and Responsibility (SARAR) (WHO, 1998). PHAST is a ‘decision support tool’, used to empower communities to improve sanitation and hygiene behavior, reduce diarrheal deceases, and manage WaSH services (Venkataramanan and Kwena, 2017). It works on inciting emotions of confidence and empowerment in people in their abilities to take action and improve the situation around them, such as reducing pollution or opting for latrine (WHO, 1998). It is a seven-step community mobilization process which is as follows (Lienert, 2019; WHO, 1998):

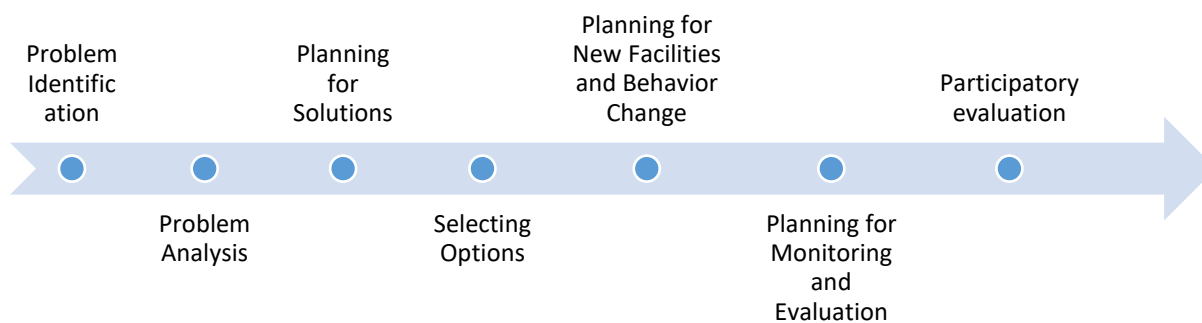


Figure 7: General steps of a PHAST approach

2. Child Hygiene and Sanitation Training (CHAST):

CHAST is an approach adapted from PHAST, in 2002, by Caritas to promote good sanitation and hygiene behavior among children in Somalia. In contrast to PHAST which targets adults, CHAST is designed using the same principles keeping children in front (Lowe, 2012). By incorporating a variety of games and exercises, it engages children between the ages of five and 15 years. The goal of this child-to-child participatory approach is to create awareness and impart an understanding of personal hygiene and good health (Keller, 2019). Since its start, it has been adapted in different settings such as South Sudan and Ethiopia.

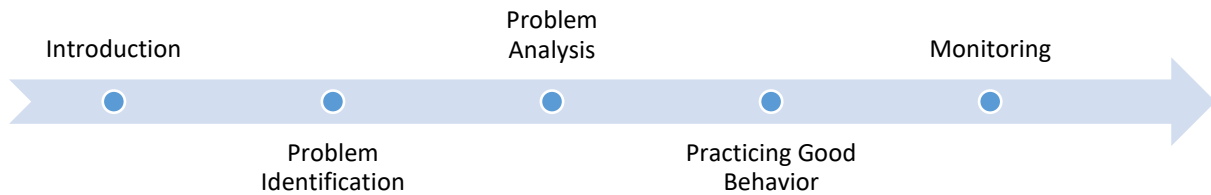


Figure 8: General steps of a CHAST approach

CHAST tool include a range of activities and games like puppet shows, role plays, card games, and colored posters (Vonderbank, 2004). It is a five-step children mobilization process which is presented above:

3. Community Health/Hygiene Clubs (CHC)

CHCs are a community-based group of beneficiaries, that are the community members, targeted to empower communities with improved health and hygiene services through knowledge sharing, common understanding, and practicing safe hygiene (Kwihangana, 2014). CHC was first introduced by an NGO in Zimbabwe in 1995 and later integrated into the National Sanitation and Hygiene Policy by the government (Government of Zimbabwe, 2017). This is a rural-based participatory approach where anybody from the village can have the membership for free and participants are empowered to identify personal and hygiene-related problems (including WaSH), discuss the potential solutions among the community members, and implement the decided solutions (US Aid *et al.*, 2020; Theoneste *et al.*, 2015).

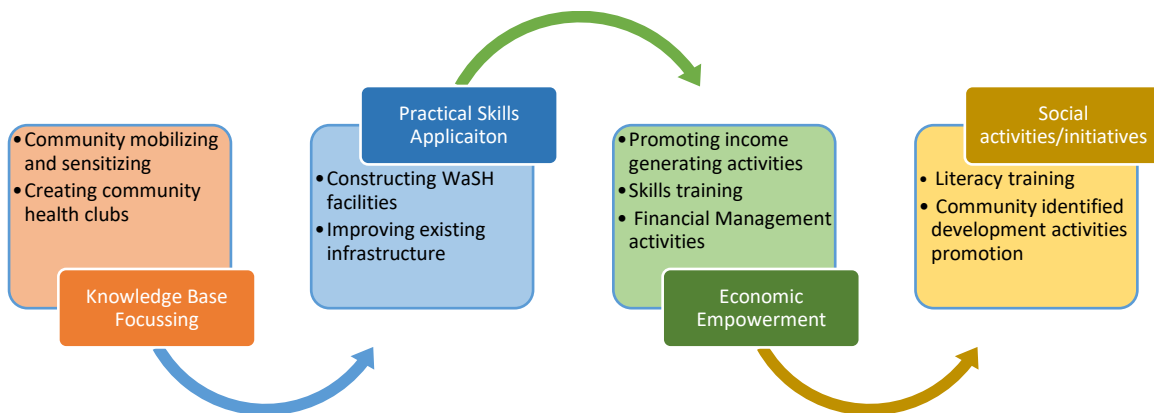


Figure 9: Implementing components of CHCs in phases (IRC *et al.*, 2007)

4. Community-led Total Sanitation (CLTS)

CLTS, as the name suggests, is a participatory rural sanitation approach that intends to ignite a behavior change in a community through a set of activities. CLTS focuses on creating a demand for a sanitation facility rather than building toilets for people to use (Kar and Chambers, 2008b). First developed and implemented in Bangladesh in 1999, this approach has reached different continents and has been adopted by many national governments as their rural sanitation approach including the Kenyan government (NOKCF, 2016, Sec2:2).

The basic CLTS steps are shown in the figure below:

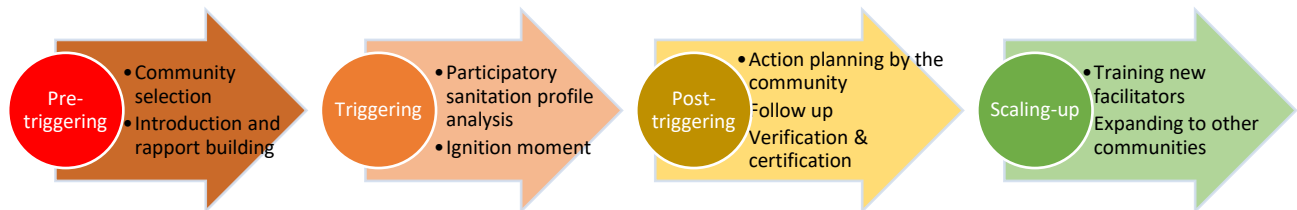


Figure 10: General steps of a CLTS approach (Kar and Chambers, 2008b)

5. School-led Total Sanitation (SLTS)

SLTS, an adaptation of CLTS, was first implemented in Nepal in 2004 (Adhikari, 2010), focuses on generating demand for WaSH facilities by using schools as an entry point to a community. It is regarded as a complete package sanitation approach for schools and the community (UNICEF, 2006a). CLTS and SLTS provided a complete transformation from the top-down, technological, subsidy, and supply-driven sanitation approach to a bottom-up, knowledge-based, participatory, demand-driven sanitation approach that focuses on open defecation-free communities including schools (Ouden, 2013). The objective of the approach is to build self-esteem and positive behavior change through several activities which generate a feeling of disgust for the present open defecation practices (Adhikari, 2010).

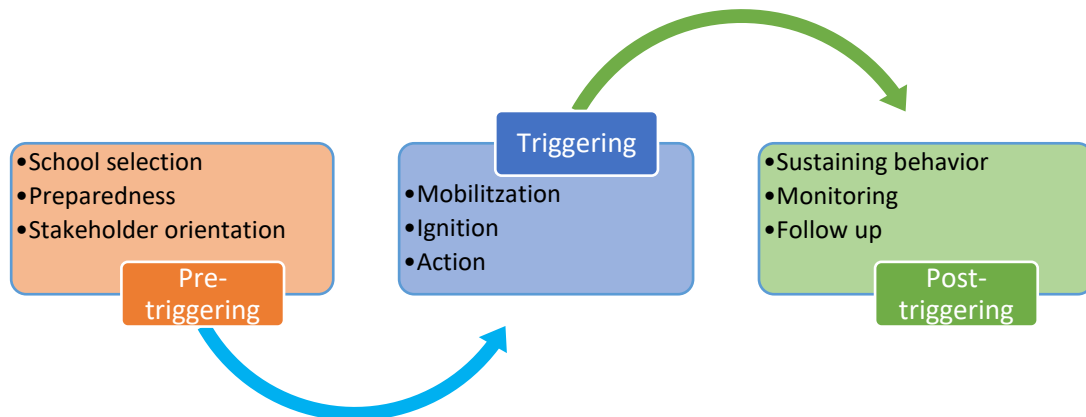


Figure 11 General steps of SLTS approach (Adhikari, 2010; UNICEF, 2006a)

2.3.2 Success through ownership

Participatory approaches have been taken over by many governments as their national policy to end open defecation. But the participatory approaches are not always successful. There have been instances where these approaches have failed. For example, In India government started CLTS with a construction focus and subsidy-based sanitation intervention for people who are below the poverty line. This led to the creation of division among people who were empowered to build their own latrines through CLTS when neighboring villages are building latrines through government subsidies. It de-motivated people to take ownership of the latrine and construct with what one can afford. It was further aggravated by corruption and paternalistic inertia. The result was that some built the toilet with the help of a subsidy but never used it because the generated demand was either lost or never created (CLTS, 2014).

Participatory rural sanitation approaches like CHS, CLTS, and also some sanitation marketing approaches have been able to increase sanitation coverage (Sah and Negussie, 2009; Waterkeyn and Cairncross, 2005). However, there is a noticeable variance in sustainability aspects of these approaches (Dwipayanti *et al.*, 2017; Jenkins *et al.*, 2014). There have been many instances where a lack of monitoring and follow-ups has encouraged communities to go back to their open defecation practices (Kar and Chambers, 2008b). On the other hand when the beneficiaries are involved in the monitoring and overlooking process increases the quality of the solution (Banerjee *et al.*, 2010; Harvey and Reed, 2007; Alexander *et al.*, 2013). Hence pre-toilet, toilet, and post-toilet steps are equally important in a sanitation approach to succeed (Hashemi and Boudaghpour, 2020). So it becomes important to understand what makes a participatory rural sanitation approach work.

One important aspect that has been consistently common in all the participatory approaches other than behavior change, demand creation, community inclusion, monitoring, is ownership building. They all try to build ownership among the population. It is because behavior change interventions focusing on community-based ownership achieve greater and long-lasting impacts (IRC *et al.*, 2007; Dwipayanti *et al.*, 2017; EMW, 2016).

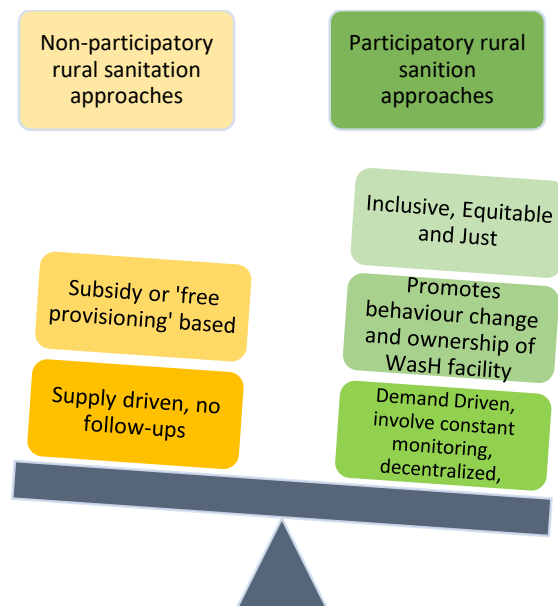


Figure 12 Rural sanitation approaches that produce long lasting effects

All the sanitation approaches focus on transform communities or people's behavior from practicing open defecation to open defecation free (ODF). As this transition needs to involve all stakeholders for an inclusive and representative of all stakeholders, it requires a need for a just transition. Hence it is important for participatory rural sanitation to change behavior, generate demand, be inclusive, build ownership, is decentralized, have constant monitoring, and strive to provide an equitable and just transition to WaSH owning ODF communities.

2.4 Equity and Just Transition

As previous chapter emphasis the need for equal opportunities and just transition in the WaSH sector. However, before looking for the just transition it is important to define what is 'just'? And how to different people perceive justice in a society. This chapter discusses just that.

2.4.1 Equity Theory

In a society, people interact with each other on day to day basis. Human interaction in a society involves the process of exchange (of emotions, goods, and services). This process of exchange has its own characteristics that influence motivation and behavior, which makes it essential to be understood (Adams, 1965). According to (Adams, 1965), "A distinguishing characteristic of exchange processes is that their resultants have the potentiality of being perceived as just or unjust". (Adams, 1965) argues that there exist two important concepts of perceived justice and perceived injustice. These are relative deprivation and relative gratification.

The theory of relative deprivation states that "when an individual or group compares themselves to other salient individuals or groups and in this comparison find themselves lacking, discriminated against, or disadvantaged, this leads to feelings of dissatisfaction" (Power *et al.*, 2020).

Relative deprivation, as a concept, was first introduced during World War II by (Stouffer *et al.*, 1949), when they tried to understand the dissatisfaction felt by the American soldiers with high school graduation, towards their status and jobs than the less educated soldiers. It was explained then that soldiers with a higher level of education had a higher level of aspirations than status achieved, which would be a status aspiration in civic life, as contrasted to soldiers with a lower level of education. Hence this discrepancy between expectations and achievements leads to dissatisfaction. That is why higher educated soldiers felt relatively deprived of the expected achieved status and were left less satisfied. Or more precisely, "The assumed existence of a discrepancy between expectation and achievement results in dissatisfaction" (Stouffer *et al.*, 1949).

An essential character in the formation of expectation is a comparison with someone/something else. The unfulfillment of these perceived expectations and aspirations, based on the comparative process, causes dissatisfaction and results in one's perception of justice or injustice, as implied by relative deprivation (Stouffer *et al.*, 1949; Thibaut, 1950; Spector, 1956; Wiley and Poznanska, 1961). According to (Thibaut, 1950), the feelings of injustice, in turn, may ignite the expressions of dissatisfaction in the form of anger (Power *et al.*, 2020), hostility, withdrawal, and changes are socio-metric choices. It is to be noted that, dissatisfaction and other behavioral expressions are responses to the felt perceived injustice rather than directly to relative deprivation (Thibaut, 1950).

Relative gratification, contrary to relative deprivation, occurs when the social comparison results in the feeling of receiving relatively more than the other person (Eller *et al.*, 2020). According to (Walker and

Pettigrew, 1984), both relative deprivation and relative gratification can be caused by the social comparison between persons as well as between different groups. Hence, relative deprivation is subjective and need not correlate with actual or objective deprivation of the person, group, or society (Runciman, 1966). So what one may perceives to be a fair exchange, may be perceived as unfair by the other.

According to (Adams, 1965), a condition of equity (or justice) exists when

$$\frac{O_p}{I_p} = \frac{O_0}{I_0}$$

Where,

O_p = Output that the person receives,

O_0 = Output that others receives,

I_p = Input that the person invests,

I_0 = Input that others invests.

So when a person examines that the output s/he received is in proportion to the input s/he invested and also equal to the output that the other(s) received for their input, then s/he perceive an exchange to be just. And just transition is a question of equity. It is one approach reaching towards equity.

2.4.2 Just transition

Most believe that just transition as a concept came into existence in the U.S. labor movement in the 1970s when the jobs of workers in the U.S. oil, chemical, and atomic industries were at stake due to the new environmental legislation (Franssen and Holemans, 2020). The U.S. trade union asked for a fund to be created for the workers to provide financial support, resources, training, and opportunities for higher education for workers on the verge of losing their jobs because of the new policies (Ben and Mary, 2020). Until the 90s several trade unions picked up the concept in North America and then the International Trade Union Confederation (ITUC) also started advocating for the concept (Franssen and Holemans, 2020).

The ITUC defines just transition as:

“A Just Transition secures the future and livelihoods of workers and their communities in the transition to a low-carbon economy. It is based on social dialogue between workers and their unions, employers, government and communities. A plan for Just Transition provides and guarantees better and decent jobs, social protection, more training opportunities and greater jobs security for all workers affected by the global warming and climate change policies”. (ITUC, 2015)

Since its start, the just transition debate has found traction by many big organizations. Recently the European Union announced its ‘Green Deal’, where it emphasized the need for a just transition to a climate-neutral world has also established a funding mechanism called ‘Just transition Mechanism’ that guides European countries to create country-specific plans (European Commision, 2021).

The just transition debate has also moved forward since the 70s and does not just include the worker's job security and benefits, but also includes a broad structural and system change to provide equity and social justice at all levels of society (Pinker, 2020). In this broader perspective, it does not include just directly affected workers and laborers but also the indirectly employed local people whose jobs are dependent on the system, who will also be affected due to the transition to low-carbon economies (OECD, 2017).

Until a couple of years ago the just transition discussion was limited to the transition of mining for fossil fuel dominated energy sector towards a low-carbon renewable energy transformation. However, the debate has expanded to other sectors such as water, fishing, agriculture, education, health, employment inspectorates, and others (ILO, 2014). For example, just transition in agriculture talks about the need to gradually move away from the high greenhouse emitting industrialized and intensive approaches towards a responsible agriculture sector based on agroecology with less and better meat (Anderson, 2019).

The presently available researches are still undecided on what a just transition as a framework include. (McCauley and Heffron, 2018) argues that it includes climate, energy, and environment scholarships. (Bennett *et al.*, 2019) says there exists also an aspect of social scholarships in it. And further more these scholarships are described in different dimensions of justices. Such as

- a. distributive justice; (Bennett *et al.*, 2019; McCauley and Heffron, 2018)
- b. recognition justice; (Bennett *et al.*, 2019; McCauley and Heffron, 2018)
- c. procedural justice; (Bennett *et al.*, 2019; McCauley and Heffron, 2018)
- d. restorative justice; (McCauley and Heffron, 2018; Hazrati and Heffron, 2021)
- e. interactional justice; (Li *et al.*, 2017)
- f. organizational justice; (Chen *et al.*, 2015; Hoy and Tarter, 2004)

These broad ranges of understanding of just transitions stem the need for an inclusive and easy to understand framework that can sum up the debate within itself.

2.5 Just Transition Definition Framework (Ben and Mary, 2020)

There being no single universally accepted definition, a just transition definition framework was developed, by the Just Transition Initiative (JTI), to provide an understanding of the array of possible definitions in a just transition debate. These definitions are based on two aspects of just transition namely scope and social inclusion. The framework includes two general dimensions of scope and social inclusion each.

The scope aspect includes two dimensions. The distributive impact focuses on the degree of transition. The intention on the other hand includes the breadth of change planned. The social inclusion aspect includes the recognition and procedural dimensions of justice and evaluates the extent of the inclusion of stakeholders in the process.

The framework follows the radical environmental justice by (Svarstad and Benjaminsen, 2020) and defines the dimensions of justices as follows:

- Distributive justice: “It refers to the burdens and benefits”;
- Recognition justice: “It considers whose interests and values are recognized and taken into account”;
- Procedural justice: “It considers which institution and individuals are involved and have influence over decision making”;

Scope: Distributional impacts and intention

The scope aspect of the framework differentiates the distributive impact dimension into two forms, i.e. focused and expansive. Focused, within the context of scope, means that a specific set of impacts and subjects are executed in the transition. The impacts can be in the form of financial, cultural, emotional, social, gendered, human impacts, environmental impacts, among others. While the subjects may include human or non-human stakeholders, institutions, enterprises, humanity, among others. With this consideration, a just transition definition in focused scope may vary from specific distributional impacts and subjects. Whereas in expansive scope it will consider a broad array of impacts and subjects.

In the same manner, the scope aspects also differentiate the intention dimension into two forms, i.e. reform and transformative. Reform, within the context of scope, means the intent to seek change in the existing political and economic systems. The reforms can be in the form of modifying rules and regulations in the existing systems without impacting the functioning of the system. While transformation means that the intervention seeks to overhaul the existing system. The transformations may include the reconstruction of policies or changing the governance structure.

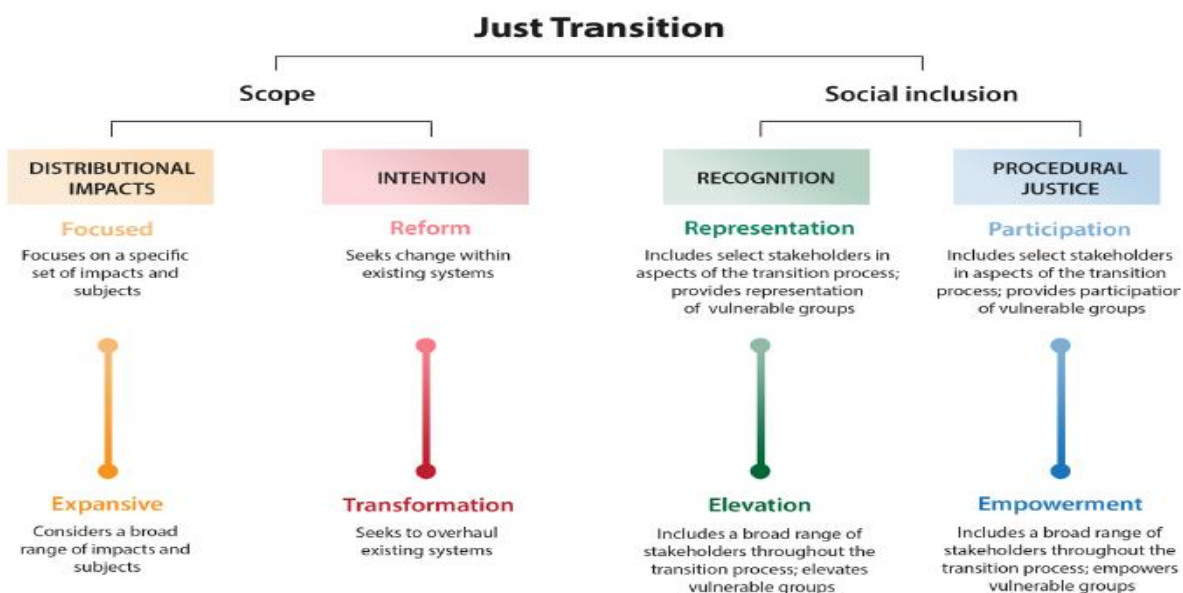


Figure 13 Just transition definition scale (Ben and Mary, 2020)

Social inclusion: Recognition and procedural justices

The social inclusion aspect of the framework classifies the recognition dimension into two forms, i.e. representation and elevation. Representation means the consideration and acknowledges of the needs and wants of the select stakeholders and does not recognizes all the existing stakeholders. While elevation means the needs and wants of a vast range of stakeholders are considered and acknowledged during the transition process and do not leave behind anybody. It is to be noted that it is the minimum requirement that vulnerable stakeholders are at least recognized. Hence recognition, at the minimum, implies the accurate representation in a just transition.

The procedural justice dimension of the social inclusion aspect is classified into two forms which are participation and empowerment. Participation represents the involvement of select stakeholders in the transition process. Participation can be in the form of consultation, brainstorming, social dialogues, among others. Whereas empowerment includes empowering a vast array of stakeholders with decision-making powers. It is important that meaningful participation happens among stakeholders. This includes more than giving an observer role in meetings.

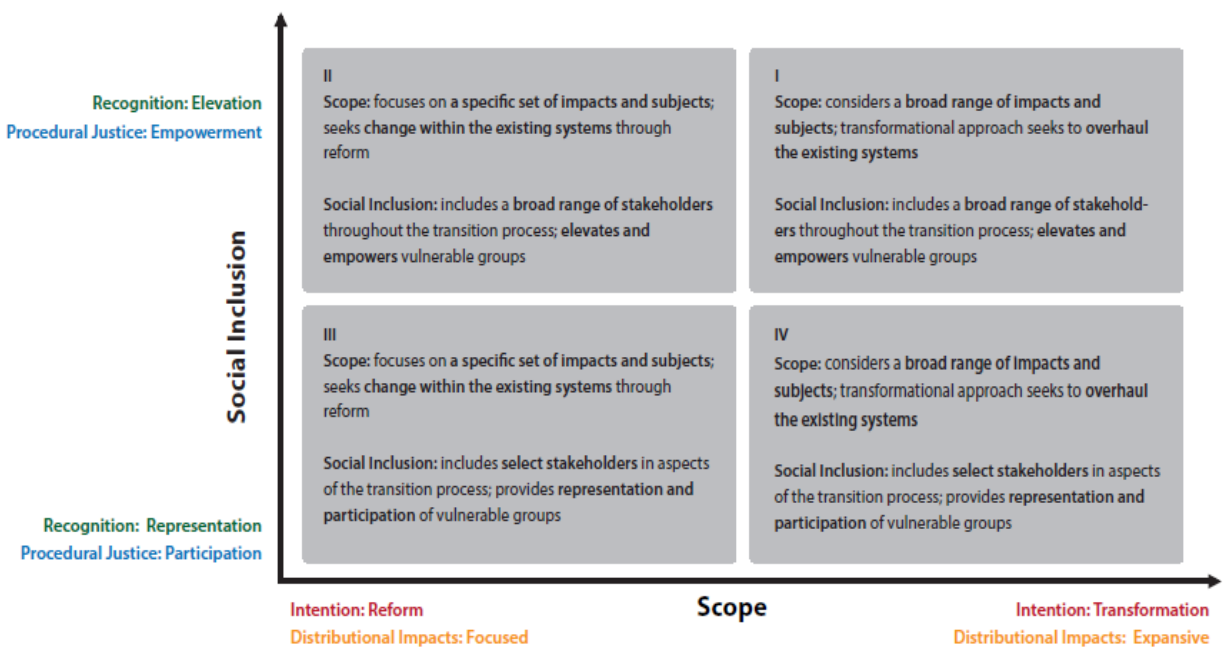


Figure 14 Framework for just transition definition (Ben and Mary, 2020)

The justice dimensions, once defined for the just transition process, can be mapped in the graph presented above. This provides an understanding of the nature of transition and provides a specific definition of that transition process. The graph gives a visual representation of complex procedures involved in an approach to decide whether it is just or not. The graph provides four quadrants where any transition approach can be drawn against the scope and social inclusion aspects of just transition. The graph can also be presented in a tabular form if there arises a need to give scores to each dimension in

order to map a specific definition of just transition. And this framework can also be used to define a just transition in the sanitation sector.

Table 3 Different quadrants of just transition definition framework

Dimensions \ Quadrants	Scope		Social Inclusion	
	Distributional Impacts	Inclusion	Recognition	Procedural Justice
Quadrant 1	Expansive	Transformation	Elevation	Empowerment
Quadrant 2	Focused	Reform	Elevation	Empowerment
Quadrant 3	Focused	Reform	Representation	Participation
Quadrant 4	Expansive	Transformation	Representation	Participation

2.6 Qualitative Public Policy Analytical Framework: By NCCHPP

According to NCCHPP, a “Public policy” refers to “a strategic action led by a public authority in order to limit or increase the presence of certain phenomena within the population” (Morestin, 2012). NCCHPP argues that although a public policy is typically designed to be solution-oriented. However, it does not follow a linear path while solving a problem. Instead, it triggers a chain of events that ultimately provides a solution to the targeted problem. Considering the incoherent problems that a public policy tries to tackle and itself being broad and complex in scope, it becomes challenging and, at the same time, necessary to examine the whole process in order to gauge their effectiveness (NCCHPP, 2013).

The analysis of a public policy is generally considered in the following situations (Morestin, 2012):

- a. Before the decision to adopt a public policy is made
- b. To analyze a policy already being implemented

2.6.1 Public policy logic model

A logic model as defined by NCCHPP represents “the chain of expected effects that link a public policy to a health problem it aims to solve. It goes beyond the question “Does it work?” to gain a better understanding of “How it works?”, i.e., how the policy being studied is meant to operate.” (NCCHPP, 2013) A logic model consists of the chain of effects of the proposed public policy which ends with the desired results expected from the public policy. It is to be noted that a logic model does not guarantee that the expected chain of effects will take into effect as presented. Instead, it modestly represents the desired effects based on logical assumptions (Williams *et al.*, 2009) (Morell, 2012).

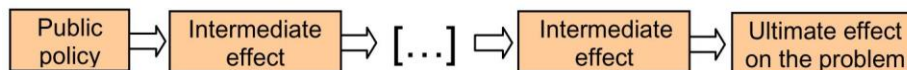


Figure 15: A logic model (NCCHPP, 2013)

Designing a logic model for a public policy typically involves reflection on the chain of effects that ought to occur to achieve the ultimate desired effects. The public policy under analysis should trigger the initial intermediate effect, which should produce another intermediate effect, which should produce further

and so on until the ultimate effect on the problem is obtained (NCCHPP, 2013). And it is after analyzing the acquired data, after implementing the public policy, that it is visible whether the data satisfies the theory or not (Weiss, 1998).

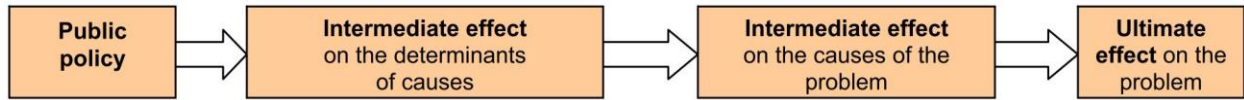


Figure 16: The Logic Model (Morestin, 2012, p. 4)

Obviously, an intermediate effect in a logic model is only among the many intermediate effects produced during the implementation phase of a public policy. The expected effects in the logic model only represent a fraction of what is obtained at each stage. For example, the figure below shows a logic model representing a chain of expected effects of nutritional labeling over-packaged food products (NCCHPP, 2013).

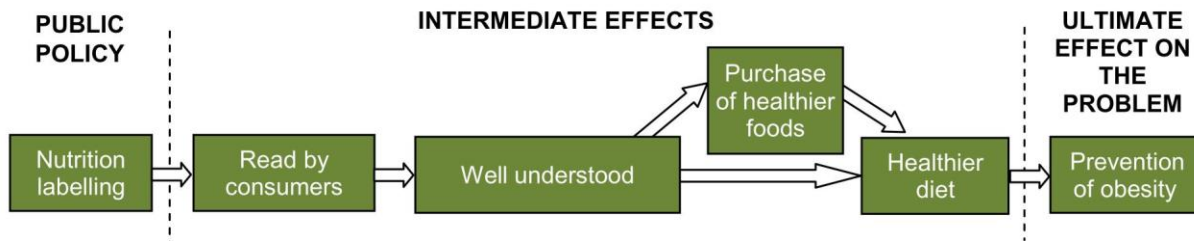


Figure 17: Example of a public policy logic model: nutrition labeling (NCCHPP, 2013)

2.6.2 Six dimensions of public policy analysis

Through consecutive analyses of different public health policies targeted at battling obesity (Swinburn *et al.*, 2005) and including work in the political science field (Salamon, 2002), NCCHPP has succeeded in creating an analytical framework that tries to examine the effectiveness of a, presumably, healthy public policy. After the analysis drawn from these researches, NCCHPP compiled the findings in six analytical dimensions creating an effective decision-making tool for public policies. These six dimensions are as follows:

Table 4: Dimensions for analyzing public policies (Morestin, 2012)

Effects	Effectiveness	What effects does the policy have on the targeted health problem?	D u r a b i l i t y
	Unintended Effects	What are the unintended effects of this policy?	
	Equity	What are the effects of this policy on different groups?	
Implementation	Cost	What is the financial cost of this policy?	
	Feasibility	Is this policy technically feasible?	
	Acceptability	Do the relevant stakeholders view the policy as	

		acceptable?	
--	--	-------------	--

As described in the table, the six dimensions can be gauged by answering the questions mentioned in from of them. The effects of a public health policy are measured by analyzing the answers of the first three dimensions that are: 'Effectiveness', 'Unintended Effects', and 'Equity'. The same goes for implementation. It can be measured by analyzing the answers to the last three dimensions that are: 'Cost', 'Feasibility', 'Acceptability'. It is to be noted that the acceptability of the public health policy is dependent on socio-economical, political, and technological changes in the environment in which it is implemented. Hence the acceptability of the public policy can change or remain the same depending on the surrounding environment (Sabatier and Mazmanian, 1995). And durability, that is how long the effects of the public policy last is satisfied by all six dimensions of the framework.

Depending on the responses received and on the intuitions of the public policy analyzer, the six dimensions can be scored in the range of:

(---), (--), (-), (+), (++) , (+++);

Table5: Example of scoring the six dimensions in the framework with imaginary score (Morestin, 2012)

Dimensions	Effectiveness	Unintended Effects	Equity	Cost	Feasibility	Acceptability
Public policy						
PP1	++	-	+++	+	-	--
PP2	+	+	-	-	++	+
PP3	+++	-	-	+	+	-

The acceptability dimension is quite sensitive and is influenced by all the analytical dimensions of the framework. The acceptability of a public policy is actually directly proportional to its feasibility (Morestin, 2012). The more people accept it, the more feasible it is to produce favorable results in that context. Also, the more people reject it and start badmouthing or impeding it, the more feasible it is to produce unfavorable results in that context. It is to be noted that the results are dependent on the perception of the legitimacy of the policy analyzer and the abilities and assessment of accountability measures of the policy implementers (Sabatier and Mazmanian, 1995; Salamon, 2002). Lastly, the ability of a public policy to produce is totally dependent on the implementation process. The relationship between the six dimensions is expressed in a pictorial form that can be seen below:

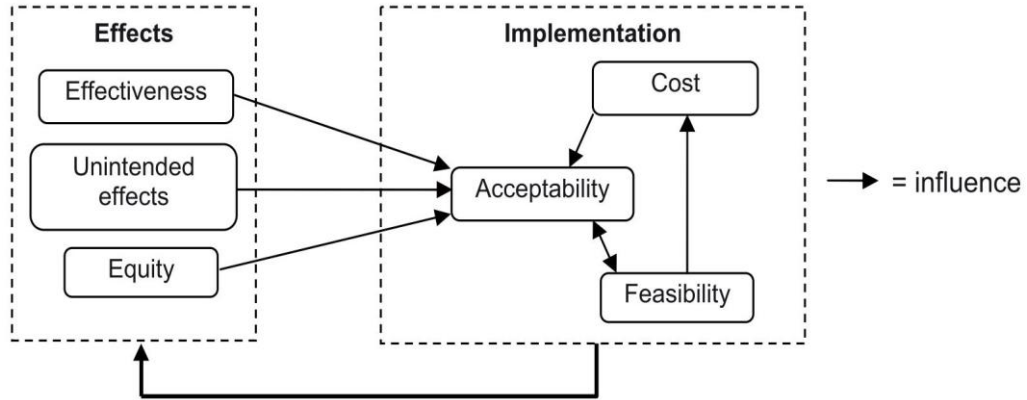


Figure 18: Relationship between the six dimensions of analyzing public policies (Morestin, 2012, p. 2)

2.7 Activity Based Rural Sanitation Approaches Comparative Framework: The Water Institute at UNO (Venkataramanan and Kwena, 2017)

Most of the sanitation approaches available are different from each other and employ a different technique, has diversified target group, perform variable activities, entertain stakeholders in a distinctive manner, has different quality of member participation, and achieve distinct results. Considering the number of sanitation approaches that exists in the market, it can appear to be nearly impossible to compare them all with just one tool. After the analysis and comparison of various state-of-the-art rural sanitation approaches, an activity based rural sanitation approaches comparative framework was developed by the Water Institute at UNO. The comparative tool can be employed to measure the correlations of activities performed among approaches.

The activities in this framework are grouped into seven categories based on the activities performed in a rural sanitation approach at different stages of implementation. The groups of activities typically conducted in rural sanitation projects are as follows:

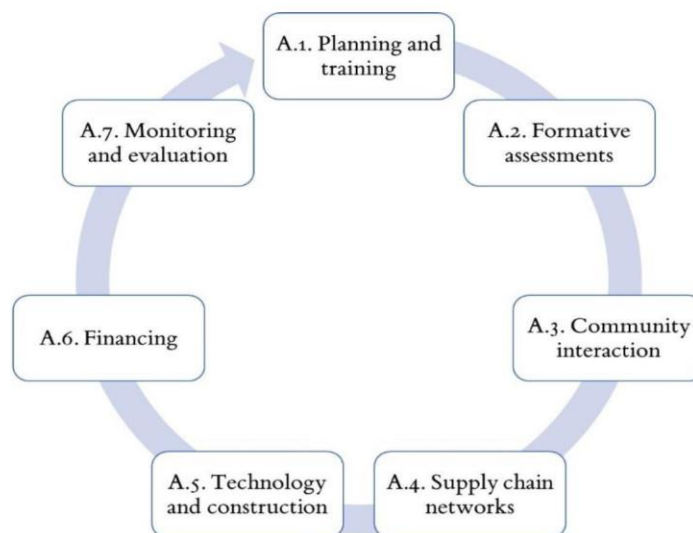


Figure 19: Review of Rural Sanitation Approaches (Venkataramanan, 2017)

The step-wise conduction of activities is represented in the form of a repeating and upgrading loop (see figure above). This framework is designed to be filled with easy ‘Yes/No’ responses, based on the number of activities involved and performed in a rural sanitation approach. Using this framework, one can compare the strengths and weaknesses, similarities and differences as well as main attributes in activities performed across different approaches. The diverse set of activities pertaining to each implementation stage can be seen in the table below.

Table 5: Activity based Rural Sanitation Approaches Comparative framework

Activities Performed	Yes/No
A.1. Planning and training	
Community selection	
Advocacy to government	
Training community members on sanitation technologies	
Training participatory facilitators	
Training community health workers	
Training community/natural leaders	
Training local government	
Training masons/artisans	
Training suppliers, entrepreneurs, sales agents	
Training credit officers/MFIs (Micro Finance Institutions)	
A.2. Formative assessments	
Baseline sanitation coverage survey	
Baseline KAP survey	
Consumer market research (e.g. barrier analysis, willingness to pay, design)	
Local supply chain assessment (e.g. landscape analysis, or informal review)	
Microfinance feasibility study	
Technology option piloting	
A.3. Interaction with communities/beneficiaries/customers	
Educational activities	
Community mobilization (“triggering”)	
Creating village committees/clubs	
Promoting latrine upgrading	
Social marketing campaigns	
Latrine technology fairs and sales events	
Door to door campaigning	
Sanctions and enforcement	
A.4. Supply chain networks	
Linking manufacturers, suppliers, consumers	
Local enterprise development (including one-stop-shop models)	

Establishing entrepreneur associations		
A.5. Latrine technology & construction		
Latrine construction support from external implementers		
Latrine construction by households with locally available material		
Designing latrine technologies at different price points		
A.6. Financing activities		
Organizing consumer loans through MFIs		
Organizing small business loans for sanitation businesses through MFIs		
Establishing village group savings associations/self-help groups		
Allocating public funds for locally-determined and subsidies		
Donation/discounting materials to community or targeted segments		
A.7. Monitoring and evaluation		
Active monitoring by external actors		
Community monitoring		
Collection of sales data		
Monitoring loan repayments		
Endline coverage surveys		
ODF (Open defecation Free) verification visit		
Post-ODF slippage survey		

2.8 Justification of selected theories and analytical considerations

This chapter defines the use of selected theories in the previous chapter and also shows how they are adapted in this research.

2.8.1 Justifications

It is important to provide rural population access to WaSH facilities, but it is also important to make sure that they use it. The conditions for which are described and discussed in the theoretical framework. In order to understand the relevance of just transition in sanitation sector it is required to define it first. And to do that the use of the above mentioned theories was important, as it provides the requirements for an inclusive rural sanitation approach to transform people's lives and the necessities of making that transformation just.

Water, sanitation and culture realizes the necessity of aim for a context based solution rather than a one-size-fit-all approach. It highlights that every community has different requirements and problems, that asks for different solutions. It also tells the importance of being empathetic and considering cultural factor of the target population in order to provide them with a proper solution that they accepts and use regularly. The use of decentralized sanitation systems for rural setups has been stressed for the community to learn to take care of it on their own and such systems also creates ownership. This chapter serves the purpose of setting a robust base of essential requirements of a sanitation approach to appeal to different communities. Thus provides the crucial knowledge base, for WaSH policies makers

definition framework has been used to simplify justice in WaSH context and to define a just WaSH approach into measurable terms.

Qualitative public policy analytical framework has been used to adapt the quantifiable indicators it has utilized and incorporate it in order to evaluate justice in WaSH context. A quantifiable just sanitation scoring tool was adapted from the qualitative framework to compute a just WaSH approach. In doing so data was also collected and used from the Activity based rural sanitation comparative framework. A flow diagram to achieve a computational model for just sanitation transition approach is described above.

2.8.2 Adaptations from the selected theories

In order to wrap up the theoretical framework into deductive logic, a need to score the situations arises. So the 'Qualitative public policy analytical framework' was adapted to create a 'Cumulative Scoring Tool'. The adaptation included a similar scoring scheme but a different scoring mechanism and set of indicators. In place of the original 'unintended effects' and 'feasibility' indicators, a new indicator called 'Scaling' was used to detect whether a rural sanitation approach can be scaled further and implemented in different contexts. It was decided that the 'feasibility' of an approach in a context can already be measured through the 'Acceptability' indicator and the 'unintended effects' indicator was covered in the 'Effectiveness' indicator.

In the adapted tool, sub-indicators are scored first and then their cumulative score is assumed to be the score of the indicator. Unlike the framework, in the scoring mechanism of this scoring tool, sub-indicators are scored against independent and justice dimensions. The scoring schemes are similar with an additional 'NA' as a score that is not used in the framework.

A cumulative scoring tool is a scoring tool in which all the sub-indicators, that are previously scored, provide an aggregate score that becomes the score of the indicator it satisfies. For example, a cumulative scoring tool for a rural WaSH approach is shown in the table below. The process of how to score is later discussed in detail in methodology. (Note: '***' means there exists a value in this field).

It is to be noted that not all the indicators have the capacity to judge the justice dimensions of an approach. It is because such indicators were required to evaluate whether the approach works and produces results and whether the approach is scalable to other contexts or not. Such indicators that disclose the potency of an approach to achieve desired targets were evaluated irrespective of them satisfying the justice dimensions. It is because whether a sanitation approach is just or not can only be checked when one knows that the approach works. If the approach is not capable of achieving desired results then it does not matter if it is just or not. Hence 'Effectiveness' and 'Scaling' indicators and their sub-indicators are evaluated independently from the justice dimensions, thus are given 'Independent scores'.

