

When Technology Fails: Insights on Socially Sustainable Strategies
In the Water, Sanitation, and Hygiene Sector

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Abstract

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Background: As the Millennium Development Goals (MDGs) come to a close, 783 million people still lack access to improved water (Onda et al., 2012). An estimated 30 – 40% of development efforts to improve access to water still fail (are broken and/or unused) (Lockwood et al., 2010), which is similar to rates found 40 years ago (Imboden, 1977). While there have been increasing efforts to address this issue – especially the financial and technical aspects, a review of recent sustainability frameworks in the Water, Sanitation, and Hygiene (WASH) sector reveal that there is a need for better understanding how to plan for and address the social aspects of sustainability in delivering rural water services.

Purpose: The purpose is to explore different strategies used by leaders in the WASH sector to deliver socially sustainable safe drinking water in low income countries. The goal is to provide insights based on specific examples and participant experiences on ways to increase the social sustainability of services: a) in the bigger picture of international aid effectiveness, and b) with a specific focus on creating effective motivation infrastructure.

Methodology: Twenty-two key informants were purposively selected and interviewed for an average of one hour and fifteen minutes, during which they were asked to describe in detail their organization’s approach to sustainability along with a specific example of an effort that failed and one that succeeded. Interviews were recorded, transcribed, and analyzed using qualitative analysis and ©NVivo10 software.

Results: Eight main themes emerged which were consistent across what participants believed worked and did not work and found worked and did not work. Socially sustainable efforts create effective incentives, build local capacity, respect local stakeholders priorities and preferences, learn before, after and throughout the process, prevent failure and protect investment, ensure on-going monitoring and maintenance, identify and avoid assumptions, and focus on what people want rather than need. Given the variability of local context and culture, it is not helpful and may not be possible to create a fixed list of actions that accomplish the themes listed above. However, learning from themes that emerged provides valuable insights into how we might more

consistently include mechanisms that improve sustainability by recognizing the importance of social versus technical challenges.

Examining how these themes align with the bigger picture of development, we find that 85% of the themes fit into one of the five categories of commitments made in the Paris Declaration on Aid Effectiveness (2005); but a lack of consistent, wide-scale monitoring in the WASH sector makes it difficult to tell to what extent each of these international commitments have been met. Looking at how these themes align with a specific focus - motivation as described in Maslow's Theory of Motivation (1943), we find that strategies participants believe to be effective align more with higher level needs such as self-actualization (n=105), self-esteem (n=88), and safety and security (n=110) compared to physiological (n=8).

Conclusion: More rigorous, collaborative research is needed to better document the definitions, combinations, and contexts in which strategies work and do not work. There is no magic bullet that will guarantee sustainability 100% of the time, but a more accurate understanding of social challenges and barriers like human motivation provide us with better tools from which to make evidenced based decisions in addressing a missing area of sustainability.

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With gratitude,

Alicia (Lia) Marshall

1. INTRODUCTION

1.1 Background

An estimated 1.8 billion people still used unsafe water (Onda et al., 2012). UNICEF estimates that 657,000 children under five die each year from diarrheal diseases, mostly due to water-related illnesses (UNICEF, 2013). This is equivalent to 1,800 child deaths per day.

Despite reaching the Millennium Development Goal (MDG) for water - globally halving the number of people without improved access (UNICEF and World Health Organization, 2012), a growing number of studies show that a significant percentage of projects are broken down or are only partially functional (Davis, 2013; Lockwood, 2010). For example, the Ministry of Water in Sierra Leone reports that 31% of water points were impaired, 17% were broken down, and 40% had insufficient water in the dry season (Davis, 2012). Similarly, a study from the Swaziland (Government of the Kingdom of Swaziland Ministry of Natural Resources & Energy, 2012) found that only 58.6% of water projects were functional.

These rates of sustainability are not limited to specific countries. A study done across 21 countries by the Rural Water Supply Network reports a 36% non-functionality rate for water systems (Schweitzer et al., 2014), and a study of Sub-Saharan Africa shows a 35-80% non-functionality rate (Sutton, 2004). Moreover, this problem has persisted for decades. Researchers in the 1970s found that 35 to 50% of systems in developing countries became inoperable after five years (Imboden, 1977).

The question then becomes: what has been done to increase sustainability of rural water services, what has worked, what has not and why? A review of the literature reveals that there has been an increasing amount of research on certain aspects of sustainability – including technical and financial (Moriarty et al., 2010; Shannon, 2008). However, authors of recent sustainability frameworks also report that understanding of the social aspects of sustainability is weak compared to others such as financial and technical (Harvey, 2013). Social in this context is defined as attributes of sustainability that center primarily on the people and processes necessary to deliver services.

In addition, a review of the literature reveals that delivering water to rural areas has proven to be exceptionally challenging (Lockwood et al., 2010). While the MDGs have been met in general, Lockwood et al. (2010) found that instead of halving the number of people without access to safe water, the number of people in rural areas of Africa without access actually grew. This study combines this under-studied area of sustainability with an unsolved challenge: the delivery of socially sustainable water services in rural parts of developing countries.

1.2 Purpose of Study

The purpose of this study is to learn from the insights, experiences, and specific examples of leaders and professionals in the sector to help increase the reliability with which the WASH sector delivers socially sustainable rural water services in low-income countries. A secondary goal, as described on page 10 and 15 respectively, is to evaluate these findings with respect to the bigger picture of aid effectiveness - the Paris Declaration on Aid Effectiveness (2005) and a specific focus - motivation as described by Maslow's Theory of Motivation (1943).

1.2.1 Definitions

WASH: An acronym for Water, Sanitation, and Hygiene.

WASH Sector: The collective group of governments, organizations, companies, donors, and academic institutions, working to help people get access to WASH worldwide.

Rural Water Services: A specific focus within the WASH sector to get safe drinking water to people in rural areas. Many of the lessons learned in rural water service are applicable to WASH in general, which are noted where appropriate throughout the text.

Reliability: Consistently good performance or quality that can be trusted (Google Dictionary, 2014).

Social: Relating to people or society (Merriam Webster Dictionary, 2014).

Sustainable: Something that lasts over time is safe and regularly used by a significant portion of the intended population; a user's ability to reliably and affordably access a given quantity of water of an acceptable quality from his or her home (Lockwood et al., 2010).

Social challenges and barriers: Difficulties that arise primarily due to the people or processes involved. Examples include issues such as motivation, community dynamics, leadership, and building local capacity. It overlaps with but does not include technical and financial challenges.

Socially sustainable: Approaches that 1) focus on strategies for how to best work with people in addition to technology, 2) use the best available information/data to plan for and address social challenges and barriers that may arise, 3) adapt and learn from mistakes.

Safe: Water that is tested using national and/or global standards to assure that the water will not cause disease.

Used by a significant portion of the population: There is no standard definition for significant portion of the population. Some argue 100% as water is a human right. For the purposes of this study, significant means greater than 80% for at least five years. A broader definition is used to capture a greater number of participants.

Service delivery: A specific approach that focuses on delivering safe water as a service rather than constructing a system (technology, infrastructure). The difference is that a system has a finite lifespan. A service is designed to be on-going and last indefinitely (Lockwood et al., 2010).

Service providers: Any organization or agency that delivers safe drinking water services in low-income countries.

Motivation: Reasons for actions or behaviors. (Google Dictionary, 2014).

1.3 Objectives

1. Conduct a literature review to learn what has been done to address rural water services, and to explore other potential solutions.
2. Learn from the experiences and insights of professionals who have delivered rural water services and leaders in the WASH sector through specific and detailed examples.
3. Analyze and compare the characteristics of what worked and what did not across the approaches used by participants. Apply these results to the bigger picture of aid effectiveness. Apply these results to a specific focus within social sustainability in the rural water delivery sector.
4. Share results to help provide insights and examples on how to increase the reliability with which socially sustainable water services are delivered and how they might be applied to WASH sector in general.

1.4 Research Questions

The basic question is: How can the WASH sector improve the reliability with which it delivers socially sustainable rural drinking water services in low-income countries? To answer that question I identify:

1. Themes found in the examples and insights (thoughts) of successful and unsuccessful efforts described by workers in the WASH sector.
2. How do these themes align with the bigger picture of sustainability, as described in the Paris Declaration on Aid Effectiveness?
3. How do the strategies that make up the themes align with a specific focus within social sustainability – Motivation, as described in Maslow’s “A Theory of Motivation”?

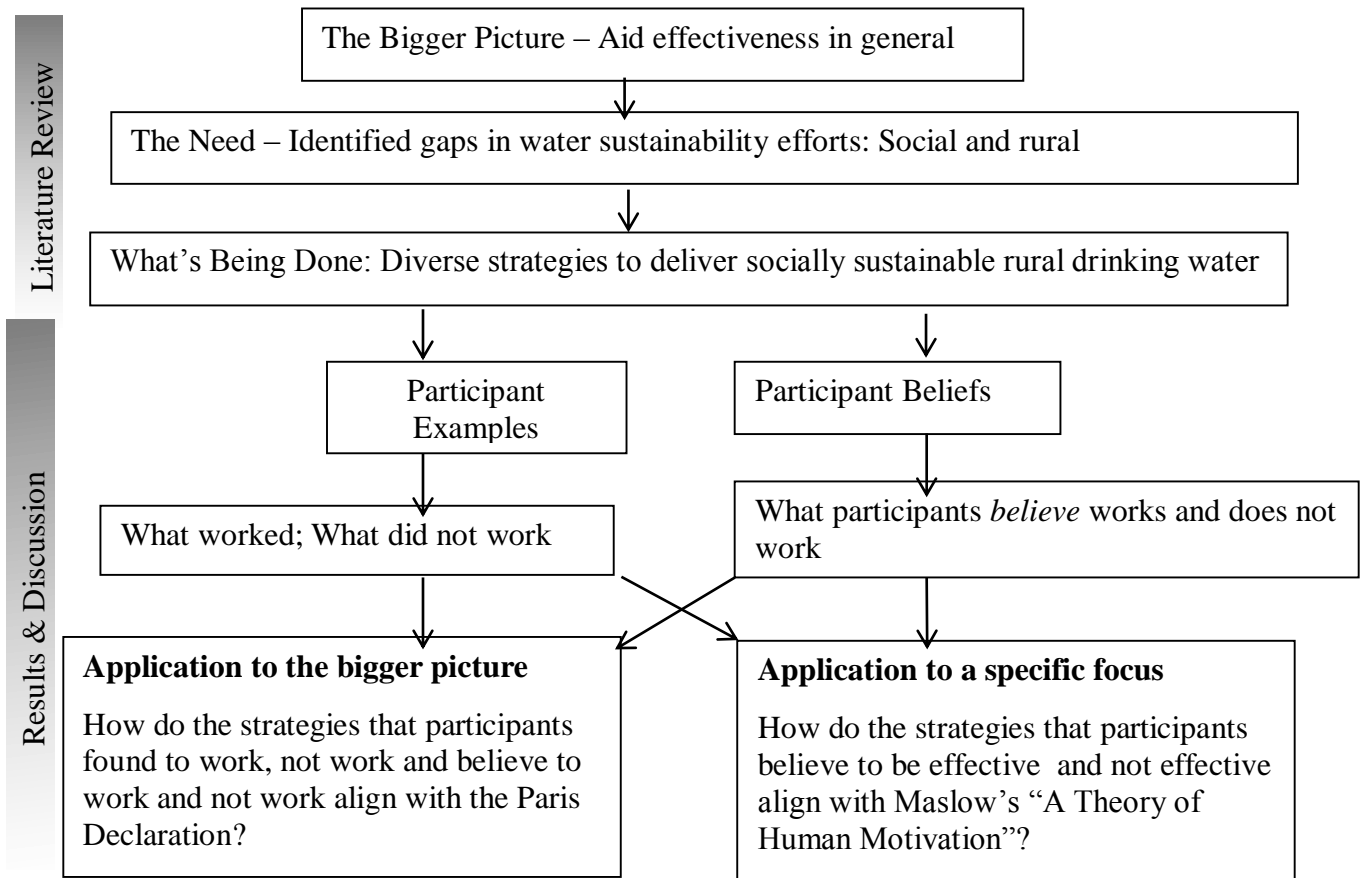


Figure 1: Roadmap of Results and Flow from the Literature

Figure 1 provides an overview of the structure of the paper. I begin with a review of the literature, starting with an examination of the bigger picture of aid effectiveness in development. I then explore aid effectiveness in the WASH Sector, specifically looking for what has been done and where there might be gaps, or opportunities to address the issue in a new way. From this, I determine that rural water services and the social aspects of sustainability are two areas mentioned by the literature to be important but that are under-studied. In the remainder of the literature review, I examine the social aspects of sustainability with a particular focus on motivation – an area identified as important but with little research in the WASH sector. The goal is to help provide information on how to more reliably create on-going sources of motivation to complement WASH sector efforts to increase sustainability.

As part of the methods, I ask leaders and professionals in the field for examples of efforts to deliver rural drinking water that have both failed and succeeded. As not all participants gave specific examples, in my analysis I separate characteristics of sustainable strategies mentioned in specific examples from those that participants believe work. I then zoom out and assess how these strategies fit into the larger picture of development by seeing how they align with the

framework outlined by the Paris Declaration for Aid Effectiveness (2005). I also zoom in and explore in depth one particular social challenge – motivation. Specifically, I examine how the strategies that participants believe to be effective align with what we know about human motivation, as outlined in Maslow’s Theory of Motivation (1943).

I structure the results and discussion sections to correspond with each of the three research questions. The first section gives a broad overview of themes that are found in specific examples of participant approaches that worked and did not work. The next two sections analyze the themes and strategies participants identify to see how they align with both the bigger picture of sustainability as described by the Paris Declaration as well as a specific focus within social sustainability, motivation as described by Maslow’s “A Theory of Motivation” (1943). The discussion section parallels the results section, sharing participant insights about main themes. It also discusses how the results connect to the literature as well as what might be some next steps for future research.

2. LITERATURE REVIEW

2.1 Understanding the Bigger Picture – Aid Effectiveness

Aid effectiveness, or the long-term, beneficial impact of aid in developing countries, is a challenge that goes beyond delivering rural water services. A review of the literature reveals that aid effectiveness is a challenge in development in general and has been for decades (Hansen & Tarp, 2000). A recent meta-analysis of 97 reports on aid effectiveness states that the overwhelming evidence shows that aid has not been effective after 40 years of development (Doucouliagos & Paldam, 2009).

Key International Fora and Resulting Documents to Address Aid Effectiveness

In response to decades of challenges in delivering aid, the international community began to address the issue through a series of high-level fora hosted by the Organisation for Economic Co-operation and Development (OECD). In 2002, the OECD hosted the first high level forum on aid effectiveness in Rome, where ministers of countries, heads of international agencies, and senior officials representing 28 countries outlined and signed an agreement to improve the effectiveness of development efforts. Through this forum, the participants produced a document called the Rome Declaration for Harmonisation (2003), which calls for donors to better align their efforts with local partner country priorities through a process known as harmonization. It also calls for local partner countries to strengthen their capacity, coordination, and leadership.

In 2005, ministers of developed and developing nations came together and created the Paris Declaration on Aid Effectiveness (PD) (2005). The document builds on and outlines in greater detail specific commitments to which donors and local partner countries agree. The goal is to scale (or increase) the impact of aid in five primary areas: ownership, alignment, harmonization, managing for results, and mutual accountability.

In the third high-level forum on aid effectiveness in 2008, ministers of developed and developing countries and heads of multi-lateral and bi-lateral agencies convened to assess progress made on commitments made in the PD. They found that while there had been some progress, the pace of that progress was slow. Consequently, the Accra Agenda for Action focuses on accelerating the progress of commitments made in the PD (Paris Declaration and Accra Agenda for Action, 2008).

In the fourth high level forum in 2011, leaders focused on partnering with and including a larger group of stakeholders in the efforts to accelerate and strengthen commitments made both in the Paris Declaration and Accra Agenda for Action. The resulting document, the Busan Partnership for Effective Development Cooperation (2011), expands the focus of the PD from North-South relationships to South-South relationships. The document also encourages civil society, the private sector, and other actors to help scale aid effectiveness through increased global cooperation in development.

A Deeper Look at the Paris Declaration

The Paris Declaration (PD) provides a detailed list of action steps and commitments that both donor countries and local partner countries agree to in order to improve aid effectiveness in five primary areas: ownership, harmonization, alignment, managing for results and mutual accountability.

The PD defines ownership as local partner countries exercising effective leadership over their development policies and strategies to co-ordinate development actions. A related category is alignment, which the PD defines as donors basing their overall support on local partner countries' national development strategies, institutions and procedures. In addition to ownership and alignment, the PD also emphasizes harmonization, a third category that refers to commitments to decrease the amount of burden placed on developing countries from uncoordinated aid efforts. Increased partnerships and cooperation are some examples mentioned.

To help make sure that the commitments to ownership, alignment and harmonization succeed, the PD includes two additional categories: managing for results and mutual accountability. The former includes regular monitoring and reporting on the progress of the PD in order to improve decision making and better management of resources. The latter places responsibility onto both donor and local partner countries to be accountable for the efforts and results to increase aid effectiveness.

Almost a decade since its implementation, the literature shows that the PD has served as an important base from which to build and improve efforts to address aid effectiveness. The Accra Agenda for Action (2008) and Busan Partnership for Effective Development Cooperation (2011) are two high level examples of how the PD has helped to shape recent efforts to scale effective aid. An independent study conducted in 22 countries to evaluate the progress of the PD finds similar results – that there has been progress made both across donor and local partner countries, but this progress has been slow and uneven across countries (Wood et al., 2011).

One of the main challenges discussed in the literature is how to take the high-level vision laid out in the PD and make it actionable in practice. Many authors challenge the extent to which it is

possible to implement the commitments outlined in the PD (Droop et al., 2008; Foresti et al., 2006; Hyden, 2008; Rakner & Wang, 2007). Schulz (2007) gives an excellent example of some of the PD's limitations in executing commitments to strengthen country ownership in his article, describing how one of the major donor countries (Sweden) withdrew support from a partner country (Nicaragua) due to an unstable political situation.

Schulz (2007) argues that power dynamics, governance, and political conflicts – important and prevalent challenges in local partner countries – are largely ignored in the PD. Specifically, he contends that the Sandinista government in Nicaragua created a situation that made country ownership counterproductive to aid effectiveness. He points out that an over-generalized and idealized view of the benefits of country ownership without taking into consideration the context and challenges found in local partner countries puts donor countries in a difficult position, but does not present donor countries with good options for how to respect local partner countries while protecting themselves.

The vast literature on aid effectiveness illustrates the extent of the problem in development and helps provide context for the struggles that professionals face in delivering safe drinking water. Even with global efforts to convene, cooperate, and commit to improving aid effectiveness, the efforts and critiques outlined in this section show that it is a slow, challenging and complex process to create change. Nevertheless, having a collaborative agreement like the Paris Declaration provides an important starting point for ministers, heads of multi-lateral and bi-lateral agencies and other development professionals to rally around, discuss, and improve. In aligning with broader development efforts, it is also important for those working in the WASH sector to understand and harmonize their efforts with what has been agreed upon on a larger scale in development. Consequently, the PD will be used as a guiding framework to help position the results of this study within the broader context of development.

2.2 Aid Effectiveness and Sustainably Delivering Rural Drinking Water

Aid Effectiveness and Sustainability Defined

Aid effectiveness refers to whether foreign aid helps developing countries make progress in development or not (Roodman, 2007). Whether aid is effective depends largely on whether the solutions delivered are sustainable, i.e., whether or not they work over time. Sustainability is then a vital component of aid effectiveness, and it is often used as a proxy for aid effectiveness in the WASH sector.

The Challenge: Aid Effectiveness and Rural Drinking Water

A review of the literature reveals that aid effectiveness has been a significant and persistent challenge in the WASH sector at large, and in particular in delivering rural water services. The literature shows that the rates of disparities between the urban and rural poor are even higher among the general population globally. A study done by the World Bank (2011) reports 30-50% non-functionality rate of rural water systems and up to 70% with a substandard service level at any moment in some regions in Africa. Godfrey et al. (2009) highlight the disparities in access between rural and urban populations in Mozambique, where the access to an improved water

source was 26% in rural areas compared to 71% in urban areas. The Rural Water Supply Network (Rural Water Supply Network, 2012) reports that five out of six people without improved drinking water globally live in rural areas.

A Brief History of Efforts to Deliver Sustainable Rural Drinking Water

Despite the continued low rates of sustainability, there have been a number of efforts to improve the delivery of rural water services over the decades. Solutions that originally focused on giving away technology gave way to more community centered approaches as professionals realized that engineering only approaches were not working. This change largely took place in the 1980s during the UN Decade International Drinking Water Supply and Sanitation (Lockwood et al., 2010).

Alternative approaches developed over the next two decades focused on finding ways to get communities to use and maintain systems, an approach known as community management (Jimenez & Perez-Fouget, 2010; Lockwood et al., 2010). In recent years, there has been growing debate on whether communities are equipped to manage their own water supply indefinitely without outside assistance (Harvey & Reed, 2007). There have been many efforts to try to improve these community level approaches, but others call into question how cost effective or scalable these approaches have been (Lockwood et al., 2003).

In contrast, other studies (Whittington et al., 2008; Marks & Davis, 2012) have shown encouraging signs of progress in community management. In a study of 400 rural communities in Bolivia, Peru, and Ghana, Marks and Davis (2012) found that 95% had operational taps and that in 90% of the communities in Ghana, all boreholes were working. However, despite the high functionality rates of the systems (whether or not the technology works), the authors also found that 38% of these households with functional systems used unprotected sources instead. Therefore, while the systems (infrastructure) were sustainable, the percent of people intended to benefit from the services was not. The fact that close to 40% of people chose to use water sources that were of worse quality according to the study highlights an imminent need to study and understand the underlying motivations and other social challenges of sustainability that may be hindering overall aid effectiveness.

Recent Efforts to Address Sustainability in WASH: Sustainability Frameworks

Increasing attention has been given to creating sustainability frameworks, or written strategies to address the different components of sustainability – including but not limited to social, financial, technical, management, and others. Schweitzer et al. (2014) provide a current and comprehensive summary of sustainability frameworks created by people working on WASH. The authors identify 220 sustainability frameworks in WASH, 25 of which have clear content and methods for predicting, measuring and understanding sustainability. Examples of the tools include the Sustainability Monitoring Framework (SMF) – (Dutch WASH Alliance, 2013) and the Sustainability Check created by UNICEF (Godfrey et al., 2013). The Schweitzer et al. (2014) paper is especially important background for this study because it documents many of the most prevalent approaches to addressing sustainability in the WASH Sector.

In addition, many organizations have presented their own sustainability frameworks at recent WASH conferences. A review of some of these frameworks reveals that there has been

significant work done to better understand what factors or indicators are likely to increase sustainability, however some areas of sustainability are better understood than others. The frameworks presented in the 2013 Addis Ababa conference were chosen for further review as they were the most recent examples of sustainability frameworks at the time this study began.

Many of the presenting organizations addressed sustainability in major categories such as technical, financial, organizational, and social among others with subcategories such as monitoring and maintenance. The frameworks go into varying detail on how each of these indicators are defined or measured. However, a further analysis of the individual criteria and reports of each organization reveals that there is a lack of emphasis and understanding of the social aspects of sustainability.

The UNICEF model specifically states that community and social aspects were weak in the sustainability frameworks compared to other categories such as financial (strong) and technical/management (medium) (Harvey, 2013). USAID also mentions that “hardware (technical) is not the primary issue” (Rainey, 2013), yet they leave out social components in their framework. The UN Special Rapporteur also emphasizes strategies to overcome social challenges such as participatory processes in her book *On the Right Track* (De Albuquerque, 2012). However none of these sources provide organizations with a detailed roadmap of how to effectively address social components of sustainability in practice (Montangero, 2013; Pankhurst, 2013).

A report published by WaterAid (2011) provides one of the few detailed accounts on how to overcome social challenges and barriers in practice. For example, in addition to stating real demand is an important sustainability criteria, WaterAid provides important clarifying information of what real demand is not, “A positive response to an offered intervention in a community is not sufficient evidence of that demand” (Water Aid, 2011:13). They warn that there is a difference between thinking demand exists and demand actually existing, and they offer a practical tip of how to tell the difference. This level of detail is important in being able to effectively implement and scale recommendations.

The literature shows that frameworks provide a useful start from which to discuss strategies, but a detailed understanding of how to consistently, successfully implement the criteria listed are needed. As a result, this study focuses on digging deeper into the details of what works and what does not in implementing socially sustainable strategies. The questions challenge participants to think about how the strategies they use are defined and measured, how they know the processes they use are appropriate, and how they would communicate those processes in a way that could be consistently and accurately replicated.

2.3 Maslow's "A Theory of Human Motivation"

The Need for Motivation in Delivering Rural Water

A further review of the literature reveals that motivation is mentioned as an important social aspect of achieving sustainability. Carter et al. (1999) state that the key to sustainability is that all stakeholders perceive it in their best interests to deliver quality services. Similarly, other authors find that aligning approaches with peoples' inherent motivations help yield more successful results. Instead of trying to change behavior by increasing knowledge, Scott et al. (2007) state that marketers target the inner desires and motivations of their target audience instead.

However, there are few articles that go in depth on how to consistently identify, address and overcome the challenge of motivation. One of the best, Mosler (2012) explores how to create a more robust structure or model for consistently creating effective behavior change. Using psychological theory, Mosler (2012) identifies five areas that serve as conceptual blocks that drive behavior: risk, attitudinal, normative, ability, and self-regulation factors. He then outlines steps that he believes can be used as a blueprint for behavior change. A similar structure is needed for motivation in delivering rural drinking water.