As the approaches are evaluated not just against their process and procedure but also against their implementation observed in the field, there might be cases where it is seen that the approach did not work well and produced desired results but most of the time there were faults in the process of implementation and not the approach itself. In such cases even if the approach was found to be

Table 6: Cumulative scoring tool for a rural WaSH approach

Approach Indicators	Approach Sub-indicators	Scores			
		Independent scores	Justice Dimensions Scores		
			Distributive	Recognition	Procedural
Effectiveness	Implementation	(* * *)	NA	NA	NA
	Performance	(* * *)	NA	NA	NA
	Sustainability	(* * *)	NA	NA	NA
	Time	(* * *)	NA	NA	NA
	Project reporting and documenting	(* * *)	NA	NA	NA
	Total	(* * *)	NA	NA	NA
Scaling	Demand	(* * *)	NA	NA	NA
	Resource availability	(* * *)	NA	NA	NA
	Political will	(* * *)	NA	NA	NA
	Willingness to invest	(* * *)	NA	NA	NA
	Total	(* * *)	NA	NA	NA
Equity	Stakeholders Identification	NA	NA	(* * *)	NA
	Stakeholders Recognition	NA	NA	(* * *)	NA
	Stakeholders Involvement	NA	NA	(* * *)	(* * *)
	Stakeholders Interaction	NA	NA	(* * *)	(* * *)
	Stakeholders Distribution	NA	(* * *)	(* * *)	(* * *)
	Total	NA	(* * *)	(* * *)	(* * *)
Acceptability	Demand analysis	NA	NA	(* * *)	(* * *)
	Creating Adaptive Environment	NA	NA	(* * *)	(* * *)
	Total	NA	NA	(* * *)	(* * *)
Cost	Funds	NA	(* * *)	(* * *)	(* * *)
	Approach/technology implementation	NA	(* * *)	(* * *)	(* * *)
	Operation and maintenance	NA	(* * *)	(* * *)	(* * *)
	Gains	NA	(* * *)	(* * *)	(* * *)
	Total	NA	(* * *)	(* * *)	(* * *)

ineffective (when an approach receives a negative score in the 'Effectiveness' indicator), the evaluation procedure was continued to access the further indicators.

After the potency of an approach to achieve its targets has been evaluated, the 'Equity', 'Cost', and 'Acceptability' indicators were assessed against the justice dimensions (i.e. distributive, recognition, procedural). The indicators that satisfy or dissatisfy such justice dimensions are evaluated and are given 'Justice Dimension scores'.

A just sanitation scoring tool is also adapted from the 'Qualitative public policy analytical framework' in the same way as a cumulative scoring tool. The total scores generated for the indicators in the cumulative scoring tool are fed in the just sanitation scoring to get a total independent and justice dimension score pertaining to a rural sanitation approach. An example of a just sanitation scoring tool is shown below. (Note: '***' means there exists a value in this field).

Table 7: Example of just sanitation scoring tool

Approach Indicators	Scores			
	Independent scores	Justice Dimensions Scores		
		Distributive	Recognition	Procedural
Effectiveness	(***)	NA	NA	NA
Scaling	(***)	NA	NA	NA
Equity	NA	(***)	(***)	(***)
Acceptability	NA	(***)	(***)	(***)
Cost	NA	(***)	(***)	(***)
Sector Total	(***)	(***)	(***)	(***)

3 Methodology

The methodology of the thesis has become a challenge, due to the pandemic Covid-19 that caused unexpected limitations for researchers worldwide. On a global level, lockdowns have been imposed, governmental institutions have suspended public opening hours, visa issuance has stopped, and borders have been closed. For this reason, the originally planned methods and tools of this thesis needed to be adapted to the current global situation. In the following chapter, principal considerations, data acquisition methods as well as the approach of data processing are exposed in detail. The perspectives and considerations embrace central questions on qualitative research, ethical considerations as well as the researcher's background and role.

3.1 Data acquisition methods

Considering that this research involves a diverse group of stakeholders, it became difficult to acquire data with just one method. For this reason, it was decided that different methods will be used to collect data depending on the understanding ability and literacy of the respondents, geographical limitations, and technological constraints. In the following, the sampling methods from governmental, non-governmental, and international institutions are presented. In addition, the methodology of the expert interviews and survey is presented.

3.1.1 Data and reports

During this research government data, strategies, projects, and plans from various ministries and government institutes of Kenya were taken into consideration. This includes reports and strategies from the national, county as well as sub-county governmental levels of Kenya. The decentralized power structure of the ministries, county departments, and sub-county institutions are expected to provide an efficient policy creation, regulatory mechanism, and service delivery to the beneficiary. The policies, rules, and standards are established by the various ministries of the national government. The work of such authorities is included in this research for a better understanding of the government's attitude, approach, and future plans towards providing WASH-related services to the population.

In addition to the government data and reports, many project reports, annual reports, newsletters, and empirical data from various NGOs were also considered during this research. It is because NGOs have a good understanding of the stakeholder's perspective on policies, innovations, and services, the know-how of implementation of rules and regulations, connection with the stakeholders in a community, etc., that it was decided to include such context-based experiences and researches of different NGOs as 'Grey Literature' in this research.

The invaluable expertise in data collection, data analysis, and data presentation by respected international organizations and institutions cannot be neglected while preparing for comprehensive research. It is because of the vast network and investigative approach of honored international organizations such as the World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF), United Nations Women (UN Women), United Nations Command (UNC), among others., in the WaSH sector that it was decided to include such thorough researches from these organizations as 'Grey Literature' in this research.

Most of the required contextual data came from expert interviews and surveys. But there exists some previous research, either on similar topics or with similar context, having reliable data. Whenever data from journal papers, conference articles, and independent sources (project reports, thesis, etc.) was considered essential for the purpose of this thesis, it was added.

3.1.2 Expert Interviews

As the just transition approach in sanitation is new and does not have a theoretical foundation based on which challenges and problems can be identified and solutions can be provided, it becomes crucial to interact with the people who have experienced and dealt with such situations. For this reason, conducting expert interview is considered the best approach to answer the research question of this thesis.

3.1.2.1 Identifying interviewees

For the selection of experts, a rapid stakeholder analysis was conducted. The population directly affected and influenced by the school WASH projects in Kenya was spotted and categorized into three categories namely government, NGOs, and community members (beneficiary or users). Among such stakeholders, the regulators and implementers of community-based sanitation approaches and sanitation technologies were considered for online interviews to share their views. In total five experts were interviewed. The selection of experts followed an inclusive way, securing a balanced composition of local government experts as well as experts from international NGOs. Some experts were not part of the initial interviewee list and were later added by heeding to the recommendations of interview partners.

The stakeholder representing the government's approach to rural community sanitation that the researcher was able to reach out to and able to successfully conduct interviews are as follows:

- i. Public Health Officer (PHO), Trans-Nzoia County, Kwana Sub-county, Kenya.

The stakeholders representing their respective NGO's approach to rural community sanitation and served sanitation technologies that the researcher was able to reach out to and able to successfully conduct interviews are as follows:

- i. Founder, Hands of Progress (HOP) e. V. , Bielefeld, Germany
- ii. Implementation Specialist, SEMiLLA Sanitation, Netherlands
- iii. Executive Director, Kenya Connect, Kenya
- iv. Rotary Doctors Sweden (RDS) staff in Kenya, RDS, Kenya

Table 8: Stakeholders Interviewed

Stakeholders	Representative	Designation	Responsibilities
County Department of Public Health, Trans-Nzoia	Elphine Moraa Mirambo	Public Health Officer	Tracking public health and Implementing CLTS (Community Led Total Sanitation) in the community
NGO	Grace Karanja- Nurek	HOP, Founder	Sanitation facilities provisioning
	Esther Von Loon	Implementation Specialist, SEMiLLA Sanitation	Analyzing sanitation-based business cases
	James Musyoka	Executive Director, Kenya Connect	Providing compost toilets in primary schools
	Selina Wachiyye	RDS staff, Rotary Doctors Sweden	Implement CLTS in the community

There exist some stakeholders that were asked for an interview but it could not happen. Such stakeholders include:

- ii. Mr. Khaemba, Head teacher, Mukuyu Primary school, Trans-Nzoia county, Kenya
- iii. Community leaders, Mukuyu community, Trans-Nzoia county, Kenya.

3.1.2.2 Developing interview Script

To make it comprehensive research, a rapid but diverse literature review was conducted on subjects including dimensions of justice, improvements in the Kenyan sanitation system over the last 15-20 years, government's adopted strategy, future plans, affected people, different support systems, among others. Once the primary literature review was done and the interviewees were identified, the next step was to develop the interview script, structure the interview, and finally conduct them.

The interview script was formulated after considering the needs and responsibilities of different stakeholders, identifying how justice dimensions may satisfy those needs in the sanitation context, activities performed by the NGOs and government stakeholders during their approach, considering the mission, vision, and work done by the NGOs and the government, analyzing different rural sanitation approaches and technologies, and studying contextual public policies, rules, regulations, and standards with regards to WASH in Kenya.

3.1.2.3 Interview structure

The interview was designed and structured with the expectation that the conversation flows harmoniously, the interviewee feels comfortable, and gets enough time to fully express his/her views. An emphasis was put on the individual needs in the way that expectations can be expressed freely, and boundaries will be respected. To execute these principles, a five-stage interview structure was elaborated. The stages include:

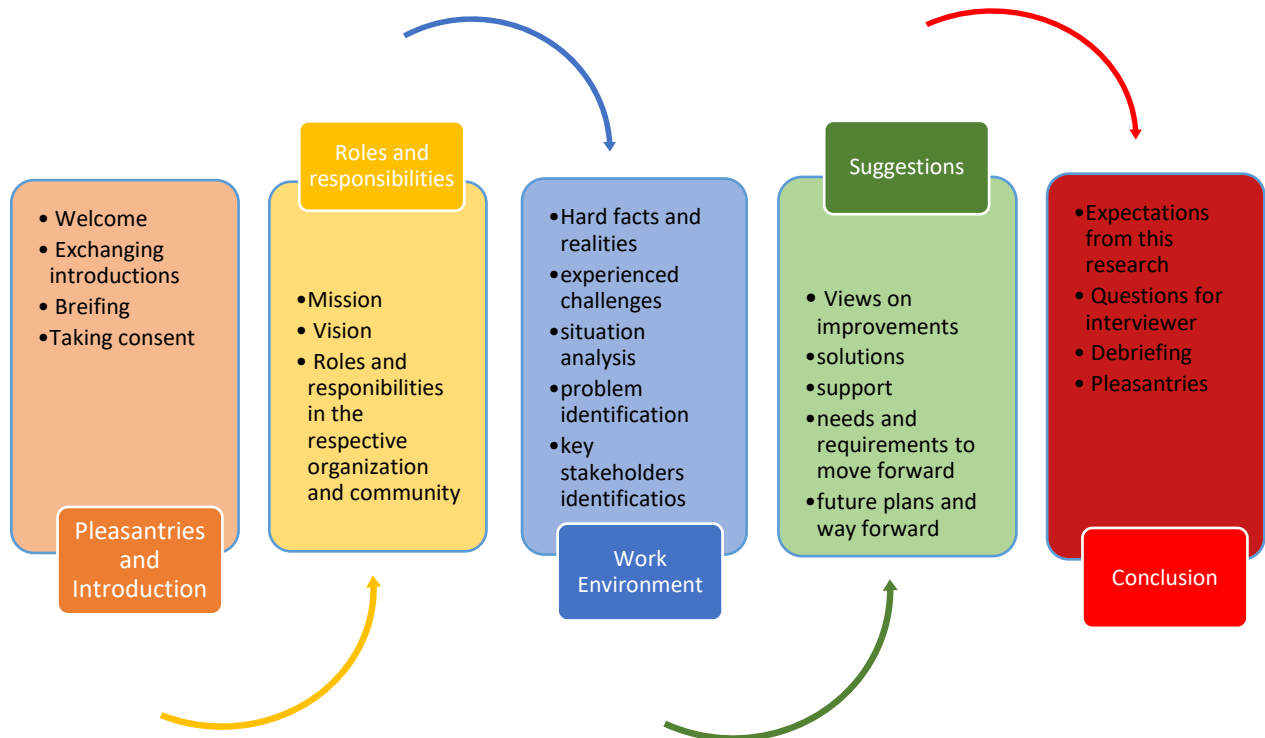


Figure 21: Expert Interview Structure

3.1.2.4 Conducting interviews

Considering the quality of responses, clear communication, and not to lose data in translation, the interviews were originally expected to be conducted in person. However, due to the unfortunate situation posed by the novel COVID-19 virus and to provide flexibility of geographical location, all expert interviews were decided to be conducted online. Taking into account the comfort of online visual meeting, video recording and later downloading the meeting as an mp4 video file, it was decided that the expert interviews will be conducted with the help of the Zoom meeting application.

Respecting the ethics of a qualitative interview the consent to participate and to record the meeting and the rights of the participator were explained at the beginning of every interview. The interview questions were asked in a scripted manner and adapted on the basis of responses whenever felt necessary.

The responses received during the interviews were mostly elaborative, involving a couple of yes/no and one-word responses. With each newly gathered information, the assumed indicators and influencing factors of a just sanitation approach were constantly updated throughout the interview process. Due to this adaptation, the final interview questionnaire turned out to be different than the primary interview questionnaire. This process of interview partner selection is the snowball method. Under such circumstances, there also arose a need to conduct a second interview with three stakeholders to get their response on newly gained information. And if still, some information was to be acquired later, it was done through exchanging messages with emails and Whatsapp application. The method was an

intuitive and heuristic-based design. The primary interview script and the consent form are added in the annex.

In qualitative research, it becomes imperative to include as many stakeholders as possible for a qualitative research result. Analyzing just sanitation transition approaches must involve a balanced stakeholder representation as well. This emphasizes the importance of gathering perspectives of community members, school representatives, and NGO staff. Considering the fact that reaching out to masses through individual interviews is impractical and taking into account the faster response and vast population coverage one can achieve, surveys were also used as the data acquiring method in this research.

3.1.3 Activity Based Comparison of Rural Sanitation Approaches Framework

In order to map different approaches, it became necessary to use a framework that can describe the number and forms of activities conducted/implemented by an organization in order to reach its goals. The activity-based comparison of rural sanitation approaches framework was considered a suitable tool for this purpose because of its comprehensive and inclusive characteristics. Therefore, it was chosen to acquire data in this research. This tool was able to differentiate various rural sanitation approaches and have a better understanding of which activities produce promising results as far as just sanitation transition is concerned. So, the representative of HOP was asked to fill this framework based on the activities done by the NGO in the community in which they have worked in.

3.1.4 Community Survey

Community members of a society are the central stakeholder on which all the efforts of most other stakeholders are focused. For this reason, it becomes important to understand their point of view on the WASH situation in their community. Since it was not possible to interview them in person due to the pandemic, including their point of view became a challenge. As most of the community members are not able to afford access to the internet, it became difficult to acquire data through online interviews. Therefore, it was decided that their responses will be collected through a survey that was conducted by the coordinator of HOP. In the design of the survey, it was considered that it will be short and precise, easy to understand, scalable of attitude and emotions, and easy to answer. Hence, a summated rating scale form of the survey was chosen to collect data from community members and the school headteacher.

In total, two surveys were elaborated. Both were adjusted according to their respective target group, being the school headteacher of Mukuyu Primary School and the parents of students attending this school.

3.1.4.1 Likert scale survey

The Likert scale (a.k.a. Summated rating scale) was invented by Rensis Likert in 1932, who used the scale for the assessment of attitudes in his research. Since its creation, the Likert scale has been widely used in the field of social science for measuring, for instance, personalities, opinions, emotional states, personal needs, behaviors, and satisfaction (Spector, 1992). As a part of his doctoral thesis, Rensis's

original scale consisted of five points with response options ranging from “strongly disagree” to “disagree” to “neutral” to “agree” to “strongly agree”(Gunderman and Chan, 2013, p. 1466).

The four characteristics of Likert scale, according to (Spector, 1992; Harpe, 2015) are as follows:

1. A Likert scale must comprise multiple items. An individual item in a Likert format, is not a Likert scale;
2. Each individual item in a Likert scale must measure “a property of something that can vary quantitatively rather than qualitatively”;
3. Each item in a Likert scale has no “right” answer;
4. Each item in a Likert scale is a statement, for which respondents do not answer ‘yes or no’, rather rate them;

A Likert scale provides a cutting edge over ‘yes or no’ questions, as they provide extended reliability, precision, and scope to the study (Spector, 1992). However, the traditional 5-point Likert scale may not be sufficient to provide high-quality results as compared to the 13-point Likert scale. Increasing the response options, i.e. from 5 points to 13 points, reduces the gaps between response items, making the response distribution curve smoother (Gunderman and Chan, 2013).

But a 13-point Likert scale, although being way more effective, has its own practical disadvantages. According to (Gunderman and Chan, 2013), firstly, it requires 260 % extra effort (on the basis of a rough calculation) to prepare, conduct, and analyze this survey, as compared to a 5-point scale. Secondly, arises the need to use a landscape view rather than a portrait view of an average DIN A4 size sheet, to accommodate the wider scale. But It is important to use a portrait view of a DIN A4 paper rather than a landscape view, as it can have more number of questions.

On the other hand, the central tendency bias or clustering bias also needs to be taken into account. The clustering bias is the propensity of respondents to avoid extreme responses and cluster in the middle of the scales (Gunderman and Chan, 2013; Pimentel, 2019). Clustering bias can be reduced by widening the response spectrum (Gunderman and Chan, 2013). By selecting a 7-points (over 5-points) Likert scale, one can reduce the clustering bias, use a portrait view of a DIN A4 sheet, and at the same time increase scale effectiveness. However, in order to force respondents to make a choice, in one direction or the other, and not stay ‘neutral/undecided’, a force-number (or even number) Likert scale becomes necessary (Pimentel, 2019).

Considering all mentioned restrictions and the practical limitations of this research, that the researcher cannot conduct the surveys in person, this study will use a forced-number 6-point Likert scale. The 6-points used are as follows: ‘Strongly Disagree’, ‘Disagree’, ‘Mildly Disagree’, ‘Mildly Agree’, ‘Agree’, and ‘Strongly Agree’.

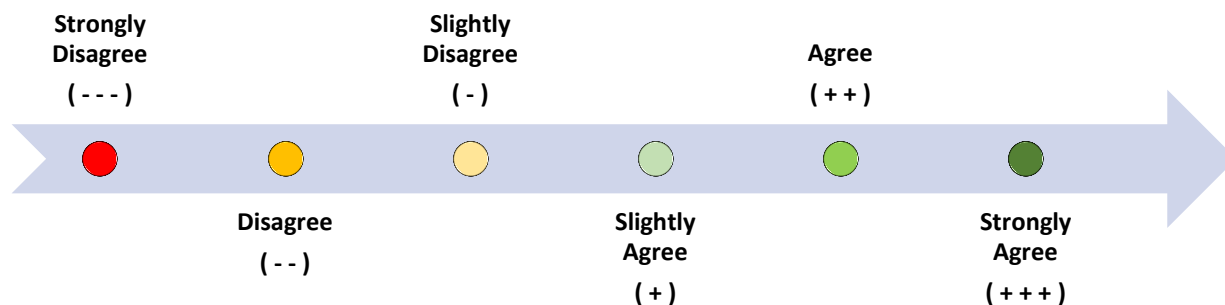


Figure 22: Six-point likert scale survey

3.1.4.2 Additional elaborative approach to likert scale

It is challenging to understand the thought process and reasons behind a respondent's choice of his/her level of satisfaction with the available services and resources, governmental and non-governmental (HOP) involvement, knowledge and awareness, motivation and willingness, and participation and engagement in provisioning of sanitation facility (both at home and at own child's school). For a better understanding, the respondents were asked to give reason(s) for their choice of level of agreement with each statement in the Likert scale survey.

This elaborative approach to Likert scale appears to provide a refined idea of respondent's familiarity and understanding of the issue and also gives space to share additional details and concerns which may not be included in the survey.

3.1.4.3 Developing survey

Two kinds of surveys were developed, one for the Mukuyu community members and one for the headteacher of the Mukuyu primary school. The survey was intended to collect information regarding the respondent's opinion over the role of the government in sanitation, the role of the NGO HOP in school sanitation facilities as well as their awareness, satisfaction with the process, and own expectations.

Keeping that in mind, a literature review was conducted to identify the shortcomings of different participatory approaches to sanitation provisioning. The limitations ignored aspects, and unexpected results were identified and juxtaposed with different justices dimensions. Alongside, expected outcomes of the approaches, awareness among respondents, demand for sanitation facilities, and important contextual behavioral and cultural aspects were also noted.

After acquiring the necessary information, 26 statements were prepared in an easy and understandable language. Then, the statements were transformed into a six-point, 26-item elaborative Likert scale survey. A pre-survey was conducted by sharing this primary survey among close friends and colleagues of the researcher in order to understand the respondent's interpretation of each item.

After reviewing the feedback, the language complexity of some items was reduced and adjusted accordingly. The survey, for parents of students at Mukuyu primary school, was refreshed and the number of items was reduced to 16-items. The modified survey for the head-teacher of Mukuyu Primary

School included a 23-items elaborative Likert scale survey in addition to 3 elaborative open-ended questions. The elaborative Likert scale surveys used in this research for data collection can be found in the annex.

Table 9: Example of a six point Likert scale responses

Responses	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Scores	(- - -)	(- -)	(-)	(+)	(+ +)	(+ + +)

3.1.4.4 Conducting survey

The elaborative Likert scale survey for both, parents of school students and the headteacher, were sent to the researcher’s contact at HOP. In a preparation meeting, the contact person was also made aware of the instructions and procedure to conduct the survey. In total, 100 surveys for parents were printed and handed out to a teacher, who then distributed them among the students to ask their parents to answer the survey’s questions. The survey for the headteacher was given to him directly by the contact person at the NGO.

Of the 100 distributed surveys, 68 complete and 32 blank surveys were returned to the contact person at the NGO, in addition to the survey for the head-teacher.

3.2 Processing, coding and analyzing data

This chapter explains the steps of processing, coding and analyzing the collected data. This includes the expert interviews as well as the surveys.

3.2.1 Data transcription and processing

Once the five expert interviews were conducted, it was necessary to transcribe them to extract information in the form of quotations to support the conclusive arguments of this research. For doing so, the qualitative analysis software called ‘MAXQDA’ was used. While transcribing the interviews some fillers words, such as ‘like’, ‘you know’, ‘umm’, and doubling of sentences were not included. This was done when such words and sentences did not provide meaning or intensified the emotions that the interviewee wanted to convey.

The data processing of the surveys followed five steps. First, they were scanned individually and sent to the researcher in form of 139 individual ‘pdf’ format files. Then these 139 files were merged into one file. Later the responses received in the Likert scale in the form of degree of agreement with the statement were assigned a score (see table below) and represented in an Excel sheet, while the descriptive answers with the Likert scale were collected in a Word documented which was later uploaded on MAXQDA to be analyzed. And the scored responses of parents and the headteacher in the form of an Excel sheet were separately processed and analyzed.

3.2.2 Approach to coding

MAXQDA was used to execute the coding process as it provides flexibility, simplicity of usage, and a wide variety of qualitative approaches to process and analyzes data. The coding process includes

creating codes, identifying the text to be coded, and assigning codes to relevant segments of the interview. To get a higher volume of coded data and a better quality of results, project reports and other relevant documents produced by stakeholders were also added to the MAXQDA during the coding phase.

Initially, three groups of primary codes were created representing the stakeholders to which the secondary codes will apply. These primary codes were 'Government', 'NGO', and 'Community members'. These primary codes were then differentiated into five secondary sub-codes (later known to be approach indicators in just sanitation tools) for each primary code. These secondary sub-codes were the indicators or influencing factors that will describe the quality of just sanitation approach executed or experienced by the stakeholders. The secondary sub-codes were adopted from the qualitative public policy analytical framework developed by National Collaborating Centre for Healthy Public Policy (NCCHPP). The secondary sub-codes were further subdivided into relevant tertiary sub-codes (later known to be the approach sub-indicators in the cumulative scoring tool). Some, not all, of the tertiary sub-codes, were further classified into sub-codes.

Once the codes were created, then the next step was to check which texts satisfy these codes and then to score them. To execute this, the texts were read thoroughly and efforts were made to understand the meaning behind the messages that the stakeholders wanted to convey. In the next step, the codes were assigned to texts.

3.2.3 Tools used for data analysis

Once the data was received through interviews, surveys, emails, reports, and WhatsApp messages, it was then assigned codes. The coded segments were then retrieved from the MAXQDA tool and used in the research as evidence. The evidence was later used to score the tertiary codes (or approach sub-indicators). The responses of the activity-based rural sanitation comparative framework filled by the HOP's representative were also used as evidence during the scoring process. The responses from the Likert scale survey were converted into pie charts and then used as evidence during the scoring process.

3.2.4 Code scoring process

After the data has been retrieved, it is used in the form of evidence to score the tertiary codes (or approach sub-indicators). It is to be noted that it is not just the approaches that were evaluated in this research but also the way of implementation of processes, procedures, and activities. The scores were assigned in the range of (- - -), (- -), (-), (+), (+ +), (+ + +), NA.

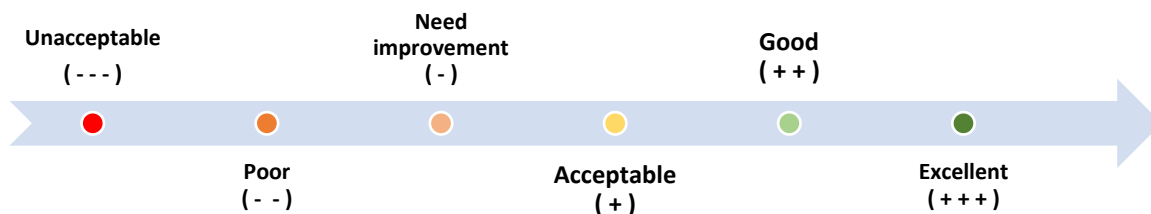


Figure 23: Different scores used in just sanitation scoring tool

- a. Excellent (+ + +) = when it fulfills all the needed requirements of the sub-indicator;

- b. Good (+ +) = when it fulfils most of the needed requirements of the sub-indicator but not all of them;
- c. Acceptable (+) = when it satisfies some of the needed requirement and when it has more positives aspects in favor of the sub-indicator than its negatives. The codes that get this score still need improvements either in their approach or during the implementation of their approach;
- d. Need improvement (-) = when it does not satisfies the requirements of a sub-indicator and when it has more negative aspects in favor of the sub-indicator than its positives and need some improvements be acceptable;
- e. Poor (- -) = when majority of the requirements of the sub-indicator are not met;
- f. Unacceptable (- - -) = when it does not satisfies any of the requirements of the sub-indicator;

The score that does neither satisfy the independent scores nor the justice dimension score is assigned 'NA'. The score 'NA' does not have any negative or positive value. It is to be noted that not all of the indicators and sub-indicators hold the same priority and weight. Some sub-indicators and indicators have higher importance than others. This is explained while scoring each indicator and sub-indicator.

Thus with this scoring process, the comparative scoring tool and later just sanitation scoring tool were filled. After the just sanitation scoring tool is filled, the results are shown in the form of the just transition definition framework graph.

Table 10: Example of just sanitation scoring tool

Approach Indicators	Scores			
	Independent scores	Justice Dimensions Scores		
		Distributive	Recognition	Procedural
Effectiveness	(***)	NA	NA	NA
Scaling	(***)	NA	NA	NA
Equity	NA	(***)	(***)	(***)
Acceptability	NA	(***)	(***)	(***)
Cost	NA	(***)	(***)	(***)
Sector Total	(***)	(***)	(***)	(***)

3.3 Ethical considerations

It is the nature of qualitative researches that it involves people interactions, such as researcher and participants. Qualitative research is also known to be interpretive research, as interpretations can be wrong and biased, the results may also raise concerns (Stake, 2010). As the researcher is engaged in different processes and stages of research like research designing, interviewing, transcribing, assessing, discussing, concluding, and reporting, it requires formal ethical guidelines (Fink, 2000; Sanjari *et al.*, 2014). During the research, ethically challenging situations can arise for a researcher during

contradicting arguments of respondents, issues with funding institutions, and social structure of the society (Punch, 1994; Truscott, 2004). So the ethical considerations that should be included in qualitative research are confidentiality, anonymity, and informed consent (Richards and Schwartz, 2002; Sanjari *et al.*, 2014).

Considering the requirements a consent form was designed and distributed among the experts before conducting the interview. The informed consent form included the clauses of interviewee rights, a promise of confidentiality, and a privilege of anonymity. The focus was also given to provide a safe environment to the experts, where communication can happen in a respectful manner. The research tries to examine the actual quotes said by the interviewees rather than interpreting the meaning behind the words, gestures, body language, and emotions. Any kind of (perceived) distasteful views, opinions, and perceptions of the experts was not challenged during the interview. The respondents were given as much time as they need to think and respond. Any kind of practice to lead the interviewees into getting the desired responses was avoided.

3.4 Researcher's background, role and biases

The researcher comes from a society wherein some places open defecation is still a routine habit. In the early childhood days (until six-seven years of age), the researcher experienced and practiced open defecation himself. It was the norm until the sewage facility was made accessible and the WaSH facility in the household became a necessity and a symbol of prestige in society. So because of this firsthand experience, the topic of open defecation, its inconveniences, and the hygienic challenges it raises, this topic is quite personal for the researcher.

However, enhanced access to improved WaSH at home and being privileged to live, travel, and study in different countries, may have presented a superiority complex, as far as the usage of WaSH services is concerned, to the researcher. With consistent media consumption regarding notions pertaining to differences and divisions of the rich and poor, global north and global south, least developed, underdeveloped, developing and developed countries, and many more, some negative or positive stereotypes may also be assumed to exist with the researcher.

Whether a WaSH facility fulfills a good lifestyle standard or not, or its knowledge, awareness, and affordability can be a subjective opinion. In order to reduce the effects of such psyche on the quality of this research, a reflexive approach to interviewing was practiced, in recommendations of (Clarke, 2006). This included asking elaborative questions to reduce presumptions, focusing more on listening, and giving priorities to lived experiences over others.

This research involves gauging the degree of justice and other indicators. This may get affected by an individual's formative bias. Also, justice can be perceived differently by different people. The researcher has a conformation bias that encourages him to look for proofs, studies, and theories to affirm his existing beliefs.

4 Mapping of cases

In order to understand the context of the situation, it is important to know their present conditions, demographics, political structures, policies, among others. This chapter covers that portion.

4.1 Kenya

Kenya is an east-African country in the Sub-Sahara region of the African continent. The Gross Domestic Product of Kenya stands at US\$ 95.5 bill. (WDI, 2019). A recent estimate by the world bank shows that the total population is projected to be 53.7 mills. with 49.7% male and proportion females being 50.3% (World Bank, 2020). The migration from rural to urban areas has been rising for a couple of decades which causes high population density in the cities. The present population divide for urban and rural populations stands at 28% and 72%, respectively. This is a 7% increase from 2015 data (JMP, 2017). This has increased the burden on resources present in urban areas. To manage the national resources better, after a total of 67% of people voting in favor, a new constitution was adopted by Kenya in 2010 (KSSF, 2016).

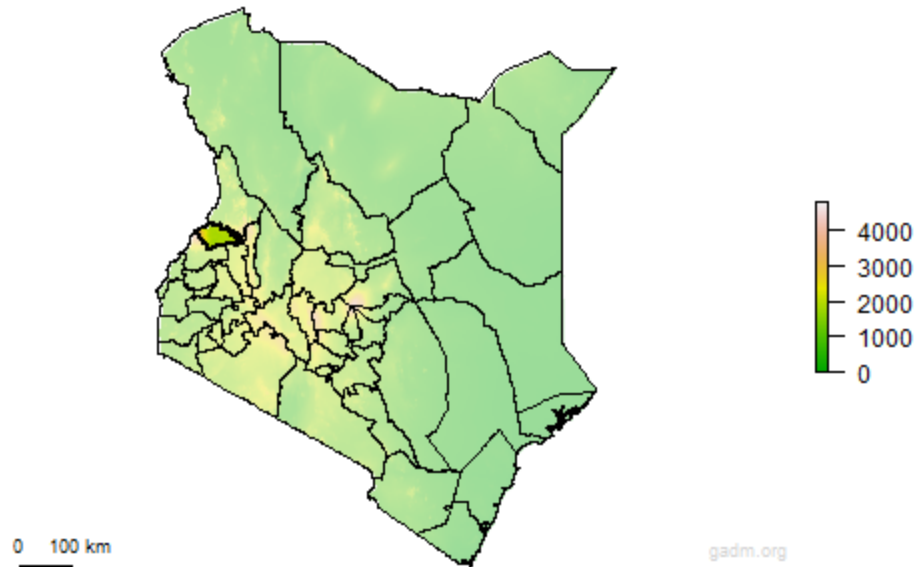


Figure 24: Map of Kenya representing elevation above sea level (in m) (GADM)

4.2 WaSH in Kenya

According to an estimate around 20% Kenyans drink directly from contaminated surface water sources (UNICEF, 2020), 14% people practice open defecation (JMP, 2020), and 75% population does not have a hand washing facility with soap and water at home (UNICEF, 2020). Poor WaSH services cost Kenya KES 27 bill. (US\$ 324 mill.) each year which is equivalent to 0.9% of the national GDP and cost US\$ 8 /Kenyans each year (WSP).

On the other hand, access to drinking water has increased by 12% since 2000 to reach 59% whereas access to basic sanitation has reduced by five percent to reach 29% at present (UNICEF, 2020). Recent studies has shown than diarrheal morbidity is reduced by 25% with more people getting access to WaSH

services. This has been seen to further reduced to 45% when community sanitation coverage reaches over 75% (Njuguna, 2019).

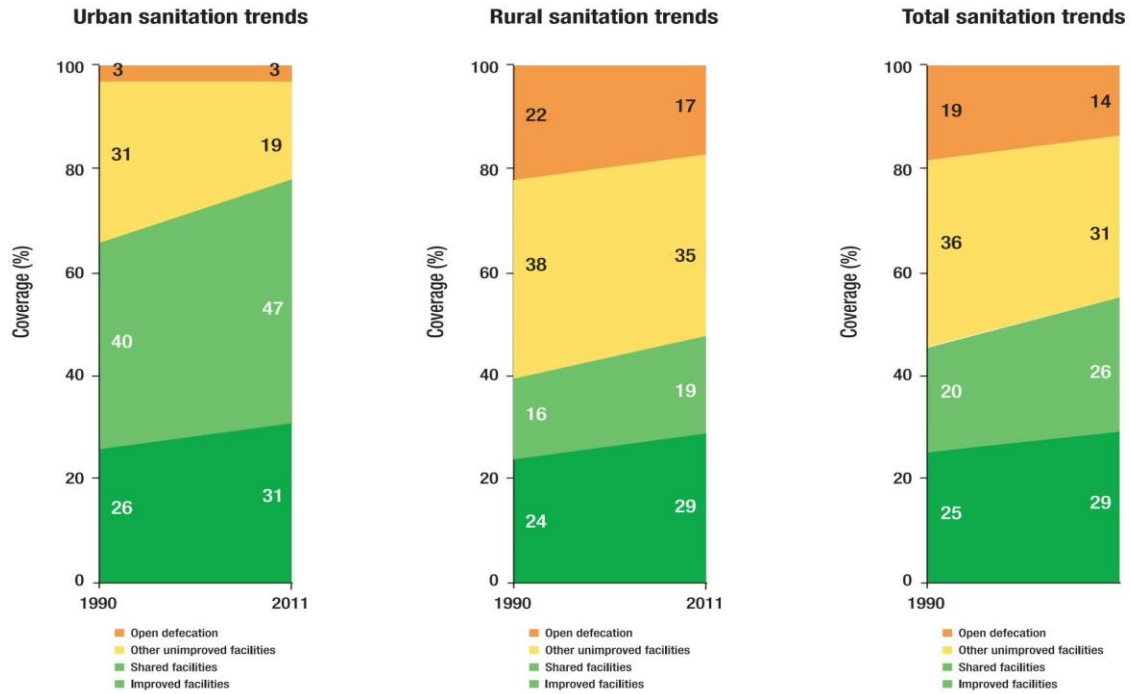


Figure 25: Access to improved sanitation in Kenya 1990-2011 (KESSF, 2016, Sec1:8)

The new constitution provides the right to every Kenya to get the highest attainable quality of health and sanitation services possible at both national and regional levels (KCHP, 2020-2030; KESHP, 2016). It is done by stressing on devolution of power from the central governments to the county governments (KESSF, 2016). Kenya Vision 2030 wishes to provide water and basic sanitation access to all Kenyans by 2030 (NESC, 2007), and to achieve this target the country required an investment of KES 1.7 trillion (US\$ 17 bill.) in the WaSH sector (WRMA, 2013). On the contrary, the budget allocation to make it possible is not enough. In the Kenya National Water Master-plan 2030, budget allocation to achieve this target is KES 592.4 bill. (US\$ 6), leaving to a shortage of US\$ 12 bill. (Mati and Mugo, 2018).

According to (UNICEF, 2020) estimations, the goal to achieve universal access to WaSH services by 2030 will prove to be challenging for Kenya considering the population growth, climate change, and current government investment. Poor WaSH services, including open defecation practices, have been found more common in poor neighborhoods than richer ones (Njuguna, 2019). According to (Lipesa, 2014), poor sanitation is also the cause of poverty. For example, poor WaSH services cause stunting in children under three years old (Rah *et al.*, 2020). Young stunted children are prone to scoring less in school exams. Stunted adults, with poor cognitive development, are less likely to get a good-paying job and end up poor. Unimproved WaSH services can leave a dent throughout one’s life. 26% of children under the age of five in Kenya are stunted, this rises to 46% in some areas of the country (UNICEF, 2006b).

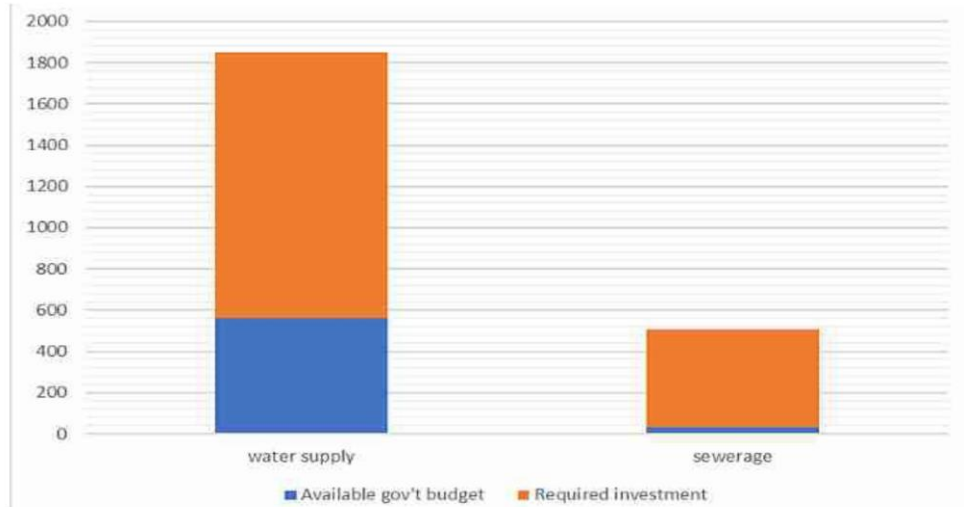


Figure 26: Investment needed to achieve 2030 WaSH targets compared to available government budget upto 2030 (KES bill.) (Mati and Mugo, 2018)

Most child deaths that occur around the world are from infectious diseases that are preventable (Black *et al.*, 2003). Diarrhea comes out to be the leading infectious disease that causes high mortality among children (UNICEF, 2006b), and about 88% diarrhea related deaths are due to poor WaSH facilities in a country (CDC, 2015). It has been found that provisioning of WaSH facilities in schools reduces morbidity and mortality that are caused by diarrheal diseases (Fewtrell, 2007; Garrett *et al.*, 2008).

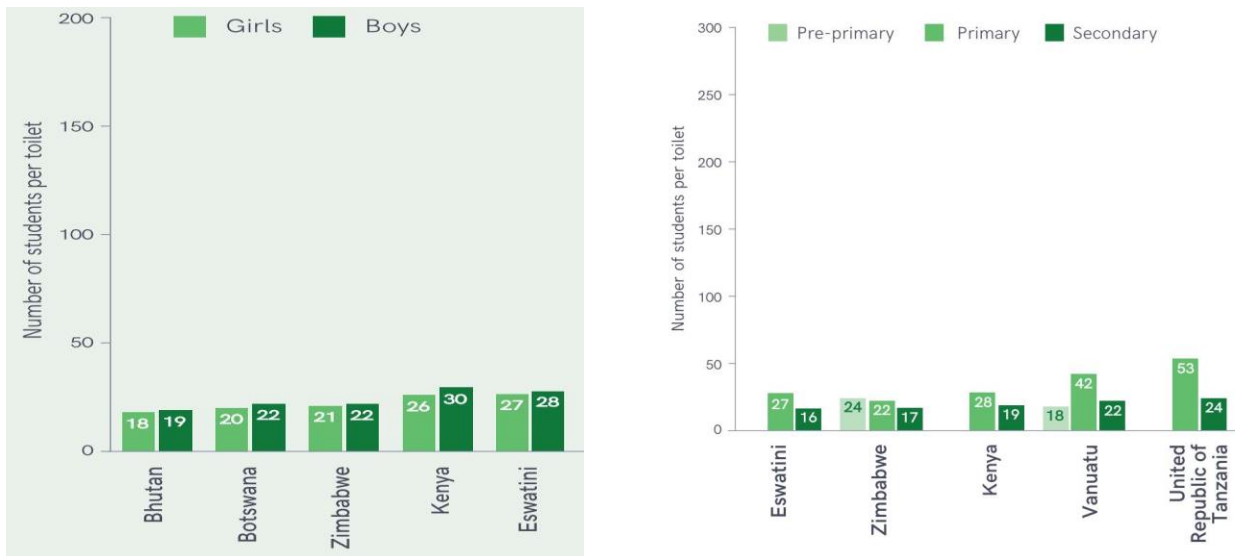


Figure 27: (a.) Number of male and female students per toilet in Kenya; and (b.) Number of students per toilet by school level in Kenya (JMP, 2020)

Provision of potable water and hand washing facilities in schools improves student health and reduces absenteeism (O'Reilly *et al.*, 2008; Blanton *et al.*, 2010; Bowen *et al.*, 2007; Talaat *et al.*, 2011). Kenyan government spends around 5.2% of its GDP on education, but 92% of total allocation is spent as

recurrent expenditure and only 8% is spent on development projects (NESSP, 2018). In Kenya, the ratio of boys and girls per toilet in schools is 1:30 and 1:26, respectively (JMP, 2020).

4.3 Governance ladder of WaSH services in Kenya (Republic of Kenya, 2013)

Since the new constitution of Kenya came into existence, there has been a shift in duties and responsibilities of departments in ministries. WaSH sector was no exception to that. A National Water Master Plan-2030 was developed under new constitution for a smooth adaptation to new realities and to show the way forward to achieve Kenya vision 2030. So 2013 onwards, devolution of powers and responsibilities are observed from the national ministries to the county departments.