The literature shows that one of the challenges in developing such a system is that local motivations often differ from those of outside delivery organizations. For example, Curtis et al. (2009) state that at the local level, disease concerns were seldom a primary motivator for handwashing except during epidemics. Specifically, they found that what motivates us (outsiders) to wash our hands are not effective motivators in the eleven countries where this study took place. Local motivations for hand-washing include disgust, nurture, comfort and affiliation. Therefore, in exploring what types of motivation infrastructure would be sustainable in delivering rural water, the literature illustrates that is essential to find a way to refrain from projecting our own motivations on others and to find a more reliable way of understanding local motivations.

This study seeks to lay some of the foundation for more reliable motivation infrastructure, i.e., social systems that are designed to increase sustainability by aligning our approaches with people's inherent motivations. In this study I use methods suggested by Scott et al. (2007) to explore how we might change our own behavior to better align with people's inherent motivations. The goal is to discover whether motivations that are reliably met might help create a relatively self-sustaining positive feedback loop for using, maintaining, and repairing services. This in turn would decrease the amount of effort, energy, and repairs needed to keep rural water services and systems going and free up investments to help scale services instead of repair them.

Maslow's Theory of Motivation

One theory that has not been explored in WASH and may be of particular relevance is Abraham Maslow's "A Theory of Motivation" (Maslow, 1943). While it has been applied in numerous sectors, a review of the literature shows that there are very few studies that have tied together Maslow's framework and WASH. In fact, a search for "Maslow" and ("water" or "water and sanitation" and "WASH") yielded only one relevant source, Rosenquist and Emilia (2005). This

study does not go into detail on Maslow’s Theory of Motivation, but recommends that Maslow may be a good starting point for future inquiry. Therefore, this study uses Maslow as a base from which to explore potential insights into how current rural water strategies align with motivation theory or not.

Maslow’s Theory of Human Motivation (1943) is one of the most well-known and widely used theories on motivation. It has been cited thousands of times in the literature, and it has been applied in a wide array of disciplines around the world. From nursing (Benson & Dundis, 2003), to business (Hersey, 1988), to technology (Bailey & Pownell, 1998) and social work (Fisher, 2009), Maslow’s framework for understanding what humans need and how they are motivated has served as a model from which to build practical strategies.

At its core, the theory proposes that people are motivated by five ascending categories of basic needs: 1) physiological, 2) safety, 3) love and belonging, 4) self-esteem, 5) self-actualization (See Table 1 below). The theory also introduces the concept of pre-potency, meaning that each need must be satisfied before moving onto the next. While there are many who argue for and against it, Maslow’s theory has held the test of time against a battery of critiques across a wide array of contexts. The next section explores some of the main critiques that have emerged.

Table 1: Definition of Needs Outlined by Maslow in His Theory of Motivation (Maslow, 1943)

Needs Outlined in Maslow’s Theory of Motivation	Maslow’s Definition
Self-Actualization	A person becomes who he/she really is; fulfills potential
Self-Esteem	Stable, firmly based high evaluation of oneself
Love and Belonging	Connection to people through loving relationships and belonging to a group
Safety and Security	Preference for a predictable orderly world; Science
Physiology	Homeostasis (balance) of chemicals in blood

2.3.1 Main Critiques

Many authors have critiqued Maslow’s theory over the years. Are the categories Maslow proposes the right categories? Are they the right number of categories, or is there overlap? (Alderfer, 1969). Is the order of the hierarchy correct (Gawel, 1997), or is the idea of a hierarchy based on pre-potency valid at all (Wahba & Bridewell, 1976)? This section of the literature review explores some of the main critiques of Maslow’s Theory and seeks to understand whether or not Maslow’s model is a reasonable starting point for delivering rural drinking water and the WASH sector at large.

Maslow Categories of Needs

Number of categories

One of Maslow's main critiques comes from Clayton Alderfer (1969), who proposes a counter theory to Maslow's theory of human motivation. Rather than five categories of motivation, Alderfer believes there are only three: existence, relatedness and growth. He challenges Maslow's categorization, arguing that there is overlap between the five categories and also a lack of evidence to prove that these categories are accurate. While there are some differences between the categories proposed by the two theories, the concepts are similar in terms of application in a WASH context.

In the case of water, it is actually useful to have the distinction between existence and physiological needs. Much of the motivation behind water efforts currently and for the past decades have been based on water as one of the most fundamental needs for existence. However, the fact that anecdotal evidence and published literature report failure rates similar to those forty years ago (Imboden, 1977; Lockwood et al., 2010; Sutton, 2004) suggests that basing motivation on existence needs may not be an effective strategy. In contrast, physiological needs as defined in Maslow's Theory refer to a very specific part of existence needs. His category does not refer to health and water in general, but to homeostasis of the blood – an urgent, tangible, uncontrollable bodily reaction that is easily associated with being remedied by a certain agent – i.e. salt, sugar, water, etc. In designing sustainable motivation strategies, it is useful to have this more specifically defined understanding of physiological needs as they may help explain why general approaches to target existence needs, such as health, may or may not have worked in the past. It may also shed light on how strategies to create sustainable motivation might be improved in the future.

Order of categories

The order of the needs Maslow describes has been one of the most contentious points of debate. Gawel (1997) looks at the different motivations of teachers, comparing Maslow to another theorist – Frederick Herzberg. He describes how Herzberg studied job factors that motivate employees. Gawel's main finding with respect to Maslow is that self-actualization is a prerequisite for esteem in his cohort of teachers whereas Maslow had put self-actualization as a higher need than self-esteem.

While not readily apparent from the pyramids and basic frameworks in popular literature, Maslow does explicitly state that the hierarchy is not a fixed progression. He states that the progression he suggested is what is typically found but that there are important exceptions. He outlines at least seven exceptions and leaves the door open for more. For example, he discusses how some individuals put self-esteem before love. He also argues that in some cases, the purpose of doing so is because self-esteem is a way for some people to achieve other needs, such as love.

The context in which Maslow's theory was developed

Sample frame

Maslow's theory rests on observations made on exemplary adults and the top 1% of the healthiest population Maslow could find in the United States. As a result, the validity of the

results and their application have been questioned relentlessly over the last seven decades. Maslow's rationale in focusing on the top 1% of the population was to form a theory based on healthy individuals, which was rare in his discipline. Most of the research had been done on pathological conditions, but Maslow wanted to understand how motivation worked in the ideal – healthiest of cases. Assessing whether or not these needs can be applied to other populations is critical. One way to do this is to examine whether the categories hold true across other cultures.

Culture

Many authors have taken on the challenge to see whether or not and how Maslow's theory might be relevant in different cultural contexts. This point is especially important as WASH efforts cross multiple continents and countless cultures. Nevis (1983) finds that in the People's Chinese Republic of China, belonging might fit on the bottom of the pyramid rather than physiology, yet the rest of the categories remain similar. He also finds that cultural history and in-country leadership are two factors that absolutely affect both local perspective and motivation. Another interesting example Nevis gives is the importance of cultural norms. He explains that because of the leadership and culture at the time, while a younger person might have motivation to be in a managerial role, it is rare that they will promote younger people into positions higher than older people. In other words, self-actualization may be delayed by cultural norms. Being aware of these norms is critically important in WASH as well.

Lack of empirical evidence

Another main critique found in the literature is the lack of empirical evidence included in Maslow's theory (e.g. Wahba & Bridewell, 1976; Yalch & Brunel, 1996). Wahba and Bridewell (1976) review of a number of studies that try to look at the evidence for Maslow's approach. Specifically they look again at where the evidence came from for the five categories Maslow proposes. None of the studies they reviewed provided evidence for five separate categories.

However, a recent study uses likert scales and multiple-regression to test the validity of the categories and the idea of prepotency, or hierarchy of needs (Taormina & Gao, 2013). The results show that all of the categories proposed by Maslow were found to be statistically significant, valid and reliable. In addition, Taormina & Gao (2013) found evidence in support of Maslow's idea of prepotency. Specifically, they found that the hierarchy of needs proposed by Maslow was statistically significant.

In either case, Maslow (1943:372) acknowledges the lack of empirical evidence and invites future generations to test and refine the theory:

“The present theory then must be considered to be a suggested program or framework for future research and must stand or fall, not so much on facts available or evidence presented, as upon researches to be done, researches suggested perhaps, by the questions raised in this paper.”

Therefore, it is important to realize that Maslow does not say that his theory is the right, only or perfect way. It is a theory based on clinical evidence he found in his practice, and he welcomes – and even challenges other researchers to do the necessary research to prove or reject it. The thousands of citations of Maslow's article in the past seven decades is evidence that researchers have been doing just that.

2.3.2 Applications to this Study

In the same spirit with which Maslow welcomes additional researchers to test his findings, this study agrees that many theories should be considered, tested, and incorporated when developing motivational infrastructure to deliver rural water services and potentially other services in the WASH sector. Maslow's theory is one of many that should be considered and reconsidered in an on-going process of learning, application, and evaluation.

Likewise, it is important to note here that not every part of Maslow's framework is recommended to include when thinking about motivation for delivering rural water. As discussed earlier, there are enough studies to suggest that the general categories are a useful starting point to begin examining what we may be missing in current approaches to address social sustainability in the WASH sector (Taormina & Gao, 2013). However, the many critiques and evidence on the order of these categories suggest that further research is necessary to understand how to determine which levels of the pyramid are the greatest needs and motivators for people in different contexts and at different times.

3. METHODS

Box 1: Terminology (Auerbach & Silverstein, 2003)

Qualitative Research – A way of discovering patterns and findings through analyzing interviews, surveys and/or texts (pp 3)

Qualitative Methods – A diverse group of tools to answer the research question, including but not limited to observations, interviews, surveys, fieldwork, textual analysis, discourse analysis, ethnography (pp 3)

Coding - A specific method used in qualitative analysis to organize and discover patterns within the text (usually interviews that have been transcribed – or typed out)

Grounded Theory - A particular type of qualitative research that uses inductive methods to identify and answer both the research question and results

Themes – A formal term in qualitative research that refers to the common idea found in a group of repeating ideas (pp 38)

Categories – An informal term used in this paper to refer to groups of themes. In qualitative research, categories are also referred to as theoretical constructs (pp 39). In this study, categories refer to four specific groups of themes: strategies found in examples that worked, did not work, and strategies participants believe are effective or ineffective.

Strategies – Specific ideas or actions used by participants within larger approaches to achieve sustainability. Strategies serve as the unit of analysis in this study, meaning that in answering the research question, each paragraph of every interview was coded (analyzed) by placing the strategies participants mentioned into one or more of the four categories listed above.

Approach – Approach refers to a specific framework used by participants to achieve sustainability. Participants were purposively (specifically) chosen to have diverse approaches – meaning they came from different parts of the WASH sector such as non-profit, civil-society, government, etc.

Framework – A formal approach used by an organization or participant. Usually has a name and/or can be found in the literature.

3.1 Research Design

Overview and Choice of Methods

I had two main goals for my sample that make qualitative methods a logical choice. First, my goal was to learn about a diverse sample of strategies to overcome social challenges and barriers. This made purposive sampling a useful technique in ensuring I had the breadth of strategies I was looking for. Second, my goal was to go in depth and learn not just about the approaches participants used but also the nuances of what worked, what didn't and why. This level of detail and candidacy may have been difficult or impossible to obtain through other methods.

Within qualitative research, there are a number of additional methods typically used. Two of the most common are deductive and inductive approaches. I used a combination of deductive and inductive methods, which allowed me to investigate specific research questions while allowing room for important data and insights to emerge from the data. This was a good fit for my study as I had a number of specific questions I wanted to investigate, and I wanted to do it in a way that limited my own bias I might have brought from my own work in the WASH sector.

The Sample

The study consists of 22 participants who have worked in civil society, consulting, NGOs, multi-lateral agencies, academia, communities, and country governments. Figure 2 below shows the distribution of their backgrounds. Many participants have worked in more than one part of the WASH sector over their career, which is reflected in the graph. It is important to note that within stakeholder groups, there is also diversity. For example, within the NGOs, there are large international NGOs, small community-based organizations, and others in-between. NGOs in the WASH sector are roughly defined as independent non-profit organizations that try to address some need. Each stakeholder included in this sample has their own approach to social sustainability and different lessons and strategies we can learn from.

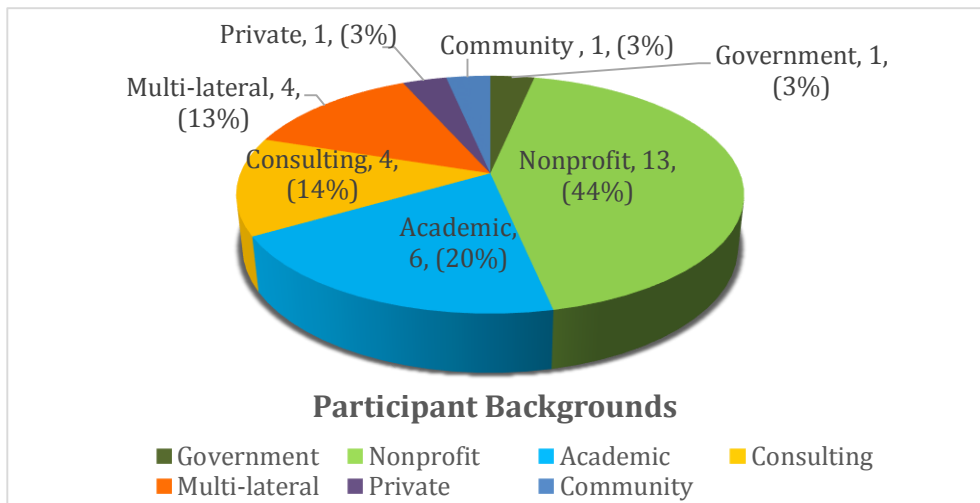


Figure 2: Participant Experience in the WASH sector (N = 22 participants. 8 participants had backgrounds in additional parts of the sector, which is reflected in this graph).

Of the 22 participants interviewed, 18 were the heads of their respective organizations. Seven of these leaders also played significant leadership roles in the WASH sector, and five founded their own organizations. The remaining four participants were technical or program officers. They were included because of their depth of experience in the field and/or insights they brought on the topic of sustainability. If there had been more time and resources to expand my research questions, I would have liked to interview a much larger and more even sample of participants with increasing focus on stakeholders from governments and local communities. I believe these stakeholders bring unique and important insights in navigating the social situations of their own communities and countries.

Sample Selection

Participants were included through a purposeful and convenience sample based on the following criteria: They

- 1) Have experience in delivering rural water services or have played a significant role in sustainability and/or the WASH sector
 - a. Experience = the interviewee must have done at least two rural water efforts – one that led to self-defined successful outcomes, and one that did not. Most will have done more. I looked for organizations that also have evidence of the outcomes through recent monitoring (within the last five years) – although these data did not exist in most cases.
 - b. Significant role in the WASH sector or sustainability refers to individuals who are commonly the heads of their organizations or departments and have decades of experience in the WASH sector.
- 2) Are willing to share one or more examples of a process that led to sustainable outcomes and others that did not.

To participate, participants also needed to agree in the informed consent to have their interviews recorded and have the results potentially used as examples after all identifying information was removed.

Before using this method, I did consider using other options. For example, I looked into doing a random sample, but it was not possible or beneficial for this study given that there is no known directory of all people working on rural water worldwide. As a result, I started my sample with well-known leaders in the WASH sector who had been in the sector for over 30 years and had played an important role in recent conversations and conferences on sustainability. I added to my sample by asking for their recommendations for other professionals in the field who have unique approaches to achieving social sustainability and would be willing to give me an example of an effort that failed and succeeded.

Sample Size

As is typical in grounded theory (a specific type of qualitative research), the number of participants interviewed is determined by reaching theoretical saturation, the point at which no new themes emerged (Guest et al., 2006). 22 participants was what was needed to reach theoretical saturation to answer my research questions in this particular study. If there had been

more time and resources to expand my research questions, I would have liked to interview a much larger and more even sample of stakeholders with increasing focus on participants from governments and local communities. I believe these stakeholders bring unique and important insights in navigating the social situations of their own communities and countries, which I had limited access to in this sample.

Study Site

The Water and Health Conference at UNC in October 2013 is a primary gathering of water professionals from around the world and was selected as part of a convenience sample. It is not the only site where this research could have been done, but it was the conference that was taking place at the time I conducted my interviews. I therefore started interviewing participants at the conference and interviewed additional participants via Skype in a snowball sample (through referrals).

This study is not limited to a geographic region as it is focused on a diverse array of strategies that people use in the WASH sector to address social challenges and barriers. Participants that work with rural communities are the primary focus of this research as sustainability rates are traditionally lower in rural areas, and this is where some of the greatest challenges and inequalities still lie in service provision (World Bank, 2011). Those with limited experience in rural regions but great experience with sustainability or leadership in the sector are included to help give overall context to the challenge and to include their insights.

3.2 Interview Procedures

Participants were interviewed at the University of North Carolina, Oct. 14th – 19th, 2013 or by phone or by Skype. The final interview took place February 20th, 2014. Participants were scheduled for a 30 minute or 60 minute interview, depending on the time and availability of the participant. Interviews lasted 30 minutes to 2 hours with an average of 1 hour and 15 minutes.

Interviews began by thoroughly explaining the interview process including risks, rights and benefits. Letters of informed consent were given or sent via e-mail to every participant, and informed consent was obtained before questioning began. As part of the informed consent, participants were notified that if at any point they did not feel comfortable answering a specific question, they had the right to refuse and/or leave. They also had the right to review any results and recordings and request that the information be deleted, changed, or not used. People who were not willing or able to give consent (no one in this study) would not have been included in the study.

I interviewed each of the participants using a script (Appendix B), but I also went deeper into certain areas such as specific social indicators if the participant seemed knowledgeable or if past participants had brought up a topic as an important theme. For example, a common theme that emerged early on was community management. While not on my script, I followed up with future participants to get their understanding as well. In addition, interviews were structured to create an atmosphere where participants felt comfortable to share freely—beginning with general questions such as the definition of sustainability or what participants thought about the state of sustainability in the WASH sector before delving into specific examples of participants' own

efforts or experiences in delivering rural water services. The goal was to get as rich a dataset as possible through having a fluid conversation with participants and allowing them to expound on their examples and experiences.

Data Coding and Analysis

All 22 interviews were recorded and transcribed (verbatim). Most interviews (17) were transcribed by a paid and trained transcriptionist hired through OneDesk. The others I transcribed myself. The interviews (1,000 + pages of text) were coded in NVivo10© for characteristics of socially sustainable approaches that worked and did not work. Following methods outlined by Auerbach and Silverstein (2003), I began with a first coding pass, highlighting relevant text and making memos about emerging insights and potential themes. In a second more refined pass, I coded each interview inductively, looking paragraph by paragraph for characteristics of approaches that were found in specific examples of sustainable efforts and non-sustainable efforts given by participants. In the results section, these characteristics are aggregated into themes under the categories of “Worked” and “Did Not Work”.

I added two additional categories as I coded “Believe to Work” and “Believe to Not Work” in order to document characteristics that participants thought were important based on their experience but for which they gave no specific example. It is important to clarify, however, that characteristics placed in this category may or may not be tied to specific examples – they just were not given in this interview. The two categories were kept separate for those who want to know which are based upon specific examples and evidence. In order to control for bias and to make sure that the themes I observed in the first pass were indeed the main themes emerging from the text, I also made a coding book to make sure that the results I found are possible to replicate (Bernard, 2011).

After multiple rounds of coding, I used the sorting and piloting method outlined in Bernard (2011) to aggregate the nodes together into potential themes. According to Auerbach and Silverstein (2003:38), themes are defined as “groups of repeating ideas that have something in common.” I then went through an iterative process of using the definitions of the emerging categories to go back into the interviews and make sure that the categories into which I placed the nodes are consistent. I further grouped the themes into the five major constructs (or groups of themes) in the Paris Declaration as a framework to contextualize my findings. I also assess how the strategies that emerged fit into the needs outlined in Maslow’s Theory of Motivation. Together, the results provide a narrative (or story) of how what participants found to work and not work as well as believed to work and not work align with the bigger picture of international aid efforts as well as a specific social challenge and barrier that both participants and the literature identified as important to address.

3.3 Ethical Considerations: Confidentiality, informed consent, and IRB approval

IRB approval was obtained through the University of Washington – number 47684.

Confidentiality was maintained by keeping all recordings and transcriptions confidential and by removing identifiers from any text included in this thesis. Written permission was obtained from candidates if identifying information was used in the thesis, as agreed in the informed consent form.

4. RESULTS

The results section begins by briefly defining some key terms (as defined by participants) and then focuses on answering the primary research question and sub-questions in three separate sections:

1. Strategies found in examples of successful and unsuccessful efforts to deliver socially sustainable rural water services.
2. How these strategies align with the bigger picture of sustainability, as described in the Paris Declaration on Aid Effectiveness.
3. How these strategies align with a specific focus within social sustainability – Motivation, as described in Maslow’s “A Theory of Motivation”.

4.1 Definitions - Sustainability and Social Challenges

Sustainability

At the beginning of the interview, participants were asked to define two key terms: “sustainability” and “social challenges and barriers” to make sure that we were using the same definitions during the interview. The results of these definitions are presented first to help the reader better understand what participants were referring to when they talked about sustainability and social challenges in the subsequent results.

For the “term” sustainability, there were four main results:

- 1) 18 out of 19 participants who answered the question agree that there is no official definition of sustainability in WASH. 8 out of 19 specifically stated that sustainability “means many different things to different people”. The one participant (P8) who did give an official definition referred to the Bruntland Report: “*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*” This broader definition found often in development and environmental circles was written by the United Nations as part of a document called “Our Common Future” (Bruntland Commission, 1987).
- 2) There was a general agreement that sustainability in a WASH sector context means something that “lasts” or is “on-going”. As another leader put it, “In its simplest form, does it work? (P20)”. Other terms that participants used to describe sustainability include a certain level of “quantity”, “quality”, “reliability”, “reparability” (ability to monitor, maintain, and pay), and “user satisfaction” for an intended population.
- 3) Some important elements that participants differed on are *what* they are trying to make last and for how long. The answer to this depends largely upon the participant’s approach. Those with project-based approaches mentioned 5-10 years, those focused on technology said sustainable means the lifespan of that technology, and those focused on service-delivery believe sustainable means indefinitely.

4) A lack of a precise definition of sustainability makes it difficult to overcome. One of the leaders in the sample put it this way,

“One of the most difficult questions in the WASH sector is what we are actually referring to when we talk about sustainability... we end up having some of the most ridiculous conversations as a result” (P18).

We may think we have a common goal, but if we have different definitions, we may be working towards different ends. This also makes it difficult to have clear and consistent monitoring of efforts.

Social Challenges and Barriers to Sustainability

As with the term “sustainability”, participants were also asked to define the term “social indicators” or “social challenges and barriers”. It became clear from the first interview that the term “social indicators” is not widely used or understood (P15). As a result, I began to use the term “social challenges and barriers” as an alternative way to describe some of the social issues that affect the delivery of water services. 15 out of 22 participants gave some sort of response.

An analysis of these participant responses reveals three main results:

1. **Social challenges and barriers are not well understood among participants.** Most participants had to ask for clarification. The term “social indicators” was particularly problematic and was replaced early on with the term “social challenges and barriers”.

2. **No official definition for the social aspects of sustainability were given by participants.** Participant responses also varied widely. Some examples of sub-themes and strategies within each sub-theme mentioned by participants are listed below (Table 2). This is not a comprehensive list. No official list exists in the sector currently for social aspects of sustainability. Table 2 provides some examples from participants that might be included in such a list.

Table 2: Examples of social challenges and barriers mentioned by participants

Sub-theme	Examples of social challenges and barriers mentioned by participants
People	Human nature, relationships
Context	History, culture, politics - community dynamics, social cohesion, willing to work as a collective
Beliefs	Perception, assumptions, incentives, demand
Behavior	Practices, use of a water system or services

3. **Many participants thought that looking at the social aspects of sustainability was a good or interesting idea.** When asked “have you seen human nature or other social indicators like that incorporated in some of the recent sustainability frameworks? Is it there in some form or what’s missing?”, one leader responded,

“I’d say largely missing, in fact...But as far as I know, no, there’s not a lot of work being done. That’s probably where research like yours will be very helpful” (P21).

Another participant stated:

“My understanding is that for social side, you cannot have the technical side without the social side” (P12).

The technical and financial aspects of sustainability are essential, and many efforts have been directed towards these purposes. Life Cycle Costing, an initiative to take into account the full costs of delivering water services from beginning through maintenance, is one example of recent efforts (Moriarty et al., 2010). However, as the participant states, the financial aspect without the social aspect still will not yield sustainable results because ultimately people must handle the finances, and that still involves social challenges.

While participants report there are no agreed upon definitions of sustainability and social challenges and barriers in the WASH sector, Box 2 provides definitions that will be used in this study based on a summary of their responses.

Box 2: Definitions Used in this Study - Sustainability and Social Challenges and Barriers

Sustainability:

Given the wide array of definitions found amongst participants, the definition of sustainability used for this study will be taken from the earlier definition in the literature: “Whether or not something continues to work over time” (Abrams, 1998). For the purposes of this study, this includes services that last indefinitely, projects that last a given number of years, and technologies that last for their lifespans. “Last” includes an “acceptable” level of quality, quantity and reparability.