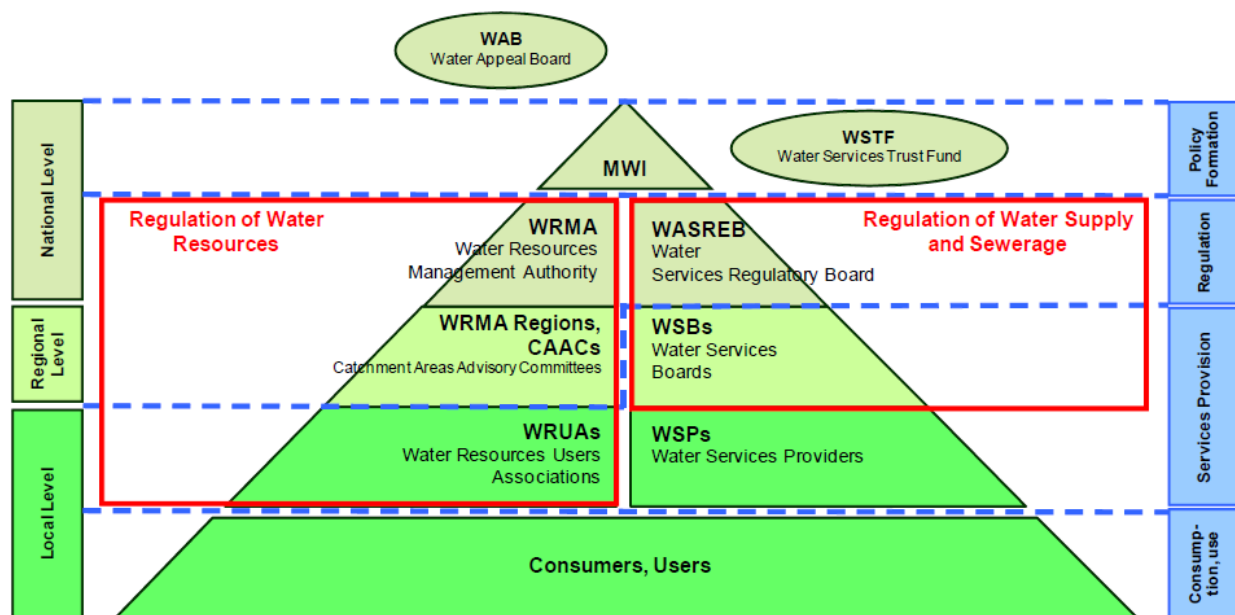


Figure 28: A countywide approach to WaSH

Under the new structure, the departments are divided on the basis of tasks (such as policy formation, regulation, services provision, and consumption) as well as on the target population (such as national level, regional level, local level). And responsibilities under tier systems are also divided into two types that are regulation of water resources and regulation of water supply and sewerage.

At the national level, the governance of the WaSH sector involves primarily ministries, departments, and agencies such as MOH, Ministry of Water and Sanitation (MWS), Ministry of Environment (MOE), Water Services Regulatory Board (WASREB), Water Resource management authority (WRMA), Water Works Development Agencies (WWDAs), the National Environment Management Authority (NEMA), Catchment Area Advisory committees (CAAC), and non-state partners like NGOs and private agencies (KISSP, 2019). The responsibilities of national-level governing agencies are to protect, conserve, control, and regulate the use of water resources and sanitation services, formulate and enforce standards, policy development, granting permits, etc. (Republic of Kenya, 2013). The county government also has their representative in the national bodies to voice their opinions. WRMA and CAACs act as a bridge between

national and county governments as waterways and sanitation services can pass through different counties (2030 World Research Group, 2016).

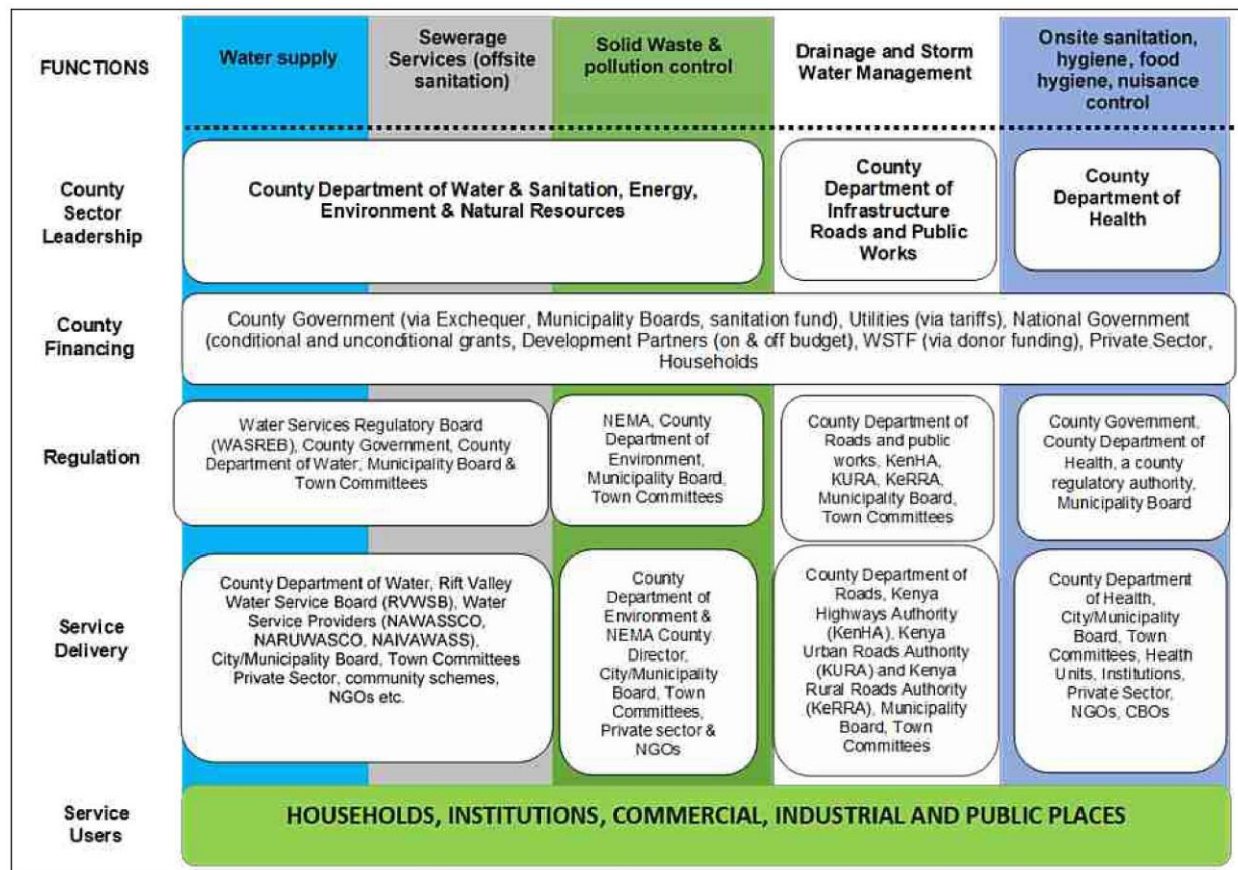


Figure 29: Institutional roles and relationships in the water and sanitation sector (KISSP, 2019)

At the county level, the responsibilities of planning and delivering WaSH services are distributed among county department of water and health, department of urban development and physical planning, Water Services Providers (WSP), and Water Resources Users Association (WRUA). County governments also hold the power to decentralize the execution of WaSH services to the city councils, town committees, and municipality, or to even the local level units like community/village groups, WSPs, private sectors, self help groups, and NGOs licenses (KISSP, 2019). WSPs, which are mostly the county owned agencies, need to acquire licenses from the regulator (i.e. WASREB) in order to provide WaSH services to the end user (Republic of Kenya, 2013). And these licenses are only valid for a time period (2030 World Research Group, 2016). The WSP that presently operates in Trans-Nzoia county and is responsible to provide the WaSH services is called NZOWASCo.

4.4 Kenyan WaSH policies

After the new constitution came into existence, it has been seen that all the ministries in Kenya are trying to adapt their rules, regulations, policies, and guidelines with the constitution. Due to which, the documentation of data and reports has improved and duties and responsibilities have become detailed.

There are a lot of policies, frameworks, and strategic plans that are related to health, education, environment, water, sanitation and hygiene. In this sub-chapter on the relevant documents are presented and discussed. The policies that targets WaSH, community and school sanitation, and whose regulations are still relevant today are included. Some documents which exist but not included are:

- 1 THE WATER ACT, 2002
- 2 National Water Services Strategy (NWSS) (2005 – 2007)
- 3 National Water Services Strategy (NWSS) (2007 – 2015)
- 4 National Water Resources Management Strategy (NWRMS) (2006-2008)
- 5 National Environmental Sanitation and Hygiene Policy 2007
- 6 NATIONAL HEALTH SECTOR STRATEGIC PLAN 2008–2012
- 7 National Water Quality Management Strategy (NWQMS) (2012 – 2016)
- 8 THE WATER ACT, 2016
- 9 National Communication Strategy for Community Health Services 2012-2017

4.4.1 National WaSH policies

1. Kenya National school Health Strategy (2011-15): (NSHSIP, 2011-2015)

The document states the set of issues and needs that has been affecting schools to provide quality education and tries to solve with a set of regulations, guidelines and activities to be performed in the period of 2011-2015 by a number of government stakeholders. The school health strategy focuses on gender equality, equal accessibility of educational services to disabled students, and provisioning of WaSH facilities in schools.

The strategy planned to promote gender equality in education sector through capacity building, advocacy and behavioral change communication, coordination and partnerships, procurements, and monitoring and evaluation. It wishes to provide inclusive and accessible education to disabled students by collecting data on children with disabilities and special needs in primary schools and rehabilitating services for special needs children. It planned to reduce the outbreak of water borne by provisioning adequate and safe water to 70 % schools, capacity building in operation and maintenance of water facilities in 5,000 schools and of sanitary facilities by training 5,000 support staff, provisioning of adequate and inclusive sanitary in 20,216 schools, constructing solid waste management system in 10,000 schools, and by conducting quarterly sanitary inspections in schools.

2. National Education Sector Strategy Plan (NESSP) 2018-22: (NESSP, 2018)

Ministry of Education has outlined its priorities and strategies with NESSP 2018-22 for the next five years. The educational institutions involved in this plan are: Pre-Primary institutes, Primary schools, secondary schools, Adult and Continuing Education program (ACE), Technical and Vocational Education and Training (TVET), Universities, Special Needs institutes, and Teacher education program. The five year

plan is set to cost KES 2,985 trillion, with the amount of KES 2,320 trillion to be received from the Kenyan government to MOE and the rest KES 666 billion (\$ 6,66 billion) is expected to be paid by partner development organizations.

NESSP is focused on making the educational system efficient and desirable for students, so that they do not leave their studies in between. The plan has also acknowledged that WaSH and hygiene is imperative for pre-primary students, secondary school students, girls, and physically challenged students. It is to be noted that primary and secondary schools students are not included in this category; hence no inclusion of improved WaSH services has been allocated towards them in this plan. The focus of policies in this plan towards WaSH services is as follows:

- a. Build disability friendly WaSH facilities in pre-primary and secondary schools,
- b. Provide sanitary towels to girls and special needs trainees,
- c. Promote low cost hygiene activities to reduce illness related absentees.
- d. Provide medical insurance cover to students in all public secondary schools

3. Kenya School Health Policy 2018: (KSHP, 2018)

Kenya school health policy 2018 highlights the health issues that students in different schools deal with and assign specific duties and responsibilities who will deal with it. Policy guidelines pertaining to WaSH responsibilities in schools are as follows:

- a. The school Board of management (BOM) shall ensure availability of adequate safe drinking water points that are well maintained in each school.
- b. The BOM shall provide adequate and acceptable management of solid and liquid waste in their schools;
- c. Ministry of Education (MOE) and Ministry of Health (MOH) shall facilitate provision of safe menstrual products to girls and provide devices for safe and hygienic management of menstrual waste in primary and secondary schools.
- d. The BOM, Curriculum Support Officers and Sub County Quality Assurance and Standards officers shall ensure functioning, use, maintenance and cleanliness of WASH facilities in each school.
- e. The County Education Boards in conjunction with BOMs shall continually identify and explore finances for construction, operation and maintenance of WASH facilities.
- f. County Health Department will monitor functionality of WASH facilities in schools.
- g. The MOE, MOH, Ministry of Water and Sanitation (MOWS), and other stakeholders shall ensure schools have safe and clean water, adequate sanitary and hygiene facilities.

Among the facilities promised to schools in this policy are adequate and well maintained hand washing facilities including soap in each school, gender sensitive and disability friendly sanitation facilities,

behavior change activities for hygiene promotion, and encouraging BoM and parents to provide sanitation facilities for boys and girls.

4. KENYA COMMUNITY HEALTH POLICY 2020-30 (KCHP, 2020-2030)

The policy mentions that engagements in partnerships with organizations to facilitate implementation and active community participation in programs have helped many countries to achieve their MDG targets. So this policy intends to follow same strategy. The Kenya community health policy 2020-30 attempts to provide policy guidance for implementation of a strong, equitable, holistic, and sustainable community health structure in Kenya. This includes a set of environment activities with a focus on WaSH, vector control, and hazard detection. This shall be done by carrying out health promotion activities involving hand-washing, proper use of latrines, home water treatment, safe water storage, safe waste disposal, and vector control. The policy also intends to advocate and promote CLTS in communities in Kenya.

The first tier of Kenyan public community health structure incorporates a community health unit (CHU). A CHU comprise of households organized in functional villages. Bridging the link between community members and county government is done by community health assistant/officer (CHA/CHO) as formal employees and at CHU. Community health volunteers are members of communities who represent community's needs and work with CHA/CHOs. The policy also highlights the lack of staff in CHUs. There is an 85% shortage of CHAs and a 17% shortage of CHVs countrywide.

5. Kenya Vision 2030 (NESC, 2007)

The Kenya vision 2030 developed by the National Economic and Social Council of Kenya (NESC) in 2007, portrays country's blueprint for the period 2008-30 and aims at making Kenya "a newly industrializing, middle income country providing high quality life for all its citizens by the year 2030". The vision also specify growth of WaSH sector, it states that 'every Kenyan should have access to clean, safe water and improved sanitation by the year 2030'. The goal is to ensure that adequate WaSH facilities are available and accessible to all Kenyans by 2030.

Some of the WaSH related objectives of the vision 2030 include are:

- a. Improvement and application of improved toilets and community sanitation
- b. Promotion of the use of hygienic toilets such as VIPs and septic tanks in rural areas and provisioning of toilets in schools with toilet to pupil ratio of 1:35 boys and 1:25 girls.
- c. Development and expansion of sewerage schemes especially in urban areas;
- d. Encouraging transition from traditional pit latrines to (adoption of) improved sanitation technologies or versions
- e. Encouraging public-private partnerships (PPP) model in the development and management of sewerage systems;

6. Kenya Environmental Sanitation and Hygiene Policy 2016 – 2030 (KESHP, 2016)

The Kenya Environmental Sanitation and Hygiene Policy (KESHP) provide broad guidelines with intent to satisfy the environmental standards envisioned in Kenya vision 2030. KESHP promotes participation of state and non-state actors, which involves government departments, NGOs, private sector, communities, households and individuals. The policy wishes to ensure universal access to improved sanitation and an environment which promotes healthy and sustainable life style to all Kenyans by 2030.

The policy highlights the need for increased sewerage coverage and sewerage treatment from the present twelve percent and five percent respectively. Policy also shows concerns of sewer bursts and non-functional treatment plants in WaSH sector, as this contaminates the water sources and spread deceases. Among the key areas KESHP wishes to intervene includes scaling up access to improves rural and urban sanitation, fostering private sector investment in WaSH, building legal, regulatory, and governance capacity for WaSH, and strengthening monitoring and evaluation systems for WaSH sector.

KESHP plans to incorporate WaSH in school health program. The plan also prescribes MOE, county health department, school administration, and school WaSH partners to facilitate provisioning of WaSH services in schools. The school WaSH program under KESHP includes drama on poor and good WaSH, deworming, screening for stunted growth, promotion of hand-washing with soap, and menstrual hygiene management, including the provision of sanitary towels. KESHP instructs MOE and MOH, at both national and county levels, to provide WaSH facilities to all schools in the country giving extra attention to needs of girls and children with disability.

7. Kenya Health Sector Strategic Plan (KHSSP): July 2018–June 2023 (KHSSP, 2018)

KHSSP is a part implementation strategy of the Kenya Health Policy 2014-30. It is second such five-year plan being realized in the period of 2018-23. The plan incorporates the Kenyan priorities and targets towards SDGs and the African Union Agenda 2063. Focus of KHSSP has been guided by the new Constitution of Kenya 2010, The Kenya Vision 2030, and Kenya Health Policy 2014-30. It intends to increase the life expectancy at birth from 60 (present) to 72 and decrease years lived with disability from twelve (present) to eight, by 2030. This comprise of strategies for all areas of health, hence also targets WaSH sector.

Indicator	Baseline (2017/18)	2018/19	2019/20	2020/21	2021/22	2022/23	Data Source	Frequency	Responsible
Percentage of households using improved sanitation facilities	52	N/A	N/A	65	N/A	70	KMIS, KDHS	5 years	MOH, KNBS
Percentage of households using improved safe water facilities	71	N/A	N/A	78	N/A	80	KMIS, KDHS	5 year	MOH, KNBS

Figure 30: WaSH specific targets of Kenya Health Sector Strategic Plan 2018-2023 (KHSSP, 2018, p. 107)

Key areas of action under KHSSP includes increasing the number of households using improved sanitation facilities and improved access of safe water facilities with an investment of KES 45.8 bill. in WaSH sector.

Table 11: Budget for WaSH sector under KHSSP 2018-23

Sector	2018 (in KSH mill.)	2019 (in KSH mill.)	2020 (in KSH mill.)	2021 (in KSH mill.)	2022 (in KSH mill.)	Total Cost (in KSH mill.)
Water, sanitation and hygiene	16,221	17,841	19,479	21,335	23,388	45,802

8. Kenya Environmental Sanitation and Hygiene Strategic Framework (KESF) 2016 – 2020 (KESF, 2016)

The KESF is a national guide adapted from the Kenya vision 2030, KESHP 2030 and aligns with the constitution of Kenya 2010. It provides guidelines for state and non-state actors at both national and county level, to provide improved sanitation to Kenyans. It is the first strategic framework of its kind under KESHP 2016-20. The main objective of KESF is to address the bottlenecks in providing universal access to WaSH services and eradicating open defecation in Kenya by 2020. The framework also intends to help increase public funding in WaSH sector from 0.2 % of GDP (present in 2016) to 0.5% by 2020 and further to 0.9% by 2030.

The strategic objectives that KESF plans to pursue involves

- Increase rural and urban sanitation coverage by 50% and declare Kenya ODF by 2020;
- Increase access to improved sanitation facilities to rural, peri-urban and informal settlements by 50% and declare 100% villages ODF by 2020;
- Ensure adequate and safe WaSH facilities in 100% schools by 2020;
- Ensure clean and accessible WaSH facilities in 100 % public places, public and private institution;
- Increase number of households treating household water to 50% by 2020.
- Advocate and ensure healthy and affordable menstrual hygiene for women at all level;

4.4.2 County WaSH policies

1. Kenya Countywide Inclusive Sanitation Strategic Planning (KISSP): (KISSP, 2019)

KISSP is an initiative by Kenyan government to provide framework for county government, so that they can plan a county sanitation strategy. This is to empower the counties to make context based plans with an inclusive perspective that helps in the wholesome development of both rural and urban areas. It is prescribed to focus on the process than merely on results. This promotes transparency in action and builds trust among stakeholders. There are only two counties who have adapted KISSP according to their contextual needs and has developed a countywide inclusive sanitation strategic plans. Trans-Nzoia county is not among those two counties.

KISSP involves a five step inclusive planning to sanitation which is required to answer five questions, the results of which are later used in implementation process:

- a. Who: Establish a multi-sectoral strategic sanitation planning team and integrate stakeholder engagement;
- b. Why: Know your 'why' and understand your current situation;
- c. What for: Develop a shared vision and select indicators of success;
- d. How: Agree on guiding principles;
- e. Then what: Plan your interventions;

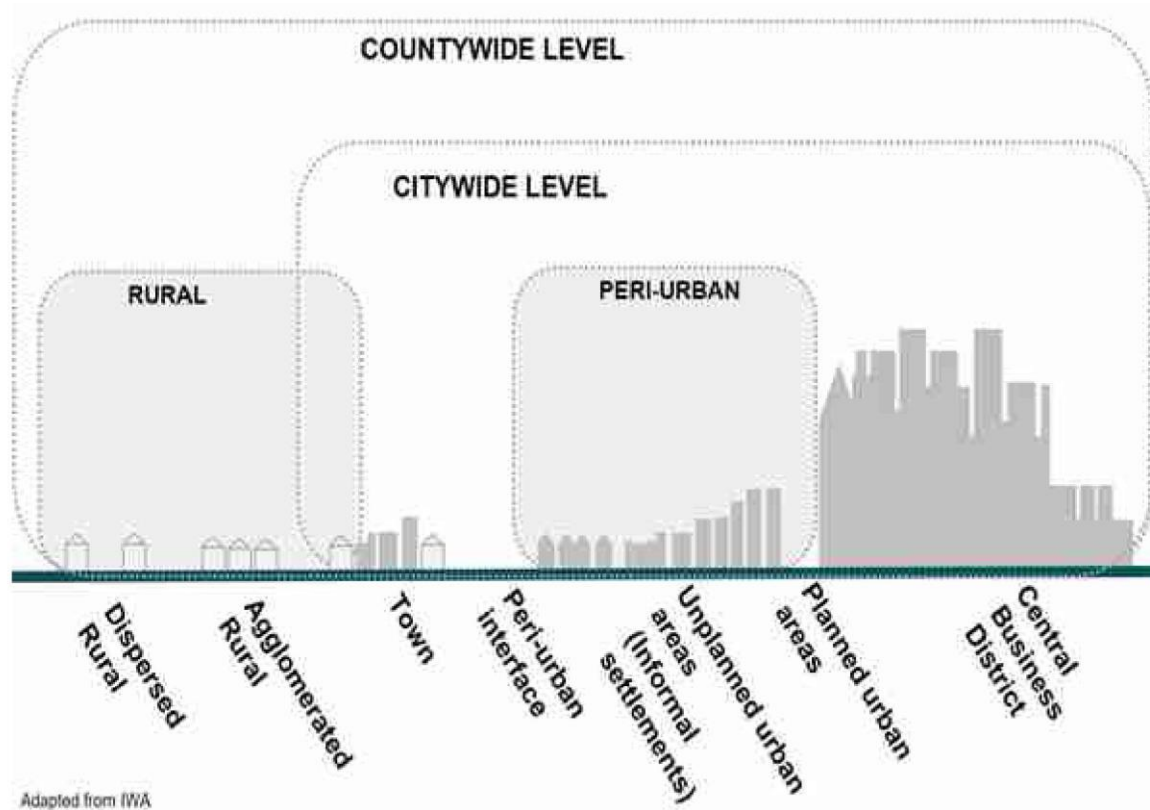


Figure 31: A countywide approach to WaSH (KISSP, 2019)

2. Trans-Nzoia county Integrated Development plan (CIDP) 2018-22: (CIDP, 2018-22)

The Trans-Nzoia CIDP is a four year development plan created by the county government to move forward towards a sustainable future. The plan has made many commitments in which WaSH, education, and health services are also included.

Table 12: School level demographics of Trans-Nzoia county: (CIDP, 2018-22)

Data Institutes	Schools (in no.)		Students (in no.)		Gender Parity	
	2013	2018	2013	2018	2013	2018
Pre-primary	40,145	41,779	2,8 m	3,4 m	NA	NA
Primary	28,026	37,910	9,8 m	10,5 m	0,96	0,97
Secondary	8,734	11,399	2,0 m	2,9 m	NA	0,95
TVET	700	1300	148,009	363,884	0,68	0,78

Table 13: School related demographics of Trans-Nzoia county : (CIDP, 2018-22)

Educational institutes	Number of institutes	Population	Teacher to pupil ratio	
			Present	Recommended
Early child-hood development education (ECDE) or pre-primary schools	385 (public)	-	1:74	1:30
Primary schools	648	227,802	1:50	1.40
Secondary schools	261	71,093	1:41	1:35

WaSH Sector Strategies:

1. Increase access to safe drinking water from the current 35% to over 60%;
2. Increase pipeline extensions by a further 250KM under the gravity water schemes;
3. Increase toilets usage to 1,112,085 households;
4. Expansion of the sewerage system to cover 70% of the urban population;
5. Declare 40 villages ODF;
6. Construct 50 exhaustible public toilets to cover all market centers;

Table 14: Budget for CIDP by sector

Financial Year Sector	2018/19 (KES mill.)	2019/20 (KES mill.)	2020/21 (KES mill.)	2021/22 (KES mill.)	2022/23 (KES mill.)	Total (KES mill.)
Water, Environment & Natural Resources	358.7	567.7	578.9	665.7	694.7	2,865.9
Education	612.4	806.0	822.0	945.3	986.4	4,172.2
Health Services	2,183.4	2,598.1	2,649.5	3,046.9	3,179.4	13,657.6

3. Trans-Nzoia county Annual Development Plan 2020/21 (CIDP, 2018-22)

Annual development plan, most WaSH related planned projects were actualized. Some projects were still in progress, some were not actualized because of lack of funds. It was because the total cumulative revenue received was less than what was projected in County Integrated Development Plan (CIDP). So WaSH related projects are as follows:

Table 15: WaSH related targets of Trans-Nzoia CIDP (CIDP, 2018-22)

Activities performed	Indicators	Planned target	Achieved target
Improved access to sanitation facilities; VIP toilets constructed in ECDEs	No. of Toilets constructed	25	30
Public toilets constructed/ renovated across the county	No. of Toilets constructed	2	7
Sanitation blocks and exhaustible toilets constructed	No. of blocks and toilets constructed	10	20

4.4.3 Sub-county WaSH policies

1. Kitale Municipality Integrated Urban Development Plan (IUDP) 2016-36: (KITALE MUNICIPALITY, 2016-36)

The main objective of this plan is to prepare an integrated urban development strategy which will light the path of Kitale municipality for next 20 years. The plan covers an area of 160 km² for the proposed Municipality and 226 km² as the planning. In the Kitale municipality, the projected population by the year 2036 is projected to be 439, 621, that will demand 126 primary schools (at present = 47 schools) and 55 secondary schools (at present = 28 schools). So the resources need to be planned better in the future policies.

Table 15: WaSH sector targets of IUDP

Sector	Target	Time line	Supervision
Water	Expansion of Water Supply Facilities	100% in 3 years	County Department of Water and Sanitation.
Sanitation	Expansion of Sewer Facilities	100% in 3 years	County Department of Water and Sanitation.

Some WaSH related objectives include:

- 1 Connect all households with sewer to reduce sanitation diseases;

- 2 Encourage community members to do proper placement of toilets/pit latrines vis-a-vis water sources to reduce contamination;
- 3 County Government and Nzoia Water and Sanitation company (NZOWASCo) to supply potable water to all households;
- 4 Provide sewer or waterborne toilets to stop potential of underground water pollution;
- 5 Proper sitting of pit latrines and toilets to curb ground water;
- 6 Improve hygiene standards in pit latrines, urinals and waterborne toilets;
- 7 Establish G.I.S based mapping of the sewer reticulation system for efficient management

Table 16: Existing issues in WaSH sector in Kitale municipality

Water	<ol style="list-style-type: none"> 1. Inadequate provision of piped water supply (only 80km²). Demand gap is 23,000m³/day. 2. Unreliable water supply and highly unaccounted for water at 65%
Sewer and Sanitation	<ol style="list-style-type: none"> 1. Inadequate provision of sewer facilities. Coverage is only 18 km² 2. Estimated waste water 23,371m³/day against a treatment capacity of 5,810m³/day
Solid Waste Management	<ol style="list-style-type: none"> 1. Poor management of solid waste. 2. Lack of a sanitary landfill
Drainage	<ol style="list-style-type: none"> 1. Inadequate storm water drainage infrastructure. 2. Ineffective maintenance of the existing drainage infrastructure

3. Kitale Water Supply and Sanitation Project

Kitale water supply and sanitation project plans the infrastructure in WaSH sector for the municipality. The project expectations include:

Table 17: Table: Targets of Kitale water supply and sanitation project

Indicators	2018	2020	2022
Percentage of people accessing clean and portable water and sewer services	35 %	50 %	60 %
Percentage of people accessing sewerage services	30 %	-	50 %

4.5 Kenyan government's approach to WaSH

Community outbreak of waterborne diseases and observed stunting in children, which is partially originating from open defecation practices in the communities, is something that Kenya has been battling for decades now (Lipesa, 2014). The Kenyan government has made numerous attempts to tackle this problem by opting for various approaches to make Kenya an ODF country. But all of them

failed. In 2010 Kenya opted for CLTS as a government’s strategic approach to eradicate open defecation from Kenyan roots (CLTS Kenya, 2021).

CLTS as a rural sanitation approach was first introduced in Kenya in 14 districts by Plan International in 2007. Observing the progress it had been gaining, the Kenyan government adopted it as a sanitation strategy for nationwide sanitation coverage (Plan International and The Water Institute at UNC, 2015). After which an ODF rural Kenya Roadmap was developed that took an ambitious target of eliminating open defecation from 59,915 villages (100%) in Kenya by 2013. Of this target, only 1,273 villages (2%) were declared ODF by the end of the time and Kenya could not complete its MDG commitment of 63 % ODF in time (NOKCF, 2016). To speed up the process and to achieve the WaSH related SDGs faster, in 2016 the MOH created a National ODF Kenya 2020 campaign framework to achieve the same target (100 % ODF Kenya) with a new deadline (by 2020). However, like the previous time this target was not achieved. But Kenya has made some progress in achieving universal sanitation coverage and is taking forward the NOKCF strategy.

CLTS approach in Kenya:

CLTS is a participatory rural sanitation approach which intends to ignite a behavior change in a community through a set of activities. CLTS focuses on creating a demand for a sanitation facility rather than building toilets for people to use (Kar and Chambers, 2008b). The basic CLTS approach consists of four steps namely: pre-triggering, triggering, post-triggering, and scaling-up.

Pre-triggering involves selecting a village. It is a half-a-day activity to meet the community, introduce oneself, build rapport, and see their enthusiasm before going for triggering. In the pre-triggering phase natural leaders in the communities are identified.

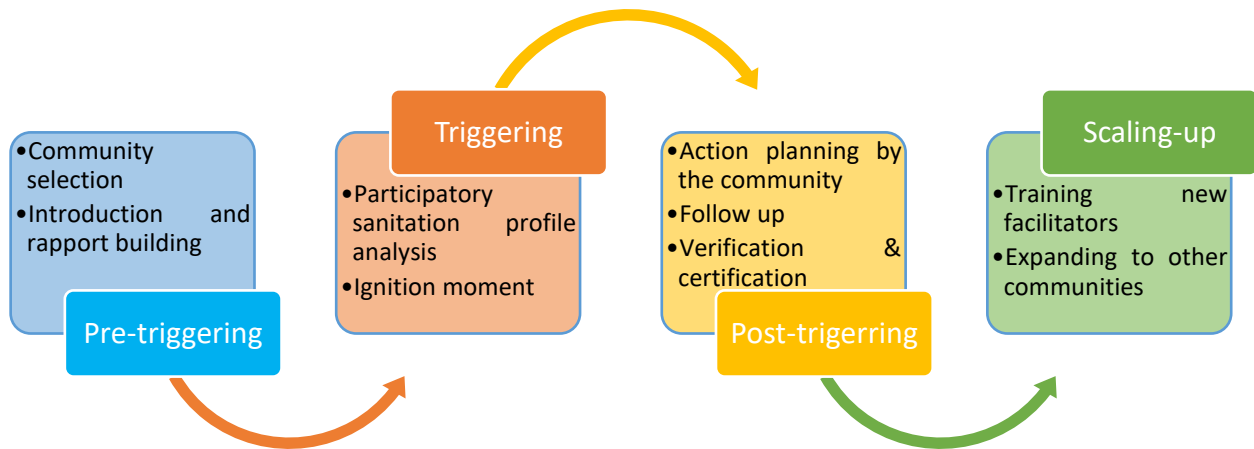


Figure 32: General steps of a CLTS approach

Triggering is a three-five hour set of activities where one interacts with the community and talking about their sanitation behavior, having a walk of shame to see where the community defecates, mapping of defecation areas, identifying the dirtiest neighborhood in the community, calculating shit and medical expenses of the households, and generating disgust towards present open defecation practices through

demonstrating experiments such as the glass of water, from open shit to open mouth, eating one another's shit, etc. At the very end of the triggering stage comes the activity called 'igniting moment', where people are asked if they still think that open defecation is good if some people (natural leaders) feel disgusted from present practices and want to change their behavior. People are then asked to discuss what can be a viable solution. They discuss solutions, habits, resource availability, cost, and if everything goes well then the community might opt for a latrine. Even if the community does not want to change their habits, the facilitators do not push them. They just accept it, thank the community, leave them and revisit after a while to follow up.

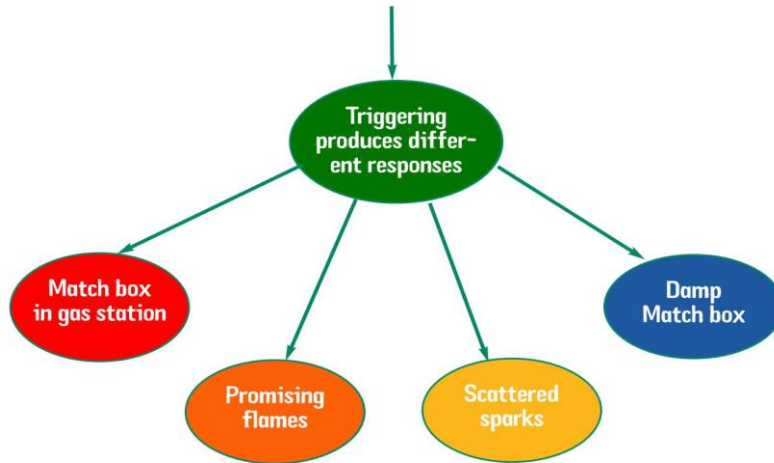


Figure 33: Types of triggered communities in CLTS approach (Kar and Chambers, 2008b)

The triggering phase produces four kinds of responses from the community. 'Matchbox in a gas station' is the highly' is the community that is highly motivated and wants to adopt a better sanitation facility. 'The promising flames' is the community where the majority has agreed but a good number of stakeholders are still not decided. 'Scattered sparks' is where only a few have agreed, a few have disagreed, and a majority of stakeholders are undecided for a collecting action. And the last 'damp match box' is where the entire community is not at all interested in giving up open defecation.

The post-triggering step includes the follow-ups with the triggered community. Follow-ups are planned with the community depending on the type of triggered community it is. The Follow-up step is followed by active monitoring, verification, certification, and celebration. Monitoring is done by including the natural leaders in the process and then open defecation status in the community is mapped. Once the ODF status is claimed by the community, it is then verified by the CLTS team. If each household in the community is found to have a sanitation facility, including a pit, a lid, a superstructure, a door, and a handwashing facility with soap (or whatever disinfectant is available) in the vicinity, then is declared ODF. The certification process normally includes celebration and a bill-board that states the community is ODF certified. It is because celebrations motivate and encourages the community to stay ODF. In the scaling-up phase, the new facilitators are trained and new communities are approached to be influenced through the CLTS approach.

Although this is the general CLTS approach, many times its adaptations are adjusted according to the context. For the same reason and to fast-track the process of the CLTS approach, the Kenyan government through the Ministry of Public Health and Sanitation (MPHS) requested UNICEF to adapt CLTS according to the Kenyan context. The request included a contextual approach to training, implementation, follow-ups, and verification. UNICEF, together with the CLTS experts and renowned consultants, created a CLTS approach which was later tested in six districts. The adapted approach was able to trigger 745 villages which were later visited by Mr. Kamal Kar (the co-developer of CLTS) (Mohamed Qone, 2011).



Figure 34: CLTS Steps Toward Achieving Open Defecation Free Status in Kenya (NOKCF, 2016, Sec2:2)

The adapted Kenyan approach includes six steps namely; triggering, follow-up, ODF claim, verification, certification, and celebration. The basic general concept of both CLTS approaches is the same and most of the steps are similar. Some of the things added to the implementation phase of the approach include awareness among people about their constitutional rights, constant and persistent education to people to change their behavior, more frequent follow-ups with ‘damp-matchbox’ communities, including schools in the verification and certification phase, and adjustments in standards to be an ODF village. The verification and certification of claimed ODF villages are done by an overarching national entity that supervises the progress of the CLTS approach in Kenya. This body is called the National CLTS-Hub (Interview\Elphine) (Mohamed Qone, 2011; NOKCF, 2016).

Logic model for Kenyan government’s approach

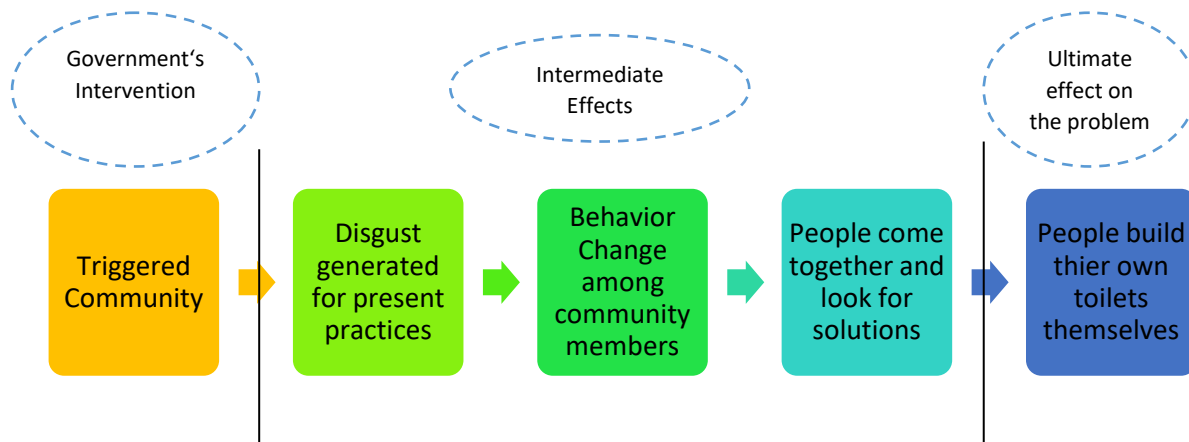


Figure 35: Logic model of Kenyan government’s approach to sanitation

Some examples of local context based WaSH solutions originated during CLTS are showed below.



Figure 36: Adapted pits structure used to tackle loose soil in the region that used to be the main cause of pit collapsing



Figure 37: A basic hand washing station made from a jerry can



Figure 38: A basic pit latrine made from sticks and old rags (with a hand-washing station made of jerry can)

NATIONAL ODF KENYA 2020 CAMPAIGN FRAMEWORK 2016/17-2019/20 (NOKCF, 2016)

MOH in 2016, with a vision to achieve 100 % ODF Kenya by 2020, launched the NOKCF strategy to counter open defecation through CLTS approach. The plan was projected to cost more than KES 41.6 billion to be distributed among different department of national and county governments. Helping in the devolution of governance system in Kenya, the framework defined specific tasks to national and county level players and provided an organizational structure of CLTS approach in Kenya.

The national level campaign activities included:

1. Training and capacity building to facilitate up scaling of ODF Kenya campaign in all counties
 - Training of 4000+ PHTS/PHOs and some 500 NGO staff as facilitators.
 - Training of 3000+ community ODF Campaign resource persons
 - Training of 100 MOH and County Government M&E staff
2. Review, development and printing of training materials
 - A CLTS Training Manual;
 - A Trainers Guide
 - Improved sanitation toolkit
3. Inter-county exposure and exchange visits

4. Knowledge management
5. Develop national ODF Kenya 2020 campaign communication strategy and conduct a national multimedia communication campaign
6. Sanitation market development and affordable supply of sanitation materials
7. Provision of technical backstopping support to the county ODF Kenya 2020 campaign
8. Hold annual national ODF Kenya 2020 campaign review forums
9. Annual national ODF award ceremonies
10. Planning, monitoring, evaluation and research

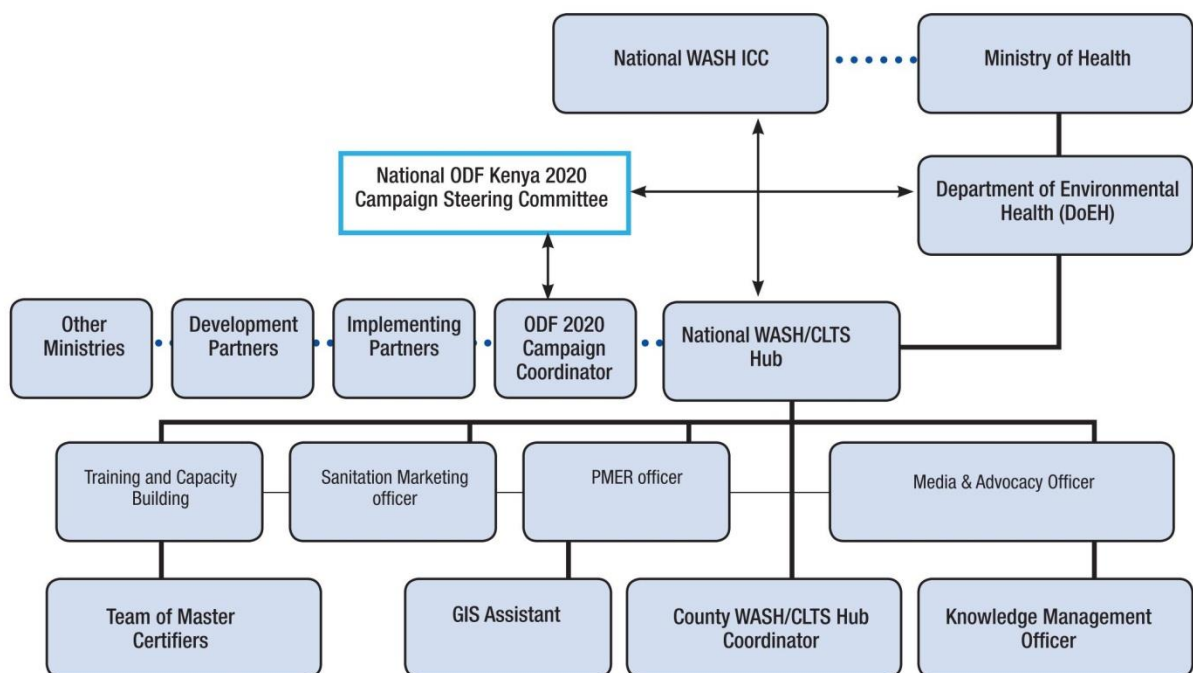


Figure 39: National Level Campaign Implementation Structure (NOKCF, 2016, Sec2:15)

The structure and organizational importance of the national government and institutions managing and planning the smooth implementation of CLTS approach in their respective counties can be seen in the figure below. The national government structure rolls down to the county government and hence acts as a bridge between them.