Social challenges and barriers:

Given the lack of consensus on how to define the terms social indicators and social challenges and barriers, social challenges and barriers are assessed inductively from what emerges from participant experiences and examples rather than pre-set (and non-existent) definitions. The overall working definition for social sustainability for this study can be summed up nicely in the words of one participant: “It’s about the people and the processes that allow water services to continue or WASH services to continue over time” (P10).

4.2 Themes Found in Examples that Failed and Succeeded

4.2.1 Overview – What we can say from the data

Forming a list of strategies that work and do not work may not be possible or ideal

The original goal of asking participants for specific examples was to be able to present a list of strategies (specific tactics, parts of approaches) that worked, did not work, and why to help increase the social sustainability with which the WASH sector delivers rural water services. The results show that such a list may not be possible or ideal for many reasons.

First, there are few long-term monitoring data from which participants can accurately draw. When asked if they had monitoring data for more than five years, only three participants (less than 10%) said yes. This is not unique to these participants but is a challenge found throughout the sector. Institutions and donors such as the University of North Carolina and the Hilton Foundation are just starting to make standardized indicators with which to collect and monitor long-term data.

Second, we do not have precise definitions of sustainability and of each social challenge and barrier to guide the consistent and successful replication of strategies to overcome them. For instance, even if we agree that a certain strategy like ownership is important, the *process* used to create ownership may differ from organization to organization with varying results. One participant described how a well-known NGO had tried to replicate a technology he had successfully scaled in Nicaragua, but they failed to replicate the process the participant used to deliver the technology. Using the technology for more people than intended, the NGO failed to successfully deliver the technology, creating a bad reputation for the product in that country and preventing further scaling (P3).

Third, participants emphasized that different contexts make it very difficult to accurately put strategies into neat categories of things that worked and did not work (P14, P7). One of the main points that participants made is that there is no one right approach, or “magic bullet” (P14) that is going to work in every situation because every place is different. Even people who live close to each other are also different (P1). As a result, participants (P1, P19, P21) also report that neighboring villages can experience radically different results using the same approaches. They attributed this mostly to differences in leadership and human nature (P19, P21).

Example of why trying to label strategies as successful or unsuccessful can be problematic

The experiences of three different participants illustrate how a strategy like behavior change may be successful in some cases and unsuccessful in others, depending on the context, the culture, methods and technology used to implement the strategy.

The first participant worked with a technology called SODIS (solar disinfection) and reported that behavior change was not a sustainable strategy because the behavior itself (treating water on rooftops) was not sustainable (P5).

The second participant described his experience implementing PUR (chlorination packets distributed by Proctor & Gamble) in two different countries. He used the same approach in each

country. However, in one country the water looked dirty, and in the other it did not. Results were less sustainable amongst the group where the water did not look dirty (P16).

The third participant did not implement any technology at all (P12). She told people straight out that that what she was sharing with them was knowledge – because it was the only thing she could give equally. By creating a club that became a socially rewarding and reinforcing weekly gathering, she helped to educate 73,827 participants in Zimbabwe, who all willingly signed up for hygiene training (P12).

Examining these participants' approaches, is behavior change a successful strategy or not? I argue trying to force the strategy into one category or another would misrepresent the data and could also lead to unsustainable results. As participants emphasized, results are context-dependent: "I think there's no right or wrong solution, it's what fits that particular country, its particular institutional set up and its resource base" (P21). Whether a solution works or not depends on the place, policies, and resources. Another participant summed it up this way, "I think that the path which creates some solutions are so context specific... there is no magic bullet" (P14). Though we may want a solution that guarantees success, the results show that what works in one context may fail in another.

An alternative: Themes that emerged from participant examples and insights

Since context plays such a large role in whether a strategy fails or succeeds, I do not attempt to present a definitive list of what fails and succeeds, as such a list may not be possible. Instead, I present the major themes that emerged from participant examples across four main categories: what worked, what did not work, what participants believe will work, and what participants believe will not work. I distinguish between these different categories for those who would like to know which themes are based on outcomes and which themes are based on participants' aggregated beliefs. Themes are defined as "groups of repeating ideas that have something in common" (Auerbach & Silverstein, 2003:38). Categories are an informal way of further organizing themes to help answer the research question. Table 3 lists and defines the main themes that emerged from the data. Table 4 gives examples of subthemes, which make up each theme. Table 5 provides quotes from the data that exemplify each of the themes. Appendix C provides a full list of all themes in this study, and Appendix E shows the frequency counts used to determine the main themes.

Table 3: Definitions of the most commonly mentioned themes

Theme	Definition
Creating effective incentives	Things that motivate people to continue taking action over the long-term. Examples of economic incentives include jobs or job security. Example of social incentives include things that build reputation, self-esteem, and respect from others.
Building local capacity	Assessing, building, and strengthening local stakeholders' ability to carry out the development, maintenance and repair of their own systems for the long-term. Capacity building can focus on any local stakeholders – government, community, and or/local businesses and entrepreneurs.
Respecting local stakeholders priorities and preferences	An active and continuous process of putting the beliefs, policies, priorities, customs, and cultures of local stakeholder's above one's own both in thought and in practice. Examples include listening and focusing on the wants of local stakeholders rather than what we think they need.
Learning before, after and throughout the process	Includes formal and informal methods of obtaining information necessary to deliver sustainable services before, during, and after the process. Uses mistakes as an asset to improve. Pre-assessments, post-evaluations, surveys, conversations are all examples.
Preventing failure and protecting investment	Actions taken to prevent failure and increase the likelihood of long-term sustainability. Looking for important indicators such as community cohesion and division as well as knowing when to walk away are important examples.
Ensuring on-going monitoring and maintenance	Monitoring and maintaining systems and services over the long-term.
Identifying and avoiding assumptions	False, over-generalized beliefs, or insufficient learning that lead to less sustainable outcomes.
Focusing on what people want rather than what we think they need (assessing and generating demand)	The act and attitude of learning how to honor and provide what local people want while addressing physiological needs. It includes challenging our own assumptions that we know what local people want or need and changing our goals and approaches to better assess and meet them. The focus in this particular category is on strategies to better determine whether there is a demand and if not when and where might be appropriate to help generate one.

Table 4: Examples of subthemes that make up the most commonly mentioned themes

Theme	Examples of Subthemes	
	Work/Believe Works	Do Not Work/ Believe Does Not Work
Creating effective incentives	<ul style="list-style-type: none"> - Economic – opportunities for employment, affordable solutions - Social – socially rewarding, belonging, esteem - Convenience - simple, easy to maintain 	<ul style="list-style-type: none"> - Focused primarily on health/water quality - Local stakeholders are not convinced there is a need - water does not look bad or has no intangible immediate consequences
Building local capacity	<ul style="list-style-type: none"> - Assessing capacity - considering whether or not stakeholder has capacity to carry out responsibilities - Building capacity- investing time and resources in training - Using and strengthening existing capacity - working through local government, hiring local contractors 	<ul style="list-style-type: none"> - Bypassing local government/and or undermining local private sector - Disrespecting/disregarding local culture, needs, preferences - Lack of capacity building
Respecting local stakeholders priorities and preferences	<ul style="list-style-type: none"> - Ability to navigate and respect local culture - even when makes no sense to you - Listening, learning, and acting on community wants and priorities - Treat local government as lead - Accept difference and adapt - Willing to let go 	<ul style="list-style-type: none"> - Putting own ideas first - failing to ask, value, or understand what local stakeholders think - Bypassing local government or private sector - Community not convinced there is a problem; no demonstrated want - Poor quality of services
Learning before, after and throughout the process	<ul style="list-style-type: none"> - Commitment to learning - Evaluations and open, honest feedback - Listening and acting on feedback - Focus on program improvement 	<ul style="list-style-type: none"> - Failure to learn or change - Denying and failing to learn from mistakes
Preventing failure and protecting investment	<ul style="list-style-type: none"> - Accountability and transparency - Pre-assessment - Focus on prevention and quality - Back-up systems - Reasonable expectations 	<ul style="list-style-type: none"> - Duplication – community has multiple sources - Lack of social cohesion - Lack of accountability - Unwilling to walk away - Division – lack of unity, common purpose
Ensuring on-going monitoring and maintenance	<ul style="list-style-type: none"> - Long-term Support –consistent follow-up - Management - water committees and associations - Reparability – people, parts, knowledge, and incentives to maintain 	<ul style="list-style-type: none"> - No long-term external support - Repairs are unaffordable - Lack of ownership - No identifiable and sustainably motivated & responsible person/team
Identifying and avoiding assumptions	<p>Participants referred to assumptions only in a negative context. They did not list any assumptions that they believed worked or found to work.</p>	<ul style="list-style-type: none"> - When community participation is important - Assume there is demand when there is none - Assuming stakeholders can do what we believe they are responsible for
Focusing on what people want rather than what we think they need (assessing and generating demand)	<ul style="list-style-type: none"> - Need for people to be convinced - Poor people want good quality services - Evidence of buy-in - Create and keep good reputation for the system and delivering stakeholders 	<ul style="list-style-type: none"> - Driven by the needs of delivering stakeholders - Failure to realize poor people want quality services. They also may or may not want to be managing their own systems.

Table 5: Examples of Quotes Representing Each Theme

Theme	Examples
Creating effective incentives	“One of the thing we noticed through the 8 Water User Associations we’ve set up, they’ve created 628 jobs for people in low income areas, which is a lot of jobs for this environment. They’re being paid, they’re earning income, and 80% if not 90% of them are women” (P4).
Building local capacity	“And you know my argument would be that you have to do the long-hard slog, and actually strengthen the system that ought to work in the long run. Because you know, International organizations come and go, but government will go on being there in one form or another – not particularly effective, not particularly efficient, - may be corrupt and all those things, but it will be there. So I think we don’t put enough emphasis on strengthening local governments” (P18).
Respecting local stakeholders priorities and preferences	<p>“In the stupidity of my action, there’s reason. Unless, as a development worker you understand the stupidity of my action, you render ways of thinking that you are the best person and you know better than I, because there are reasons for people doing things” (P17).</p> <p>“I don’t think there’s ever a wrong situation to deal with the utility, no matter how weak or challenging. It just means that your work shifts from putting new Chinese pumps to actually getting your hands dirty and helping build the stronger utility” (P10).</p>
Learning before, after and throughout the process	“What is linked to success... is very much about learning and learning cultures. Making mistakes is OK, but most people deny it. I actually think that the biggest single success factor is possibly learning. Because it’s the ones that make mistakes – we all make mistakes, and let’s not pretend otherwise, but it’s those that learn from their mistakes that improve. Those that deny their mistakes, don’t. And that’s dangerous” (P20).
Preventing failure and protecting investment	“A lot of NGOs will try to do it themselves... but sooner or later any NGO will leave a country, I mean that’s what they should do at least. So, you need to make yourself unnecessary. You need to have an exit strategy before you start” (P3).
Ensuring on-going monitoring and maintenance	“... basically is there money to fix the thing when it breaks and then tools and training; does the person or group responsible for maintaining a given intervention have the capacity to do basic maintenance and then external support when something breaks that they can’t fix; do they know who to call and will that person come when they call them; and then obviously is there some incentive for that person to come, either because they’re getting paid or because they’re accountable in some clear and immediate way?” (P5)
Identifying and avoiding assumptions	“We seem to have reached the climax and people are saying ‘You see, we told you, we need more money to move forward’, but the more money we put in, the more is consumed by the maintenance. It’s not giving us new coverage. Why can’t somebody realize that the old technology used in bore holes and this kind of other systems is not going to help us? Let’s may be evolve new ways, new technologies of piped water, however expensive it is, but know that we have covered this ground and we’re not going back there” (P1).
Focusing on what people want rather than what we think they need (assessing and generating demand)	“What you really need to do is make sure you actually create a demand that you didn’t just go through the motions. Money is a great way to see if that was successful and see how that demand is now prioritized against other demands of scarce resources” (P10).

4.2.2 Main Themes that Worked, Did Not Work, and Participants Believe Worked/Did Not Work

The main themes that emerged in each category are presented in this section: what worked (Table 6), what participants believe to work (Table 7), what did not work (Table 8), and what participants believe to not work (Table 9). See Appendix C for a full lists of themes in each of the categories. The themes are listed in the order of the frequency of participants who mentioned the theme followed by the total number of references of all participants combined. The distribution of participant responses (i.e. whether one participant mentioned a theme more times than others) was also taken into consideration (See Appendix E) but was not included due to the small sample size and variation in participant responses.

The important take-aways from the data and tables are not so much the order of the themes, which may vary in another sample, or even the names of the themes themselves – which may or may not be new. The value of the data is the depth of insights and lessons learned on themes that we know are challenges and the potential new ways or missing pieces that might emerge to increase the consistency with which we overcome them. This is discussed primarily in Section 5 (Discussion Section).

Since I am researching the social aspects of sustainability, I present a list of themes that relate specifically to this focus. My goal is not to make a case for whether one theme is more important than another, but rather to recognize the collective importance of main themes that participants mentioned and to highlight key insights that participants raised within each. In doing so, I hope these themes may be a useful reference for future research and help to inform efforts to create a more coordinated approach to reliably creating socially sustainable solutions in delivering rural water and WASH services in general.

Main themes that emerged in each category

The results in tables 6 and 7 show that the main themes that participants believe to be effective in overcoming social challenges and barriers are almost exactly the same as the themes participants reported in examples of efforts that worked. There were some differences in the order of importance of each theme, and participants consistently shared more about what they believe to work rather than specific examples of what actually worked. This points to the need for increased regular monitoring so that decisions on how to increase sustainability can be more evidence-based. However, the fact that 90% of the main themes of what participants believed to work and found to work match indicates that our thinking about the major themes of social challenges align with what is reported in practice. What is needed is further insight on how to reliably overcome them. Some strategies mentioned by participants are presented in the Discussion Section.

Table 6: Main themes participants mentioned in examples that worked

Themes found in participant examples that <u>worked</u>	Number of Participants Who Referenced Theme	% of Participants	Total Number of References to Theme
Creating effective incentives	12	55%	69
Building local capacity	11	50%	78
Focusing on what people want rather than what we think they need - assessing and generating demand	11	50%	31
Ensuring on-going monitoring and maintenance	11	50%	27
Involving local people and creating ownership	10	45%	38
Respecting local priorities and preferences	9	40%	47
Preventing failure and protecting investment	9	40%	31
Learning and basing action on evidence	7	31%	38
Identifying and using strong local leadership	8	36%	28
Strategies for creating good working relationships	6	27%	11

Table 7: Main themes that participants believe work

Themes <u>participants believe work</u>	Number of Participants Who Referenced Theme	% of Participants	Total Number of References to Theme
Respecting local priorities and preferences	20	90%	175
Building local capacity	18	81%	77
Learning and basing action on evidence	17	77%	87
Preventing failure and protecting investment	17	77%	84
Creating effective incentives	17	77%	81
Focusing on what people want rather than what we think they need - assessing and generating demand	16	73%	73
Ensuring on-going monitoring and maintenance	16	73%	66
Involving local people and creating ownership	16	73%	61
Approaches need to be context specific	14	64%	54
Creating effective working relationships with local stakeholders	14	64%	47

In contrast, the themes that participants stated did not work in specific examples (Table 8) and believed did not work (Table 9) differ to a greater extent than themes participants believe work (Table 7) and found to work (Table 6). Failing to prevent failure and protect investment, not creating effective incentives, failing to respect local priorities and preferences, acting on assumptions, and failure to ensure on-going monitoring and maintenance are all themes that held true across participant beliefs and outcomes. The rest of the themes (50%) differed. Some of the main differences were that participants believe that the NGO approach and community management and being driven by the needs of delivering stakeholders were ineffective. Participants found that themes such as lack of precise communication to effectively scale solutions, lack of understanding how human nature works may lead to unexpected outcomes, and ignoring or ineffectively addressing issues of equity did not work in specific examples.

The difference between the themes that emerged in examples and in opinion signify the need for larger-scale evidenced-based research to determine to what extent and in what contexts each of these themes play a role in the success or failure of rural water efforts. The larger variance found between themes that did not work and participants believe did not work may also reflect the need for more data and sharing of failures in addition to successes in the effort to achieve socially sustainable solutions.

Table 8: Main themes that participants mentioned in examples that did not work

Themes found in participant examples that <u>did not work</u>	Number of Participants Who Referenced Theme	% of Participants	Total Number of References to Theme
Failing to prevent failure and protect investment	9	41%	43
Not creating effective incentives	8	36%	23
Failing to respect local priorities and preferences	6	27%	15
Acting on assumptions	6	27%	10
Lack of precise communication to effectively scale solutions	5	23%	13
Failing to ensure on-going monitoring and maintenance	5	23%	9
Lack of understanding how human nature works may lead to unexpected outcomes	5	23%	7
Failing to focus on what people want rather than what we think they need - assessing and generating demand	4	18%	15
Ignoring or ineffectively addressing issues of equity	3	14%	9
Failing to effectively involve local people and create ownership	3	14%	8

Table 9: Main themes that participants believed did not work

Themes <u>participants believe do not work</u>	Number of Participants Who Referenced Theme	% of Participants	Total Number of References to Theme
Failing to prevent failure and protect investment - rushed-quick fix solutions	15	68%	32
Failing to ensure on-going monitoring and maintenance	12	55%	33
Acting on assumptions	12	54.55%	19
Being driven by needs of delivering stakeholders	11	50%	38
Not creating effective incentives	11	50%	29
Failing to build up local capacity	10	45%	18
NGO approach and community management	9	41%	28
Failing to recognize poor people want quality systems and services	6	27%	11
Failing to respect local priorities and preferences	5	23%	11
Failing to learn and take evidenced based action	5	23%	10

4.3 Application to the Bigger Picture: How do the strategies that participants found to work, not work and believe to work and not work align with the Paris Declaration?

One of the main recommendations that participants make is to take a step back and look at how rural water services fits into the larger picture of development. In this section, I follow that recommendation by comparing how the main themes for each category (Tables 6 -9) compare to the recommendations being made in international development in general. Using the Paris Declaration as a guiding framework, I organize all of the major themes that participants mentioned work, did not work, believe to work, and believe do not work into the five main categories of commitments (agreements) found in the Paris Declaration (PD): ownership, alignment, harmonization, managing for results, and mutual accountability. I used the definitions outlined in the PD to accurately and consistently place the themes that emerged in the study into five categories outlined in PD.

The definitions and descriptions used to place the themes in each category are shown in Table 10. Table 11 illustrates how the main themes that emerged in this study fit into the Paris Declaration.

Table 10: Descriptions of Categories Used in the Paris Declaration to Code Themes in this Study

Commitment	Definition	Description
Ownership	“Partner countries exercise effective leadership over their development policies and strategies, and they coordinate development actions.”	Donors respect country leadership and help strengthen their capacity. Partner countries take ownership and leadership in developing, implementing national development strategies – including coordinating aid and taking care of budgets.
Alignment	“Donors base their overall support on partner countries’ national development strategies, institutions and procedures.”	Donors take action to support country partners’ strategies by streamlining funding requirements, strengthening country systems, and investing in and using local capacity. They commit to avoiding setting up parallel systems and to using local procurement systems (local supplies). Partner countries take necessary action to make sure environment is safe and conducive for development.
Harmonization	“Donors’ actions are more harmonized, transparent and collectively effective.”	Donors work together to make aid more effective and manageable for countries by implementing common arrangements, simplifying procedures, reducing duplication through more effective division of labor, reducing fragmentation through increased collaboration. Partner countries coordinate national actors, work with donors, and delegate tasks and programs where appropriate.
Managing for results	“Managing resources and improving decision-making for results.”	Donors commit to relying on partner countries’ results oriented monitoring. Partner countries commit to trying to keep results oriented reporting and to connect national development strategies with budget processes.
Mutual accountability	“Donors and partners are accountable for development results.”	Donors commit to providing timely, transparent, complete information on aid flows. Partner countries commit to involve a broad range of development partners in forming and assessing development strategies. Both commit to jointly assess progress.

Placing the main themes in each category (what worked, what did not work, and what people believe works and does not work), I find that the vast majority of themes mentioned in tables 6 – 9 fit (34 out of 40, or 85%) fit into the categories outlined by the Paris Declaration. This finding indicates that the general themes that participants discuss align well with the commitments made in the PD. This does not mean that 85% of the themes mentioned by participants effectively or reliably achieve the commitments made in the PD. There is not enough information in this study to determine whether any of these themes have been achieved or to what extent.

However, Table 11 does allow us to begin to see important patterns. Namely, many themes appear in both what worked and what did not work categories, indicating there is still room for improvement in aligning rural water strategies with development priorities. For example, if the theme respecting local priorities and preferences was reliably addressed, we would expect that it would only appear in the “what works” and “what participants believe to work” categories. The fact that a lack of respect was a major theme discussed by participants in examples that failed as well indicates that respect is still a theme that needs to be addressed to fulfill the commitments made in international agreements. Future studies may want to do more wide-scale monitoring to be able to regularly to what extent each of these themes have been achieved in practice. These results would help prioritize how to better align WASH sector strategies with development priorities.

The 15 % of main themes that did not fit into the PD framework included: importance of process, identifying and working with right people, rights and equity, strategies for behavior change, strategies for creating good working relationships, and human nature. All of these themes have to do with people and processes, which are not explicitly stated in the PD. Future research should investigate whether it would be beneficial to add a category if using the PD framework in WASH in order to explicitly address some of the additional social challenges and barriers found in the sector.

Table 11: How Themes Mentioned by Participants Align with the Paris Declaration

	Worked	Believe Works	Did Not Work	Believe Does Not Work
Ownership	Building local capacity Involve local stakeholders and create ownership Respect local priorities and preferences Identifying and using strong local leadership	Building local capacity Involve local stakeholders and create ownership Respect local priorities and preferences	Disrespecting, bypassing local government; undermining local private sector	Failing to build capacity Driven by needs of delivering stakeholders Failing to respect local priorities and preferences NGO approach; community management
Alignment	Respect local priorities and preferences Involving local stakeholders Identifying and using strong local leadership	Respect local priorities and preferences Involving local stakeholders	Failing to respect local priorities and preferences Disrespecting, bypassing local government; undermining local private sector	Failing to respect local priorities and preferences Driven by needs of delivering stakeholders NGO approach; community management
Harmonization	-----	-----	Lack of unity, common purpose Lack of precision in communicating and replicating processes Acting on assumptions	Rush-quick fix solutions NGO approach; community management Acting on assumptions
Managing for Results	Focus on what people want, not what we think they need Ensure on-going monitoring and maintenance Preventing failure and protecting investment Learning and evidence-based action	Focus on what people want, not what we think they need Ensure on-going monitoring and maintenance Preventing failure and protecting investment Learning and evidence-based action Need to be context specific	Failing to prevent failure and to protect investment Failing to consider community attributes – community dynamics and social cohesion Failing to ensure on-going monitoring and maintenance Lack of understanding of how human nature affects outcomes	Failing to recognize poor people want good quality systems Failing to ensure on-going monitoring and maintenance Failing to learn and take evidenced based actions
Accountability	Learning and evidence-based action Ensuring on-going monitoring and maintenance	Learning and evidence-based action Ensuring on-going monitoring and maintenance	Failing to learn and take evidenced based actions Failing to ensure on-going monitoring and maintenance	Failing to learn and take evidenced based actions Failing to ensure on-going monitoring and maintenance

4.4 Application to a Specific Focus: How do the strategies that participants believe to work align with Maslow's "A Theory of Human Motivation"?

To this point, we have been analyzing the themes that emerged from participant data (or groups of strategies). In this section, we will be taking the analysis one step deeper by examining how individual strategies align or not with a specific social challenge and barrier: creating effective incentives. In this study, effective incentives are treated as an indicator of motivation.

I analyze strategies rather than themes in order to gain a more precise understanding of how methods used in the WASH sector align with what we know about human motivation, as measured by Maslow's Theory of Motivation (MTM) (1943). As emphasized in the beginning of the results section, the purpose of this analysis is not to say whether a certain strategy works or not, rather the purpose is to begin to see if there are patterns that we may be missing or that we might capitalize on in increasing the reliability with which we are able to create effective incentives and motivation.

All of the strategies participants believe to work were coded (organized) according to Maslow's Theory: self-actualization, self-esteem, love and belonging, safety and security, and physiological needs. The definitions for each category (Appendix D) were taken directly from Maslow's theory. Operational definitions were also compared and supplemented by Taormina and Gao (2013). An additional coding scheme was developed in order to help apply the definitions of Maslow and Taormina and Gao to water and sanitation, which was developed using examples from the data in this study. It is not meant to be a definitive list but rather a useful starting point to begin conceptualizing how MTM's might be used to understand motivation in WASH.

Each strategy participants believe to be effective was examined to see whether it met the definitions for each of Maslow's needs using the definitions in Appendix D and Table 12. Each strategy could be coded to multiple needs. Those that did not have enough information or were not relevant were excluded. The results of the coding – how many strategies align with each need – are presented in Figure 3. The examples in Table 12 and results in Figure 3 are relevant not only for rural water services but may also serve as a reference for the WASH sector as well.

In addition to the five needs Maslow outlines in his theory, I split Maslow's self-actualization category (the need to be who one really is or self-fulfillment) into two sub-categories: local self-actualization and outside self-actualization. The former refers to strategies aimed at helping local stakeholders (communities, private sector, and/or government) achieve their own self-actualization. The latter includes strategies that consciously or unconsciously put the actualization of delivering stakeholders (governments, NGOs, donors) above the long-term actualization of local stakeholders. A local government that does not put the long-term self-actualization of local communities first would also be considered outside actualization (outside of the ultimate goal of helping local people achieve long-term actualization).