County level campaign activities included:

1. Mapping sanitation/CLTS partners and securing campaign commitments
2. Celebration of ODF status and rewards
3. County ODF campaign monitoring, evaluation and research

The structure and organizational importance of the county department implementing the CLTS approach in their respective counties can be seen in the figure below. The county structure rolls down to the affected population. So the process and implementation flows from county government to sub-county to ward to location to village to household.

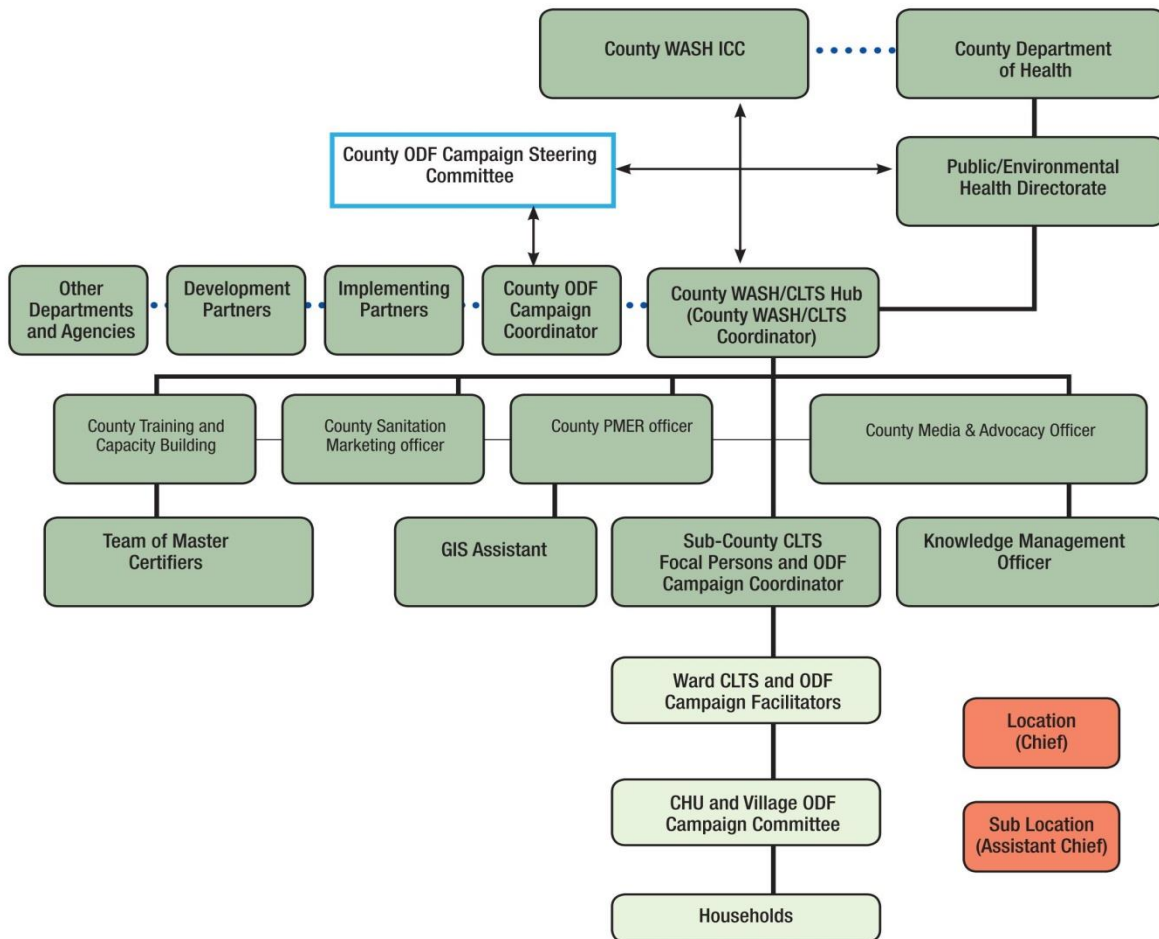


Figure 40: County Level Campaign Implementation Structure (NOKCF, 2016, Sec2:16)

4.6 HOP's approach to WaSH

The HOP was started in 2017 by a group of people in Bielefeld, in Germany with the intent to provide WaSH facilities in schools in the Mukuyu community, Trans-Nzoia county in Kenya. Until now they have provided WaSH facilities in Mukuyu primary school and the project in Mukuyu Secondary School for boys and in Mukuyu Secondary School for girls is ongoing. As their work got traction from the government and other communities, they are planning to expand outside of the Mukuyu community. Among the WaSH facilities arranged by them include pour-flush toilets, hand washing facility, water wells, electric/solar water pump, water storage tank, and septic tank. When funds allow they also cater to resources other than WaSH such as electricity and playground. In the future, they plan to generate

reusable resources from the waste and intend to invest in biodigesters and kilns to make bricks from extracted soil.

The mission of HOP includes:

1. Provide access to better WaSH facilities in schools;
2. Raise awareness about importance of WaSH;
3. Environmentally friendly wastewater management;
4. Support the care and maintenance of the sanitary facilities;
5. Improve hygiene conditions through training and active participation;

The vision of HOP includes:

1. Motivated school girls who are not absent from class due to inadequate sanitation;
2. Healthier and more humane environment for all student development;
3. Happy students who benefit from improved WaSH facilities and do not struggle with life-threatening illnesses, worms and diarrhea infections;
4. Healthy, educated and informed children who change community behavior when they are grown ups and lead the communities towards a better future;

There are eight members in the organization and all of them are the co-founders. Among them there is one project manager, one treasurer, one trustee, one It specialist, one project coordinator, and three outreach coordinators.

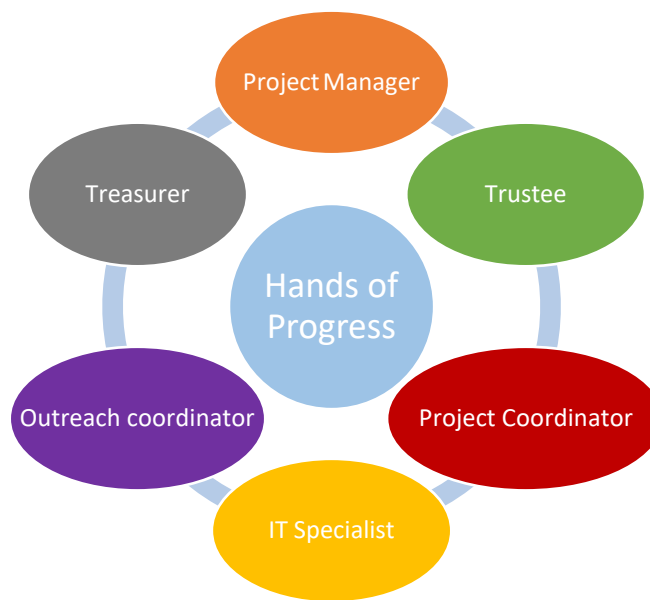


Figure 41: Organizational structure of the HOP



Figure 42: (a.) Construction of robust toilets with septic tanks; (b.) A disability friendly toilet for students in Mukuyu Primary school



Figure 43: An example of pour flush Sanitation technology provisioned by HOP in Mukuyu primary school

Stepwise field approach:

Step one: Profiling

Profiling includes data collection for the proposed project and involves a number of activities. As the project manager comes from the Mukuyu community as well, it was easier to look for schools that need improved WaSH facilities. In the future, they will receive the list of schools that needs improved WaSH facilities from the MOE. In this phase, the project manager visits such schools, meets the headteacher, inspects their WaSH facilities, and interviews the students. In the interviews, students share their needs and health challenges faced with the present WaSH facility. After collecting this data the project manager goes back and looks for sponsors to fund this project.

Step two: Planning

The planning phase includes getting permits to start construction, auditing the land, designing the WaSH facility. Once they have the funds to sponsor a WaSH project, the project manager then again visits different government departments to get the necessary documents to start construction in schools. Once they have the permits, the project manager again visits the school with the engineers, to look for a site within the school's boundaries to construct the WaSH facility. Once that is done then they design how the new facility is going to look like.

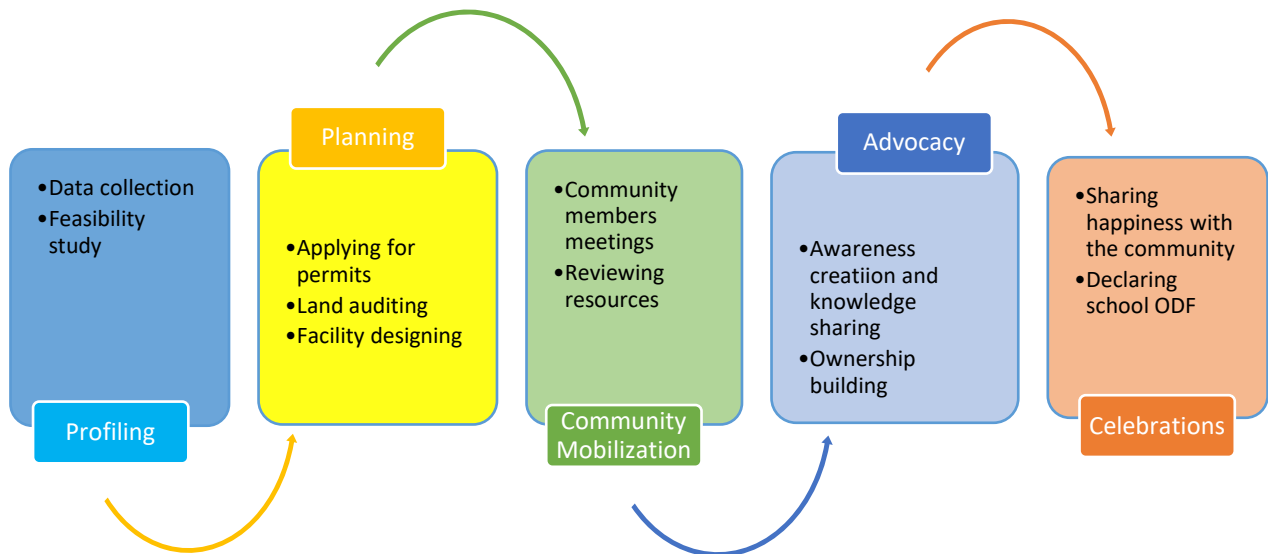


Figure 44: General steps of HOP's approach

Step three: Community mobilization

During this phase, the NGO representative interacts with the community members. First, the headteacher gets in contact with the community members and arranges a meeting between the project manager and the community leaders and members. In this meeting, they explain the WaSH project that they want to implement in the school and answer their questions regarding the facility or student's

safety. After that, a baseline survey is conducted in the community. Once that is done, the project manager looks for local labor and construction material distributors. And when the design of the WaSH facility is over, they arrange a meeting with the key stakeholders to check for any concerns with the designs.

Step four: Advocacy

After the community mobilization, the construction work starts. When the construction of the WaSH facility is finished, community members are engaged with some awareness drives and knowledge-sharing events regarding the importance of WaSH facilities. In these events, community members are encouraged to contribute towards new WaSH facilities in the form of time, sanitary products, money, etc. Students are also mobilized in this phase through school health and hygiene clubs in which they are trained on handwashing and personal caring. Secondary school students are taught about how to operate and maintain the WaSH facility and a caretaker is appointed for primary schools to look after young children.

Step five: Celebrations

The celebration phase includes community events organized by HOP for the stakeholders to experience the new WaSH facility in the school, to observe the behavior change in children, and to declare the school ODF.

Logic model for HOP's approach

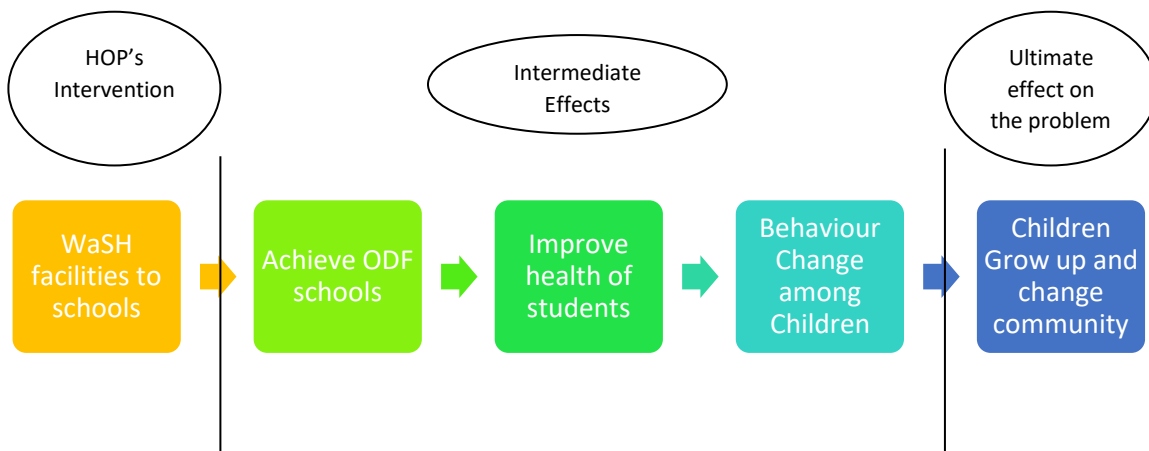


Figure 45: Logic model of HOP's approach

4.7 Mukuyu community and the Mukuyu primary school (Grace Karanja-Nurek, 2021)

Mukuyu community is a village in the Kitale area of Trans-Nzoia county, Rift Valley Province, Kenya. The majority of the villagers are small farmers who grow only for their own needs. Corn is the main crop that is predominantly grown in this region. In the community, there is one primary school, one technical school, two secondary schools, and five churches. Most of the schools are understaffed. Most of the

community members practice open defecation in the central areas, and the people who have a sanitation facility have pit latrines. As far as schools are concerned, they have pit latrines which are provided by the government. The schools face challenges during rainy seasons when either floods the pit and spread diseases or the pit latrine collapses and leaves students to open defecate.



Figure 46: Location of Mukuyu community in Kitale Area (Grace Karanja-Nurek, 2021)

An improved sanitation facility for the community members means a VIP latrine. Because there are no better solutions in the community that is also a reason that the community does not priorities WaSH in their lifestyle. The community does not have access to sewage systems that is why cheap decentralized WaSH solutions are the only option. In the past small kids have fallen in the pit latrines and died which has made some community members refrain from using them. The community also lacks access to proper roads and sewerage facilities. The community comes under the jurisdiction of the Kitale municipality. The municipality government wishes to cover the sewerage system facility by 2036 for every household in the area.

The government has implemented the CLTS approach in the Mukuyu community and the community has been going through the triggering phase, according to a PHO. Although most of the community has not been approached by the government. In order to reduce the open defecation in the community, the government tries to promote public toilets in the central areas by imposing rules and regulations to build shops with public toilets for people to use. The county education boards and BOMs are responsible to explore finances for WaSH facilities and the county department of public health is responsible for monitoring the functionality of WaSH facilities in the schools.

The government has started implementing its CLTS In the Mukuyu community. However, it has just triggered the community and the further steps are yet not followed. But the survey reveals that many community members are not aware of such activities performed by the government. Hence it is

assumed that CLTS has only been implemented among a group of people and not with everyone in the Mukuyu community.

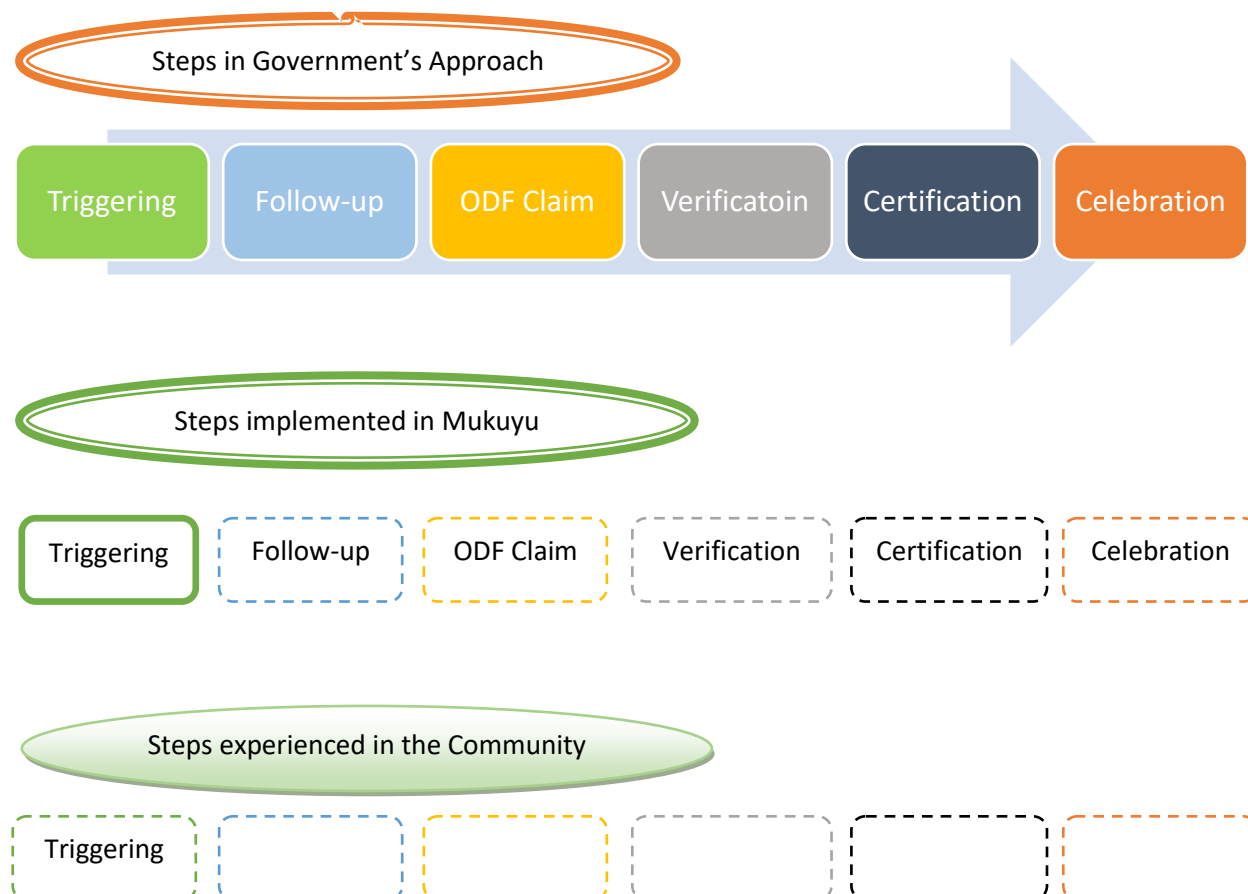


Figure 47: Government's implemented CLTS approach experienced by the community

Some schools do not have drinking water, hand washing facilities, and electricity. The sanitation facilities are not operated and maintained well so they smell very bad. Students sometimes have to remove their upper body clothes before using the sanitation facilities so that the clothes do not smell bad when they come back to the classroom. Some students wait for the break to go back home to help themselves, while many just opt to defecate in the open. Skin diseases, diarrhea, and school absentees are some of the problems students face due to bad WaSH facilities.

The government provides three functional pit latrines whenever there is a need to build new toilets. There exists three latrines for boys and three for girls. For a school with a student population of roughly 400 boys and 400 girls, this provides a toilet to student ratio of 1:133. The ratio for secondary schools is 1:66 for both boys and girls. The recommended toilet to pupil ratio in schools, by the national government, for boys is 1:35 and for girls is 1:25. As can be seen in the pictures the quality of WaSH facilities provides are also really bad. This means that the government has failed, on both quality and quantity of service, to provide an improved sanitation facility in the community schools. No importance on constructing the structure disability-friendly has been given by the government.



Figure 48: Some examples of government sponsored pit latrines in Mukuyu Primary school



Figure 49: Some examples of government sponsored pit latrines in Mukuyu Primary school

Thus it creates unequal opportunities in society and a lot of difficulties for disabled students to actively participate in schools. However, the government does provide sanitary towels for girls in the schools that promote healthy menstrual hygiene management in society.

The schools in the community are well-staffed. Around 800 students attend the Mukuyu primary school and there exist only 20 teachers to look after them making teacher to pupil ratio to be 1:40. The two secondary schools both have around 500 students and 15 teachers to look after them, making a teacher to pupil ratio of 1:33. The county average for the teacher to pupil ratio for primary and secondary school are 1:50 and 1:41 respectively with a recommended ratio of 1:40 and 1:35 respectively. This shows that necessary staff requirements in the school of Mukuyu community are sufficient.



Figure 50: Girls from secondary schools helping themselves with the new WaSH facility provisioned by HOP

5 Description of key findings: looking for patterns between theory and research data

5.1 Summary of findings

Both the sanitation approaches, government's and NGO's, were scored against the five indicators and their sub-indicators. A summary of the total scores from both scoring tools, cumulative as well as just sanitation, are presented in this sub-chapter. The detailed scoring procedure can be found in the Annex.

5.1.1 Scoring government' approach to WaSH

The cumulative scoring tool of all the indicators and sub-indicators of the government's approach to sanitation is shown in the table below.

It can be noted that the cumulative score of effectiveness is (- -), it is because 'time taken' and 'project reporting and documenting' are given lesser priority than others. That is because the longer time taken and project reporting does not influence the productivity of the approach as much as 'implementation', 'performance', and 'sustainability' do. So in descending order the approach sub-indicator of 'Effectiveness' is as follows: 'Implementation' > 'performance' > 'sustainability' > 'time' > 'project reporting and documenting'.

As far as scaling is concerned all the sub-indicators have equal priorities. Hence the cumulative score will mostly be an average of all the sub-indicators, if not specified otherwise.

For 'equity' indicator, the sub-indicators are prioritized as follows: 'Stakeholder involvement' > 'stakeholder distribution' > 'stakeholder recognition' > 'stakeholder interaction' > 'stakeholder identification'. They are based on the fact that whichever indicator creates more ownership among stakeholders, is prioritized higher. That is why the cumulative score of recognition justice dimension is (++) , even though it scores (+++) for the 'stakeholder identification' sub-indicator.

As far as the 'Acceptability' indicator is concerned, all its sub-indicators are equally prioritized. Hence the cumulative score will mostly be the average of all the sub-indicators, if not specified otherwise.

For the 'Cost' indicator, the priority of sub-indicators are considered as follows: 'Funds' > 'approach/technology implementation' > 'operation and maintenance' > 'gains'. This is also done in the way to increase the ownership of the WaSH facility among the stakeholders. It is assumed that if stakeholders contribute in funds for the project, they will have greater ownership on the facility gained from the project than equal participation and contribution in 'approach/technology implementation', and gain is prioritized as the lowest because it is more important to be involved in contributing for the project than to be involved in getting the gains from the project. Hence it is because the distribution of contribution in funds for the project is not fairly distributed among all stakeholders it is given more importance than the equal distribution of gains from the project. That is why the distributive dimension for cost is (++) , even when other sub-indicators are performing way better. The same can be said for the procedural justice dimension for Cost. The cumulative score is given (++) for the same reason as that for the distributive justice dimension.

Table 18: Cumulative scoring tool for government's approach

Approach Indicators	Approach Sub-indicators	Scores			
		Independent scores	Justice Dimensions Scores		
			Distributive	Recognition	Procedural
Effectiveness	Implementation	(--)	NA	NA	NA
	Performance	(--)	NA	NA	NA
	Sustainability	(+)	NA	NA	NA
	Time	(--)	NA	NA	NA
	Project reporting and documenting	(-)	NA	NA	NA
	Total	(--)	NA	NA	NA
Scaling	Demand	(+++)	NA	NA	NA
	Resource availability	(+)	NA	NA	NA
	Political will	(+++)	NA	NA	NA
	Willingness to invest	(+++)	NA	NA	NA
	Total	(+++)	NA	NA	NA
Equity	Stakeholders Identification	NA	NA	(+++)	NA
	Stakeholders Recognition	NA	NA	(++)	NA
	Stakeholders Involvement	NA	NA	(++)	(++)
	Stakeholders Interaction	NA	NA	(++)	(+++)
	Stakeholders Distribution	NA	(++)	(++)	(++)
	Total	NA	(++)	(++)	(++)
Acceptability	Demand analysis	NA	NA	(+++)	(+++)
	Creating Adaptive Environment	NA	NA	(+++)	(+++)
	Total	NA	NA	(+++)	(+++)
Cost	Funds	NA	(+)	(+++)	(++)
	Approach/technology implementation	NA	(+++)	(+++)	(++)
	Operation and maintenance	NA	(+++)	(+++)	(+++)
	Gains	NA	(+++)	(+++)	(+++)
	Total	NA	(++)	(+++)	(++)

The just sanitation scoring tool including all the indicators of the government’s approach to sanitation is shown in the table below.

As far as independent scores are considered the sector total is only (-), even though scaling is (+++). It is because the effectiveness is given more weight (higher priority). It is done because if an approach is not effective then no matter how scalable it is, it cannot be recommended. On the other hand in justice dimension scores, ‘equity’ has been given priority over ‘acceptability’ and ‘cost’. It is because it is assumed that even if equity is low, people will accept a WaSH facility if given for free but not use it. So higher fairness in acceptability and cost does not transform into higher ownership among stakeholders. But higher equity, i.e. involvement of people in decision making and contributing, increases ownership. And building ownership for a sanitation facility is imperative for any rural sanitation approach to succeed.

Table 19: Just sanitation scoring tool of government’s approach

Approach Indicators	Scores			
	Independent scores	Justice Dimensions Scores		
		Distributive	Recognition	Procedural
Effectiveness	(--)	NA	NA	NA
Scaling	(+++)	NA	NA	NA
Equity	NA	(++)	(++)	(++)
Acceptability	NA	NA	(+++)	(+++)
Cost	NA	(++)	(+++)	(++)
Sector Total	(-)	(++)	(++)	(++)

5.1.2 Scoring HOP’s approach to WaSH

The cumulative scoring tool including all the indicators and sub-indicators of HOP’s approach to sanitation is shown in the table below.

It can be noted that the cumulative score of effectiveness is (+), it is because ‘time taken’ and ‘project reporting and documenting’ are given lesser priority than others. That is because the longer time taken and project reporting does not influence the productivity of the approach as much as ‘implementation’, ‘performance’, and ‘sustainability’ do. So in descending order the approach sub-indicator of ‘Effectiveness’ is as follows: ‘Implementation’ > ‘performance’ > ‘sustainability’ > ‘time’ > ‘project reporting and documenting’.

As far as scaling is concerned all the sub-indicators have equal priorities. Hence the cumulative score will mostly be an average of all the sub-indicators, if not specified otherwise.

Table 20: Cumulative scoring tool for HOP's approach

Approach Indicators	Approach Sub-indicators	Scores			
		Independent scores	Justice Dimensions Scores		
			Distributive	Recognition	Procedural
Effectiveness	Implementation	(+)	NA	NA	NA
	Performance	(++)	NA	NA	NA
	Sustainability	(++)	NA	NA	NA
	Time	(---)	NA	NA	NA
	Project reporting and documenting	(--)	NA	NA	NA
	Total	(+)	NA	NA	NA
Scaling	Demand	(+++)	NA	NA	NA
	Resource availability	(++)	NA	NA	NA
	Political will	(+++)	NA	NA	NA
	Willingness to invest	(+++)	NA	NA	NA
	Total	(+++)	NA	NA	NA
Equity	Stakeholders Identification	NA	NA	(+++)	NA
	Stakeholders Recognition	NA	NA	(++)	NA
	Stakeholders Involvement	NA	NA	(++)	(+)
	Stakeholders Interaction	NA	NA	(++)	(+++)
	Stakeholders Distribution	NA	(--)	(++)	(+)
	Total	NA	(--)	(++)	(+)
Acceptability	Demand analysis	NA	NA	(+++)	(+++)
	Creating Adaptive Environment	NA	NA	(+++)	(++)
	Total	NA	NA	(+++)	(++)
Cost	Funds	NA	(---)	(+++)	(---)
	Approach/technology implementation	NA	(-)	(+++)	(+)
	Operation and maintenance	NA	(-)	(+++)	(+)
	Gains	NA	(+++)	(+++)	(+++)
	Total	NA	(--)	(+++)	(-)

For the ‘equity’ indicator, the sub-indicators are prioritized as follows: ‘Stakeholder involvement’ > ‘stakeholder distribution’ > ‘stakeholder recognition’ > ‘stakeholder interaction’ > ‘stakeholder identification’. They are based on the fact that whichever indicator creates more ownership among stakeholders, is prioritized higher. That is why the cumulative score of recognition justice dimension is (+), even though it scores (+++) for the ‘stakeholder identification’ sub-indicator. The same is true for the procedural justice dimension.

As far as the ‘Acceptability’ indicator is concerned, all its sub-indicators are equally prioritized. Hence the cumulative score will mostly be the average of all the sub-indicators, if not specified otherwise.

For the ‘Cost’ indicator, the priority of sub-indicators are considered as follows: ‘Funds’ > ‘approach/technology implementation’ > ‘operation and maintenance’ > ‘gains’. This is also done in the way to increase the ownership of the WaSH facility among the stakeholders. It is assumed that if stakeholders contribute in funds for the project, they will have greater ownership on the facility gained from the project than equal participation and contribution in ‘approach/technology implementation’, and gain is prioritized as the lowest because it is more important to be involved in contributing for the project than to be involved in getting the gains from the project. Hence it is because the distribution of contribution in funds for the project is not fairly distributed among all stakeholders it is given more importance than the equal distribution of gains from the project. That is why the cumulative distributive dimension for cost is (--), even when other sub-indicators are performing way better than ‘funds’. The same can be said for the procedural justice dimension for Cost. The cumulative score is given (-) for the same reason as that for the distributive justice dimension.

Table 21: Just sanitation scoring tool for HOP’s approach

Approach Indicators	Scores			
	Independent scores	Justice Dimensions Scores		
		Distributive	Recognition	Procedural
Effectiveness	(+)	NA	NA	NA
Scaling	(+++)	NA	NA	NA
Equity	NA	(--)	(++)	(+)
Acceptability	NA	NA	(+++)	(++)
Cost	NA	(--)	(+++)	(+)
Sector Total	(+)	(--)	(++)	(+)

The just sanitation scoring tool including all the indicators of HOP’s approach to sanitation is shown in the table below. As far as independent scores are considered the sector total is only (+), even though scaling is (+++). It is because the effectiveness is given more weight (higher priority). It is done because if an approach is not effective then no matter how scalable it is, it cannot be recommended. On the other hand in justice dimension scores ‘equity’ has been given priority over ‘acceptability’ and ‘cost’. It is because it is assumed that even if equity is low, people will accept a WaSH facility if given for free but not use it. So higher fairness in acceptability and cost does not transform into higher ownership among

stakeholders. But higher equity, i.e. involvement of people in decision making and contributing, increases ownership. And building ownership for a sanitation facility is imperative for any rural sanitation approach to succeed.

5.2 Identifying deviation of both approaches

In this sub-chapter both approaches are first compared against each other to find deviation from each other and later analyzed with just transition definition framework.

5.2.1 Juxtaposing NGO's and government's approach

A general analysis can be derived from the results attained. After the evaluation of both approaches on the just sanitation approach scoring tool, both approaches are nearly equal with some aspects of the approaches showing distinct results from each other. It is because both approaches are different in design, resource utilization, and implementation. Some differences in results can also be because of the fact that HOP's approach is a top-down approach, where resources are provisioned by them to build sanitation facilities in a community. Whereas the Trans-Nzoia government's approach is a bottom-up approach, where communities are encouraged to build their sanitation facilities with the resources they have.

It can be seen that the sector total of independent scores of HOP's approach is better in achieving desired results after implementation and scaling to other communities than the Trans-Nzoia government's approach. It is because there are many stakeholders involved, on different levels, in the government's approach, which requires everyone to work efficiently to achieve good results. On the other hand, HOP involves lesser stakeholders, which comparatively reduces the amount of errors. Another factor can also be the set targets among both players. Where the NGO builds a sanitation facility and is done with the work, the government has to change the age-old mindset of the people which requires extra care, time, and resources. It is also due to the available financial resources among both. In the government's effectiveness, resources available with the government have been a real challenge. But with HOP this challenge is not that big.

Table 22: Juxtaposed just sanitation scoring tools of government's and HOP's approach

Approach Indicators	Scores							
	Independent scores		Justice Dimensions Scores					
			Distributive		Recognition		Procedural	
	Gov.	NGO	Gov.	NGO	Gov.	NGO	Gov.	NGO
Effectiveness	(--)	(+)	NA	NA	NA	NA	NA	NA
Scaling	(+++)	(+++)	NA	NA	NA	NA	NA	NA
Equity	NA	NA	(++)	(--)	(++)	(++)	(++)	(+)
Acceptability	NA	NA	NA	NA	(+++)	(+++)	(+++)	(++)
Cost	NA	NA	(++)	(-)	(+++)	(+++)	(++)	(-)
Sector Total	(+)	(++)	(++)	(--)	(++)	(++)	(++)	(+)

Going further, when the distributive justices of both approaches are compared, it appears that the government's approach is considerably fairer or more just in that aspect as compared to HOP's approach. It is due to the fact that the government's approach builds ownership among people. The community members contribute with what they can and build their own sanitation facilities themselves. Other than the government's assistance, schools and development organizations are also encouraged to source funds to provide sanitation facilities in schools. This creates ownership in the community, and although the sanitation facility may not last long, the solution is permanent. As with generated demand the stakeholders can build a facility themselves again. But HOP, using a top-down approach, provides the sanitation facility by itself, asking little to nothing from the community. By not focusing on building ownership among the community members towards the sanitation facility, although their sanitation facility is durable and long-lasting, but the solution itself is a temporary solution for it does not create demand among people and makes them always dependent on others to help them. Hence making the sanitation facility non-self-sustainable as well.

The recognition justice of both approaches is similar. This is because both approaches identify and recognize stakeholders that are important for their approach to succeed and that are vulnerable and need their help. There were some stakeholders that were identified but not recognized as key stakeholders. These stakeholders were not involved in the approach properly and their importance was not realized. These are the stakeholders that affect the outcome of their approaches positively or negatively. To improve the effectiveness of their respective approaches, including these stakeholders may turn out to be beneficial in the future. It is important to recognize and involve those people who are affected by the decisions taken. It might not upset someone for not being included in the process, but not even been recognized and asked to contribute can be detrimental to a participatory approach.

The government's approach has performed better at justice aspects as compared to the NGO. It is because in NGO's approach many stakeholders that are identified and recognized are either not involved in meetings, planning, designing, and brainstorming to figure out better solutions, or they were not given the decision-making powers. It is to be noted that people may be happy with the end results (sanitation facilities in this case), but they might not be happy with the process of achieving those results. It was noticed in the NGO's approach that many community stakeholders would like to join the meetings and take part in deciding what infrastructure to have or not to have in their community (including schools). Taking that right from them because they do not agree with a high degree of seriousness of those problems may result to be counterproductive and raise concerns in the future. So it is important that all the decisions are taken with everyone's advice.

The other aspect of procedural justice also includes the quality of involvement of stakeholders in a process. This is called interactional justice. Just including a stakeholder is not enough, the stakeholder needs to feel his/her opinion is respected and holds equal weight as others do. Interactional justice, just like distributive justice, creates ownership among stakeholders. When someone feels that their opinion is important and they are included in decision making then they own the repercussions of those decisions as well. Procedural justice helps in bringing the community closer and opting for long-lasting sustainable solutions.

Now looking at the fact that the effectiveness of the government's approach is really bad as compared to the NGO's approach, does that mean it is better to provide a WaSH facility without involving people? The answer is, no. The effectiveness of an approach incorporates many factors other than just the approach itself. It includes the implementation of an approach, the time taken, targets achieved, corruption, training of staff, and many more. On many of these aspects, the government has failed. It was noticed that the badly rolling down the participatory approach, ineffectiveness at implementation and governance, fewer resources availability, corruption, and high targets than the resources available to achieve them has been the cause of low score for government's approach. Had the implementation and governance aspect not been considered, it would have had performed better. The NGO's approach, on the other hand, considering the resources available has been 'okayish'. So poor effectiveness of an approach is not necessarily an indicator for a poor approach, especially when the implementation, performance, and governance aspects are involved. However, it is very important to know where the approach stands. So it can be deduced that an approach, although being just, can be ineffective if implemented wrong.

5.2.2 Analyzing gaps between the two approaches through just transition definition framework

In light of the results gained from the just sanitation approach scoring tool, the scope and social inclusion aspect (in the context of just transition definition framework) of both approaches has been identified. This is achieved by considering the nature of the solution provided, target population, procedure, and resources utilized.

It was noticed that the solution provided by the NGO only tries to reform the existing system and does not change the system itself. The NGO fulfills the existing demand for a better quality sanitation facility in the school that was not prioritized earlier. In the form of behavior change, the government provides the solution through CLTS implementation that transforms the existing system of open defecation countrywide. The target population of HOP is children of the community that goes to school that has bad sanitation facilities. The target population of the government is the whole community, and the government provides training to the community through CLTS, provides sanitation facilities in schools through the department of education, and provides behavior change health and hygiene education in schools through the department of health. The procedure that the HOP follows is a top-down approach and the procedure that the government follows is a bottom-up approach. Both provide desired results following a different process.

Once the specifics have been identified, now the details can be placed into the just transition definition framework and the differences between these two sanitation approaches can be better analyzed and represented against the distributive justice (focused or expansive), recognition justice (representation or elevation), procedural justice (participation or empowerment), and intention dimension (reform or transformation). After evaluating the scope and social inclusion aspects of both approaches, it has been noted that the HOP's approach and the government's approach theoretically satisfy the quadrant (III) and quadrant (I) of the just transition definitions framework, respectively. According to the just transition definition framework, the NGO's approach is focused, representative, participatory, and

reformatory in nature. On the other hand, the government's approach is expansive, elevation promoting, empowering, and transformation endorsing in nature.

Table 23: Scope and social inclusion (in the context of just transition definition framework) of NGO's and government's approach

HOP	Government
<p>Scope:</p> <ol style="list-style-type: none"> The approach focuses on a specific set of impacts and subjects. It targets to provide sanitation facilities to the schools and is focused to impact the lives of children in a community. Hence transforming schools into ODF schools. The approach appears to be a reformatory approach and seeks to change within the existing systems through reform. It provides sanitation facilities where there is a need and demand for sanitation facilities. 	<p>Scope:</p> <ol style="list-style-type: none"> The approach considers a broad range of impacts and subjects. It targets to facilitate the sanitation facilities to the community as well as institution such as schools. Hence transforming communities in to ODF communities. The approach appears to be a transformational approach and seeks to overhaul the existing systems. It generates demand for sanitation facilities by motivating communities to become ODF.
<p>Social inclusion:</p> <ol style="list-style-type: none"> The approach includes select stakeholders in aspects of the transition process. It recognizes select stakeholders like community leaders, ministries, and school administration as key stakeholders and includes them throughout the process. The approach provides representation and participation of vulnerable groups. It involves stakeholders in awareness and information provisioning. Hence provides representation and participation to them. 	<p>Social inclusion:</p> <ol style="list-style-type: none"> The approach includes a broad range of stakeholders throughout the transition process. It recognizes many stakeholders like ministries, NGOs, institutions, community leaders and members, and others, as key stakeholders and includes them throughout the process. The approach elevates and empowers vulnerable groups It involves stakeholders in planning, brainstorming, and decision making. Hence elevates and empowers them.

Although it has not been suggested or recommended in the just transition definition framework, still an attempt was made to put the data received in this research from NGO and government's approach into the graph to check if the data received satisfies the same quadrant as found in the theoretical explanation. As the government's approach being transformative, a score of (+ + +) was assumed for the intention of the government's approach. And for NGO's approach being reformatory, a score of (- - -) was assumed for intention for NGO's approach.

No change in the theoretically attained quadrant and resulting quadrants based on data gathered has been observed for the government’s approach. Both satisfy the quadrant (I) of the framework. However, for NGO’s approach, the resulting quadrant based on data gathered (II) is different from the theoretically attained quadrant (III).

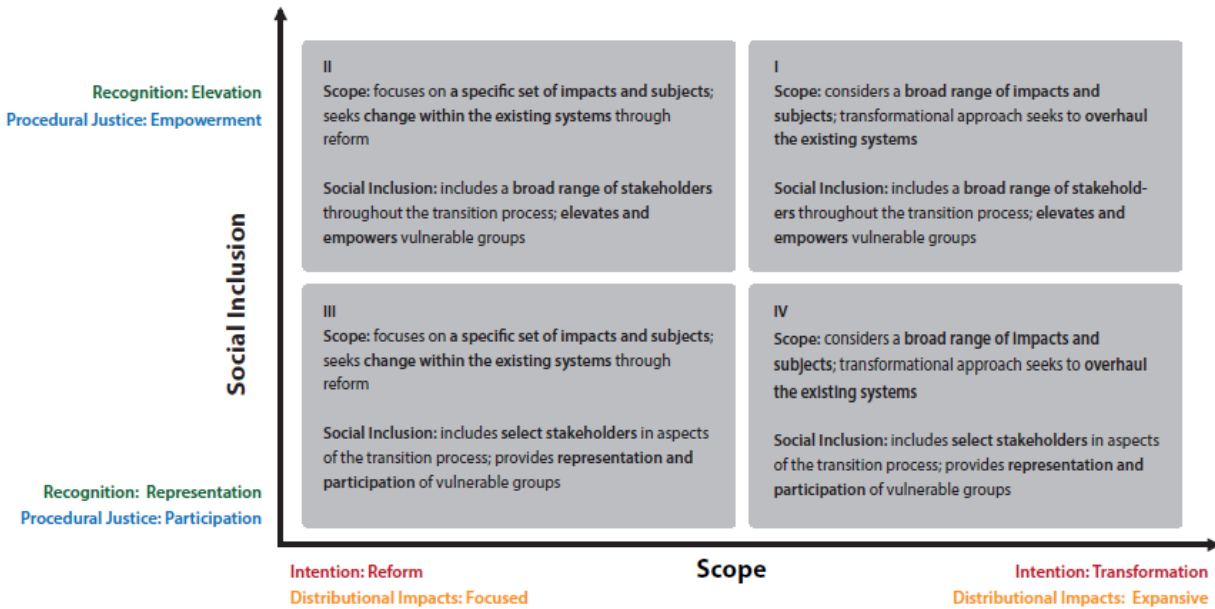


Figure 51: A just transition definition framework by the water institute at UN

This maybe because of the following reasons:

1. The difference in weight (priority) given to different indicators and sub-indicators while analyzing the data for cumulative scoring tool and for just sanitation scoring tool;
2. The current scoring scheme of ((+++), (---)) may also be a reason and one may get different results following a different scoring scheme.
3. Assumed score for intention for both NGO and government’s approach;
4. Assumed manner of representing score on just transition definition framework;
5. Difference in approaches in theory and in implementation;
6. Government’s approach has not been fully implemented in the case study in question;

Hence the based on the results from the analyzed data, government’s approach is expansive, elevation promoting, empowering, and transformation endorsing in nature. On the other hand, the NGO’s approach is focused, elevation promoting, reformative, and empowering.