It is useful to make this distinction between local and outside actualization in a WASH sector and development context as Maslow's hierarchy focuses on the individual rather than the collective. In Maslow's original framework, the question of whose actualization was irrelevant because it only focused on the individual. In an environment with many different stakeholders, each with their own needs and motivations, it is important to consider the needs of all groups and how they interact with each other when creating sustainable motivation infrastructure.

Table 12: Maslow’s Theory of Motivation Applied to Delivering Rural Water

Need	Maslow’s definition	Relevant Examples in Delivering Water
Local Self Actualization (Local Community or Country)	Helping local people become what they really want to be; fulfill potential	Strategies that make life more convenient , simpler, easier, frees time. Looks at bigger picture – not just health and water; Health as a means, not an end . Incorporates water and health as a step in the process to ultimate goals or self-actualization. Focuses on development of local people – helps them to be all they can be – capacity building (including knowledge), leadership training etc. Focuses on long-term development – often at expense of immediate short-term outcomes. Focus on delivery of services and long-term use. Other indicators: accepted ownership, demonstrated perceived need, demand, exit strategy, context specific.
Outside Self Actualization (Delivering Stakeholder)	Help outside organization/stakeholder become who they really want to be; fulfill potential	Focus on outside interests – (budget, schedule, scale). Motivated by need to feel useful, powerful, fulfilled. Narrow approaches that focus on own goals and expertise – e.g. WASH only, health only, engineering only approaches. Short-cuts to achieve things cheaper, faster, easier, at expense of long-term outcomes. Short-term focus. Project-based – focused on construction. Motivated by individual self-serving interests.
Self-Esteem	Stable, firmly based high evaluation of oneself	Delivering Stakeholders – Need to succeed, feel useful, recognition, to maintain a good reputation. Strong motivation to not fail or look like failed because negatively impacts esteem and ability to achieve self-actualization. Strong desire to continue working in a community or situation even if likely to fail. Not willing to walk away. Partner Community or Country – poor don’t want to be seen as poor. They want good quality services. Respect – listening to and building local capacity and culture – even when it makes no sense to you. Respecting local priorities, policies, preferences and systems. Reputation – building critical mass of acceptance/desire, building a good reputation for a product/organization/approach, effective marketing. Respecting opinions - not forcing or shoving down throat Working through local mechanisms . No shunning for making a mistake, trust, empowering community, Community members have a say.
Love and Belonging	Connection to people through loving relationships and belonging to a group	“A place in his/her group” – belonging, the need and desire to be part of a group – connected. i.e. involving local people in decisions. Strategies that help people stay connected and foster loving, meaningful relationships . Satisfies need to be social. Long term commitment – don’t just leave. Takes into consideration issues like community dynamics, social cohesion and other social challenges.
Safety and Security	Preference for a predictable orderly world; Science	Formal research - Data, monitoring; Informal research – evaluations, sustainability factors, and magic bullet models. Formal and informal research - Monitoring, research, evaluations – formal – informal. Psychological/technical familiarity – Preference for using familiar methods and tools (regardless of evidence for whether it works or not). Division , Failure to protect investment, cost effective, transparent, injustice, unfairness, inequality, transparency, accountability.
Physiology	Homeostasis (balance) of chemicals in blood	Water content of the blood . Thirst, water quantity. Immediate and uncontrollable physiological needs that would result in imminent, tangible death, the concern for which supersedes all other needs.

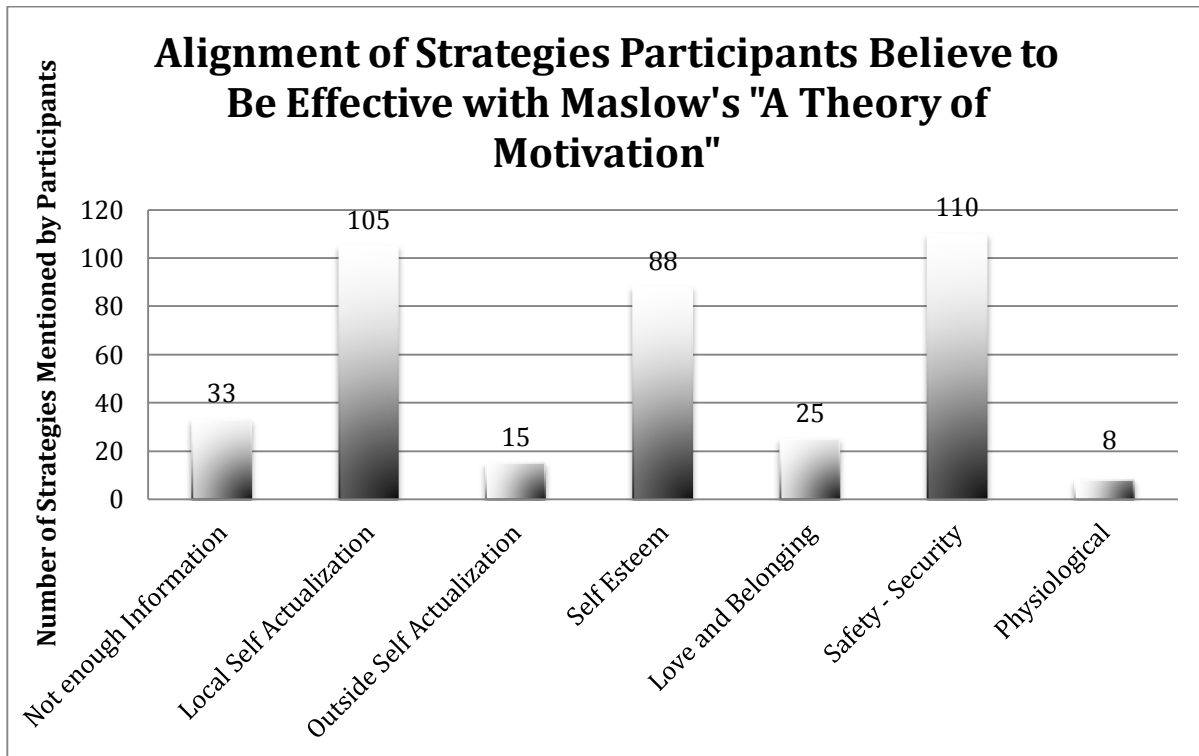


Figure 3: Alignment of Strategies Participants Believe Work Align with Needs in Maslow’s “A Theory of Human Motivation” (Number of strategies, n =333)

The results show that the vast majority of strategies that participants believe to be effective fell into one of three categories: safety-security (110), local self-actualization (105), or self-esteem (88). In contrast, strategies that focused on outside self-actualization and physiological needs were only referenced 15 and 8 times respectively. This finding is significant in that many of the approaches to deliver rural water services and the WASH sector in general focus on needs it believes to be physiological such as water and health, yet only 2.4% of the strategies participants believe to work (8 out of 333) targeted true physiological needs according to Maslow’s definition (homeostatic balance).

There were also a limited number of strategies focused on love and belonging (7.5%). The low percentage for this category, however, may be due to the relatively few participants who focused on this need compared to the high number of strategies focused on health and water. Those participants who did focus on strategies with love and belonging found that they worked.

In some cases, certain strategies fell into multiple categories. For example, a strategy such as understanding what local stakeholders want is not only respectful (self-esteem) but also protects the donors’ investment (safety-security) by increasing the likelihood of sustainability. In other cases, there was either not enough information to determine which category a strategy might fall under, or it might not fit in the framework at all. These strategies that did not fit were put into a category called “Not enough information”.

Safety-Security

Out of the 333 strategies that participants believe to work, 110 of them address the need for “safety and security”. There is a diverse mix of strategies used to meet this need – including those addressed the needs of both local stakeholders and outside stakeholders.

Safety and Security Needs of Local Stakeholders

For local stakeholders, the most common strategies addressing safety focus on a particular part of Maslow’s definition: “**preference for the familiar rather than the unfamiliar**”. For example, strategies that focus on helping community members see and feel the benefit of an intervention or that make sure people are *convinced* of the need for water are important strategies participants mentioned. One participant compares his experience with the same technology in two different countries:

“I think they had two things – that the water they had often didn’t flow, so they knew that the water that came was often dirty and they believe that it made their children sick” (P16). In the other country, when asked how the technology worked, he replied: “Not very well – people in [this country] don’t feel their water quality is bad, they don’t have the same complaints about water quality” (P16).

The participant reports the technology was not well received – or used – in this country – because they were not convinced that there was a problem with the water quality.

Another important area of security identified for local stakeholders was **job and economic security**. These are important incentives participants discussed for many types of stakeholders, including those in communities, private sector and government positions. In the same example above where participants were not convinced, the participant states,

“If we asked them [the community members] the first thing they wanted, they wanted jobs. They wanted economic opportunities” (P16).

Another participant recommends, *“Don’t hesitate to use the private sector because then incentives are very clear, if there’s payment involved, bottom-line involved” (P18).*

Economic opportunities are a powerful motivator that participants believe lead to sustainable outcomes. Money in particular is a strong incentive, perhaps because it allows people to meet their needs, at any level of the pyramid that they want, when they want.

Safety and Security Needs of Outside Stakeholders

In addition to addressing the safety and security needs of local stakeholders, there are also numerous strategies that focus on addressing the safety and security needs of outside delivering institutions. If the ultimate actualization for outside delivering institutions is to provide sustainable rural water services and WASH, then it makes sense that protecting these services and investments would be a vital step in the process towards that actualization. Some of the ways that organizations provide security for themselves included gathering evidence to make sure that local people had a strong preference for a new thing (i.e. assessing demand) and creating some form of insurance for themselves. Pre-assessments or making sure local

stakeholders had the necessary pre-requisites and capacity for long-term delivery of rural water services are examples of types of insurance.

Many of the strategies used by outside institutions to meet their safety-security need center on specific parts of Maslow's definition of safety and security needs. Specifically, Maslow defines these needs partially through **science and the desire for a predictable, orderly world**. Examples of science oriented strategies include monitoring, basing decisions on evidence and data, commitment to critical evaluation. Setting clear boundaries before starting, setting a clear precedent, and transparency are examples of strategies that reflect peoples' need for a predictable, orderly world.

Local Self-Actualization vs. Outside Self-Actualization

The results show that participants believe that strategies that focus on local actualization are more effective than those that focus on outside actualization. Together, a total of 120 strategies fit into the self-actualization category. 105 of the strategies mentioned focus on the self-actualization of local stakeholders compared to only 15 that were focused on self-actualization of outside delivering stakeholders. Moreover, of these 15 strategies, 11 overlap with other needs, such as safety and security.

Many of the strategies that participants recommended for supporting local self-actualization challenge our current ways of doing things. For example, some of the heads of organizations and leaders in the sector recommended focusing on changing outside delivering stakeholders' behaviors rather than the behaviors of local stakeholders. For instance, they advocated for NGOs working in alliance with each other as well as with local government. This type of collaboration (harmonization) is called for in the PD, but it has not yet been widely applied in the WASH sector. One leader challenged how our presence impacted the possibility of local self-actualization, concluding, "*We should be working our way out of existence*" (P6). The participant argues that the goal should be for local stakeholders to achieve self-actualization; and in order for them to fulfill their potential, at some point we must leave. In line with this approach, strategies like helping stakeholders to develop capacity, even if it requires a "long-hard slog" (P18) is what participants and the PD ultimately agree is going to produce change that lasts.

Self-esteem

Of the 88 times participants talked about strategies that aligned with Maslow's definition of "self-esteem", the vast majority refer to a specific part of self-esteem defined by Maslow: the need for respect.

What respect looks like differs depending on with which stakeholder one works. For participants working with governments, respect looked like listening to governments and supporting government efforts – what can we do to help you in your goals? (P13, P14, P21). For those participants working with local entrepreneurs, respect looked like training and empowering entrepreneurs (P3) to gain new skills and start a business, not creating competition by using foreign parts or setting up parallel systems. For those participants working with communities, it meant respecting local wisdom, preferences, and culture, even when the participants did not understand or see why something was important.

Included in respect is the subtheme of not bypassing local stakeholders – for example working in a country without reaching out to work with the government, not using local supply chains, giving things away for free. According to participants, respect means working within the larger system, donating through the government, knowing and doing things in line with national policies, and getting help when you do not understand. Many of these approaches discussed by participants are in line with the Paris Declaration, but there is much room for growth in making them a standard part of the procedure of delivering rural water services and WASH.

Love and Belonging

Only 25 strategies (less than 10%) fell into this category, and all were focused on belonging rather than love. This does not necessarily indicate that people do not need love, but rather strategies in the delivering rural water have more effectively targeted belonging than love. For example, most strategies in this category have focused on the human need to “have a place in his/[her] group”. While the community health clubs started by one participant (P12) focus primarily on hygiene education, they still serve as an excellent example of how love and belonging might be incorporated into rural water approaches as well. This participant’s primary goal is to improve health, but her approach centers on local stakeholders’ need and desire to be part of a group. She went so far as to make membership cards, take attendance, and have a graduation ceremony to help participants feel like they were part of a group.