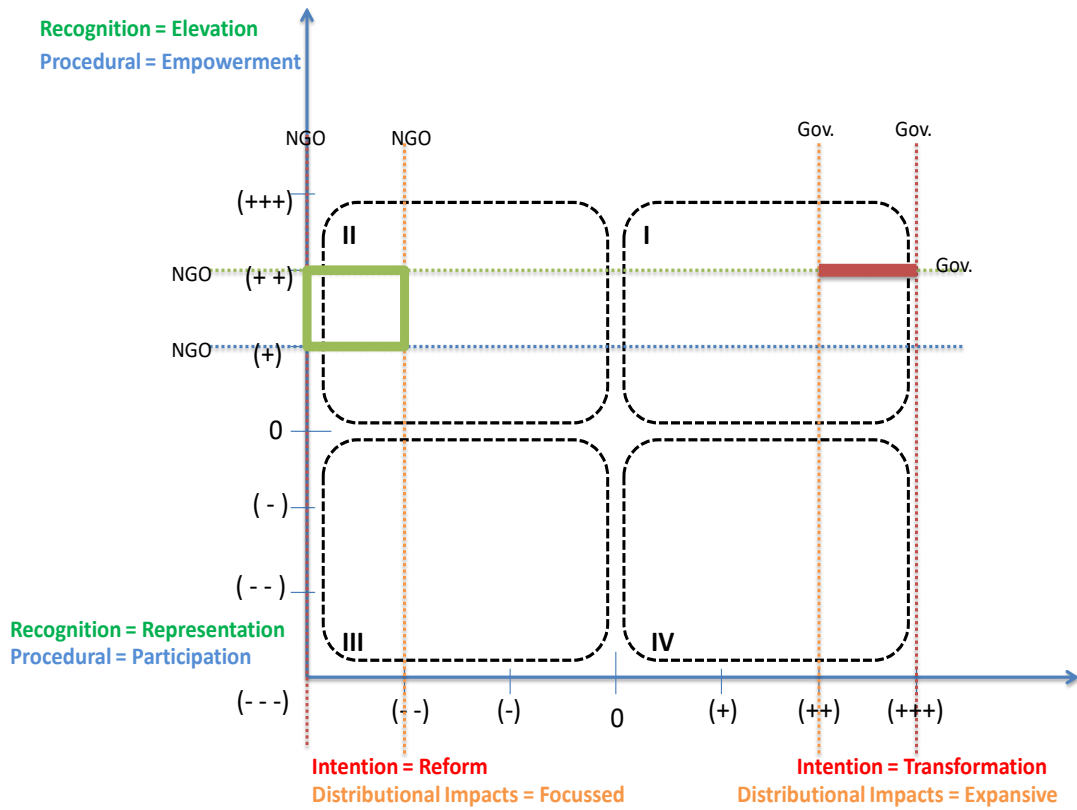


Figure 52: The just transition definition framework with resulted data

6 Theory into practice into theory

This chapter appreciates just how the theoretical knowledge of just transition from other sectors can be used into practice to calculate the just transition in sanitation sector and how the findings can be further used to create a theoretical frame for a just transition in sanitation.

6.1 Just sanitation transition approach framework

The just sanitation transition approach framework is a combination of tools used to analyze a sanitation approach against different justice dimensions. The key attributes of a sanitation approach that this framework intends to analyze are sustainability, scaling and equity.

The framework operates with easy to use set of tools that are used to evaluate the performance of an approach against a set of indicators. The tools that are used in this framework are:

1. Activity based rural sanitation approach comparative framework by the water institute at UNO
2. Just sanitation approach scoring tool
3. Just transition definition framework

The data needed to work with this framework can be collected through:

1. Interviews with the approach implementers and supervisors.
2. Activity based rural sanitation approach comparative framework filled by the implementers.
3. Surveys conducted with the target population.

The results of this framework are produced in the form of:

1. Scores in the range of (- - -), (- -), (-), (+), (+ +), (+ + +), NA.
2. A graph with which an approach can be place in different quadrants.

6.1.1 Guiding principles for just sanitation transition approach

The guiding principles presented here are adapted from the just transition guidelines developed by International Labor Organization (ILO) (ILO, 2015). As the research has established that the just sanitation transition framework may appear to be a viable method to gauge justice in a rural sanitation approach. This calls for theoretical considerations and research findings to establish guiding principles for a just sanitation transition approach. The following principles should guide the transition to environmentally sustainable sanitation economies and societies.

A just sanitation transition approach must:

1. be demand-based, instead of supply-based; (Chapter 2.2; 4.4)
2. provide a context-based solution; (Chapter 2.2; 4.4; 4.5)
3. be adaptable to different contexts; (Chapter 2.3; 4.4)

4. promote an ODF society; (Chapter 2.2; 4.4)
5. must improve the standard of living for users; (Chapter 4.4; 4.5) (ILO, 2015)
6. help society move forward to a sustainable future in which young generation is motivated to play an active role. (For example: Educating children about importance of water, sanitation, and hygiene can convey the message to the communities, with a little pressure, and a spark to bring change.); (Chapter 4.5) (ILO, 2015)
7. provide a sense of safety and comfort and restore dignity, independence and control over one's life; (Chapter 2.2; 4.5)
8. satisfy the distributive, recognition, and procedural dimensions of just transition; (Chapter 2.5) (ILO, 2015)
9. track progress, inspire and motivate people to strive for improved or better sanitation services; (Chapter 2.3; 4.4; 4.5)

The recognition justice dimension of a just transition approach must:

10. be planned and designed focusing vulnerable population (for example: disabled people, old people, women, and children); (Chapter 2.2; 2.5; 4.4; 4.5)
11. Every affected individual, directly and indirectly, must be identified and recognized as a stakeholder; (Chapter 2.5; 4.4; 4.5) (ILO, 2015)

The distributive justice dimension of a just sanitation transition approach must:

12. develop ownership for the sanitation facility, among the target population; (Chapter 2.3; 4.4)
13. encourage using affordable and locally sourced material to build sanitation facilities. People should be encouraged to build their own latrines out of locally available materials, which can then be repaired or replaced easily if needed, to eradicate open defecation; (Chapter 2.3; 4.4; 4.5)
14. provide a self-sustaining sanitation solution. (Sustainable sanitation means eliminating open defecation, providing a healthy and hygienic experience to defecate while improving economy, improving social equality and a self-sufficient system that does not harm the environment); (Chapter 2.3; 4.4) (ILO, 2015)
15. generate sanitation based livelihood and ending open defecation; (Chapter 2.3)

The procedural justice dimension of a just sanitation transition approach must:

16. respect and encourage freedom of choice. Decision to choose sanitation technologies, facilities and services to be implemented should be given to the affected population and stakeholders; (Chapter 2.5; 4.4) (ILO, 2015)

17. include every recognized stakeholder in planning, brainstorming and decision making throughout the approach; (Chapter 2.5; 4.4) (ILO, 2015)
18. provide respect and dignity to sanitation workers. (for ex. Pit-emptier, manual scavengers, toilet cleaners, etc.) (Chapter 2.2; 4.4; 4.5) (ILO, 2015)
19. promote stakeholders to move up the sanitation ladder; (Chapter 2.3; 4.4)

6.1.2 Requirements of just sanitation approach

Requirements of a just sanitation approach includes:

1. The approach is demand based rather than supply based. i.e. WaSH facilities are provided only when there is an existing demand for it or when demand is created in the community through meetings, workshops, trainings, tutorials, etc.; (Chapter 2.2; 4.4) (ILO, 2015)
2. It creates/promotes a sense of ownership, for toilets and other WaSH related facilities, among stakeholders; (Chapter 2.3; 4.4)
3. The needs of vulnerable population have been taken into consideration during the planning and designing phase. Ex.: Disabled people, old people, women and children etc.; (Chapter 2.2; 2.5)
4. It provides a context-based sanitation solution; (Chapter 2.2; 4.4; 4.5)
5. Stakeholders who will be directly or indirectly affected are included in planning and decision making; (Chapter 2.5; 4.4) (ILO, 2015)
6. All the necessary material used for construction are available within or nearby the community; (Chapter 2.3; 4.4; 4.5)
7. Proper user, operation and maintenance training has been provided to the direct stakeholders. (Chapter 2.5) (ILO, 2015)
8. Proper protective gears and equipment are made available to sanitation workers and labors. (Chapter 2.2) (ILO, 2015)
9. Community members have been made aware of the disadvantages of open defecation and benefits of using sanitation facilities; (Chapter 2.3; 4.4)
10. Stakeholders have been given the options to choose and decide for themselves which technology is best for them to use, operate and maintain; (Chapter 2.3; 4.4)
11. Progress is tracked and follow-ups including inspirational drives to promote better sanitation systems are performed. (Chapter 2.3; 4.4; 4.5)

6.1.3 Opportunities and challenges

In the transition to a self-sustainable ODF society, it can benefit from some major opportunities, for example:

1. Improved health by realizing the potential created by an ODF society;

2. Net gains in household income through prevention of communicable diseases and health benefits;
3. Time saved by the stakeholders by using an in-house sanitation facility;
4. A better environment to live and flourish catalyzed by reduced pollution in the society;
5. Restored dignity and control over one's life;
6. social inclusion through improved access to affordable and sustainable sanitation services, for instance, which are of particular relevance to vulnerable population of the society;

and faces some major challenges, for example:

1. behavioral change in society towards open defecation, resulting in shift in belief system related to culture, ethics, health, hygiene, etc.;
2. economic restructuring of family finances, resulting in sacrificing entertainment or recreational goods and services;
3. additional cost to the household to build, operate and maintain a sanitation facility; and
4. adverse effects on the incomes of poor households from higher operation and maintenance costs of sanitation facilities;

Given the scale and urgency of these environmental, economic and behavioral challenges, it is clear that the world will have neither the resources nor the time to tackle them separately or consecutively. Tackling them jointly is not an option, but a necessity.

6.2 Limitations and assumptions

As this being a unique adaptation of just transition in sanitation sector, the approach witnessed some limitation, for example:

1. Restorative dimension of justice transition is not included in the framework, as its relevance in the sanitation context was not found. If the contrary is true, it may have reduced the quality of this research;
2. Conducting desk-based study may have attracted some errors in data collection. Some key information may have been lost in translation, unfamiliarity of topics, and simplification of the terms and processes;
3. At certain instances, the researcher experienced central tendency bias while scoring the just sanitation approach scoring tool;
4. There is no fixed and defined manner of scoring an approach in the tool. The scores to be given are subjective in nature and changes with the analyzer;

and because of this research being a first of its kind, the unavailability of guiding tools has led to some assumptions to move forward, for example:

1. Restorative dimension of just transition is irrelevant to sanitation context;
2. There appeared some repetition in surveys received from the field (from parents). Although many surveys had unique responses, some surveys had exactly the same reasons for the questions, that too all of them having the same grammatical mistakes. The researcher assumes the unfilled surveys were dictated to the children by someone at school or someplace where many people can copy one response. But there exists no proof for this assumption. So these exactly same repetitive reasons were not used during the analysis, only their likert scale responses are considered;
3. The score for intension of NGO and government's approach was assumed to be (- - -) and (+ + +), respectively;
4. When in doubt between two scores, the lower score of the two was chosen in the just sanitation approach scoring tool;
5. Some sub-indicators were considered to have higher priority than the others while scoring, for example procedural justice of gains as sub-indicator is not equal to (also lower) in priority than procedural justice of funds as sub-indicator, although they both fulfill the same indicator, i.e. Cost;

6.3 Recommendations

It is important to guide the findings of this research so that it can bring some positive change in future. This sub-chapter embraces researcher's recommendations towards using the just sanitation framework effectively, for the future practical usage of just sanitation framework, and for government and NGO's approach to sanitation.

6.3.1 For using the just sanitation transition framework effectively

As far as the just sanitation scoring tool is concerned, to reduce the errors and acquire quality data, it is best to conduct the surveys, interviews, and witness the approach implementation in person. This can reduce the key information that may be lost in translation, the unfamiliarity of topics, and simplification of the terms and processes during an analysis done from distance. The clustering bias was experienced by the researcher during the scoring of approaches. This stems from a need to have more variance in scores or a different scoring scheme if needed. So the possible score can be increased from present six to eight or ten, depending on the needs. Also the weights of different indicators, sub-indicators, and sub-sub-indicators are recommended to be identified before starting the scoring process. It is also recommended to find methods to reduce the errors caused by acquiescence bias and social-desirability bias among the surveyed stakeholders.

6.3.2 For the possible practical usage of just sanitation transition framework

The just sanitation transition framework is a set of comprehensive tools that can be used to evaluate the capability and productivity of a rural sanitation approach in different contexts. Although it integrates a time-consuming process, yet it intends to provide a thorough evaluation that guides the transition towards an ODF society in a just manner. Due to the flexibility of this framework to evaluate the

approach as well as its implementation process, governments and NGOs can find this framework useful to analyze the equity gaps and to refine and enhance their respective sanitation approaches. The framework provides flexibility to give more weight to some aspects than the others, in this way it can guide the user if they would like to focus on making their approach more solution-oriented or towards more equitability.

Considering the expectations of the sanitation economy market opportunity to reach US\$ 6.2 billion by 2030 (TBC, 2020), a transition to a sustainable sanitation economy is important to produce a greater output. This will require as many people as possible to use and invest in WaSH services. To keep the benefits grow consistently, it is imperative to guide this transition in the direction such that the consumers and beneficiaries of the WaSH facility stay satisfied and be subscribed to the services over a long period of time (preferably lifelong). That can only be achieved when each stakeholder in the sanitation economy market believes that their part of the transaction was done fairly. In other words, if the transition to a sanitation economy market was fair and just. This is when this framework can play an important role to cooperate with a sanitation transition to be just.

6.3.3 For government and NGO's approaches

As far as the cases in this research are concerned, the government's approach can be improved if government conducts regular feedback sessions with the PHOs and keep track of their progress in the community. There is also a need to increase funds for the ministry of water, ministry of education, and ministry of public health. Priority on sanitation services in primary schools has also been found missing in many WaSH policies. The national government created Kenya Countywide Inclusive Sanitation Strategic Planning in 2019, yet there are only two counties that have made a strategy following this plan and Trans-Nzoia County is not one among them. It requires seriousness from the county government's end towards the necessity of WaSH services in communities (including schools). The national target of 100% ODF Kenya has been left unachieved three times in 2013, 2017, and now in 2020. It has been every stakeholder's concern that the government has a plan, but they are never implemented on grounds, maybe it is time to focus on implementation on sanitation approaches more than planning sanitation policies. Maybe setting small targets, but ensuring 100% ODF in those communities, is the key to ODF Kenya. The government also needs to curb the corruption in its institutions which will build mutual trust within stakeholders. Considering the lacking funds in the WaSH governing agencies, a decentralized approach to rural sanitation waste management appears to be a viable and feasible way to universal access to WaSH facilities.

With its CLTS approach, the government should also include some aspects of a market-based approach, where sanitation business owners are incentivized. As the market reacts to incentives, this may create a chain of events where, after getting triggered through CLTS, people demand low-cost credit-based sanitation facility and market players are there to fulfill their demand. So having a mixture of behavior change and market-based approaches can help Kenya achieve 100% ODF faster. It is also important for more villages to achieve ODF status that the verification and certification process is expedited. As with the present approach the certification officers have to be called from the national CLTS-hub in Nairobi, it

costs the NGO too much money to get a village ODF certified. In the future, the government may also include private players or NGOs to do the certification process.

Appropriate CLTS training to facilitators and provisioning of needed resources for them to execute the approach effectively is imperative to move forward. It is recommended to include schools, markets, and religious institutions actively in the CLTS approach so that nobody is left out from this approach. In addition to CLTS, an SLTS approach can be suggested which targets the community through schools. In poor households where people cannot afford a personal sanitation facility, people may also be allowed to have shared toilets to achieve ODF status. There is a need for a support mechanism for poor households to move up the sanitation ladder, government may create a handbook or training module for facilitators on how to identify disadvantaged groups and how to help them.

The HOP has reliable sources of funds which are the important factors in making their approach scalable, as their approach needs funds to work. The NGO's approach is dependent on the donations by well-wishers. That is a blessing for now, but that support is not sustainable as of yet. They may invest in building their capacity in constructing resource-efficient WaSH facilities which also generate some revenue in return. And one of the most important things they need to focus on is community participation and building ownership among the community to take responsibility for the WaSH facility in schools. As long as the facility needs investment from the NGO, their project is never finished and not sustainable.

NGO's plan to involve teachers in the future sounds promising but it depends on how much time teachers can spend. As Trans-Nzoia has a teacher to pupil ratio of 1:50, against the recommended 1:40, in primary schools, involving teachers too much may affect their productivity on other tasks at school. The NGO also needs to focus on the distributive justice dimension of their approach, as it shows very little participation and contribution from community stakeholders. Students stay most of the time at home, it is important they have an improved sanitation facility in their home as well. And that can only be achieved by investing more in behavior change activities with the community members for the wholesome development of the Mukuyu community.

Some traces of the SLTS approach are already visible in their approach, where children are demanding better sanitation facilities at home. So it appears to be that now they just need to reach out to the community. Otherwise, the equity and sustainability aspect of their approach will not fulfill the required conditions, and that is the basis for any participatory rural sanitation approach to succeed. It is advised to the NGO to opt for the SLTS approach and work with the government's CLTS approach, as it will keep their focus on schools and it will also improve the sanitation conditions in the community.

7 The way forward

At the end of the research, it becomes important to go back to the objectives to check what has been achieved and what has not. It also poses a possibility to discuss what can be done in the future with regard to this research. So in this chapter objectives are reviewed and some suggestions for future researches are presented

7.1 Review of objectives

Reviewing how the considered theories have come together to reach the objectives is a necessary task. It can be perceived from the findings that the considered theoretical framework has helped to achieve all the desired objectives. The theories considered, the adapted framework and the interpretations of received data mostly unfolded to be in harmony with the aims of this research. Although there were some shortcomings in data acquisition and data analysis, the fundamentals, data needs, and the pathway designed by the considered theories to attain the intended outcome.

The multidimensional scoring tool for a just sanitation approach was adapted from the qualitative public policy comparative framework and just transition definition framework. The data requirements to fill this scoring tool were fulfilled by interviews, surveys, and literature reviews. The result received from the adapted tool was later mapped to identify the deviation of NGO's approach from the government's approach over just transition definition framework developed by the Just transition Initiative. Both approaches were later defined on the basis of justice dimensions (distributive, recognition, procedural justice, and intention). The gaps between the two approaches were later analyzed and presented in the form of a graph for an easier understanding. Using the theoretical framework and the findings of the research, the just sanitation transition approach framework was defined and presented with the guiding principles. In the end suggestions and recommendations were provided to implement the achieved results in different contexts and in bridging the gaps between the two approaches in consideration. Although it has not been tested in different contexts, the resultant framework intends to work in distinct contexts, in a diverse group of stakeholders, and with a varied range of sanitation approaches. Hence all the desired objectives of this research have been achieved.

7.2 What's next?

Considering that a foundation for just transition in the sanitation sector has been laid, present research opens a window to further researches on this topic in the future. For example:

1. There were some things that were scoped out of the research due to the constraints posed by the pandemic Covid-19, which hindered the research in that proper data collection was not possible, so adaptations had to be made. Another thing is that the government's approach has not been fully implemented in the field which has also been the reason for shortcomings in achieved results. So there exists a need to increase the scope of this research and to test the competence of this framework.
2. Now that it has been established that the just sanitation framework may be a viable method to provide a better understanding of the capabilities of a rural sanitation approach to produce results and be just, it has posed new questions on how to analyze and represent the findings in a better way and how to use the findings to improve the approach?

3. Now there exists a foundation for a just sanitation approach, the question arises if we can deduce it into a working approach will it be substantial for implementation in projects? We should be more considerate about certain things where we found weaknesses, like when (Kar and Chambers, 2008a) describes that 'people come together to help each other in case some do not have resources', the research was able to notice partly here but in the cases where the challenges were aggravated due to climatic conditions which made sanitation solutions expensive, community members in poor communities got reluctant to help each other and CLTS facilitators had to sponsor toilets for some old and disabled people. So there exist certain gaps and weaknesses in the approach, maybe there is a need to review the CLTS approach towards a deeper justice thinking that is more systematic.

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9 Annex

9.1 Interview script

Stages	Topics	Questions
Pleasantries and Introduction	<ul style="list-style-type: none"> - Welcome - Exchanging introductions - Breifing - Taking consent 	<ul style="list-style-type: none"> - Welcoming and thanking the interviewee - Self introduction - Explaining the procedure - Taking consent
Roles and responsibilities	<ul style="list-style-type: none"> - Mission - Vision - Roles and responsibilities in the respective organization and community 	<p>How did your organization start or what motivated you to work at your present job?</p> <p>What are the Mission and Vision of your organization?</p> <p>What are your roles and responsibilities at your present position in your organization?</p> <p>What is the present situation of WaSH sector in the field?</p>
Work Environment	<ul style="list-style-type: none"> - Hard facts and realities - experienced challenges - situation analysis - problem identification - key stakeholders identification 	<p>Please explain the step-wise procedure that you follow in your approach in the community.</p> <p>How is the WaSH situation in the schools and the locality that you work in?</p> <p>Who is responsible for governing and provisioning of WaSH facilities?</p> <p>What challenges have you faced while implementing your approach?</p> <p>How do you deal with challenges faced in the field?</p> <p>What kind of support do you get and provide to the community?</p> <p>What kind of inequalities exist in the society?</p> <p>Who are the key stakeholder in your approach?</p> <p>In what ways people are included in the approach?</p> <p>Is the WaSH facility constructed from locally sourced material?</p> <p>What kind of training have you received from the government for your present job?</p> <p>What is people's opinion of the government?</p> <p>What is people's attitude towards pit-emptier? Is that a desirable job?</p> <p>What do people think of a 'toilet'?</p>
Suggestion	<ul style="list-style-type: none"> - Views on improvements - Solutions - Support - needs and requirements to move forward - future plans and 	<p>How can we improve the present condition and deal with the challenges effectively?</p> <p>What kind of support do you need and from which stakeholder?</p> <p>What is missing or what is required to move forward?</p> <p>What are future plans of your organization?</p>

	way forward	
Conclusion	<ul style="list-style-type: none"> - Expectations from this research - Questions for interviewer - Debriefing - Pleasantries 	<p>What are your expectations from this research? Do you have any questions for me? Scheduling next interview, if needed. Debriefing Thanks and goodbyes</p>

9.2 Exemplar of consent form

Declaration of consent

Research topic: Assessing NGO's engagement in WASH: the contributions of school sanitation projects to just transition

Interviewer (and researcher): Sumit Sharma

M. Sc. IWRM, Institute for Technology and Resources Management in the Tropics and Subtropics, Cologne University of Applied sciences, Cologne, Germany.

I declare that:

1. I voluntarily agree to participate in this research study;
2. It being a qualitative research, the interview will be recorded for quotation extraction, proper citation, and referencing;
3. The transcript of the interview may be shared with me, if requested;
4. Personal details will not be shared with anyone without consent;
5. I reserves the right to refuse to respond to any question without any provided explanation;
6. I reserves the right to end the interview, whenever felt like, without any provided explanation;
7. This interview will only be used for educational purposes

Date: _____ Name: _____ Signature _____

9.3 Elaborative likert scale

9.3.1 For parents

Survey

Instructions: The following questions concern your opinions and beliefs about newly constructed sanitation facilities (Hand washing stations, toilets and well) in your child’s school. These questions ask about your personal beliefs, so there is no right or wrong answers. No matter how you answer each question, you can be assured that many people will answer it the same way. We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement. Your identity will be kept anonymous, so please be honest and a bit elaborative with your opinions. Please only select one option and write the reasons for your choice in the space provided.

For example, Statement: I enjoy sharing information with others.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input checked="" type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	--	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?): I like to share information but I do not share too personal information.

Here we chose “Slightly Disagree” and gave a reason for the choice.

Now your turn.

1. Using toilet is against my religion/culture/values.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Reason for your choice (Why/Why not?):

2. Sanitation facilities (hand washing and toilets) in schools, are important for students.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason (How/Why not?):

3. I have the required resources, available near/around me, to build a personal toilet, if I need one.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (What/What not?):

4. I was informed, in advance, about the construction of new sanitation facilities (hand washing and toilets) at my child’s school.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (How/Why not?):

5. I have concerns with the new sanitation facility (hand washing and toilets) at my child’s school.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason (What/Why not?):

6. Open defecation (Pee & Shit in open spaces) is good.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

7. After proper treatment, wastewater from toilets should be reused (in fields as fertilizer or flushing in toilets).

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

8. In the past, I have been approached or motivated by the government, to build a personal toilet at/near home.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (How/Why not?):

9. Students may be asked, if needed be, to help cleaning the sanitation facilities to save operation and maintenance cost at school.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason (Why/Why not?):

10. Having toilet for vulnerable people (disabled, children, girls), according to their needs, empowers them.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (How/Why not?):

11. After the construction of toilets at school, children ask to have a toilet at home as well.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

12. I am willing to contribute/help in construction of sanitation facilities (hand washing, toilets) in my child's school.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Reason for your choice (How/Why not?):

13. In the meetings conducted among school authority and government leaders to plan new infrastructure in schools, parents should also be included and consulted.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

14. A job to clean, operate and maintain toilets is a low-value job. It is not for me.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

15. Government should help me build a toilet at/near my house.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Help How/Why not?):

16. Water and sewage connection to a household, is a necessity.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Reason for your choice (Why/Why not?):

Relation with the student (Father or Mother?): _____

9.3.2 For head teacher

Survey

Instructions: The following questions concern your opinions and beliefs about newly constructed sanitation facilities (Hand washing stations, toilets and well) in your school. These questions ask about your personal beliefs, so there is no right or wrong answers. No matter how you answer each question, you can be assured that many people will answer it the same way. We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement. Your identity will be kept anonymous, so please be honest and a bit elaborative with your opinions. Please only select one option and write the reasons for your choice in the space provided. **For example,**

Statement: I enjoy sharing information with others.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Reason for your choice (Why/Why not?): I like to share information but I do not share too personal information.

Here we chose "Slightly Disagree" and gave a reason for the choice.

Now your turn.

1. New sanitation facilities have helped our students.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Reason for your choice (help how/Why not?):

2. New sanitation facility in our school can be repaired with locally available material and skills, if needed be.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Reason (How/Why not?):

3. Government's approval is necessary when planning sanitation infrastructure in schools.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Reason for your choice (Which department/Why not?):

4. Government is concerned about student's sanitation needs in schools and is doing everything it can.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (How/Why not?):

5. Our new sanitation facility is sustainable and environment friendly.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason (How/Why not?):

6. Students should be trained about how to use the toilet and wash hands properly, at school.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

7. Having toilet for vulnerable people (disabled, children, girls) according to their needs, empowers them.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (How/Why not?):

8. Parents should be consulted before building a sanitation facility in their child's school.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (How/Why not?):

9. After proper treatment, Waste from toilets should be reused (in fields as fertilizer or toilet flushing).

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason (Why/Why not?):

10. It is possible to construct a good quality toilet at our school without government, church or NGO's help.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (How/Why not?):

11. It is important that parents approve of the design and quality of sanitation facility at their child's school.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

12. Having a toilet means that people use it.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

13. Cleaning and maintaining a toilet regularly, increases its operating life.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

14. A job to clean, operate and maintain toilets is a low-value job. It is not for me.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

15. If parents will take their child's sanitary health seriously, it will change government's behavior towards it too.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (How/Why not?):

16. Government should help people build a toilet at/near each household.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason (help how/Why not?):

17. Students may be asked, if needed be, to help cleaning the sanitation facilities to save operation and maintenance cost at school.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

18. Parents and school staff members should be consulted while planning new infrastructure in schools.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason (Why/how/Why not?):

19. Sanitation facilities (hand washing stations and toilets) in schools, is irrelevant for students.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

20. Parents and school staff members should be given decision making powers while planning new infrastructure in schools.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

21. Which new water and sanitation facilities were (or are being) built in school recently?

22. It is church's responsibility to provide sanitation facilities in the schools.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason (Why/Why not?):

23. Parents should contribute/help in the construction of sanitation facilities in their child's school.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (How/Why not?):

24. After the construction of toilet at school, children ask to have a toilet at home as well.

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	--------------------------------------	-----------------------------	--------------------------------------

Reason for your choice (Why/Why not?):

25. How can we involve parents and school staff members in improving school's sanitary hygiene?

26. How can we build ownership among community members to take responsibilities of school sanitation systems?

9.4 Activity based rural sanitation approach survey for HOP's and Government

Table: Activity based rural sanitation approach survey for HOP's and Government' approach

Activities Performed	HOP	Government
A.1. Planning and training		
Community selection	Partially	Yes
Advocacy to government	Partially	Yes
Training community members on sanitation technologies	Partially	No
Training participatory facilitators	No	Yes
Training community health workers	No	Yes
Training community/natural leaders	No	Yes
Training local government	No	Yes
Training masons/artisans	No	Yes
Training suppliers, entrepreneurs, sales agents	No	No
Training credit officers/MFIs (Micro Finance Institutions)	No	No
A.2. Formative assessments		
Baseline sanitation coverage survey	Yes	Yes
Baseline KAP survey	Partially	Yes
Consumer market research (e.g. barrier analysis, willingness to pay, design)	Partially	No
Local supply chain assessment (e.g. landscape analysis, or informal review)	Partially	Yes
Microfinance feasibility study	Partially	No
Technology option piloting	No	No
A.3. Interaction with communities/beneficiaries/customers		
Educational activities	Yes	Yes
Community mobilization ("triggering")	Yes	Yes
Creating village committees/clubs	Yes	Yes
Promoting latrine upgrading	Yes	No
Social marketing campaigns	No	No
Latrine technology fairs and sales events	No	No
Door to door campaigning	No	Yes
Sanctions and enforcement	No	Yes
A.4. Supply chain networks		
Linking manufacturers, suppliers, consumers	Partially	No
Local enterprise development (including one-stop-shop models)	No	No
Establishing entrepreneur associations	No	Yes
A.5. Latrine technology & construction		
Latrine construction support from external implementers	Yes	No
Latrine construction by households with locally available material	Yes	Yes
Designing latrine technologies at different price points	Yes	No

A.6. Financing activities		
Organizing consumer loans through MFIs	No	No
Organizing small business loans for sanitation businesses through MFIs	No	No
Establishing village group savings associations/self-help groups	No	Yes
Allocating public funds for locally-determined and subsidies	No	Yes
Donation/discounting materials to community or targeted segments	Yes	No
A.7. Monitoring and evaluation		
Active monitoring by external actors	Yes	Yes
Community monitoring	Yes	Yes
Collection of sales data	Yes	No
Monitoring loan repayments	No	No
Endline coverage surveys	Yes	Yes
ODF (Open defecation Free) verification visit	Yes	Yes
Post-ODF slippage survey	Yes	Yes

9.5 Overview of codes

Table: Overview of codes

Stakeholders (Primary codes)	Approach Indicator (Secondary code)	Approach sub-indicator (tertiary codes)	Approach sub-sub-indicator (Quaternary codes)
Government / HOP/ Community Members	Effectiveness	Implementation	Follow ups
			Efficiency and Efficacy
			Corruption
			Policy/approach framework
			Impact of context
		Performance	Staff training
			Targets achieved
			Feedback gathering
			Population covered
			Effects on people
		Sustainability	Dealing with challenges
			Sanitation ladder
			Innovations
			Health and hygiene
	Time	Pollution	
		Durability	
		Project reporting and learning	
	Scaling	Demand	
		Resource Availability	
		Political will	
		Willingness to invest	
	Equity	Stakeholder Identification	
		Stakeholder Recognition	
		Stakeholder Involvement	
		Stakeholder Interaction	
		Stakeholder distribution	
	Acceptability	Demand Analysis	Priority evaluation
			Willingness to contribute
Creating Adaptive Environment		Education/ awareness/ training	
		Stakeholder relations	
		Context based solutions	
Cost	Budget and Funds		
	Policy/ approach/ technology Implementation cost		
	Operation & Maintenance		

		Gains	
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9.6 Samples of coded text

Table: Samples of coded text

Respondent	Codes assigned to some segments	Coded Segment
Grace	<ul style="list-style-type: none"> - Stakeholder identification - Stakeholder recognition - Stakeholder relations - Permits - Context based solutions - Labor - NGO's approach - Resource availability - Institutions 	<p><i>R: Okay so once I gather the information and I get sponsors for the school, okay for these schools I got the permit to build there all (three) at once. I put them all in one pot and I got their permission to build. So I then contact again the head teacher and we look for a site which is convenient for the children and I look at the topography because we want for example if we are collecting waste we want to use the natural landscape. So I get an engineer, I come with them and then we look for a good site and then we introduce our concept that we want to bring into their school. And from there it is normally head teacher who gets in contact now with the community, then we meet with the community, we tell them what we are doing so that they don't feel like their children are being exposed to some kind of danger or something. And once that is done then I work with the local community. I start looking for people who I can implement the construction with or who I can build with. And also maybe I should mention that as HOP we are not allowed to just come and work here, so we have another local organization which I also founded. And with this local organization we now are able to employ people and to receive funds as well. Yeah, we receive funds and we have an agreement with HOP and then we implement using the local craft. (Interview\Grace_1: 32)</i></p>
Elphine	<ul style="list-style-type: none"> - Context based solutions - Dealing with challenges - Policy/approach framework - Staff training - Project reporting and learning 	<p><i>I: And have you been trained for this approach?</i></p> <p><i>R: No, for them we were trained for the community directly. But during the checklist when were going through the tools we realized that there is institutional checklist. So I had just like to come up with a plan on how to manage the institution be integrated in the CLTS and improve the indicators and make the checklist during certification process. (Interview\Elphine 2: 26-27)</i></p>
Selina	<ul style="list-style-type: none"> - Staff training - Willingness to invest - Staff - Institutoins - Efficiency & efficacy 	<p><i>R: it is the public health department. But they are doing nothing because they are not being facilitated on finances and training. So we take up the responsibility to train them, we take up the responsibility take care of their financial needs that comes in implementing the program. (Interview\Selina: 47)</i></p>

9.7 Detailed scoring procedure of approaches

9.7.1 HOP's approach

Effectiveness:

Implementation

Corruption:

Corruption here depicts the money or resources charged by the HOP representative for themselves. Corruption could be either money or benefits charged from the community members or stealing from the donor funds. As mentioned by Grace, she prefers to stay and work in the field because she does not have a trustworthy employee or acquaintance that she can transfer money and get the sanitation facilities ready. So she implements the sanitation facilities on ground and hence is also responsible for utilizing the funds the way she feels fit.

Any kind of charging money or asking for benefits from the community members has not been witnessed in the surveys. To check any misallocation or unnecessary expenditure of funds, one needs to go through the organization's balance sheets, which were not accessible. With no incidence in sight, it is safe to assume that no corruption was done by the HOP representatives during their approach. Hence score allocated for this category is:

Approach sub-indicator	Score
Corruption	(+++)

Follow ups:

Follow ups here depicts either through physical community visits or through other means staying in touch with key stakeholders in order to gain feedback on the performance of the WaSH facility after the implementation phase. It is mentioned by the experts interviewed that if regular follow ups are not done after the ODF certification of a community then people may go back to their old habits of practicing open defecation. So it becomes important that regular follow ups are performed in a just sanitation approach.

Grace has mentioned during the interview how regular follow ups are important for their approach to succeed. And because of that regular follow ups are done by her to make sure if there are any breakages, repair work, to fulfill the hygiene requirements for girls and to be updated on the performance. Although she has appointed a care taker in the primary school for a better operation and maintenance, still how important it is for to do follow ups can be understood from the following argument of hers.

So we don't just build a facility and leave the school and that has been one of the reasons most projects in the past failed, even projects of big organizations. Because people argue that now you have done something good for the community, you have build for them a toilet, and now you'll tell them 'now they need to take responsibility and see that it's running'. It just doesn't work. It doesn't work here. (Interview\Grace_1: 50)

Because of the evidence and non existence of any contradiction from the surveys, the score allocated for this category is:

Approach sub-indicator	Score
Follow ups	(+++)

Efficiency and Efficacy:

Efficiency and efficacy here depicts achieving more with less resources and power/capacity to produce desired effect, respectively. It becomes an advantage for an approach to achieve its targets using as little resources as possible. So in order to check the effectiveness of an approach, efficiency and efficacy are necessary.

In the schools where students used to wait for the break to go back home or behind the bushes to help themselves, the HOP has been able to transform Mukuyu primary school and others into an ODF school with their approach. Instead of just providing simple WaSH facilities they have also provided electricity, well, water tanks, and septic tank.

It is because the VIP toilets do not guarantee that there will be water in the school, they go for pour flush toilets. Water is provided through digging wells and pumping into water tanks. It is because it is a water rich region and water table is less than 25 meters high. When there is no care taker available they appoint a care taker, most of the resource that is used to build the WaSH facility is locally sourced including using trees available in schools for timber and other use. Also all of their labor and technicians are local community members who use local craft during construction.

We are trying to build with the material that will last for a long time. Bricks are good for subdividing the rooms, but for the outside structure it's better to have building blocks from natural stones because they are available. They are a bit more expensive but that makes the building more stable and long lasting. (Interview\Grace_1: 94)

However, there are some speed breakers in the implementation phase which has made the process take longer and expensive. During their approach they go extra miles to make sure the facility is long lasting and durable even if costs more money. There are some things that Grace would like to improve in future. This includes searching for a better and faster technology which can reduce the time from four-five months to one month. Although she believes the behavior change of parent is important for her project to succeed, but due to financial and time constraints she cannot entertain the parents.

It demands you do some entertaining so that you can engage the parents actively [for behavior change]. But because also we don't have so much time and we don't want to use the donor funds to engage the parents too much, we concentrate on the children (Interview\Grace_2: 19)

Being resourceful and achieving defined target has made their approach effective. However more work needs to be done to engage parents more, as students stay most time of the day at home and changing parent's behavior towards sanitation becomes important for a better upbringing of a child. Hence the score allocated for this category is:

Approach sub-indicator	Score
Efficiency and Efficacy	(++)

Approach framework:

The approach framework here depicts a formulated structure of an approach which represents technology used, detailed steps and their explanation, key stakeholders and how to engage them, resources to be used, activities to be performed, among others. A stepwise organized structure of a sanitation approach makes it easier to implement it, makes it easier to train staff and employees, prepares you for challenges in advance, and makes one adaptable to surprises in the field. Also not to forget that an approach is always evolving with time and adapting to different contexts, but a general articulated structure is necessary for a better understanding of reality and for a good implementation.

The approach framework of the HOP 'sapproach is not formally defined and constituted. The program still being in the initial stages and with only one school being transformed to ODF, as of now, challenges are dealt with as they come. However as they are learning by doing, the approach, per say, is still evolving. The absence of standardized framework to the approach, steps to be followed, specifics of means to achieve the targets, predefined duties and responsibilities of the team, accessible resources and technologies, and organized timeframe seems to have made the implementation process time consuming, costlier and dependent heavily on Grace's efficiency. Although one can be optimistic that they are learning and the mistakes will be avoided in future, however a structured approach to the vision of the organization will provide greater efficiency to the implementation phase.

The responsibilities of utilizing time and donor funds effectively make it important to have a proper structure of activities and ways to do them. On the other hand, the free will to the approach may provide extra resources to deal with the individual challenges in the effective manner. Investing extra time and money to reach to the root of the problem and act for the long lasting contextual permanent solutions rather than short term temporary solutions provides an advantage to the approach.

Considering them being in the initial stages and worked only in three schools until now, it is highly important that regular follow-ups, feedback gathering, documentation of learning's, pilot project reporting, identifying strengths and weaknesses, noting challenges and solutions, etc. are done properly. As much of it is still yet to be done, the score allocated for this category is:

Approach sub-indicator	Score
Approach Framework	(--)

Impact of context:

Impact of context here depicts the originated challenges in the field that were not considered in the planning phase of the approach, and that has affected the approach positively or negatively.

The context of Mukuyu primary school has, although not put a stop to the project however, increased the operation and maintenance cost for HOP. It is due to the fact that the children are small and need extra care. Considering the unwillingness of community members to take the responsibility and underfunded school administration, the HOP had to hire a care taker for proper operation and maintenance of the WaSH facility. This increases the cost by 140 Euro/month. In future, Grace wishes to improve the relationship with parents and teachers, to share responsibility of the care taking of WaSH facility.

The project that had started by HOP just to provide sanitation facilities in the schools has been expanded to provide various other facilities on which the sanitation technology is dependent on. There were some facilities that were not available in the community which has increased the cost of the initial

project. These include providing potable tap water, decentralized sewage system, water treatment system, well, electricity, water tank, etc. Grace has also mentioned what she felt in the beginning, when asked about her approach.

I got some technical consultation to see what was possible in terms of our approach of improving sanitation in the area. And once that was in place I knew that I was not going to be able to do it on my own, because at first I thought that I will just put something small and I am done. But I realized that it is going to be a very big project. And I realized that there is lot of need (Interview\Grace_1: 3)

Sometimes the context also increased the risk to labor’s health and created challenges in the working environment. And this can also increase the time period of the implementation phase.

The water in this region is not very far from the ground. You can get like water, good fresh water within 25 meters. But [...] you can only dig the bore holes manually and it’s a very risky business digging 25 miters under the ground manually. Because sometimes there is gas down there. [...] And the mud down there is very ‘slimey’, [...] the soil down there is very very soft so it’s quite difficult to get somebody who can dig for you a good bore hole. (Interview\Grace_2: 15)

On the other hand providing sanitation in secondary schools reduces the operation and maintenance cost for both school and HOP. It is due to the fact that secondary school students are older and can be trained to look after the WaSH facility. And in the Kenyan culture it is common for students to clean the toilet at schools which helps in saving the operation and maintenance cost. And HOP also uses the trees in the schools for timber, and water and electricity from the schools which also helps in saving some of the construction cost for them. Sometimes school administration also provides lunch to labor and some parents also contribute for toilet paper, soap, etc.

So context has both positive and negative impacts for the HOP. Hence the score allocated for this category is:

Approach sub-indicator	Score
Impact of context	(--)

Cumulative score of implementation as approach sub-indicator:

Of all the sub-sub-indicators efficiency and efficacy and approach framework are assumed to holds more weight (higher priority) and it is because corruption is rarely noticed in NGOs and it is more important to have an approach framework, so that it can be followed to reduce errors. Hence the total score of implementation is decided to be (+).

Approach sub-indicator	Approach sub-sub-indicator	Score
Implementation	Corruption	(+++)
	Follow ups	(++)
	Efficiency and efficacy	(++)
	Approach Framework	(--)
	Impact of context	(--)
	Total	(+)

Performance:

Targets achieved:

Targets achieved here depict the provisioning of the facilities and services mentioned in the 'mission' on website of HOP and voiced by Grace in the interview. The number of targets achieved is a symbol of how good or bad the effectiveness of an approach is.

The achieved targets that have been mentioned by Grace includes the improved health and hygiene of the community, increase in attendance of students in schools, behavior change among community members towards sanitation, demand generation among other schools for improved sanitation facilities, and reduced pollution in the community.

As the schools are centrally located community members have now been noticing that the place which used to smell bad because of practicing open defecation in schools and outside, now it does not smell bad at all. Grace has been hearing appreciations for the WaSH facilities in Mukuyu primary school from ministry of education, community members, and schools from other communities. Ministry of education has even provided Grace a list of schools which requires better WaSH facilities in their vicinity. The positive change in students has also been shared by school head teacher and parents. Hence the score allocated for this category is:

Q: New sanitation facilities have helped our students.

A: [Agree: (++)]

Have reduced absentees. (Survey\Headteacher: 1-2)

- Because it is better than old. (Survey\Parents: 148)*
 - Yes, because the new toilet has many goods, because it has water and tissues. Is better than old. (Survey\Parents: 149)*
 - It is better because they can avoid pollution. (Survey\Parents: 159)*
 - I admire because it will be good for our children health. 169)*
 - Because it may help them to be clean and safe in the school, when sharing things their hands are clean. (Survey\Parents: 170)*
-

Approach sub-indicator	Score
Targets achieved	(+++)

Population covered:

Population covered here depicts the number of people, villages or schools that has been benefited from their approach. The population covered is a symbol of how good or bad the performance of an approach is.

The WaSH projects have been implemented successfully in the Mukuyu primary school which serves to a population of 700 – 800 students. And there are two ongoing projects in boys secondary school and girls secondary school which serves to a population of around 400 – 500 students each. The schools are also used for community events such as marriage or other celebrations. During these functions, the community members also get the benefit of the WaSH facility. So it is safe to assume that the WaSH facilities provided by HOP gives direct benefit to at least 1500 – 1800 students, school staff, and

community members at public events. The indirect benefits of knowledge and information gained, employment, healthy people, and less pollution in environment, has been received by the whole community. Hence the score allocated for this category is:

Approach sub-indicator	Score
Population covered	(+ + +)

Effects on people:

Effects on people here depict all the physical, mental and psychological effects the approach had on the affected population. As not all the positive effects on people are covered in targets of the an approach so analyzing the effects on people, alongside targets achieved, is a good indicator of how good or bad the performance of an approach is.

The WaSH facilities appear to have had positive impacts on children’s development. As mentioned by Grace, parents and the head teacher of the school, students are cleaner than before, they fall less sick than before hence their attendance in the school has increased, they perform better at studies than they used to, students are happy to play with clean water, girls feel safer, disabled students feel empowered with availability of disability-friendly toilet.

The impacts on community members are seen in the form of demand generation for sanitation facilities through students, knowledge and information gained through awareness drives, behavior change and appreciation of improved environment and disability-friendly WaSH facilities.

The parents keep coming to me [Grace] and telling me ‘hey, now we have to have a better toilet because our children, they keep protesting they can’t go to filthy toilet.’ So it is happening, it is really working out. (Interview\Grace_1: 84)

The impacts of the WaSH facilities by HOP are also visible on other communities when they visit the Mukuyu community. Ministry of education has approach Grace with a list of schools that requires better WaSH facilities and many schools have also been contacting Grace individually to have a look at their facilities and improve them if possible. So the schools which used to say that we don’t want toilets, we need more classrooms, teachers and other facilities, now they see the importance of having an improved WaSH facility for a school. So the possibilities of scaling up of the approach of HOP to other communities and schools are evident.

Now we are in Mukuyu, when there are sports events other schools just want to come in Mukuyu because there it is better, they have water, they have better toilets. (Interview\Grace_1: 56)

There is a raise in demand for better quality toilets in others schools following HOP’s approach. However there has not been seen any visible increase in demand for toilets at the household level. She has heard people talking about need for a toilet at home and appreciating her work but it is not visible in community that people are actually opting for it. On the other hand creating demand for toilet at the household level is not in their vision. Their vision focuses on focusing on children and then these children will change the community in future. Hence the score allocated for this category is:

On the household level there is nothing. But we really don’t expect any demand on the household

level because we do not intend to go on the household level. First we just want to stay in schools because that's where the need is most (Interview\Grace_1: 102).

Approach sub-indicator	Score
Effects on people	(+ + +)

Dealing with challenges:

Dealing with challenges here depicts the ways and means with which HOP deals with problems at hand. Dealing with challenges is good indicator for identifying how solution oriented an approach is.

To keep the cost low and building ownership in the community, the HOP uses local craft to implement their WaSH technology. Although not all high-tech technologies are available near the community, however due to the sub-skilled and unskilled local labor the project takes longer time than using better technologies during construction. This includes digging the bore holes manually and constructing the septic tank using the traditional approach.

Other than that opting for local solution to the problems gives an advantage to their approach. Whether it is the problem of absence of centralized sewage system or the absence of potable water, HOP finds local solutions by constructing own decentralized sewage system or by testing and treating the water so as to use it further. When they do not have enough funds to involve community members, they focused only on developing children in the hopes that children will be their ambassadors and take their knowledge to their parents.

We get that water tested, we know if it is safe for the children. And if it is not safe, we treat it. (Interview\Grace_1: 62)

So far there is no centralized sewage system here, so we made our own decentralized one. (Interview\Grace_1: 64)

Grace mentioned that wishes to somehow reduce the cost of construction without compromising with the quality. But it seems like a long way ahead to reach that point. Although they try to be thorough in their approach but it is still time consuming and takes longer time than they would like it to be. She would also like to reduce the time taken to finish a project from four – five months to one month in future. To make it worse due to the Covid-19 pandemic, their projects have also been delayed in the previous year. Hence, the score allocated for this category is:

Approach sub-indicator	Score
Dealing with problems	(+)

Cumulative score of performance as approach sub-indicator:

The population covered is considered to hold the least weight and the dealing with problem is considered to hold the highest priority, hence a rough total is reached for performance to be (+ +)

Approach sub-indicator	Approach sub-sub-indicator	Score
Performance	Target achieved	(+ + +)
	Population covered	(+ + +)
	Effects on people	(+ + +)
	Dealing with problems	(+)
	Total	(+ +)

Sustainability:

Reduce, recycle and reuse:

Reduce, recycle and reuse of resources and services to achieve results here depicts the environmental aspect of sustainability. This indicator is a good indicator of how sustainable an approach is.

The HOP in their approach try to reduce, recycle and reuse the available resources instead of participating in unnecessary wastage of resources. For example they used the trees in the school as timber for roofing of the WaSH facilities and other things. They also reused the soil, which was excavated while constructing septic tank, into bricks to be used in the future constructions.

Although they try to make the structure robust and long lasting, however they also use natural stones as building blocks which has to be brought from 400 – 500 Km away and foundation stones which has to be brought from 50 Km away from the community. It is this aspect of the approach that needs to be reduced and need to be looked for a local solution in future projects, if possible. Hence, the score allocated for this category is:

Approach sub-indicator	Score
Reduce, recycle and reuse	(+ +)

Durability:

Durability here depicts the time period that the structure and the knowledge and behavior change from their approach last. There is no way of scaling after lasting how long something can be called durable. So durability is assumed to be subjective here. Durability is a good indicator to check the sustainability aspect of an approach.

As they are building the WaSH facility using traditional local craft, although it is time consuming and is comparatively expensive, to much cheaper solutions available, but it is highly durable. Just taking an example of septic tank, Grace describes it has a very long life span as it will take around three – five years to fill and then it can emptied several times to be used again. As long as they are operated and maintained properly, these facilities will last long.

On the other hand when we talk about the durability of behavior change among community members, it is hard to say how long lasting it really is. As much as can be said, it requires a long time to change someone's mind and lifelong habits. Looking at the examples that people are complimenting on her work and still if the household demand of improved sanitation is not increasing then that means it requires more investment of time and resources in the community. Hence, the score allocated for this category is:

Approach sub-indicator	Score
Durability	(++)

Sanitation ladder:

Sanitation ladder here depicts the quality of improved sanitation technology that has been incorporated in the approach as compared to open defecation. Sanitation ladder is a good indicator to measure how sustainable an approach is.

It is evident that HOP has improved the sanitation situation for students and has transformed the school environment from open defecation to ODF environment. And that progress in sanitation ladder came in the form of privacy, cleanliness, piped water, odorless toilets, disability-friendly sanitation facilities, fearlessness of contacting diseases, and where students can help themselves in a respected and dignified manner. The sanitation ladder that school reaches to with HOP's pour flush technology is way higher than the sanitation ladder that school reaches with VIP toilets which does not even guarantee piped water. Hence, the score allocated for this category is:

But students spend most time of the day at home and if community practices open defecation at household level then students cannot be 100% safe even if they have an improved toilet at school. It seems as if the Kenyan government's approach and HOP's approach are contrasting in nature. Government is focusing on providing toilet at household level through its CLTS approach and HOP is focusing on providing toilet in schools through its school based approach. But the success of both the approaches seems to be mutually exclusive.

Even when the county government comes to build for them [schools] the toilets, they just come and they just build more pit latrines. And then when the next rainy season comes they collapse (Interview\Grace_1: 20). [...] So we don't do that, we just do the pour flush toilet and then we build a septic tank because a septic tank. [...] with VIP toilets if you don't push people here to have water to wash their hands they don't bother. (Interview\Grace_2: 7)

Approach sub-indicator	Score
Sanitation ladder	(+++)

Health and hygiene:

Health and hygiene here depicts the physical and sanitary wellbeing of the targeted population in an approach. The health and hygiene is a useful indicator to check the sustainability aspect of an approach.

The health of students have been improving and this can be confirmed by the head teacher and parents when they say that there is increase in school attendance of students and they do not fall sick that often anymore. Grace has also noticed reduction in skin rashes and other skin diseases among children which was the defecating in the open. Community members have also noted the absence of odor that used to come from open defecation near the school. Hence, the score allocated for this category is:

They (students) are cleaner, they don't miss school anymore like they used to, they don't get sick like they used to. (Interview\Grace_1: 56)

Approach sub-indicator	Score
Health and hygiene	(+ + +)

Pollution:

Pollution here depicts the air, water and ground pollution emitted or countered by an approach. Analyzing emitted pollution is a great indicator of environmental aspect of sustainability for a rural sanitation approach.

As the Mukuyu primary school is centrally located, people has told Grace that they don't smell the bad odor that used to come from open defecation being practiced near the school. Also schools used to have pit latrine which pollutes the environment and contaminates ground water and wells. But WaSH facility from HOP does not use pit latrine and all the waste is collected in septic tanks and will be extracted or treated later. So the WaSH technology used in HOP's approach does not emit air, water and ground pollution. On the other hand it helps in reducing such pollutions in the community. Hence, the score allocated for this category is:

Approach sub-indicator	Score
Pollution	(+ + +)

Cumulative score of performance as approach sub-indicator:

All the sub-sub-indicators of sustainability are given equal priority hence a rough average is taken.

Approach sub-indicator	Approach sub-sub-indicator	Score
Sustainability	Reduce, recycle, and reuse	(+ +)
	Durability	(+ +)
	Sanitation ladder	(+ + +)
	Health and hygiene	(+ + +)
	pollution	(+ + +)
	Total	(+ +)

Project reporting and documenting:

Projects reporting and documenting here depicts the journaling of data and experiences gathered after working in the field which may include activities performed, challenges faced, people reached, key stakeholders, funds allocated, technologies used, etc. In the absence of organized framework of their approach it becomes necessary for HOP to collect as much data as possible and report them for research and development of their approach.

Only project pictures, data available on the website and the HOP newsletter was shared with the researcher by Grace. Apart from that, pilot project reports or documents were neither found on the website nor were they made available to the researcher by the NGO. It is assumed that no reports were written regarding the completed as well as ongoing projects.

Considering them being in the initial stages and worked only in three schools until now, it is highly important that regular feedback gathering, documentation of learning's, pilot project reporting, identifying strengths and weaknesses, noting challenges and solutions, etc. are done properly. The

absence of which may compromise the scaling up of the approach. It may also create problem while training new staff members when experienced staff like Grace are the only source of contextual knowledge and information. Hence, the score allocated for this category is:

Approach sub-indicator	Score
Project reporting and documenting	(--)

Time:

Time here depicts the time taken by the approach from the entry of implementers into the community to their exit from the community. Time is a very important indicator of effectiveness of a rural sanitation approach.

The present HOP's approach takes around four – five months to be implemented. According to Grace, the project is taking too long to finish with the present approach and she would like to have a method which can reduce the time period to one month, without increasing the cost too much at the same time without compromising with the present quality of the structure. Also the Covid-19 pandemic has prolonged the project otherwise three schools should have had been completed by now instead of just Mukuyu primary school.

It is also to be noted that there is a care taker in primary school which is appointed and being paid for by HOP. Therefore as long HOP is still involved in the operation and maintenance of the facility, the approach is considered to be ongoing. It is until either there will be no need for a care taker or community members take the responsibility of care taking of the WaSH facility, the approach will be considered ongoing. So with the present conditions, the current HOP approach takes too long. Hence, the score allocated for this category is:

In spite of everything we could have moved very fast by now this is our third year now. And this is our third school, okay Covid came in between last year and we could have done our second school last year and we would be looking at our third school this year. (Interview\Grace_1: 12)

Approach sub-indicator	Score
Time	(---)

Cumulative scores of acceptability as approach indicator:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach Indicators	Approach sub-indicator	Independent score
Effectiveness	Implementation	(+)
	Performance	(++)
	Sustainability	(++)
	Time	(---)
	Project reporting and documenting	(--)
	Total	(+)

Scaling:

Scaling up here depicts the increase in number of people (households, communities, districts) that are willing to opt for their technology or their approach. In case of HOP scaling up would mean the increase in the number of schools that are willing to opt for their technology or their approach. Scaling up is a great indicator of feasibility of a rural sanitation approach.

Demand:

After seeing the results in the Mukuyu community primary schools, a demand for HOP's WaSH approach has been noticed. Organizing community events, inviting all the key stakeholders, and engaging them in activities has helped their approach as an advertisement with which many students from other schools wants to come to Mukuyu primary school for annual functions because they have better quality toilets and water which children likes to play with.

This has been noticed by many stakeholders from other communities and public schools in the neighboring communities. According to Grace, representatives of more than ten schools have reached out to her and have invited her to have a look at their school's WaSH facilities. This was done to ask her to implement her sanitation approach in their respective schools. Grace has already met ten of those representatives, and in now planning to expand with their approach outside of Mukuyu community.

I: how many schools have reached out to you to implement your WaSH facilities in their schools?

R: The ones I've met are 10 but there are more. (Whatsapp\Grace: 8-9)

Approach sub-indicator	Score
Demand	(+++)

Political will:

Political will here means the support from government to scale an approach to other communities. This support may be in the form of finances, paper work, advocacy, moral support, etc.

As the WaSH approach of HOP is being picked up by many schools from other communities. Many government bodies have also showed interest in this approach. County representative of Ministry of education and public health department has admired their approach and has asked them to implement it in other less fortunate schools, where sanitation facilities are bad, to help them transform from open defecation to ODF schools. These departments have also promised to help with giving rebate in needing documents and permits to start constructing in these schools. Ministry of education has also shared a list of schools with Grace which are in need of a WaSH facility in their schools. As the responsibility of providing sanitation facilities in schools is of BOM and ministry of education, community involvement is not really necessary for scaling. However it will good to include the community members to make it more inclusive. Hence, the score allocated for this category is (+++).

I: Which government departments have asked you to improve the sanitation facilities of other schools?

R: District Education officer + county govt in charge of public health. (Whatsapp\Grace: 10-11)

Approach sub-indicator	Score
Political will	(+++)

Resource availability:

Resource availability here depicts the presence of resources that are required to implement an approach in a community. This may include the financial resources, technology, material, labor, technicians, etc. Resources include something more than the sanitation facility itself.

At present the technology is being constructed with most of resources available in the community and surroundings with some material to be sourced from a distance within Kenya. According to the head teacher of Mukuyu primary school all the facilities constructed by HOP can be repaired and rebuild by locally available material and skills.

Q. New sanitation facility in our school can be repaired with locally available material and skills, if needed be.

A. [Strongly agree (+++)]

Available local market. (Survey\Headteacher: 3-4)

So it can be assumed that most communities will have the resources needed to implement HOP's WaSH technology. However, in future Grace expects to have better skilled labors and technicians and improved sanitation technology than what they are presently implementing. If there will be a change in technology which requires resources that are not available in and around community, it will cause some problems with sustaining that technology. At present HOP receives 20,000-30,000 Euros/year and Grace expects them to increase in future. Hence, the score allocated for this category is:

I think that technology it's not yet here, but in future depending on funds I just want an easier technology of implementing that [septic tank] whole system. There must be an easier way. (Interview\Grace_2: 35)

Approach sub-indicator	Score
Resource Availability	(++)

Willingness to invest:

Willingness to invest here depicts the implementer's eagerness and enthusiasm to invest the WaSH projects. Without fulfilling this indicator scaling up in other communities cannot be achieved. It is visible that there are demands, political will, and resources that are available, however if there is not willingness to invest in further projects by HOP then fulfilling those indicators is irrelevant for scaling.

Considering the length HOP is willing to go to make sure the built WaSH facilities work properly and for a longer time, the willingness to invest seems high. It is visible when instead of providing just VIP toilets they go further and implement pour flush which means they also arrange water for the school. Also when they take the responsibility to teach children on how to use the sanitation facility, by appointing a care taker. Or when they go an extra step in order to provide electricity, well, water tank, water pump and septic tank.

And willingness does not just come in the form of investing money but also through time. The intent of HOP appears to be getting the work done as soon as possible whether with or without the help of local labor. That is seen when Grace mentions that she would like the projects to be finished in one month rather than in three to five months. For which she would require a better technology and skilled labor. Approach appears to be very solution oriented. And the only support Grace expects from the community is to help reducing the operation and maintenance cost. Hence, the score allocated for this category is:

Like I saw in some Chinese companies they have some plastic containers which they use for septic, I think that technology it's not yet here, but in future, depending on funds, I just want an easier technology of implementing that whole system. There must be an easier way. We are doing it traditionally. We are building septic tanks traditionally. The buildings themselves it has to get easier. It has to get easier. (Interview\Grace_2: 35)

Approach sub-indicator	Score
Willingness to invest	(+ + +)

Cumulative scores of scaling as approach indicator:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach Indicators	Approach sub-indicators	Independent Scores
Scaling	Demand	(+ + +)
	Political will	(+ + +)
	Resource availability	(+ +)
	Willingness to invest	(+ + +)
	Total	(+ + +)

Acceptability:

Acceptability indicator shows the efforts made by HOP to check if stakeholders accept and approve their approach, and if not the how does their approach deal with it.

Demand Analysis:

Demand analysis is done to evaluate the need of stakeholders towards the given product or facility. It is important to do demand analysis, as it is after this one gets to understand the perspective of stakeholders towards the product or facility. And after this can also be analyzed whether an approach is demand based approach or supply based approach. It is important because in the past numerous supply based approaches to community sanitation has failed. Demand analysis includes priority evaluation and willingness to pay or contribute.

Priority evaluation:

Priority evaluation here depicts the preferences of stakeholders regarding the importance or need of a sanitation facility in a community school compared to other facilities. This may include priority of having classrooms, kitchen, store room, labs, toilets, air conditioners, etc.

During assessment phase, HOP had partially conducted a baseline Knowledge, Attitude and Practices (KAP) survey and baseline sanitation coverage survey. According to which, a majority of people practice open defecation in the community and the ones who has a toilet has only a pit latrine. Mukuyu primary school at the time of the survey did not have a toilet. The toilet built by the government was a pit latrine which washed away and collapsed during rainy season.

When asked about people’s priority, Grace said that people do not prioritize sanitation very much including the government, school and community. Funds that come from the government are easily channeled into building more classrooms, and even if the toilets are built they collapse during rain. Also while planning and designing a sanitation facility, the physical and hygienic needs of vulnerable members of the community (disabled, girls) is not taken into account.

Even when you go to the schools and you are like 'hey, we would like to help children get better sanitation.' They are like 'hey, look at our classrooms; we don't need toilets we need classrooms.'
(Interview\Grace_2: 18)

However in the survey conducted under this research, it is seen that most respondents (both parents and the head teacher) think there is a necessity of a sanitation facility in the school. There can be possibility of social desirability bias for such response, but no evidence was found to prove that claim. Hence it is assumed that having a sanitation facility in the school after HOP’s approach, has been a reason of change in the attitude.

52/68 respondent parents think sanitation facility is important for students in schools.

Conducting baseline KAP survey and baseline sanitation coverage survey has given HOP an understanding of how to move forward. It is also because of this that long neglected disabled student’s needs were incorporated while designing the new facility. The process of including different stakeholders in their survey and including them into their approach can be seen to satisfy the recognition and procedural justice of the equity matrix. Hence, the score allocated for this category is:

Approach sub-indicator	Score		
	Distributive Justice	Recognition Justice	Procedural Justice
Priority evaluation	NA	(+++)	(+++)

Willingness to contribute:

As the name suggests, willingness to contribute here depicts stakeholder’s eagerness and enthusiasm to help in the construction and sustaining of the sanitation facility in their community school. Contribution may include contributing through physical labor, money, material, supplies, supervision, management, knowledge, skills, etc.

During assessment phase, with consumer market research was also conducted partially by HOP. This research included the barrier analysis and willingness to pay by stakeholders. According to which the main barriers along with lower prioritization was lack of money with the stakeholders. The unemployment rate is high in the region. Money was also one of the big reasons for people to just be able to afford a pit latrine. Lack of money is a bottleneck for interested stakeholders to move up the sanitation ladder.

It is because of this reason when asked from Grace about willingness to pay among stakeholder, she responded that she tried it in the beginning to ask stakeholders to contribute with money for toilet supplies but it did not work. She also mentioned that there is mentality in the community that if you are coming to help us then you must be having money. That is also the reason why the community members do not even help with their physical labor, as they see it as an opportunity to earn some money.

We tried for example you know some of the schools where the parents to contribute for toilet paper and they are like 'Why should we..' (Interview\Grace_2: 20)

It is maybe after the consumer market research it was decided by HOP that help from the stakeholders will be expected in forms other than money. Hence schools provided electricity, water, and trees to be used as timber. Students contribute by cleaning and maintaining the facility. Government representatives help with paper work and some parents contributed with toilet paper and soap. The process of including different stakeholders into their research and involving them into their approach can be seen to satisfy the recognition and procedural justice of the equity matrix. Hence, the score allocated for this category is:

Approach sub-indicator	Score		
	Distributive Justice	Recognition Justice	Procedural Justice
Willingness to contribute	NA	(+++)	(+++)

Creating adaptive environment:

After doing the demand analysis it becomes necessary to satisfy the demand if it exists and to create it if does not exist. This is achieved by creating an adaptive environment for the target population by including them in different activities to build trust and providing them with a safe space to adapt. Creating adaptive environment typically includes educating, training, creating awareness, providing context based solutions, and developing relationship with stakeholders.

Education/ Awareness/Training:

Education, awareness, and training depict here the activities performed to impart knowledge, skills, or information in an approach. Such activities can include awareness drives, training classes, skill sharing courses, do it yourself campaigns, etc.

Community engagement was done by HOP throughout their approach. This also included doing activities such as community mobilization ('triggering'), creating village committees/clubs, educational activities, and promoting latrine upgrading. They invited public health officer to teach teachers how to wash hands properly, trained the care taker and students on how to operate and maintain the sanitation facility, created awareness among stakeholders about advantages to having good sanitation, taught new skills to labors, plumbers, and technicians during the construction of sanitation facilities, created hygiene club and sanitation club in the school where students and teachers inform and aware the rest of the school about importance of sanitation, impart knowledge with stakeholders about sanitary needs and necessities of girls, young kids and disabled people.

We educate the children who in the [hygiene] club about for example, how infections happens if you don't wash hands and all that. [...] And then they become our ambassadors for the rest of the

The propagation of knowledge has not just been one sided but HOP representative has also learned many local techniques of dealing with problems, building with local crafts, and achieving targets with available resources. The activities performed by the HOP have given a platform to different stakeholders to voice their opinions and recognize their needs. The HOP has done numerous trainings and awareness campaigns with different stakeholders. The process of including different stakeholders with different activities and including them into their approach can be seen to satisfy the recognition and procedural justice of the equity matrix. Hence, the score allocated for this category is:

Approach sub-indicator	Score		
	Distributive Justice	Recognition Justice	Procedural Justice
Education/ awareness/ training	NA	(+++)	(+++)

Context based solutions:

Context based solutions depict here the adaptability of the approach according the environment it is in. It may include the adaptability of the technology used, the way of approaching stakeholders, . Adaptability of the approach could be based on the culture, religion, gender, socio-economic, physical and mental capabilities, circumstantial beurocratic requirements, etc.

As Grace comes from the same community where the HOP's approach was implemented it became easier to understand the context and how to advance with the approach. The baseline KAP survey and consumer market survey performed during assessment phase also helped in understanding the perspective and needs of different stakeholders in the community.

Keeping that in mind, most of the resources utilized in the construction of the sanitation facility were locally sourced. Whether the resource is human resource (labors, plumbers, technicians, trainers) in the form of skills, knowledge, and talent or if it is capital resource (material, supplies, technology), efforts were made to keep to it as local as possible. To produce lasting results and for a better understanding of the environment, different stakeholders were included in the survey and research.

Considering the cultural aspect, the design of the sanitation facility was changed. It was because the culture does not allow boys and girls to be together, so the toilets had to be separated and made to face in different direction on the request of stakeholders. As VIP toilets are not long lasting considering the rainy season, pour flush improved sanitation facility with septic tank was constructed. Pour flush technology was also incorporated in the approach, as it guarantees the provisioning of water for hand washing on the other hand VIP toilets is what government provides without water.

So we find that it is easier to do the pour flush toilets and also it needs water. It also means that there has to be enough water always for children to wash their hands. [...] with VIP toilets if you don't push people here to have water to wash their hands they don't bother (Interview\Grace_2: 7).

Taking into account the religious and cultural aspect of the environment squat type seating arrangement was chosen over seating type toilet seat. It is also because of this reason toilet paper was used as anal

cleansing method over water. Considering the needs of disabled people, wheelchair-friendly ramps, spacious toilet cabins with handle bars, and a seating type toilet seat was used. Also when there was a need for a person to look after the sanitation facility and young kids, a care taker was appointed.

Due to the fact that HOP's approach is evolving with the implementation of the first few projects; all the challenges that are dealt with providing the context based solutions. And the solutions are provided keeping in mind the context and durability of the solutions. The process of recognizing and including different stakeholders with their respective needs and including them into their approach can be seen to satisfy the recognition and procedural justice of the equity matrix. Hence, the score allocated for this category is:

Approach sub-indicator	Score		
	Distributive Justice	Recognition Justice	Procedural Justice
Context based solutions	NA	(+++)	(+++)

Stakeholder relations:

Stakeholder relations depict here the rapport build between the community stakeholders and HOP following their approach. Stakeholder relation is a good indicator of showing how open people are to accept the solutions provided by an approach.

Church leaders are always invited by HOP in the meetings, planning and celebrations. That may be why he church has also given them support by advocating for their sanitation solution in the community. Government representatives have also been supporting HOP by helping them with advocacy, paper work and they have also given them rebate on cost of permits. Other community stakeholders have also helped them with what they can.

HOP have sustained good relations with the key stakeholders since the commencements of their projects. Grace has described just how the relationship, feedbacks, and compliments from the stakeholders have motivated her to pursue the projects further with enthusiasm.

We are happy when they [community members] are in agreement with our project, when they say 'Hey guys, you're doing something good. Go ahead!' You know that is really the biggest blessing for us, because we don't get any opposition. (Interview\Grace_1: 14)

However there are some relationships which can improve and requires more efforts from HOP. Grace is not totally satisfied with the present relations with some stakeholders and would like to improve their relations through active participation in future. These include parents and teachers. From what they have learned from their experience, there needs to be extra efforts and focus given in their approach to involve parents and teachers.

And maybe something else that I would do better in future or which I wish would also work is to get more involvement from the teachers [...] They don't participate, unless we request them. (Interview\Grace_2: 23)

It can be observed in HOP approach that people approve of it but some stakeholders are not committed to participate. The activities are conducted with different stakeholders and including them into their

approach to see who needs more focus to approve and participate can be seen to satisfy the recognition and procedural justice aspects of the equity matrix. Hence, the score allocated for this category is:

Approach sub-indicator	Score		
	Distributive Justice	Recognition Justice	Procedural Justice
Stakeholder relations	NA	(+++)	(++)

Cumulative scores of acceptability as approach indicator:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach Indicator	Approach sub-indicator	Scores		
		Distributive	Recognition	Procedural
Acceptability	Demand analysis	NA	(+++)	(+++)
	Creating Adaptive Environment	NA	(+++)	(++)
	Total	NA	(+++)	(++)

Equity:

Stakeholder Identification:

Stakeholder Identification here depicts the process in which stakeholders that came in contact with the approach during the planning, implementing, operating or sustaining phases. It is also to be noted that only some of the identified stakeholders are involved in all the phases of an approach. It is essential to know which stakeholders have been identified by an approach and which stakeholders have been neglected. Stakeholder identification is said to be the first step of stakeholder relations which is followed by stakeholder recognition. Thus satisfies the recognition justice dimension of the equity matrix.

Stakeholder identification is an important step to be performed before the implementation. It is after this step one knows the diversity of stakeholders that exist and can decide how to proceed with the approach. Of course not all of the identified stakeholders are the key stakeholders in the absence of whom the project cannot move forward. But it is important to identify the stakeholders in order to specify who the key stakeholders are and who can be replaced. It is assumed that many stakeholders in an approach are replaceable and there are only a handful of key stakeholders on which the success of a rural sanitation approach depends.

The identified stakeholders from HOP rural sanitation approach includes all the stakeholders mentioned by or came in contact with their project before, during and after the project. Among the stakeholders mentioned by Grace is the ministry of health, ministry of education, ministry of water, public health department, department of sanitation, Nema, local community government, government field workers, community leaders, community members, the church, sewage extracting company, head teacher of the school, students of the school, parents of the students, school staff members, sponsors of HOP, construction material suppliers and distributors, labors, technicians, teachers, trainers, and care takers.

It can be noted that most stakeholders which are included in the approach are identified by HOP. However, the religious institutions of faith other than Christianity are not considered. Considering the

fact that the demography of the community based on religion is not known, any argument cannot be made. Hence, the score allocated for this category is:

Indicator	Score		
	Distributive Justice	Recognition Justice	Procedural Justice
Stakeholder Identification	NA	(+ + +)	NA

Stakeholders Recognition:

Stakeholder recognition here depicts the process in which identified stakeholders are recognized as the key stakeholders, of the approach, who are to be involved during the planning, implementing, operating, or sustaining phases. It is also to be noted that only some of the recognized stakeholders are involved in all the phases of an approach. It is essential to know which stakeholders have been recognized by an approach and which stakeholders have been neglected after being identified. Stakeholder recognition is said to be the second step of stakeholder relations which is followed by stakeholder involvement. Thus satisfies the recognition justice dimension of the equity matrix.

Stakeholder recognition is an important step to be performed before or during the implementation. It is after this step once knows the important stakeholders in the community and can decide how to proceed with the approach. The key stakeholders are the ones in the absence of whom the project either cannot achieve its desired goals or it becomes hard to move forward. But it is important to recognize the identified stakeholders in order to specify who the key stakeholders are and who can be replaced. The key stakeholders involving whom the success of a rural sanitation approach depends are placed in this category.

The recognized stakeholders from HOP's rural sanitation approach includes the ones whose help was asked, without whose help the project could not have moved forward and the ones that were included in the meetings and decision making. Among the stakeholders recognized by Grace is the local government, ministry of health, public health officer and public health department, department of sanitation, ministry of education, Nema, government field workers, the church, head teacher, community leaders, parents, sponsors, and teachers.

The government departments are important because there are many permits that are required to perform any kind of construction activities in the government institutions by another organization. HOP needed to have numerous permits in order to start working in the schools. Their support is also necessary because they are the authoritative figure in the community and when someone is working with the government representatives then the community members pay attention to it. Grace talks about bureaucracy when she says she had to spend so much time and money to get the necessary permission that just telling them 'I want to help the community children and school' does not help which she initially thought would work. She is now hoping to build a good relationship with the government officials so that she can skip these time-consuming and expensive paper work in the future. And so she tries to involve the government officials at almost every step.

The majority of the community follows the Christian faith and hence it becomes easier to reach out to mass population if church is included in the approach. It becomes apparent to involve the church in their when Grace talk about its importance in the community.

The church is very influential. If you don't involve the church then you're basically excluding more than half of the community. [...] if the church accepts it, then the community is most likely going to accept it.

Sanitation being a sensitive topic and considering many cultural aspects in the community, the community leaders are included in the meetings, planning and sometimes designing of the sanitation facilities. It is assumed that if the community leaders are on board then it becomes easier to pursue and tackle the problems faced by the community members. Community leaders and the head teacher of the school are the key stakeholders which needs to be included almost all phases of the approach. The head teacher being the authority in the school will be responsible for the operation and maintenance and any other issues which may arise in the future. So it becomes important that the head teacher knows everything that is happening inside the school boundaries.

Parents and teachers are the primary care givers and the ones who stay in direct contact with the students throughout the day. It is important to give attention to their opinions and concerns of the sanitation facility in school as their opinion influence the opinions of the students as well. More over teachers are also the direct user of the facility at school, getting them on board is good to get direct feedback for future technology improvements. When parents and the teachers start believing that they are the beneficiary of school's sanitation facility, it may develop a sense of ownership towards the facility.

The stakeholders who were identified but not recognized are school staff members excluding teachers, construction material suppliers and distributors, sewage extracting company, labors, technicians, primary school students, community members excluding parents, trainers, and care takers.

Although also being the direct users of the proposed sanitation facility, the school staff members, excluding the head teacher and teachers, are not regarded as the key stakeholders to be included in the approach. It may be due to the fact they don't have enough decision making powers and resources to influence the success of the approach. The same can be said for construction material suppliers and distributors, sewage extracting company, labors, technicians, and primary schools students. They help in the process but they do not hold the decision making powers in the planning, implementation, operation and sustaining phase. Thus they are stakeholders who are identified but not recognized.

Community members, excluding parents and leaders, are not involved in the meeting, planning and designing of the sanitation facilities. The reason for which has been cited by Grace as 'the donor funds need to be spend for which they are given'. Thus entertaining the community member by spending donor funds is not a priority.

It demands you do some entertaining so that you can engage the parents actively. But because also we don't have so much time and we don't want to use the donor funds to engage the parents too much (Interview\Grace_2: 19).

Although labor and technicians are important in implementation phase but they are easily replaceable. Achieving goals fast and with better technologies appears to be paramount for Grace when she talks about using better technologies and skilled labor in future, to speed up the implementation process. This may eventually decrease the need for local labors and technicians. As far as care takers in the primary school are concerned, Grace expects to build better relation with parents and teacher so that they can take responsibilities of care taking.

There are also secondary school students who are involved in the approach, as their assistance is needed in the operation and maintenance of the approach, but not mentioned as key or recognized stakeholders.

It is great to include all the identified stakeholders in different phases of an approach, but realistically speaking it can become really tough to entertain that many stakeholders in meetings, planning, designing, decision making, etc. especially when it comes with extra financial expenditure. However it is still important to engage the community members in a rural sanitation approach where any progress in behavior change at school can be lost after going back home. Hence, the score allocated for this category is:

Approach sub-indicator	Score		
	Distributive Justice	Recognition Justice	Procedural Justice
Stakeholder recognition	NA	(++)	NA

Stakeholders Involvement:

Stakeholder Involvement here depicts the degree of engagement done with the recognized stakeholders during the planning, implementation, operating, and sustaining phases of an approach. It is to be noted that different stakeholders are involved in different ways and are given different degrees of powers in different phases of an approach. It is essential to know which stakeholders are to be involved and how much power should they be provided with to successfully achieve the targets. Stakeholder involvement is said to be the third step of stakeholder relations which is followed by stakeholder interaction. And this category satisfies the procedural justice dimension of the equity matrix.

This step includes the degree of involvement of the recognized stakeholders in the form of meetings, awareness drives and trainings, planning, designing and brainstorming, celebrating and decision making. While engaging stakeholders, the implementers have to decide in their approach who will be an observer, who will be the spokesperson, and who will be the decision maker. And then stakeholders are sorted into these categories and made aware of their powers. Generally, the stakeholders who are the most influential are given most of the powers, and the people with least influence are given least amount of power. Decision makers are generally in the absence of whom the project either cannot achieve its desired goals or it becomes hard to move forward.

The stakeholders that were actively involved in meetings, trainings, planning, facility designing, brainstorming, celebrating and decision making in the HOP's approach were representatives of government, the head teacher, secondary school students, teachers, parents, community leaders, and the church.

It can be noticed that all the key stakeholders are involved in different processes of different phases. However all the key stakeholders have different importance in the approach.

Government representatives are the ones who grant the permits and other documents that say that HOP can start working in the mentioned schools and perform mentioned activities. The government officials were then involved in the meetings before starting the construction. Once the construction was over, in the opening ground celebrations, invitation letters were sent to public health department. Public health officer showed the teacher hand washing basics that they can teach the children. So it can be noticed that the government involvement is high and they hold some decision making powers.

The church leaders and the community leaders were involved in the initial meetings and were asked about their opinions on design of the sanitation facilities. It is because girls and boys are kept separated in the community culture, so their opinion is important on matter of culture. So the door of boy's and girl's toilet were in the opposite direction, so it was decided by the leaders that the door of boy's toilet will be facing the back side and the door of girl's toilet will be facing the front side. It is visible that the community leaders hold some decision making powers as far as design of the sanitation facilities are concerned. The invitation letter for the opening ground celebrations were also sent to the church and community leaders.

The head teacher is one of the only stakeholders who are involved in almost all the processes throughout the approach. Since the beginning when Grace received the permits, she visits the school and meets with the head teacher. After inspecting the sanitation services in the school and collected all the needed data to get the sponsors, she and the head teacher look for the ground and location inside the school where the sanitation facility can be built. When that is done the head teacher arranges a meeting with the parents of the students and they let them know what they are doing and answer their concerns about children's safety and hygiene. Then head teacher is again involved in the meeting to design the sanitation facility. Then during the implementation phase the head teacher helps in whatever way possible. Head teacher is again involved in the opening ground celebration of the sanitation facilities. And afterwards the responsibility of sustaining the constructed sanitation facility also assumed by the head teacher. So it is evident that the head teacher is involved throughout the HOP approach.

Teacher and parents were invited for the initial consultation meetings to inform them of the construction activities about to take place in the school. They are asked about their concerns and made assured about their and children's health and safety. They are also invited in the op opening ground celebration of the sanitation facilities. According to Grace, the potential services from teacher and parents have not been utilized fully yet. She expects to build better relationship with them in future, so that the responsibility of care taking of young students and their needs at the sanitation facility can be shared. Parents and teachers do not hold much decision making powers. At the moment their role can be assumed to be of an observer. It is also because they do not consider sanitation as a priority and hence refrain from participation. Their participation in the operation and sustaining phase can help achieve targets fast and for a long period of time.

The parents, we try to involve the parents by engaging the children. Because the parents are difficult to get, they don't value so much the sanitation so much. And they are paying school fees so they are already financially burdened. (Interview\Grace_2: 19)

Sponsors are actually the most important element of HOP's approach, as they are the ones who are funding the whole project. After interviewing the students at school and collecting needed data, Grace looks for sponsors to fund the projects by showing them what is the present situation and what is required for a better sanitation. Sponsors are also involved when and if they visit the community maybe in the ground opening celebration or some other time. When sponsors of HOP visit to the community and notice if the children need a playground or something else then they also help to arrange it. So it can be said that sponsors although are mostly the observers in the approach, but sometimes they also exercise their decision making power.

Students are differentiated into two groups: one is the primary school students and other is the secondary school students. Primary school students are very young and vulnerable to many deceases in the community so they require constant in the sanitation facility. Hence they require a constant

supervision of a care taker and can be considered to be a liability. On the other hand, the secondary school students are older and are coachable. After proper training they help in cleaning and looking after the sanitation facilities. So they are used as an important stakeholder in the operating and sustaining phase and can be considered to be an asset.

For the secondary schools the children are big, they are older, And the students are coachable [...] So we just give the responsibility [...] to the head teacher who organizes the caring of that facility. (Interview\Grace_1: 50)

Although majority of the recognized stakeholders are engaged in the approach, however not all the stakeholders are given the decision making powers. The stakeholders that are involved in decision making are leaders from community, leaders from church, the head teacher of the school, sponsors of projects, and representatives from the government. Some examples are shown below. Grace argues that this is due to the fact that community members do not value sanitation as much and also HOP do not want to invest the donor funds in engaging the community too much and rather wants to focus on the target group that are students.

Well, I don't really need permission but I go to them [community stakeholders] and I tell them the procedure that I have followed, I tell them that I have permission and I ask them if they also in agreement, and at that point they won't say no. Yeah, so the most important thing is to communicate with them, the communication. But the official things you just have to do them yourself. You can't depend on the community to give you permission because this is not something this is not something that is in their mind. (Interview\Grace_1: 103-104)

When asked from the parents and the head teacher of Mukuyu primary school, through the respective surveys, it can be observed that both the parents and the head teacher are of the opinion that parents and school staff members should be engaged more during the implementation phase and given decision making powers during the planning phase.

When asked about more representation of parents and school staff members in the HOP approach, this is what the head teacher of Mukuyu primary schools had to say.

Q. Parents and school staff members should be consulted while planning new infrastructure in schools.

A. [Strongly Agree (+++)]

For ownership. (Survey\Headteacher: 38-39)

Q. Parents and school staff members should be given decision making powers while planning new infrastructure in schools.

A. [Agree (++)]

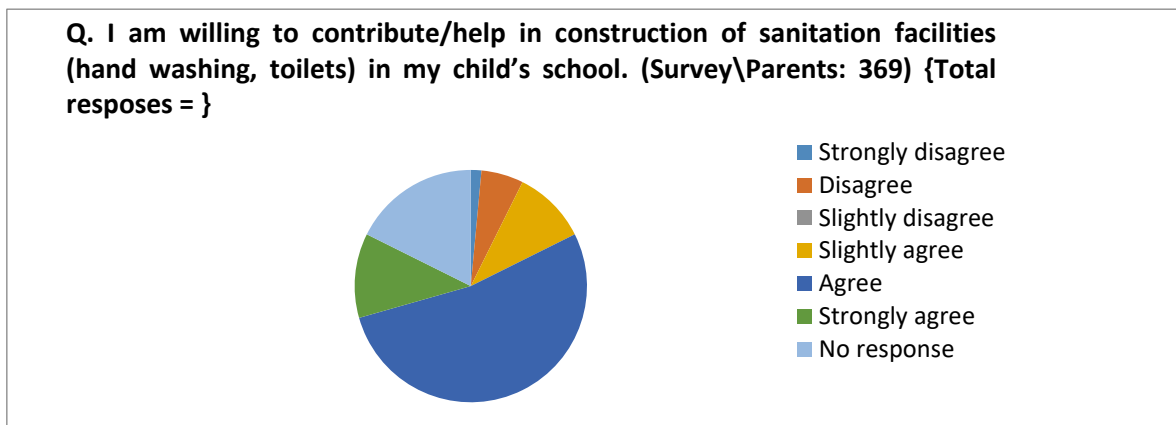
Is essence of ownership. (Survey\Headteacher: 43-44)

Q. How can we involve parents and school staff members in improving school's sanitary hygiene?

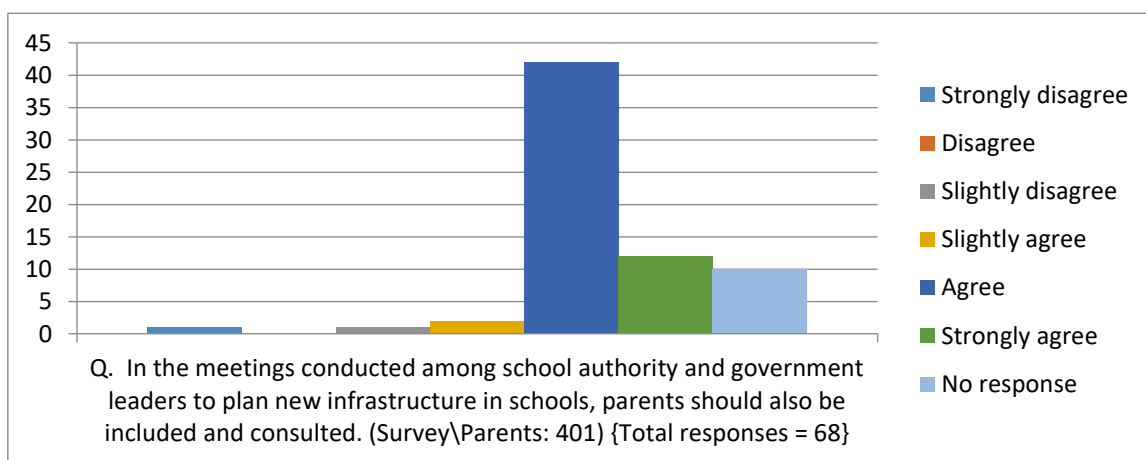
A. By having regular meetings to brainstorm the idea. (Survey\Headteacher: 54-55)

When asked from parents about their willingness to help and contribute in the construction of the sanitation facilities at their child’s school, 51 out of the 68 responses received says they agree and would like to contribute. As this survey was done after the implementation of sanitation facilities by the HOP, it is considered that behavior of parents has changed after the construction of sanitation facilities by HOP.

The responses from some of the parents are shown below.



- *I am willing to contribute since it improves hygiene and prevents some deceases. (Survey\Parents: 370)*
- *If we do not observe washing our hands in school, many deceases will get to child. (Survey\Parents: 371)*
- *Yes, to help improve sanitation. (Survey\Parents: 372)*
- *Yes, to improve their health. (Survey\Parents: 373)*
- *Who else if not me. (Survey\Parents: 385)*



- *Parents have to hear what is going on and what they are planning. (Survey\Parents: 403)*
- *Yes, in order to have proper constructed building for pupil’s safety. (Survey\Parents: 404)*
- *Yes, also the stakeholders in school management. (Survey\Parents: 405)*
- *Yes, parents can have different idea and can be helpful. (Survey\Parents: 417)*

-
- *Yes, because is their duty. (Survey\Parents: 418)*
 - *Yes, because parents are ones who agree or disagree of that new infrastructure. (Survey\Parents: 430)*
 - *Yes, for a good cooperation.+ (Survey\Parents: 432)*
-

It can be noted that both the head teacher and parents believe that there should be more involvement of parents and schools staff members. It is also suggested by the head teacher that the school staff members and parents should be given decision making powers while planning new infrastructure in school. It may be assumed that if there were more awareness drives, education and behavior change trainings from HOP to the community members, then participation of parents and teachers in the operation and sustaining phase would have increased. This may have increased the sustainability aspect of their approach and reduced the need for a care taker and other resources from HOP. Hence, the score allocated for this category is:

Approach sub-indicator	Score		
	Distributive Justice	Recognition Justice	Procedural Justice
Stakeholder involvement	NA	(++)	(+)

Stakeholders Interaction:

Stakeholder interaction here depicts the quality of engagement done with the involved stakeholders during the planning, implementation, operating, and sustain phases of an approach. It is to be noted that different kinds of relationships are build with the different stakeholders. Different stakeholders are interacted in different manner and are given different quality of respects in an approach. Stakeholder interaction is said to be the fourth step of stakeholder relations which is followed by stakeholder distribution. And this category satisfies the procedural justice dimension of the equity matrix.

This step includes the quality of interaction of involved stakeholders in the form of giving respect, building trust, sharing knowledge, honoring beliefs, acknowledging opinions, etc. While engaging with stakeholders, the implementers have to keep in mind that the stakeholders feel welcomed and accepted. In order to get stakeholders to speak freely about their concerns it is important that the relationship with the stakeholders is based on respect and trust. For this one need to have empathy and be aware of the different background people comes from. Respectful stakeholder interaction is generally in the absence of which trust cannot be built among stakeholders.

It is to be said that assessing the stakeholder interaction can be very difficult when one is not an active part of an approach. Unfortunately there exists an unavailability of strong evidence to assess the quality of interaction between stakeholders, as the responses in the stakeholder surveys are not descriptive enough to lead to any conclusion. Such data is better acquired from in person data collection methods, as data collected through interviews and in person surveys are more elaborative in nature. It can have a higher propensity of acquiescence bias and social desirability bias.

So the quality of interaction between the HOP and community stakeholders is represented based on Grace's infield experiences. Overall it seems like the community leaders, parents, head teacher and government representative respects her opinion and she has built trust with community stakeholders by involving them in different ways in her approach.

The quality of interaction can be interpreted through the compliments that Grace has received from community stakeholders during her time in the field. It is visible how it motivates her when the government representatives says to her “you are doing a good thing, please go ahead!”. I seems like it is due to such fruitful interaction that the ministry of health has assured her that she will not have to pay to get permits to implement HOP’s approach in future.

She has received a similar response from the parents during the ground opening celebrations, when they somebody said “Hey guys, you are doing something good. Go ahead!”. And when she asked some parents to support with toilet paper and soap, they did send their kids with money for the resources for some time. And it is because of good interaction that community members are in agreement with HOP’s approach and they do not oppose it. So maybe if there is constant interaction with the community members, the relationship can further advance being based on mutual trust and respect. And this can also lead to the sense of ownership among the community members.

The interaction can also be judged looking at the honorable gestures of writing invitation letter to the church leaders and government departments. Realizing that parents are already burdened with school expenses and may not be able to help with money shows the empathy of HOP’s representatives. Organizing awareness drives and activities for community members to participate with intent of knowledge sharing and opinion gathering also shows the spirit of companionship. So it can be assumed that HOP has been able to build a relationship with the stakeholders, that is based on mutual respect and trust. However, it the outcomes of this relationship can be longer lasting with more efforts. Hence, the score allocated for this category is:

We invite them [parents] to schools. We have like a big event, we organize a big event and then organize activities, let the parents see like in Mukuyu they can see, you know look at the new facilities, let them play with water and then we talk with them and tell them look at your children how they have changed. They are cleaner, they don’t miss school anymore like they used to, they don’t get sick like they used to. So you do it in a community way. You make it desirable for them. (Interview\Grace_1: 55-56)

Approach sub-indicator	Score		
	Distributive Justice	Recognition justice	Procedural Justice
Stakeholder interaction	NA	(++)	(+++)

Stakeholders Distribution:

Stakeholder distribution here depicts the profits and losses, benefits and costs, achievements and failures, among the stakeholders during different phase of an approach. It is to be noted that different stakeholders contribute with own distinct resources and at the end receives different personal benefits and losses. Stakeholder distribution is said to be the final step of stakeholder relations which tells the stakeholders what they gained against what they committed. And this category satisfies the distributive justice aspect of the equity matrix.

This step represents the distribution of goods and services that the stakeholders receive in the form of better health, money, knowledge, employment, relationships, etc. While engaging with stakeholders, the implementers need to keep in mind the extent to which different stakeholders can contribute with. In order to get stakeholders to assume the ownership of a sanitation facility, it is important that help

from every stakeholder in whatever manner is accepted. And it should not matter with how much resources one contributes with, what should matter is one's dedication and devotion to be a part of change. In the absence of investment ownership among stakeholders is hard to build. Investment can come in many forms for example: financial, responsibility, goods and services, emotion, time etc. Hence an investment in any form is important in building a sense of ownership and sense of ownership is essential to maintain and sustain a WaSH facility in a rural sanitation approach.

Sanitation facilities made available by HOP in the Mukuyu primary school is accessible for everybody in the community. It is accessible for students, teachers, and school staff members. And the school is also used for community events like marriage, festivals and other kinds of celebration, during which it is used by the community members as well. So it can be said that the benefits of the sanitation facility as fairly distributed with all the stakeholders along the community.

On the other hand the cost of implementing and the resources used in the construction of the sanitation facility has been disproportionately paid by HOP. Not to ignore that there has been efforts made by community stakeholders to help achieve the results. But the cost and benefits of transitions is not distributed or shared fairly among all the stakeholders.

The government authorities helped by easing up the documentation process and giving rebate on the expenditure on permits for the future projects. The public health officer participated in the community meetings and training teachers on how to teach children to properly use the facility and wash their hands afterwards. The school authority has provided land and helped in construction with whatever they could manage to. When they could not invest financially contributed with trees to be used as timber for the roofing of the sanitation facilities, and pitching in by providing electricity, and sometimes by providing lunch for labors and technicians. Secondary school students are helping in cleaning and maintaining the sanitation facility in secondary school. Parents also helped by contributing for toilet paper and soap for some time.

Although the enthusiasm seen during the implementation phase is not visible during the operating and sustaining phase of the sanitation facility. When it comes to looking after the facility, making sure there is water in the water tank, regularly cleaning the toilets, helping small children on using the facility properly, and providing toilet paper and soap, there appears to be no participation to take such responsibility.

There are consistently two stakeholders that have refrained from an active participation in the process and they are the teachers and community members including the parents. That also has to do with the priority different stakeholders give to having good sanitation facilities. The HOP is the one who is paying for everything. Schools administration, students and government stakeholders help with the available resources. But that still does not make the facility self-sustainable. It only makes it sustainable as long as it is funded by the HOP.

They [community members] don't support with labor. Labor is basically money generating. For the community that is an opportunity for work. (Interview\Grace_1: 88)

The approach will only become self sustainable when there exist a sense of ownership among the community members towards the sanitation facility. And sense of ownership is build with active participation, involvement and investment of any form. It is until the community members, teachers or

government take active participation in planning, construction, operation, and maintenance of the sanitation facility, it will be regarded as dependable and non self-sustainable.

It requires more work to be done in community engagement to build ownership. As mentioned by Grace, parents agreed to contribute with toilet paper and soap after involving them in awareness drives and behavior change trainings. But the engagement had to be stopped to channel the funds to be used to entertain students and after a while the parent’s contribution also stopped. There appears to be a direct relation between people’s participation with the amount and quality of engagement performed during the approach. So the onus falls on HOP to invest more in behavior change trainings, awareness drives and community events and meetings to increase stakeholder’s participation ultimately making their approach self-sustainable.

Grace has expressed her desire to involve the community members and teachers more for active participation in future. If done the right way, it may even lead to creating an ODF community instead of just an ODF school. Creating ownership among community members is important because students spend most time of the day within the community. Students also get influenced by them. Hence, at the moment the score allocated for this category is:

Yes, I would really want them [parents] for example to contribute for toilet paper, to contribute for soap, even getting involved in paying for a care [taker] (Interview\Grace_2: 21). And maybe something else that I would do better in future or which I wish would also work is to get more involvement from the teachers. (Interview\Grace_2: 23)

Approach sub-indicator	Score		
	Distributive Justice	Recognition Justice	Procedural Justice
Stakeholder distribution	(--)	(++)	(+)

Cumulative scores of Equity as approach indicator:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach indicator	Approach sub-indicators	Distributive	Recognition	Procedural
Equity	Stakeholders Identification	NA	(+++)	NA
	Stakeholders Recognition	NA	(++)	NA
	Stakeholders Involvement	NA	(++)	(+)
	Stakeholders Interaction	NA	(++)	(+++)
	Stakeholders Distribution	(--)	(++)	(+)
	Total		(--)	(++)

Cost

Cost indicator shows the distribution of resources spent and benefits gained by the stakeholders and HOP to achieve targets in their approach.

Funds:

The HOP is reliant on donations from well wishers of their church community in Bielefeld, Germany and online donations on their website from around the world. HOP does not receive any support in monetary from the Mukuyu community, Trans-Nzoia county government, or Kenyan government.

An average estimate of accumulated donations for HOP is around:

Total funds = 20,000 – 30,000 €/Year.

And once in a while somebody gets to know about our project and they are touched by what we are doing and they sponsor us maybe with 2000 Euros and we are grateful. (Interview\Grace_1: 12)

I: How much funds do you get on average per month or per year?

R: So far 20k - 30k per year. We hope for more regular sponsors... (Whatsapp\Grace: 1-2)

Although different stakeholders were recognized and involved in the approach, yet no monetary contribution was accumulated by HOP from the community. This may be due to the fact that no fundraising event was performed during their approach to give a chance to stakeholders to contribute towards funds. This indicator appears to satisfy the distributive, recognition and procedural justice of the equity matrix. Hence, the score allocated for this category is as follows.

Approach sub-indicators	Distributive	Recognition	Procedural
Funds	(---)	(+++)	(---)

Approach/technology Implementation cost:

Depending on the different circumstances and needs of a school, cost of an approach changes. So it not feasible to calculate the total cost of an approach when different resources are used, different activities are performed and different facilities made available depending on the context. So it rather makes sense to look at the cost of the resources and technology used during the approach. A total costs summary and cost of individual sanitation technologies are represented in the table below (Hands of Progress e.V., 2019):

	Technology	Cost
Total Costs Summary	Structural work	20,000 €
	Interior Structures	20,000 €
	Water works	10,000 €
Individual Technologies	Hand wash station	700 – 2000 €
	Sewage treatment or septic tank system	7000 – 15000 €
	Well	5000 – 7000 €
	Pour-Flush toilet	900 – 1000 €/cubicle
	Pour-Flush toilet facility	70 – 100 €/child

Btw you also wanted to know how much it costs to up a pour/flush toilet... ist 900 - 1000 € (Whatsapp\Grace: 7)

Staff:

The HOP staff consists of five directors, two executive directors, one treasurer and one care taker at Mukuyu primary school. The money spent on all the staff members in the form of salary and allowances are not known. It is assumed that it being an NGO, whole staff is working on voluntary basis except the care taker in the school. This is actually the more important thing to know when speaking of money spent in the approach in Mukuyu community. At the moment the HOP employs one care taker in the Mukuyu primary school and wish to add more staff to work on ground in the future.

Care taker salary = 140€/ month

I: And also how much do you pay to the helper in primary school for training young students?

R: 140€/ month (Whatsapp\Grace: 3-4).

Permits:

The required documents needed to start constructing in the schools in Kenya involved around five permits as told by Grace. These permits are:

1. Provisional building permit
2. Structural plan approval
3. Environmental permit from Nema
4. Occupancy certificate from municipal authority
5. Water, sewerage and electricity connection inspection

Permit cost = 1000 €/school (approx.)

Grace got the permits for three schools together for 3000 € (approx.). She is positive that due to her good relationship with the government departments, she will not have to pay any fee for permits in the future.

[Three permits costs] Appr. 3000 €. (Whatsapp\Grace: 5)

Labor:

The HOP employs local artisans so as to implement local craft in their approach. The cost of labors, technicians and engineers are not known and it also changes with respect to time, location and project work.

School administration helped with providing water, electricity, and timber for roofing. Government officials have contributed with giving rebate on permits needed in the future. Community stakeholders, including parents, were involved in the meetings and asked to contribute with their physical labor but it did not work out. It was because community members see labor work as an opportunity for employment. There requires more community involvement to source resources from them in any form. This indicator appears to satisfy the distributive, recognition and procedural justice of the equity matrix. Hence, the score allocated for this category is as follows.

Approach sub-indicators	Distributive	Recognition	Procedural
Approach/technology implementation cost	(-)	(+++)	(+)

Operation and maintenance:

In their approach toilets paper, soaps and other toilet cleaning agents are being provided by them. Parents did contribute with toilet paper and soap but it stopped after a while. In the secondary school students are trained to look after the facility which helps in saving some cost. A care taker also had to be appointed by them in the primary school since parents and teachers refused to take this responsibility. There requires more community involvement to source resources from them in the form of money, labor, or time to look after the sanitation facility.

Toilet paper and soap = 20 €/child/month

Care taker salary = 140€/ month

This indicator appears to satisfy the distributive, recognition and procedural justice of the equity matrix. Hence, the score allocated for this category is as follows.

Approach sub-indicators	Distributive	Recognition	Procedural
Operation and maintenance cost	(-)	(+++)	(+)

Gains:

There are many social benefits that the communities have gained through HOP's approach. The social benefits can be calculated in the form of money saved on medicines and health checkups, time taken to fetch water or to travel to a distance to defecate in the open, and other mental, psychological and spiritual benefits of using a WaSH facility in schools. The social gains that have been observed by Grace includes the improved health and hygiene of the community, increase in attendance of students in schools, behavior change among community members towards sanitation, increased importance of privacy and restored dignity among students, demand generation for improved sanitation services, and reduced pollution in the community.

The parents keep coming to me and telling me 'hey, now we have to have a better toilet because our children, they keep protesting they can't go to filthy toilet.' So it is happening, it is really working out. (Interview\Grace_1: 84)

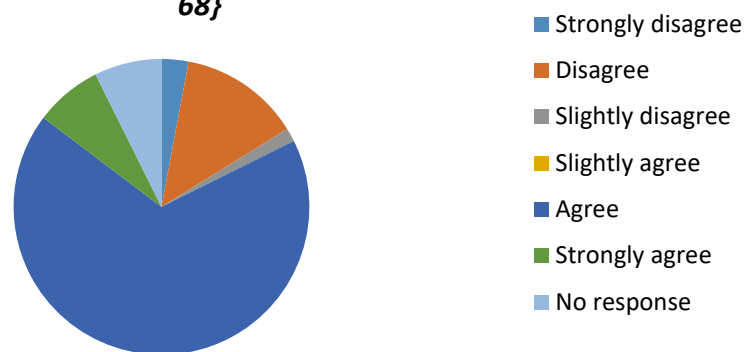
According to the head teacher of Mukuyu primary school, the gains of HOP include the reduced number of absentees, child friendly WaSH facility, motivator and empowerment factor for vulnerable (disabled, small kids, girls) students, and behavior change in the community.

Q. Having toilet for vulnerable people (disabled, children, girls) according to their needs, empowers them.

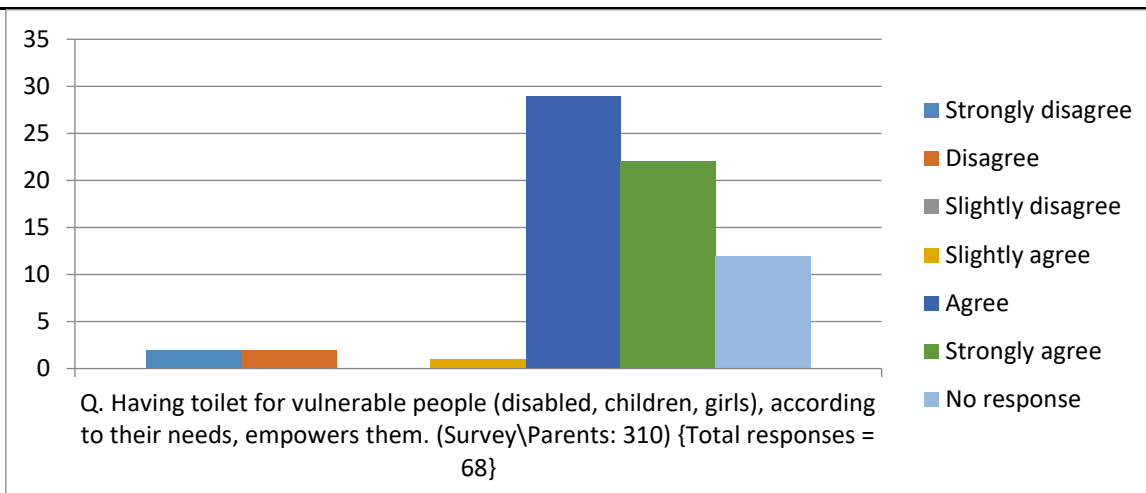
A. [Agree (++)]

And according to parents, the gains of sanitation facility installed by the HOP include behavior change, demand generation for WaSH facility in the community, motivator and empowerment factor for vulnerable (disabled, small kids, girls) students, children happy to go to school, and reduce deceases in the community.

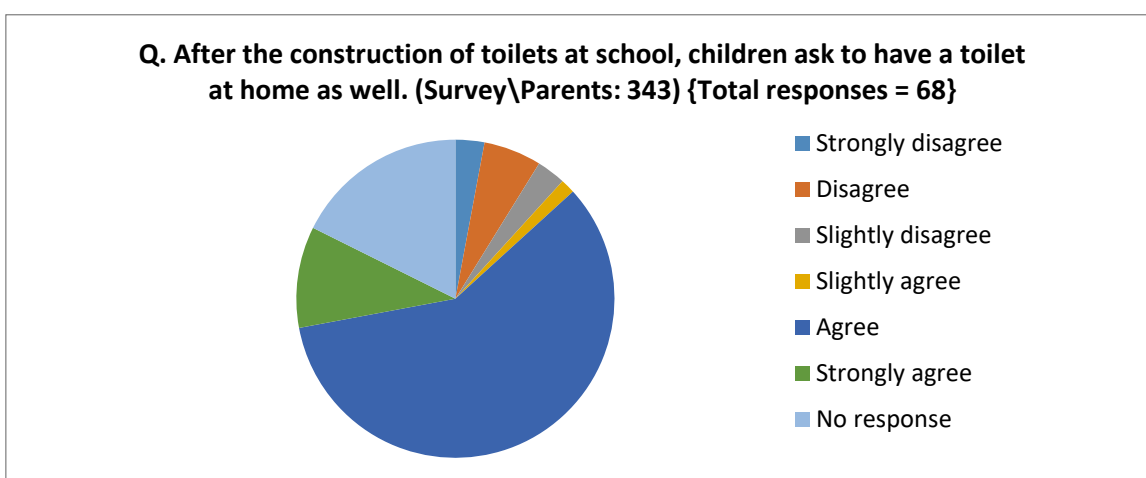
Q. I have concerns with the new sanitation facility (hand washing and toilets) at my child's school. (Survey\Parents: 140) {Total responses = 68}



- *To wash our hands regularly after using toilet everyday. (Survey\Parents: 143)*
 - *It is the best facility for the pupil. (Survey\Parents: 144)*
 - *To know that my children health is well taken care of. (Survey\Parents: 145)*
 - *Yes, because the new toilet has many goods, because it has water and tissues. Is better than old. (Survey\Parents: 149)*
 - *Yes, Because they have a positive impact in my learning. (Survey\Parents: 154)*
 - *Yes, I don't have a problem with it. (Survey\Parents: 155)*
 - *It is better because they can avoid pollution. (Survey\Parents: 159)*
 - *It will help pupil to maintain their health. (Survey\Parents: 161)*
 - *I admire because it will be good for our children health. (Survey\Parents: 169)*
 - *Because it may help them to be clean and safe in the school, when sharing things their hands are clean. (Survey\Parents: 170)*
-

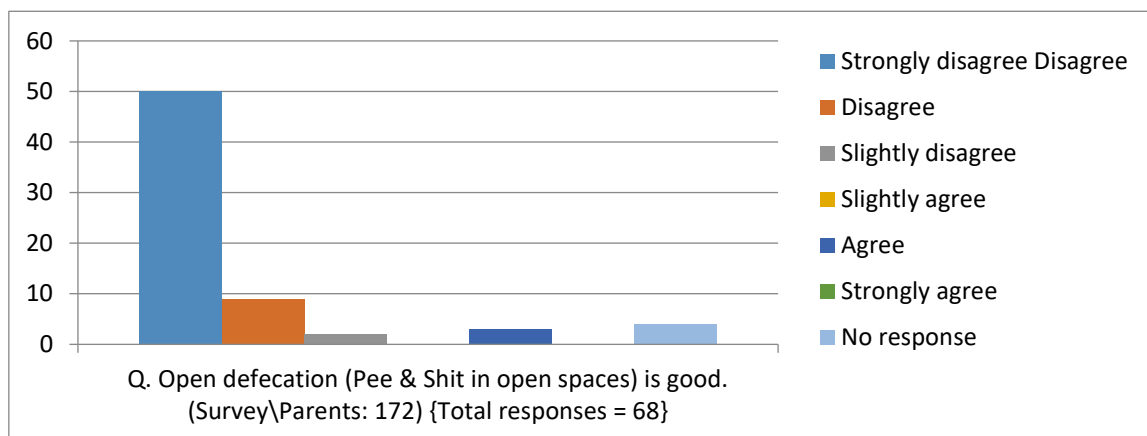


- *It make them feel much wanted in the society and empowers them. (Survey\Parents: 311)*
- *They don't have to share toilets with abled children, they are important. (Survey\Parents: 312)*
- *Yes, in order to give the vulnerable people proper sanitation according to their needs. (Survey\Parents: 313)*
- *Yes, because they need toilet at home for their use. (Survey\Parents: 311-314)*
- *We must help the vulnerable people, is good. (Survey\Parents: 319)*
- *They are also humans and have their rights. (Survey\Parents: 320)*
- *Disabled people are just people like everyone. (Survey\Parents: 332)*
- *Yes, because they cannot be able to use ordinary toilets. (Survey\Parents: 338)*
- *It is good because vulnerable people need our protection and good care. (Survey\Parents: 339)*
- *Yes, to avoid misbehave. (Survey\Parents: 340)*
- *Disabled people are just people like others. (Survey\Parents: 338-341)*



- *They take it a necessary thing and a way to keep the environment clean. (Survey\Parents: 344)*
- *To maintain clean as well as school. (Survey\Parents: 345)*
- *No, it is costly. (Survey\Parents: 346)*
- *This toilet will help us and children will be happy to use. (Survey\Parents: 344-347)*

- *The facility is good and modern. (Survey\Parents: 349)*
- *For environment conservation. (Survey\Parents: 349-350)*
- *Yes, some of them didn't have their at home. (Survey\Parents: 356)*
- *Yes, they are happy because of them never see or use it. (Survey\Parents: 358)*
- *My child can avoid decease if it is hand washing and toilet they happy. (Survey\Parents: 358-359)*



- *Because it prevents deceases.*
- *Decease spreading.*
- *For people to be strong and healthy.*
- *Because is bad if you pee in open spaces and is bad.*
- *For proper disposal of waste.*
- *Open defecation spread deceases. (Survey\Parents: 173-178)*
- *It can cause water borne deceases such a typhoid, cholera and others.*
- *It pollute the environment. (Survey\Parents: 190-191)*

The gains appear to be distributed equally. HOP achieved their targets and the community members are also satisfied with the new sanitation facility. This indicator appears to satisfy the distributive, recognition and procedural justice of the equity matrix. Hence, the score allocated for this category is as follows.

Approach sub-indicators	Distributive	Recognition	Procedural
Gains	(+++)	(+++)	(+++)

Cumulative scores of cost as approach indicator:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach Indicator	Approach sub-Indicators	Distributive	Recognition	Procedural
Cost	Funds	(---)	(+++)	(---)
	Approach/technology implementation	(-)	(+++)	(+++)
	Operation and	(-)	(+++)	(+++)

	maintenance			
	Gains	(+++)	(+++)	(+++)
	Total	(-)	(+++)	(+)

Cumulative scores of HOP's approach:

Approach Indicators	Scores			
	Independent Scores	Justice Dimensions Scores		
		Distributive	Recognition	Procedural
Effectiveness	(+)	NA	NA	NA
Scaling	(++)	NA	NA	NA
Equity	NA	(--)	(++)	(+)
Acceptability	NA	NA	(+++)	(++)
Cost	NA	(-)	(+++)	(+)

9.7.2 Government's approach

Effectiveness:

Implementation:

Indicator	Evidence	Score	Reason
Follow ups	<p><i>After [...] the villages are declared ODF, the sustainability part of it becomes a challenge because of the gap in follow up [...] to go up the sanitation ladder. (Interview\Selina: 25)</i></p> <p><i>The govt. officials especially public officers follow up to see sanitation guidelines are followed. [...] the facilities are there [schools], but you go there and you find that there is no water for washing. (Interview\James: 51)</i></p> <p><i>They might come and control the school once and they get something small and they disappear. (Interview\Grace_1: 46)</i></p>	(--)	Although the number of ODF villages are increasing, but after certification to go up the sanitation ladder follow ups are important in CLTS approach. There have been some instances that follow ups by public health officers are not done as needed. And that is the case the case with both schools and communities.
Efficiency and efficacy	<p><i>Even when the county government comes to build for them [schools] the toilets, they just come and they just build more pit latrines. And then when the next rainy season comes, they collapse (Interview\Grace_1: 20). [...] there are a lot of programs but like i told you last time, most of them they are not implemented (Interview\Grace_2: 13).</i></p> <p><i>You have a schools of 1000 pupils and of these 1000 pupils they have no access to good sanitation there are no enough latrines for them. They don't get clean water, they have to go 2km to the river to fetch some drinking water. (Interview\Selina: 65)</i></p> <p><i>The only challenge is that the govt. is not giving the necessary support in matter of training the government workers on the same [CLTS]. (Interview\Selina: 45)</i></p> <p><i>Well, the school is supposed to look for their own sources</i></p>	(---)	<p>The sanitation facilities offered by government in schools are VIPs, which is not long lasting and collapses after rain. And they again look for new place to build pit latrines. VIP toilets also do not guarantee water to come with the facility, to wash hands. And the Mukuyu community members do not value washing hands. It is not just the case with Mukuyu community; it is also the case with other communities. Government try to control the availability of toilets in the community, by mandating public toilet to open businesses.</p> <p>Elphine says that PHOs just give schools knowledge and schools have to arrange funds for WaSH facilities on their own.</p> <p>As government is providing knowledge to community through CLTS to opt for toilets and is responsible to provide toilets in public schools, it is noticed that they are</p>

	<p><i>of water. [...] the govt. doesn't provide schools with water. (Interview\James: 16)</i></p> <p><i>They [schools] do extra activities. So they sometimes have few cows, they grow some vegetables and they sell them and that's how they make like an extra stream of revenues. (Interview\Esther: 13)</i></p> <p><i>In most cases it is the parents who contribute money to get this infrastructure. [...] The govt. doesn't provide money for that. (Interview\James: 17-18)</i></p>		<p>not doing a good job in both fields. They are not providing proper CLTS training to their officials and also not providing good sanitation to public schools.</p>
Corruption	<p><i>There is also a lot of corruption. (Interview\Grace_1: 46)</i></p> <p><i>I didn't foresee a time that will come during the implementation where some will just ask for price, especially when they were doing the registration of the household phase. (Interview\Elphine: 33)</i></p> <p><i>There is just a lot of corruption in the county where I was. The managing director, he wanted to request for piping and then it turned out someone else from the government had already requested for piping, received the money but never laid pipes. (Interview\Esther: 23)</i></p> <p><i>Because of instances of corruption that people have seen happening, some people have lost confidence with the govt. because some people see a lot of corruption cases daily reported. (Interview\James: 52-53)</i></p>	(---)	<p>Corruption is a problem that has been reported by almost all the interviewed experts. And due to the rise in corruption, people have also been losing trust in the government.</p> <p>Elphine recalls her memory when they found out that a CLTS implementer was asking for money from the community members. Although they caught him/her in the beginning stages of implementing, but it surely stains the reputation of government among the people.</p> <p>Esther talks about a time when community member had to pay to government officials to come to their community.</p>
Policy/ approach framework	<p><i>Actually, They have a very laid out program for sanitation. If you just go into these offices they have a program really well laid out with details. (Interview\Grace_1: 36)</i></p> <p><i>In delivering the knowledge and behavior change its good. It is a good approach. (Interview\Elphine 2: 5)</i></p> <p><i>We were trained for the community directly [but not the schools]. [...] I had just like to come up with a plan on how to manage the institution be integrated in the CLTS and</i></p>	(+)	<p>After the new constitution came into existence and devolution of power has taken place, Kenyan policies, especially WaSH policies, have been framed and documented very well. And this has been complimented by almost all the experts interviewed and by some development organizations as well.</p> <p>The governance ladder of WaSH services, responsibilities of the government departments and officials, WaSH</p>

<p><i>improve the indicators and make the checklist during certification process. (Interview\Elphine 2: 27)</i></p> <p><i>In institution is a very high population of pupil but the sanitation facility are not equivalent. But on the other hand the school is tied up; it cannot ask funds from the parents. [...] It's only the government that gives the funding and the funding they receive it has, they are doing renovation, they are doing things, they are buying books, they are doing maybe lunch program. (Interview\Elphine 2: 39)</i></p> <p><i>When people are travelling for long distance in the market and they need to go you open defecate because there are no public toilet on the roads (Interview\James: 27)</i></p> <p><i>In schools is a bit technical because there they have so many stakeholders. They have ministry of education, the non govt funders, and the ministry of health and the board of management of institutions. So they need to have funds. (Interview\Elphine: 65)</i></p> <p><i>We need more of the visual aid [for CLTS implementation], to enable those people who may be not be able to read and understand. Actually it can be depicted in the pictorial form so that people can take in the concept. (Interview\Elphine: 48-49)</i></p> <p><i>I am just doing surveillance, I am doing contact tracing for covid-19, at the same time I need to see the CLTS in 2 villages in my area. So you find I cannot balance, I cannot meet the time line, I cannot do perfect job that I wish to do. (Interview\Elphine: 71)</i></p> <p><i>Once you tell people that you need to have a latrine, I educated them and till they go to a point 'yes, we want to do it but tell us how to do it better that it cannot collapse'.</i></p>	<p>approach, and the WaSH technology to be implemented. County government is responsible for implementing CLTS approach in the community. National CLTS-Hub is responsible for training and certification of ODF status. Public health department is responsible to implement the CLTS approach and oversee the health and hygiene in public schools. However schools are included in the CLTS approach. VIP technology needs to be implemented in public schools.</p> <p>Elphine thinks CLTS approach is inclusive and nobody is left behind in this approach. PHOs are trained for CLTS implementation but are not trained to engage with schools.</p> <p>There is need to arrange transport services for PHOs as they have travel long distances for community follow-ups and CLTS implementation and so have to spend money from their own pocket. Also charts and images in pictorial form is required by PHOs during the triggering phase for communities to understand better. Other is absence of proper water testing and sampling labs. Because of samples sometimes have to be sent to Nairobi for testing. And in some areas there is also lack of staff, which influences the performance of working staff.</p> <p>It is also noted that the approach should also include training on how to construct better quality toilets. There were people who were ready to have a latrine but did not know how to construct a good quality latrine which does not collapse.</p> <p>Some communities which cannot afford individual latrines opt for community toilets, which are however not counted as moving up the sanitation ladder in CLTS; hence the communities cannot achieve ODF status.</p> <p>Although approach is well defined, many aspects are still missing in the framework from the government's end</p>
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	<i>(Interview\Elphine: 27)</i>		which is stopping the communities getting the ODF status.
Impact of context	<p><i>They have this culture where the dad cannot use the same latrine with daughter in law or the dad cannot use the same latrine with the daughter. So you imagine a situation where in one home you want to have 3 different latrines within the same household because of culture. (Interview\Selina: 33)</i></p> <p><i>I get some communities that have some cultures around how they do their thing. So they may even chase you away because you are going to temper with their culture. (Interview\Selina_2: 61)</i></p> <p><i>The socio-economic problems were so high, people were drunkard 24/7. They are illiterate. [...] And you look at this their piece of land is very small, the children are so many, there is no family planning. (Interview\Elphine: 27)</i></p>	(--)	<p>There are many geographical and climate concerns due to which the cheap WaSH solutions are not durable. Like when government provides VIPs in the places where it rains a lot. In this context, there is a need for a robust solution which does not collapse so easy. There are also many challenges which are based on the different cultures in the community.</p> <p>There also exists a need to provide transport services for PHOs to travel long distance every day.</p> <p>There have been many contextual challenges which had to be adapted during the approach implementation. Some were able to be fixed by the PHOs, some they are still struggle with. These contextual challenges many times can not be anticipated, because of which it takes longer to get back on track. However it affects the target time period that is four months to achieve ODF status through CLTS approach. So the impact of context has been negative on the approach and has created challenges for implementers instead to helping them, hence the score.</p>
<i>Total score</i>		(--)	

Performance:

Indicator	Evidence	Score	Reason
Staff training	<p><i>The public health officer that are directly involved in the program was not very knowledgeable on the [CLTS] program. [...] But we were able to tackle that by taking them through a training. We were able to train them on CLTS for around 1 and half weeks. (Interview\Selina: 18)</i></p> <p><i>So the govt. is not giving good support in matter of financing the program, giving training, and giving the</i></p>	(--)	<p>The training to PHOs for implementing CLTS is given by national CLTS-hub. But in some case it is found that the quality of training is not that good. So some international organizations also helps in the training the PHOs. One such organization is Rotary Doctors Sweden (RDS) who helps training PHOs and works with them in the community.</p>

	<p><i>necessary materials that are needed to be able to do the program. (Interview\Selina: 45)</i></p> <p><i>There was rotary doctors who supported the training (Interview\Elphine: 61). I think it [training from national CLTS-hub] was detailed. It gave me the knowledge, so to me it was sufficient (Interview\Elphine: 63). Not for them [schools] we were trained for the community directly. (Interview\Elphine 2: 27)</i></p>		<p>So the quality of training given to the PHOs is under question and needs to be improved in future. And this training should also include how to engage with schools. Under National ODF 2020 campaign framework, 4000+ PHT/PHOs are supposed to be trained on CLTS until 2020. If Elphine was among those 4000+, then as mentioned by Selina, the quality of training is not satisfactory.</p>
Targets achieved	<p><i>Total villages = 1314</i></p> <p><i>Triggered = 955 (73 %)</i></p> <p><i>Claimed = 16 (1%)</i></p> <p><i>Verified = 15 (1%)</i></p> <p><i>Certified = 12 (0.99)</i></p> <p><i>Remaining Unclaimed = 1298 (99%) (CLTS Kenya, 2021)</i></p>	(--)	<p>Under National ODF 2020 campaign Framework Kenya was supposed to be 100 % certified. According to National CLTS-Hub only 25% villages are ODF certified, 69 % villages are still remaining unclaimed. Since its commencement in 2014 in Trans-Nzoia county, only 12 villages have been certified as ODF. This is less than 1 percent. There are 1298 villages that are yet to be claimed (CLTS Kenya, 2021).</p>
Feedback gathering	<p><i>I: Also wanted to know whether CLTS-HUB or government asks you for your feedback about CLTS approach. On what to improve, or how it is going?</i></p> <p><i>R: They have never called me since nor asked m during and after the project (Whatsapp\Elphine: 6-7).</i></p>	(--)	<p>The government does not gather feedback from their own staff members. As observed earlier, there are many that Elphine has regarding how to improve the CLTS approach and how she adapted the CLTS approach with school education. Such ground experiences are being lost by not being reported. Although it has been noticed that there used to be quarterly newsletter, about progress in CLTS in Kenya, called Shared Sanitation, Hygiene, Information & Tales (SSHIT). This included interviews with CLTS implementers and challenges experienced by them. Last publications of these newsletters could be found was in 2014. It is assumed that it has stopped publishing.</p>
population	<p><i>I: So is it safe to assume that people who have pit latrines</i></p>		<p>It is important to note that only around 80% of the</p>

covered	<p><i>they are not open defecating?</i></p> <p><i>R: Most of them. Not 100% but maybe 80% of those who have a latrine they are not open defecating. (Interview\Selina_2: 70-71)</i></p>	(-)	<p>population that build pit latrines actually uses it regularly. According to Selina, It is because people tend to forget why they have a latrine and why they need to use it. So follow-ups becomes necessary in CLTS approach even after certification of the community. So of these twelve villages that are certified as ODF in Trans-Nzoia county, 20 % households can be assumed to be not using the latrines if the follow-ups were not done properly.</p>
Effects on People	<p><i>There are like for example we are implementing the program in one village then by the time we finish implementing the program, the next village is admiring how this village has really progressed and without us going to that village practically to implement the program there is that behaviour change that is just copied (Interview\Selina_2: 57).</i></p> <p><i>Okay, one of the positive impacts is it has reduced the chances of rare deceases from schools. Though from us we were aiming like we don't want open defecation, I think those ones are unintended impacts. But the direct impact we achieved, people are not defecating openly and now we are having few absentees and the diarrheal cases are reduced. (Interview\Elphine 2: 33)</i></p> <p><i>It just became like a contagious solution even to the surrounding village. They are like 'okay, also come to our village and also help us move ahead in this sanitation ladder'. And this village that was certified, i even meet the members of that village and they tell me come and visit us. I tell them 'okay i will come. How is it going?' they just tell me 'yeah, we are doing great, some of our latrines just collapsed, but we again constructed them.' So that to me says that they have the knowledge, they have the solution and they can do it on their own. So it is a positive one.</i></p>	(+++)	<p>Mostly the effects on people have been positive. There are many stories shared during the interview in which behaviour change and demand generation for a WaSH facility was observed. Although some people also go back to their old habits of open defecating after their latrine collapse or when they are not able to sustain the facility. But after imparting more knowledge and spreading awareness among them, they come back to using the latrine again.</p> <p>Selina shares her views that earlier people were tired of constructing latrines only to see them collapse in a couple of months. But after trained under CLTS they have gained confidence of solving problems by themselves. So now they come up with innovative local solutions whenever there is a problem with their latrine. Now their latrine can last whole year without collapsing.</p> <p>A positive impact on behaviour change is visible when other villages where CLTS has not been implemented want PHOs to come to their village and train them to solve their problem themselves.</p> <p>In schools number of diarrheal cases has been reduced and number of absentees has reduced after the implementation of CLTS in the communities.</p>

	<i>(Interview\Elphine: 43)</i>		
Dealing with challenges	<p><i>We feel supporting and helping the community and schools there is still a gap in sanitation. So if are able to bring the school on board it will now be a total sanitation (Interview\Selina: 65)</i></p> <p><i>You have talk to them, you have empower them with education, they are willing to own a latrine they feel they should have it, they understand the importance, they are ready to change and have it but now here comes this disaster. The water table is very high. They cannot afford to purchase materials that can construct a latrine that is raised a little higher to take care of challenge of water table. So you get a little bit stranded because now what you do with this kind of house. (Interview\Selina: 22)</i></p> <p><i>We have the ministry of water and sanitation. This is the ministry which is responsible for providing water to schools but they will always give you the excuse of that they have no finances to do that. (Interview\Selina: 60-61)</i></p> <p><i>And we also thank covid-19 that it came, which is own positive and negative. So currently, especially in my area, all public and private institutions they have their hand washing stations and those are permanently. (Interview\Elphine: 21)</i></p>	(--)	<p>During the implementation of CLTS, challenges are dealt with on spot. There cannot be designed a guidebook to solve contextual problems which changes with each community. The challenges whether behavioural, geographical, social, political, or due to climate are solved by PHOs in the field so that the program can move forward. It is to be noted that not all the solutions are long lasting.</p> <p>When there are no toilets in the schools, they provide pit latrines. If, by any chance the pit latrines get to fill, they just close it and then they look for the next spot to build a new pit latrine. But the waste is never extracted.</p> <p>Elphine, being a PHO says that our job is to provide knowledge in schools about how to wash hands and why it is important. And school have to arrange for funds by themselves. Elphine actually thank covid-19 that because of it government became a bit serious and there is water in schools to wash hands. James says the same thing that the sanitation facilities are many times paid for by parents although it is the responsibility of government. Esther observed that schools were growing vegetables to sell and arrange funds for facilities. So although things are getting solved but they are temporary solutions and there is not accountability from governments end.</p> <p>As far as CLTS is concerned, schools are totally missing in the approach. However without providing sanitations in schools, the community cannot be certified as ODF during verification and certification phase.</p> <p>Where ever it takes longer time to change behaviour of the community, PHOs adjust their deadlines from four months to six months. Geographical and climate</p>

			<p>challenges are also dealt with on the spot. For example where there is high water table and one cannot dig deep pit latrines, the opt for elevated pit latrines on the ground.</p> <p>Hence there are some good solutions happening on the ground, but many solutions are to be fixed by the government which are also affected the progress of CLTS.</p>
<i>Total score</i>		(--)	

Sustainability:

Indicator	Evidence	Score	Reason
Sanitation ladder	<p><i>For pit latrine they just use toilet paper. The toilet paper is also not common in the community in the villages. So the toilet paper is leaver and leaves different kind of trees. (Interview\Selina: 43)</i></p> <p><i>Also maybe because of this VIPs maybe that's the reason why also when the government decides to build a toilet in a school, they just come and build something that looks like a VIP but they don't bother with water. And they don't also bother with hand washing facilities. But it's also a background thing because they never had water to wash their hands in schools. So they don't see the importance. And that's something we are trying to change now. (Interview\Grace_1: 42)</i></p> <p><i>You get ending up in some community just opting for sharing of latrines other than defecating in the open and some of this natural calamity is beyond our control then we encourage this community to team up as a community and they put their resources together and then they will be able to do like one latrine that is used</i></p>	(+)	<p>Going up the sanitation ladder has witnessed many difficulties and there any not many examples where people have gone higher than pit latrines. Grace argues that it because people have not seen any better sanitation facility than pit latrines. Even when government build something in school they just build pit latrines, so schools can be a good start to show people that better sanitation is possible and achievable.</p> <p>According to Selina the quality of present sanitation facilities is quite bad. People are just using old rags, plastic, wood, stones, etc., to cover the pit latrine but going up the ladder is not in sight. The progress in sanitation technology can be evaluated from the fact people are still using leaves as anal cleansing method in the toilet. They do not have enough resources to buy toilet papers.</p> <p>Some communities which cannot afford individual latrines opt for community toilets, which are however not counted as moving up the sanitation ladder in CLTS;</p>

	<i>by as many households as possible. (Interview\Selina_2: 7)</i>		<p>hence the communities cannot achieve ODF status.</p> <p>So although people have moved up the sanitation ladder from open defecation to using a pit latrine, but there is still a long way ahead.</p>
Innovations	<i>In the case where we have a loose soil, we explore some of the local options with the community. We hold like a dialogue day with the community members and then we ask them 'what is the practical possibility for them?'. Now again back challenges in advances is in the sense that you get most of the time, some of the available solutions need money. Like someone needs to purchase some pieces of wood to be able to reinforce their soil with, someone is required to use the bricks and blocks to reinforce the soil. (Interview\Selina_2: 7)</i>	(+++)	<p>Many local innovative ideas have been observed in the field when implementing CLTS and that is not just with the sanitation technologies by also with the approach itself.</p> <p>Like when the community needed extra time then the timeline of the approach was increase from four months to six months to achieve better results. Or when PHOs were not trained on school engagement they adapted the CLTS indicators and worked it out. And they told the schools that if they do not have latrines in schools the community cannot be ODF certified, so everybody helped the school to have latrines. To tackle the cultural barriers, extra efforts and resources were allocated to solve their issues.</p> <p>When someone does not have enough financial resources they make basic pit latrines with easily available material like old rags and clothes, plastic, soil, stones, trees and leavers, etc. When the ground is hard or with a lot of rocks, they try to break the rocks with help of the community or make an elevated latrine, if the finances allow.</p> <p>So there are many local innovations visible, which came into existence during the CLTS approach.</p>
Health and Hygiene	<i>We have communities which cannot even afford soap, so we ask them to use ash. It is some kind of a local disinfectant, so the ash that have used in the kitchen to cook they use that ash in the place of soap but if someone can afford soap then they use soap.</i>	(+)	<p>Opting for an in house WaSH facility has helped the community in fighting deceases. It has improved the health and hygiene of the community comparatively. There are less children getting sick from diarrheal cases</p>

	<p><i>(Interview\Selina_2: 45)</i></p> <p><i>And then one thing that is also very important and we always insist on it is the general cleanliness of the latrine, it has to be clean. Like the floor, the wall, the roof it has to be clean otherwise it doesn't pass the test. (Interview\Selina_2: 46-47)</i></p>		<p>and their attendance in the schools has increase.</p> <p>However there are still many things that need to be improved. There are people who cannot afford toilet paper so they are using leaves as the anal cleansing method. There are people who cannot afford soap so they use ash or mud to wash their hands. There are some pit latrines which are of bad quality so they may spread also deceases in the household.</p>
Pollution	<p><i>Those services of emptying latrines and sewages they are very expensive services to get. And that's why you will get most of our community just use pit latrines. Once the pit is full, you close it down. And you dig another pit. (Interview\Selina: 39)</i></p>	(+)	<p>Although the people have started defecating in household toilets but they use pit latrines. So the feaces are still there in the environment. Previously feaces used to stay on the ground and now it is inside a pit. It is still contaminating ground water or nearby water sources. And this will be solved until the sewage from these pits are extracted and treated properly.</p> <p>It is to be noted that the air pollution has been decreased with the adoption of pit latrines, as there is not bad odour that used to come from openly defecated feaces-</p>
Durability	<p><i>Because once they excavate the pit, just only some are there for around 3 months, Jan., Feb., march during the dry season. And once the rainy season sets in it just overflow, and after over flawing it just collapses. (Interview\Elphine: 27)</i></p>	(+)	<p>Most sanitation technologies the community members have opted for after CLTS implementation are pit latrines. And even the people who have gone for a better technology, has VIP latrines which are a more durable than pit latrines if maintained properly and emptied regularly.</p> <p>Most of these are basic pit latrines made from clothes, stones, leaves, wood, mud, etc. These facilities are not long lasting, especially if you are living in a place where it rains a lot. And even if they do not collapse, the services of emptying a pit latrine are expensive that majority of people cannot afford. So once the pit gets full, people close the pit and dig a new pit.</p>

Total score	(+)	
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Time:

Indicator	Evidence	Score	Reason
Time	<p><i>In CLTS protocol, you given a timeline of around 3 months to do the follow-ups and then be able to get to a stage when the community can claim ODF. So changing someone's behaviour in that period of time was quite a challenge. (Interview\Selina: 19)</i></p> <p><i>Right now, I am just doing surveillance, I am doing contact tracing for covid-19, at the same time I need to see the CLTS in 2 villages in my area. So you find I cannot balance, I cannot meet the time line, I cannot do perfect job that I wish to do. (Interview\Elphine: 71)</i></p> <p><i>The community member they are like calling me to go and maybe check on their status but I don't have time. (Interview\Elphine 2: 37)</i></p>	(--)	<p>The time line for CLTS is to finish with in four months. It has been seven years since the commencement of CLTS as a Trans-Nzoia government's rural sanitation approach, and it has only achieved 12 villages with ODF status. That suggests that the it is taking too long.</p> <p>One of the reasons for taking longer time is to deal with cultural factors and focusing on such communities with extra time and resources. This ends up taking longer than the desired time limit. Other reason is also that after verification process is done by the PHOs, they have to invite the CLTS staff from national CLTS-Hub to certify the village as ODF. Elphine says that there are many villages in which verification process has been finished but nobody has come here for months from CLTS-Hub to certify these villages.</p> <p>Also PHOs are given with so many other responsibilities that they cannot fully focus on the CLTS approach, which also increases the time line. This makes someone think that deadlines should be context based.</p>

Project reporting and learning:

Indicator	Evidence	Score	Reason
Project reporting and documenting	<p><i>Because Sanitation is very poorly documented, that is one of the biggest problems that we have here because sanitation is not really considered a priority. So even the</i></p>	(-)	<p>There are many solutions performed during CLTS implementation that should be documented for future trainings. Like the way Elphine dealt with promoting WaSH facilities in schools without proper specific training</p>

	<p><i>documentation is very very little. (Interview\Grace_1: 8)</i></p> <p><i>You know in Kenya we are not yet so up on technology like we do reporting on soft copy. No we still do a lot of manual work and writing. So the govt. needs to make sure that they have reporting tools. Because unless we report on what you have done, it is impossible to know what has been done when it is not reported. And then the govt. needs to give the necessary facilitation. (Interview\Selina: 54-55)</i></p> <p><i>All the knowledge is really scattered, there is no centralized best practices so I think if all the knowledge, the positive things that has been happening to schools, if that's more centralised and known for regarding all the different stakeholder I think that will really improve. Because everybody is just reinventing the wheel. (Interview\Esther: 67-68)</i></p>	<p>or other contextual adaptation which can improve the quality of training if incorporated.</p> <p>It was also mentioned by Esther that all the knowledge appears to be scattered and there is a lack of centralized best practices. For this purpose reporting and learning from other's mistakes becomes important.</p> <p>There are not many facilities provided to the PHOs or other field workers to let them work independently. The water samples have to be sent to Nairobi to get tested in lab. Data collection is still happening manually when officers can afford to have a smart phone.</p> <p>According to Grace, it is because sanitation is so poorly documented that it has not become a priority. Although data is being collected but the quality of data and the process of data collection can still be improved. A lot is being missed out with the current approach.</p>
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Cumulative score of effectiveness as approach indicator:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach indicators	Approach sub-indicator	Score
Effectiveness	Implementation	(- -)
	Performance	(- -)
	Sustainability	(+)
	Time	(- -)
	Project reporting and documenting	(-)
	Total	(- -)

Scaling:

Approach sub-indicator	Evidence	Score	Reason
Demand	<p><i>So currently we are checking that it just became like a contagious solution even to the surrounding village. They are like ‘okay, also come to our village and also help us move ahead in this sanitation ladder’. (Interview\Elphine: 43)</i></p>	(+++)	<p>It is also seen that many community members from other communities are inviting Elphine and Selina to implement CLTS in their villages too. So when applied good it can work as a chain reaction and can increase demand for sanitation in the community.</p> <p>CLTS is actually known for being a participatory rural sanitation approach that generates demand for sanitation. So it is used where there is no demand for or knowledge of obtaining sanitation facility. And it can be said that there is a demand for demand generation in Kenya. And as there are around 20,000 villages, and growing, in Kenya that has been certified ODF after CLTS implementation, so this implies that there is a demand for it.</p>
Resource Availability	<p>Following activities were performed by (NOKCF, 2016), from 2016-20:</p> <ul style="list-style-type: none"> - Training of 4000+ PHTS/PHOs and some 500 NGO staff as facilitators. The training of 4000+ PHTS/PHOs alone will require over 100 weeks of continuous 1 week duration CLTS training (assuming a batch of at least 30 trainees); - Training of 3000+ community ODF Campaign resource persons - Training of 100 MOH and County Government M&E staff 	(+)	<p>4,000+ PHT/PHOs and 500 NGO staff have been trained under National ODF 2020 campaign framework. It is evident from Selina and Elphine’s views, that there is not enough staff to implement CLTS approach. Other than the staff availability, there is also lack of financial resources from government’s end towards schools as well as CLTS. However there are also NGOs like RDS and UNICEF which are helping in training the staff and filling the gap of lacked resources.</p> <p>As far as building toilets in the community is concerned, in CLTS people are encouraged to build their own toilet from whatever resources that they have.</p>
Demand	<p><i>Target of Trans-Nzoia county Integrated Development plan (CIDP) 2018-22 = 40 ODF certified villages (CIDP,</i></p>	(+++)	<p>The Kenyan government has implemented National ODF 2020 campaign framework to achieve country wide 100%</p>

	2018-22, Page159-Page160) Target of Kenyan government has implemented National ODF 2020 campaign framework = 100 % ODF Kenya (NOKCF, 2016)		ODF status by 2020. With Trans-Nzoia county Integrated Development plan (CIDP), the county government expects to certify 40 ODF villages by 2022. So there seems to be high political will to implement CLTS at both national as well as county level.
Willingness to invest	Indicative Financial Resource Requirements for Implementation of the National ODF Kenya 2020 Campaign For FY 2016/17 – FY 2019/20 = KES 41,607,869,000.00 20 (NOKCF, 2016)	(+++)	The funds of KES 41.6 b was diverted towards the Ministry of Health by the Kenyan government with in the span of four years. So that alone shows the willingness of the Kenyan government towards implementing CLTS at mass level. Not just the Kenyan governments, but county government also helps with whatever they can contribute. Trans-Nzoia county government has promised KES 50 m to achieve 40 ODF villages until 2022. Hence the willingness to invest in Kenya by different governments appears to be high for CLTS approach.

Cumulative score of scaling as an approach indicator:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach indicators	Approach sub-indicator	Independent scores
Scaling	Demand	(+++)
	Resource availability	(+)
	Political will	(+++)
	Willingness to invest	(+++)
	Total	(+++)

Equity

Approach sub-indicator	Evidence	Score			Reason
		Distributive justice	Recognition justice	Procedural justice	
Stakeholders Identification	<p><i>We have the community volunteers, these are basically community members but they are given a responsibility by their respective communities to represent their community on matter of health. So you get every community has a community health volunteer. So whenever we do a program in the community the first people in the community that we bring on board are these community health volunteer (Interview\Selina: 10)</i></p> <p><i>Yes, we have the cultures mostly like Kalingin, then we have Pokot, then we have Sabaot, they believe that defecation happens in the bush so getting them out of the bush into the latrine it's really not easy. (Interview\Selina_2: 63)</i></p>	(NA)	(+++)	(NA)	<p>What is good about community participatory approaches is that it includes each and every stakeholder of the community. And it is the same with CLTS as well. To achieve ODF status for the community it is necessary that everyone has a toilet; hence everybody from the community is included in the village.</p> <p>The stakeholders that are identified in the CLTS approach implemented by Trans-Nzoia county government are: Community health volunteers, local administration, county public health department, area chief, ministry of water and environment, local politicians, community natural leaders, religious leaders, religious institutions, schools, head teacher, parents, teachers, markets, labourers, pit-emptiers, people of different tribes, culture, religion, socio-economic status, educational background, disabilities, gender, age groups, and addictions (drug addicts, drunks, etc.).</p>
Stakeholders Recognition	<p><i>I received support from area chief, the administration department they gave me a lot of support. Politicians I never saw them though they have a say, because for them they can say yes or no and the members take them. [...] So administration is the key, we have the public health; we have the ministry of</i></p>	(NA)	(++)	(NA)	<p>The stakeholders that are recognized by the implementers of the CLTS approach by Trans-Nzoia county government are: Community health volunteers, local administration, county public health department, area chief, ministry of water and environment, local politicians, community natural leaders, religious leaders, religious institutions, schools, head teacher, parents,</p>

	<i>water, and ministry of environment. (Interview\Elphine: 54-59)</i>				<p>teachers, and markets.</p> <p>The stakeholders who are identified but not recognized by the PHO and other implementer as key stakeholders are laborers, pit-emptiers, people of different tribes, culture, religion, socio-economic status, educational background, disabilities, gender, age groups, and addictions (drug addicts, drunks, etc.).</p>
Stakeholders Involvement	<p><i>Religion plays a very key role in the lives of members of the community. Like in Kenya here 80% Christians, and then like 15 % Muslims and then 5% other like Hindus and the rest. So religion plays a very key role and people really believe in their religious leaders also. One of the things we do is we always bring on board religious leaders. (Interview\Selina: 33)</i></p> <p><i>During the planning phase and the implementation [we can include religious institutions in future]. When you are planning you have to call their [religious institutions] leader, they give you their views and then you go as an individual when you are implementing you talk to the members of the church, you tell them 'this is our view, this is our stand this is our approach'. They also tell you maybe their perspective. 'Way for that or they are not for that change.' And if they are then they are the good ambassador for the same project. (Interview\Elphine 2: 17)</i></p>	(NA)	(++)	(++)	<p>The stakeholders that are included in the CLTS approach, in some way or the other, implemented by Trans-Nzoia county government are: Community health volunteers, local administration, county public health department, area chief, ministry of water and environment, local politicians, community natural leaders, religious leaders, schools, labourers, pit emptiers, people of different tribes, culture, religion, socio-economic status, educational background, disabilities, gender, age groups, and addictions (drug addicts, drunks, etc.).</p> <p>However, there are some stakeholders who are identified and recognized by implementers as key stakeholders but not fully involved yet. Selina says that in the approach framework we should also put special attention on institutions like schools, parents, teachers, churches (religious institutions) and market places. As CLTS reaches to other stakeholders effectively, these stakeholders are sometimes not included as much as they should be. It is because it is not in the protocols of Kenyan CLTS to involve them. But the process can get way much easier if they are included in the triggering phase as well. As they matter in the lives of the people a lot and</p>

	<p><i>R: They [Parents and teachers] are the key stakeholder but they do not hold a lot of decisions. For them they do not give money so their decision is tied up. But they are the key.</i></p> <p><i>I: And how far are they involved in this [CLTS] process?</i></p> <p><i>R: I think they are not fully involved. I will say around 20%. (Interview\Elphine: 66-69)</i></p> <p><i>Q. In the past, I have been approached or motivated by the government, to build a personal toilet at/near home. (Interview\Parents survey: 245)</i></p> <p><i>A:</i></p> <p><i>[Strongly disagree (---)] = 2</i></p> <p><i>[Disagree (--)] = 16</i></p> <p><i>[Slightly disagree (-)] = 0</i></p> <p><i>[Slightly agree (+)] = 1</i></p> <p><i>[Agree (++)] = 29</i></p> <p><i>[Strongly agree (+++)] = 7</i></p> <p><i>[No response (0)] = 13</i></p> <ul style="list-style-type: none"> • <i>No, not approached or motivated by the government.. (Interview\Parents survey: 249)</i> • <i>I have never met government officials. (Interview\Parents survey: 260)</i> • <i>No, we have toilet. (Interview\Parents survey: 266)</i> 				<p>people follow them.</p> <p>Elphine agrees to that as well, although as part of her job being a PHO she also reaches out to schools, but she thinks that including schools and church properly will improve the inclusivity of this approach. At the moment they involve religious leaders of church and mosques but they do not visit the religious places like church and mosques to aware and involve people there.</p> <p>One thing also to be noted is that parents and teachers are considered to the key stakeholders for school sanitation but not involved to much because they do not hold decision making powers in school sanitation programs. So to achieve better results they can also be involved in future.</p> <p>Some people from the Mukuyu community says that they have not been approached and motivated by the government to opt for in house latrines. It may be possible that the pre-triggering of their community has not been conducted properly and many people have been left out, or the process is not finished yet and they will be reached out to in near future.</p>
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	<ul style="list-style-type: none"> • <i>No, the government works for public and not for personal (Interview\Parents survey: 270-271)</i> 				
Stakeholders Interaction	<p>I must say with education again and again we take a little longer time to change the behaviour but most of them with education they are able to take up changes and putting it up. But it really needs us to empower them with a lot of knowledge. (Interview\Selina: 27)</p> <p>Before we start in a community we take them through the training, not once, not twice, maybe three time to four times so that they are well knowledgeable and we are able to trigger their minds in the direction of having an open defecation free community. (Interview\Selina_2: 15)</p> <p><i>And this village that was certified, I even meet the members of that village and they tell me come and visit us. I tell them 'okay I will come. How is it going?' they just tell me 'yeah, we are doing great, some of our latrines just collapsed, but we again constructed them.' So that to me says that they have the knowledge, they have the solution and they can do it on their own. So it is a positive one. (Interview\Elphine: 43)</i></p>	(NA)	(++)	(+++)	<p>The stakeholders that are involved in the CLTS approach, in some way or the other, implemented by Trans-Nzoia county government are approached and interacted in different ways during different phases of the approach.</p> <p>As mentioned by Selina, in CLTS they are not allowed to give and help the community members with hardware and they can only help with the software part. So they try to spend as much time as needed to change the behaviour of people. With some cultures it is easy and fast, with some it is hard and take months.</p> <p>It has also been mentioned by Elphine that the implementer should not forget that s/he is just a facilitator and only give the space and create an environment for people to talk and make their own decisions. That process of creating a respectful, safe and trustful environment is core of stakeholder interaction. These emotions of how people felt must be better asked from the people themselves. Unfortunately that data is not available in this research, and the CLTS approach in the Mukuyu community has not been finished yet.</p> <p>But while observing the arguments and feedbacks that the people gave to Elphine and Selina, it can be seen that people like to talk and interact with the implementers, and they feel safe to tell them the insecurities, fear and reasons of not opting</p>

					for a toilet.
Stakeholders Distribution	<p><i>So it is little a challenge because you get this very poor family in the community. You have talk to them, you have empower them with education, they are willing to own a latrine they feel they should have it, they understand the importance, they are ready to change and have it but now here comes this disaster. The water table is very high. They cannot afford to purchase materials that can construct a latrine that is raised a little higher to take care of challenge of water table. So you get a little bit stranded because now what you do with this kind of house. (Interview\Selina: 22)</i></p> <p><i>And in some community, you go to the community and then you have these old people who cannot put up a latrine for themselves, they cannot do anything. Sometimes I talk to individuals and then we are able to myself I can make a decision 'I want to help one household of a very old person to have a latrine' so I pay someone to do it for them. I talk to my friends, I ask them that 'in a certain community we are stuck because 3 households they have the people with disabilities, or they have people that are very old, so can you chip in and give some financial support so we pay someone to put up a latrine for them. And that's normally also work out.</i></p>	(++)	(++)	(++)	<p>The stakeholders that are approached in the CLTS approach implemented by Trans-Nzoia county government to change their behaviour and opt for a sanitation facility, are encouraged to build the facility by their own resources that they can afford. So it can be noticed that people who are better off, can afford to have a better quality sanitation facility than the person with less resources.</p> <p>It is because no help in the form of hardware infrastructure, tools to construct, subsidy, credits and incentives are provide to any stakeholder in this approach, it is quite fair in nature. It helps people to be independent to take ownership of the facility.</p> <p>As far as schools are concerned schools receive funds from the government to construct toilets specified by the government and hence are dependent on them. Although in some cases schools also get support from NGOs and parents, but that is not the case for every school. As told by Esther, many schools also opt for farming to generate some revenues on the side, to build sanitation facilities in the school and claim ownership of the facility. So they also have that liberty. At the end of the day they have to look after the facilities, as mentioned by James and Selina, it is very common in Kenya for students to clean and operate the toilets in schools. So schools are also taking responsibilities but they should be focusing on providing good education</p>

<p><i>(Interview\Selina_2: 73)</i></p> <p><i>Yes, yes it happens. Actually it is the schools, [it is] students that clean the toilet facilities. (Interview\Selina_2: 48-51)</i></p> <p><i>Q: I have the required resources, available near/around me, to build a personal toilet, if I need one. (Interview\Parents survey: 251)</i></p> <p><i>A:</i></p> <p><i>[Strongly disagree (---)] = 1</i></p> <p><i>[Disagree (--)] = 36</i></p> <p><i>[Slightly disagree (-)] = 3</i></p> <p><i>[Slightly agree (+)] = 2</i></p> <p><i>[Agree (++)] = 17</i></p> <p><i>[Strongly agree (+++)] = 3</i></p> <p><i>[No response (0)] = 6</i></p>				<p>rather than this.</p> <p>There are some communities which cannot afford to own a latrine and need financial help to build one. But it is not allowed in CLTS approach, as it does not matter how basic the facility is, it has to be constructed and maintained with the resource that the stakeholder has.</p> <p>Government also needs to spend money on training the staff and providing sanitation facilities in the government institutions.</p> <p>So the CLTS approach costs everybody something. And everybody gets the benefits from it. So it can be said that the cost and benefits of gaining sanitation facilities from CLTS approach is distributed fairly although government can perform better in schools and provide more resources to its staff.</p>
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Cumulative scores of equity as approach indicator:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach indicator	Approach sub-indicators	Score		
		Distributive	Recognition	Procedural
Equity	Stakeholders Identification	NA	(+++)	NA
	Stakeholders Recognition	NA	(++)	NA
	Stakeholders Involvement	NA	(++)	(++)
	Stakeholders Interaction	NA	(++)	(+++)
	Stakeholders Distribution	(++)	(++)	(++)
	Total	(++)	(++)	(++)

Cost:

Approach sub-indicator	Evidence	Score			Reason												
		Distributive justice	Recognition justice	Procedural justice													
Budget & Funds	<p><i>Budget to construct and rehabilitate 10,000 toilets= KES 800,000,000 (NSHSIP, 2011-2015)</i></p> <p><i>As of 2017 data, no. Of public primary schools, in Trans-Nzoia county, with complete access to health packages (including WaSH) = 24 (CIDP, 2018-22)</i></p> <p><i>Table: Trans-Nzoia County Inclusive Development Plan (CIDP, 2018-22)</i></p> <table border="1"> <thead> <tr> <th>Activities</th> <th>Target 2022</th> <th>Budget (KES in m)</th> </tr> </thead> <tbody> <tr> <td>No. of households with toilets</td> <td>1.1 m</td> <td>50</td> </tr> <tr> <td>No. of ODF villages</td> <td>40</td> <td></td> </tr> <tr> <td>No. of public toilets constructed</td> <td>10</td> <td>30</td> </tr> </tbody> </table> <p><i>Budget requirement to trigger 1617 villages by 2020 = KES 35.2 m (NOKCF, 2016)</i></p> <p><i>No. of villages triggered by 2020 = 955</i></p>	Activities	Target 2022	Budget (KES in m)	No. of households with toilets	1.1 m	50	No. of ODF villages	40		No. of public toilets constructed	10	30	(+)	(+++)	(++)	<p>Under NSHP 2011-15, MOE has built and rehabilitated 10,000 toilets at the cost of KES 80,000/school. And under NESSP 2018-22, MOE wishes to invest KES 2,985 trillion in education sector in which they will build disability friendly WaSH facilities in pre-primary and secondary schools, provide sanitary towels to girls and special needs trainees, promote low cost hygiene activities to reduce illness related absentees. (NESSP, 2018) This shows that although focus is give on WaSH in school, but it is not enough and fairly distributed to all forms of institutions. First, the budget is not enough to provide good quality WaSH facilities in schools country wide, even the MOE mentions it in the document and asks for NGOs to help. Second, WaSH in primary schools is not included in the strategy.</p> <p>The MOH has identified total 1617 villages in Trans-Nzoia county and national CLTS-hub has identified 1314 villages to be certified ODF. So there exists an error in the available data. So it is assumed that the budget from MOH is given for 1617 villages and it is being used for 1314 villages.</p> <p>On the other hand county government has a target of reaching 40 ODF villages until 2022. With this speed it will take more than 150 years to certify 1617 villages in the county. Also the</p>
Activities	Target 2022	Budget (KES in m)															
No. of households with toilets	1.1 m	50															
No. of ODF villages	40																
No. of public toilets constructed	10	30															

	<p><i>(CLTS Kenya, 2021)</i></p> <p><i>The County Education Boards in conjunction with BOMs shall continually identify and explore finances for construction, operation and maintenance of WASH facilities. (KSHP, 2018)</i></p>			<p>plan does not say anything about providing WaSH in schools. Only 24 out of 648 primary schools have complete health package (including WaSH), and yet providing WaSH facilities to primary schools are not included in national and county plans. The plan includes providing 625 specialized toilets in ECDEs by 2022.</p> <p>The numbers of villages triggered by 2020 are not as expected, that means either the budget was not enough, not received, or not utilized properly.</p> <p>On the other hand, building pit latrine costs money to the community member as well. And according to Seline, Elphine, James, Esther, and Grace, it is out of most people’s budget to construct and maintain a toilet because of high unemployment rate. However, sanitation is people’s own responsibility and government is investing in behaviour change activities which can generate demand for it. NGOs are also asked to help with building toilets in schools and schools are also asked to look for funds on their own to build toilets in their premises. It is government’s responsibility to provide WaSH service to public schools and they are not doing a good job at the moment as they are not meeting their target what they plan.</p> <p>So in the Trans-Nzois county CLTS approach everybody is asked to contribute, but funds and budgets are not fairly distributed among government institutions. Most stakeholders are recognized, and all recognized stakeholders are involved to invest and enjoy the benefits of WasH facilities. Government can do better with</p>
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					distributing funds to schools and CLTS approach.
Policy/ approach/ technology Implementati on cost	<p>According to (NOKCF, 2016), Budget requirement to trigger 1617 villages = KES 35.2 m (NOKCF, 2016) i.e. Cost of triggering 1 village = KES 21,768 Cost of Certifying 1 Village to be ODF = KES 10,436 5 Days CLTS Training for a PHTs/PHOs = KES 42,600/person Cost of 1 VIP latrine = 120,000 (CIDP, 2018-22) Cost of 1 improved toilet = KES 593,415 (CIDP, 2018-22)</p> <p>According to Selina, for Rotary Doctors Sweden (RDS): Cost of achieve an ODF village (including 1 week PHO training) = KES 350,000 Cost of certifying 1 village to be ODF = KES 80,000</p> <p>According to Elphine: (Interview\Elphine: 72-73) Cost of 1 simplest pit latrine (with a pit, slab, superstructure) = KES 15,000 Cost of 1 moderate pit latrine (with lining) = KES 45-50,000 Cost of 1 VIP latrine (with ventilation and extractable) = KES 250,000</p>	(+++)	(+++)	(++)	<p>As can be seen in evidence column, the cost of implementation of CLTS are different for RDS and as projected by MOH. Where for RDS it cost around KES 430,000/village to achieve ODF status (including PHO training and certification), for MOH it costs around KES 74,804 (including PHO training and certification). Although the present costs has a huge difference, but cost distribution over time may reduce this gap to some extent.</p> <p>As far as schools are concerned, government implements VIP latrines in ECDEs or pre-primary schools and it costs them KES 120,000 /toilet. But According to Elphine it costs around KES 250,000 /toilet to the community members. So it can be noted that the cost of construction quoted by the government does not match what it costs the people to construct the same technology and for NGO to implement the same approach. Government can look into this in future policy planning.</p> <p>Most of the people in the community build the simplest pit latrine which cost them around KES 15,000 /toilet.</p> <p>So in the Trans-Nzoia county CLTS approach everybody is asked to contribute, most stakeholders are recognized, and all recognized stakeholders are involved to invest and enjoy the benefits of WaSH facilities. However Government can do better with planning the cost of implementation of toilets and CLTS approach. Hence can improve the procedural justice dimension of the equity matrix.</p>

<p>Operation & Maintenance</p>	<p><i>Q. Students may be asked, if needed be, to help cleaning the sanitation facilities to save operation and maintenance cost at school. (Survey\Parents: 275)</i> A. Total responses = 68 [Strongly disagree (---)] = 2 [Disagree (--)] = 7 [Slightly disagree (-)] = 11 [Slightly agree (+)] = 14 [Agree (++)] = 19 [Strongly agree (+++)] = 4 [No response (0)] = 11</p> <p><i>Q. Students may be asked, if needed be, to help cleaning the sanitation facilities to save operation and maintenance cost at school. (Survey\Headteacher: 36-37)</i> A. [Agree (++)] Yes.</p> <p>Capacity building in operation and maintenance of water facilities: (NSHSIP, 2011-2015) - Train school management on Operation & Maintenance in 5,000 schools</p>	<p>(+++)</p>	<p>(+++)</p>	<p>(+++)</p>	<p>In schools and in community, mostly VIP toilets and simple pit latrines are constructed, respectively. Both facilities are not mostly non extractable. Also the cost of extracting waste from the pits is too high for the community member so they prefer to cover it with mud and erect a new pit latrine. The same is the case for toilets in public schools. Either toilets do not survive the rainy season, or fortunately if they do the waste does not get extracted. However environmentally unfriendly it is, it saves for the operation and maintenance cost for both community members and the government. Also in Kenyan culture, it's common for students to clean the toilets, that also saves the operation and maintenance cost. Although government also invest in training staff to operate and maintain school WaSH facility. In the survey, the head teacher says that government has been helping with sanitary towels and other supplies for operation and maintenance of sanitation facilities. The community members use leaves as anal cleansing method and use ash for washing hands and cleaning the WaSH facility. So most people do not use toilet paper and washing agents in their hygiene. Although this being unhygienic, but it saves for the operation and maintenance cost. So it can be said that the operation and maintenance costs are well distributed among stakeholders and all the key stakeholders are recognized and involved to contribute, in some way or the other, for operation and maintenance of the WaSH facilities.</p>
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<p>Gains</p>	<p><i>Total villages = 1314</i> <i>Triggered = 955 (73 %)</i> <i>Claimed = 16 (1%)</i> <i>Verified = 15 (1%)</i> <i>Certified = 12 (0.99)</i> <i>Remaining Unclaimed = 1298 (99%)</i></p> <p><i>Projected population of Trans-Nzoia in 2022 = 1,265,797 people (CIDP, 2018-22)</i> <i>Average population of Trans-Nzoia in 2022 per village (1314 villages) = 963 people</i></p> <p><i>I educated them and till they go to a point 'yes, we want to do it but tell us how to do it better that it cannot collapse'. (Interview\Elphine: 27)</i></p> <p><i>Poor sanitation costs Kenya 27 billion Kenyan Shillings each year, equivalent to US\$324 million (SSHIT, 2011)</i></p>	<p>(+++)</p>	<p>(+++)</p>	<p>(+++)</p>	<p>Until now twelve villages has been certified ODF and county government has plans to achieve 40 ODF villages by 2022. With these projections more than 90% villages (assumption) will be triggered and 52 villages (4%) villages will be certified as ODF. According to the projections, in 2022 that will mean more than 1,138,843 people triggered and 50,076 people opting for in house WaSH facility. That will improve the health of the community many folds.</p> <p>As told by Elphine, it has decreased the chances of rare deceases from schools and increased active student participation in schools. There has been a contagious reaction that has been witnessed where people from other villages, where CLTS approach has not been implemented, want PHOs to educate. The behaviour change towards sanitation can also noticed when even after the latrine being collapsed repeatedly, people build them back without needing more motivation from government through CLTS approach. With behaviour change activities in CLTS approach more people are opting for toilets and improving their community's health.</p> <p>Government's efforts to provide sanitation in school is also helping in reducing deceases among students and with more access to sanitation in ECDEs it is decreasing the number of stunted children in the community. Also disability friendly toilets have given dignity and respect to many.</p> <p>Government has saved some money, which was costing it billions for KES each year, through CLTS approach.</p> <p>The gains are well distributed, and the approach</p>
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					focuses on everyone in the community and benefits everyone in the community.
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Cumulative score of cost as approach indicator:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach Indicators	Approach sub-indicators	Scores		
		Distributive	Recognition	Procedural
Cost	Funds	(+)	(+++)	(++)
	Approach/technology implementation	(+++)	(+++)	(++)
	Operation and maintenance	(+++)	(+++)	(+++)
	Gains	(+++)	(+++)	(+++)
	Total	(++)	(+++)	(++)

Acceptability:

Demand Analysis

Approach sub-indicator	Evidence	Score			Reason
		Distributive justice	Recognition justice	Procedural justice	
Priority evaluation	<p><i>Among the activities performed under CLTS approach are: (Venkataramanan and Kwena, 2017)</i></p> <ul style="list-style-type: none"> - <i>Baseline sanitation coverage survey</i> - <i>Baseline KAP survey</i> 	(NA)	(+++)	(+++)	Baseline sanitation coverage survey and baseline Knowledge, Attitude, and Priority survey are conducted in CLTS approach. These surveys are basically conducted to check the sanitation coverage in the community through which the priority of community members towards sanitation is also evaluated. These surveys are conducted by door to door campaigning which

	- <i>Door to door campaigning</i>				assures that the whole community is covered. Hence it satisfies the recognition and procedural justice aspect of the equity matrix.
Willingness to contribute	<p><i>Activities performed under CLTS approach; (Venkataramanan and Kwena, 2017)</i></p> <ul style="list-style-type: none"> - <i>Baseline sanitation coverage survey</i> - <i>Baseline KAP survey</i> - <i>Local supply chain assessment (e.g. landscape analysis, or informal review)</i> - <i>Community mobilization (“triggering”)</i> - <i>creating village committees/clubs</i> - <i>Door to door campaigning</i> 	(NA)	(+++)	(+++)	<p>As the quality of toilet constructed is not a problem with CLTS approach, it does not matter how much someone is willing to pay to construct a toilet. People construct their own toilets with whatever they can afford.</p> <p>Strategy to proceed forward is made after baseline sanitation coverage survey and KAP survey. And community mobilization is started right after that. So checking willingness to pay is not needed in their approach as the motivation factor is generating feeling of disgust and opting for a toilet. So it does not matter what somebody is willing to pay, as long as that person is willing to have a toilet. So it can be said that willing to contribute is not checked but it is generated within the approach in the form of willingness to have a toilet. Hence it satisfies the recognition and procedural justice aspect of the equity matrix.</p>

Creating adaptive environment:

Approach sub-indicator	Evidence	Score			Reason
		Distributive justice	Recognition justice	Procedural justice	
Education/awareness/training	<i>The approach that we just give to this community is continuous education to just change their behaviour. (Interview\Selina: 33)</i>	(NA)	(+++)	(+++)	Although in general CLTS approach education activities are not performed. The behaviour is changes through inciting feeling of disgust towards their habits and then people start

	<p><i>So training and awareness, that is the most direct benefit they get from us because through that is when they can change their behaviour and all that. (Interview\Selina_2: 73)</i></p> <p><i>They can get the knowledge from you, they decide on their own and they tell you this is the right task for us to go. (Interview\Elphine: 46-47)</i></p> <p><i>So when I was educating them, i used to come with poster and no, you know flip chart and i just kind of drawn what idea i need them to understand. (Interview\Elphine: 49)</i></p>				<p>changing by observing others and chain reaction starts.</p> <p>But in CLTS approach by Trans-Nzoia county government, after the triggering phase education, awareness and training are provided through PHO so that people who are not convinced in triggering phase, can change their behaviour.</p> <p>The entire recognized stakeholders are involved in the approach. Hence it satisfies the recognition and procedural justice aspect of the equity matrix.</p>
Context based solutions	<p><i>Okay, in the case where we have a loose soil, we explore some of the local options with the community. We hold like a dialogue day with the community members and then we ask them 'what is the practical possibility for them?' [...] someone needs to purchase some pieces of wood to be able to reinforce their soil with, someone is required to use the bricks and blocks to reinforce the soil. (Interview\Selina_2: 7)</i></p> <p><i>For instance when we were doing this we never had any poster, we were just like let me draw it from my brain. So when i was educating them, i used to come with poster and no, you know flip chart and i just kind of drawn what idea i need them to understand. (Interview\Elphine: 49)</i></p>	(NA)	(+++)	(+++)	<p>In the areas where there are loose soil, the community members come together to think for a solutions and decided to reinforce the soil with locally sourced wood, bricks and blocks. In case of hard rocks, people get together to beat the rocks. In case of high ground water table, people tend to raise their latrines up, and then there a tank to hold the waste instead of a pit. Some do not have the financial resource to construct a private latrine, and then a couple of house put resources together and have a community toilet. Where there is availability of soaps, people use ash. And where people cannot afford toilet paper, they use leaves.</p> <p>When Elphine did not get training to engage with schools, she used her CLTS training to improvise according to the context. So CLTS provides flexibility with the context and appreciates the</p>

					<p>context based solution through its approach.</p> <p>All recognized stakeholders are involved in the approach. Hence it satisfies the recognition and procedural justice aspect of the equity matrix.</p>
Stakeholder relations	<p><i>First introduce yourself to the community, giving them what you need to do, how you intend to do and what their achievement will be and then later on giving them a forum to express their feelings, their satisfaction towards the project. And how they can be involved, give them an opportunity. Let each to select their members, they feel that this is our opinion leader, this is something we can do, this is the person we can trust. Say that “Yes, I am government employee, you are a partner and they are the community”. They can get the knowledge from you, they decide on their own and they tell you this is the right task for us to go. So you just fit in and you tell them okay this it, what you can support and this is what we want to achieve at the end. (Interview\Elphine: 47)</i></p>	(NA)	(+++)	(+++)	<p>It is observed that feedback from the community members towards the implementers has been positive. Be it when the surrounding community want to invite them to implement CLTS in their village or when they show motivation to keep constructing new toilets even the previous one collapsed. Although there are some communities with whom it is difficult in the beginning, but with continued awareness and persistence, the implementers are able to build trust and mutual respect.</p> <p>CLTS provides community members a space to interact, express their concerns and find a solution together. That is why it a community led participatory approach, because every one is a participant in it.</p> <p>CLTS approach is found to be based on good stakeholder relations and cannot succeed in the absence of respectful communication and trust among stakeholders.</p> <p>All recognized stakeholders are involved in the approach. Hence it satisfies the recognition and procedural justice aspect of the equity matrix.</p>

Cumulative scores of approach indicators:

The measuring method of approach Indicators are explained in summary of findings chapter.

Approach indicator	Approach sub-indicator	Score		
		Distributive	Recognition	Procedural
Acceptability	Demand analysis	NA	(+++)	(+++)
	Creating Adaptive Environment	NA	(+++)	(+++)
	Total	NA	(+++)	(+++)

Cumulative scores of government's sanitation approach:

Approach Indicators	Scores			
	Independent scores	Justice Dimensions Scores		
		Distributive	Recognition	Procedural
Effectiveness	(--)	NA	NA	NA
Scaling	(+++)	NA	NA	NA
Equity	NA	(++)	(++)	(++)
Acceptability	NA	NA	(+++)	(+++)
Cost	NA	(++)	(+++)	(++)