This example illustrates that while love and belonging may seem like a less likely candidate for sustainable strategies, love and belonging may be essential motivators in tight-knit communities, especially in rural settings. The fact that “division” – or lack of love and belonging within a group – was one of the top reasons why efforts failed in this study, suggests it may be in our interest to further study how this particular need may be used as a stronger motivator in future strategies.

Physiological Needs

Of the 333 strategies participants believe to be effective, only eight focused on physiological needs. “Emergency relief” and “Focus on children under five” are two examples. The fact that much of the literature and many of the approaches used in the WASH sector to deliver services are driven by health as the primary motivator reveals a potential disconnect between WASH sector strategies and motivation theory. The discussion section further explores some of these disconnects as well as what we can learn from MTM to increase the reliability with which we deliver socially sustainable safe drinking water.

5. DISCUSSION

5.1 Participant Definitions – Sustainability and social challenges and barriers

Need for Standard Definitions

The results indicate that creating standard and accepted definitions of the social aspects of sustainability may be an essential part of the process for measuring and achieving sustainable results.

Connection to the Literature

The definitions that participants gave for “sustainability” are consistent with what is found in the literature. A desk review of the rural water supply and sanitation literature (Lockwood et al., 2003) arrives at a similar definition provided by Abrams (1998): “Whether or not something continues to work over time”. The literature also points out that it is important to distinguish between the social and technical aspects of sustainability. Jimenez and Perez- Foguet (2010) found that project failure was seldom due to technical or physical problems but rather to social and political challenges. Therefore, I argue that having a better understanding of what the social challenges are, how they are defined, and how other stakeholders have successfully overcome them or not is a very important step in increasing the overall reliability of delivering sustainable rural water services in low-income countries.

For Future Studies

More research is needed to reach a consensus on standard definitions of sustainability and social indicators in the WASH sector. These definitions should include a more solid list of social challenges based on data. Such a list would be useful to better plan for social challenges, monitor them, and overcome them. Creating and agreeing on working definitions of the social aspects of sustainability could also help set the course for more accurately measuring and consistently achieving services that last.

5.2 Insights on Themes that Worked, Did Not Work, and Participants Believe Work/ Do Not Work

While many of the themes that emerged in this study are not new, what is new are the insights participants share to more reliably achieve them. As discussed earlier, many sustainability frameworks do not provide great detail in how to consistently and effectively implement the indicators they recommend. As a result, this section provides insights shared by participants for how to take common themes such as respect, demand, and capacity building and more reliably succeed in practice. Instead of covering all themes, I focus on sharing insights that were not commonly found in the literature. It is encouraged that future researchers use these as a base from which to further explore how to increase the reliability with which we deliver socially sustainable services.

Need for Identifying and Overcoming Barriers to Increased Rigorous, Regular, and Aggregated Monitoring

Need for more monitoring data

Not surprisingly, the results show that there is a great need to increase monitoring in the WASH sector. The original goal of this study was to have participants give examples of efforts for which they had monitoring data going back at least five years. Out of 22 participants, only three stated that they regularly collected monitoring data. Another participant was in the process of setting up more regular collection. The monitoring data of the two participants who had it was organization specific and difficult to aggregate. Only one of the participants (P6) had aggregated data using a tool that was well-recognized and used by other stakeholders as well. As a result, I had to adapt my methods to allow participants to use any specific examples of efforts that failed and succeeded as their primary source of data rather than examples that only had monitoring data.

The literature and recent efforts in the WASH sector show that there are increased efforts to institute rigorous monitoring (Bartram et al., 2014; Schouten, et al., 2011). For example, recent frameworks call for more integrated indicators (Pankhurst, 2013), and certain groups and donors such as the Hilton Foundation, University of North Carolina and partners are working on it. However, the fact that even many of the leading organizations interviewed in this study have not had monitoring for more than five years begs the question – why? If we know it is important, then what is taking us so long to implement it?

Some of the barriers that participants mentioned include a lack of commitment on the part of donors, a lack of resources, and a lack of coordination between groups in the sector. Applying the Maslow's theory of motivation, we might say that it is not in the immediate best interests of outside stakeholders to monitor if outside actualization (their own) is the primary goal. They want to see the effort succeed, and it's easier to hope and believe that what is delivered the first time will be sustainable forever. The high failure rates in the sector show, however, that this is not the case. Then what is still preventing us from instituting sector-wide monitoring?

Examining Maslow's hierarchy of needs may provide one potential explanation. Both delivering stakeholders and donors have a need for self-esteem, or self-respect and respect from others. Monitoring directly counters this need by exposing mistakes that have been made, which can realistically threaten the ability of both stakeholders to achieve their purpose, or self-actualization. Organizations face serious threats of losing funding, precluding the ability to try to achieve self-actualization. Funders lose the feeling of achieving actualization and the reason why they invested in the first place.

Stepping back and looking at other sectors reveals that this mentality towards failure found in the WASH sector may actually be crippling and hindering our ability to reliably deliver sustainable services. As a result, shifting our mentality to accept failure as a reality and necessary tool to improve may be a first step in overcoming it. One positive example we may draw from is the business sector where “fail fast” is a common motto. Those investing in business ventures know that a high percentage of their investments will fail. It is not uncommon, for example, that angel

investors will rigorously vet and pick the best 10 opportunities they can find; but they know realistically that maybe only 20-30% will succeed.

There are ethical issues obviously in development that make failing require extra precaution to not do permanent harm. However, if highly motivated, smart people in business make mistakes or are unable to predict or prevent everything – why should we in development think that we are capable of any different? Having open and honest conversations with donors, many of whom themselves come from or made their money in business, may be a good first step to working together to use failure as an asset rather than a barrier.

Need for more precise monitoring strategies

In addition to the lack of commitment to monitoring, the actual strategies that we use to monitor may also be improved. Some participants discussed some techniques that they had found to be effective. One participant (P5) in particular did an excellent job of summarizing the qualities of successful monitoring on the ground:

- *“Is there money to fix the thing when it breaks and the tools and training?”*
- *Does the person or group responsible for maintaining a given intervention have the capacity to do basic maintenance and then external support when something breaks that they can’t fix?*
- *Do they know who to call, and will that person come when they call them?*
- *And then obviously, is there some incentive for that person to come, either because they’re getting paid or because they’re accountable in some clear and immediate way?”*

It’s the nuances of this list that make it useful. The participant points out that it is not enough to train someone - what incentives does that person or committee have to continue? It is not enough even to set up a water committee – when things go wrong, who can the water committee call? Will that person come – what incentive do they have? Another participant remarks that we should not just assume people want to volunteer. People are busy, perhaps especially in low-income countries, and even if they did have time – is it anyone’s human nature to want to go to a public restroom much less clean it?

The results of this study show that another area to strengthen is the precision in our monitoring and measurements. In addition to asking participants to describe effective monitoring and maintenance, a number of participants were asked to go deeper into how one would actually measure specific social challenges and barriers. This is important because in order to know whether or not a strategy works, consistent definitions are necessary to make sure the strategies being compared are the same and were actually achieved. Participants who had recent experience delivering services thought this was a good question, but more often than not, could not offer a response.

For example, community contribution was a commonly mentioned strategy to create ownership. However, when participants were asked how much of a contribution a community had to make to create ownership (i.e. how much time, labor, money?), one participant summed up the general sentiment,

“That’s a very interesting question to which I can offer no strong answer... it’s [ownership] a theoretical construct which we take for granted...” (P2).

In contrast, those participants who played a leadership role in the sector could not answer either but questioned whether trying to define social indicators such as ownership was useful. They felt ownership was part of the community management model, which they seriously questioned.

Connection to the Literature

Despite the lack of monitoring data for individual organizations, the literature shows that global monitoring of WASH has been taking place for decades. Bartram et al. (2014) give an in depth history of global monitoring of water and sanitation over the last eighty years and how it began in the 1930's with the League of Nations Health Organization (LNHO – the predecessor of WHO) and progressed to be under the joint leadership of WHO and UNICEF in the Joint Monitoring Program (JMP).

The authors point out that while the country level data has helped to gauge global progress, the monitoring system has some significant limitations (Bartram et al., 2014). They contend that one area of concern is the gap between nationally reported data and estimated data by the JMP. They give the example of Tanzania – where the JMP reported a 77% coverage rate (using linear regression estimates) while the national data stated a 40% coverage rate in the same year (2005). Another concern particularly relevant to this research is the lack of clear definitions and distinction between rural and urban coverage in the monitoring data. Given that coverage rates are worse in rural areas (Lockwood, 2010), a lack of a precise definition between urban and rural areas in global monitoring data might further mask some of the inequalities.

In summary, the current lack of monitoring data combined with the lack of precision in the monitoring data we do have makes it difficult to learn with accuracy what works, what does not and why. To increase the reliability with which we deliver sustainable and socially sustainable services, we need more consistent, rigorous, and easily aggregated and available sources of data from which to learn. Without a reliable way to collectively learn from past mistakes, the lack of monitoring data arguably sets up a situation designed for failure, or at best - a slow process of individual organizations all learning from their own mistakes. The fact that current rates of failure are the same as four decades ago suggest that this may be what has been happening (Imboden, 1977; Sutton 2004).

Need for a Shift in Focus to Long-term Outcomes

Alignment - Capacity Building and Respecting Local Stakeholders

Call for capacity building and quality as outcomes rather than outputs

The results show that capacity development is the second most commonly mentioned theme that participants believe to work and that actually worked in examples they gave. Many of the participants incorporated capacity development into their approaches. One approach was entirely capacity development-based, where knowledge itself was the outcome (P12). In another approach, the participant incorporated capacity development into his outcome indicators. Instead of measuring only the number of systems, what his organization gets excited about is evidence that new knowledge about water is being adapted and applied by the government, which is an indication that they are one step closer to ownership as defined by the PD (P15).

Other participants agreed that for solutions to be sustainable long-term, the sector must invest in developing capacity, even if it feels slower or less glamorous than producing one-off projects. The opinions of some of the leaders in the WASH sector can be summed up in one participant's statement:

“And you know there are many actors that say, we'll we set up some sort of parallel system. So we try to get the community to do what local government should be doing or we actually try to get International NGOs to come in and do what government should be doing. And you know, my argument would be that you have to do the long-hard slog, and actually strengthen the system that ought to work in the long run. Because you know, international organizations come and go, but government will go on being there in one form or another – not particularly effective, not particularly efficient – may be corrupt and all those things, but it will be there. So I think we don't put enough emphasis on strengthening local governments” (P18).

In other words, instead of going for quick-fix, rushed solutions, which was the number one theme participants believe to not work, the participant advocates for investing time to develop systems that will work over the long haul. Taking time and doing it well connects with another important sub-theme – investing in quality. After years of not being able to make progress towards increasing coverage, a participant from government said:

“We seem to have reached the climax and people are saying ‘You see, we told you, we need more money to move forward’, but the more money we put in, the more is consumed by the maintenance, it's not giving us new increasing of coverage... Should we continue throwing good money after bad money? Why can't somebody realize that the old technology used in bore holes and this kind of other systems is not going to help us?” Let's maybe evolve new ways, new technologies of piped water, however expensive it is but know that we have covered this ground and we're not going back there, covered this ground and not going back”

” (P1).

The participant expressed frustration over both the internal and external politics that created strong incentives for individual stakeholders to put in quick-fix solutions. He explained that quick-fix solutions actually cost the government time and resources as they have to continue to invest money in fixing broken systems instead of continuing to increase coverage.

The call for capacity development is not new. There is substantial literature on the topic, in many cases going back decades (cite). Recent documents, like the PD, also call for increased capacity development. This strategy is woven throughout the document and serves as integral part of many of their target indicators. So if we know that capacity development and investing in quality are important, what then are the barriers to making these approaches a standard part of the foundation of any process? How can we reframe our vision so that capacity is valued as an outcome and integral part of the infrastructure of any technology?

Supporting local governments

Supporting local governments means building the capacity of local leaders at the municipal, regional and national levels of government. The Paris Declaration describes it as assisting local entities in taking ownership over the development process. Supporting local governments is a strategy increasingly mentioned in the WASH sector and was discussed by a number of participants as well. However, it is still in the initial stages of being accepted and decided what this would look like for different stakeholders.

Supporting local governments was reported to be particularly problematic for NGOs. Participants said NGOs are often quick to do their own thing. They are small and mobile and work directly with communities, but they often bypass government. This was perhaps the main reason why the NGO approach/community management made the list of main themes and attributes participants believe did not work. Importantly, 9 out of 22 participants (5 of them heads of their organizations and leaders in the sector) spoke adamantly against the type of bypassing and lack of strengthening local capacity often found in community management and NGO approaches.

Participants had a range of ways of expressing their frustration, but the underlying call to reexamine the efficacy of community management was a common theme. Some felt that the idea that everyone would love each other because they were part of the same community was unrealistic:

“People want, for the most part, if you talk to them, they just want something that works that they don’t have to fuss about...there are many rural communities, especially in Africa for which piped systems are going to be a long way off but I just wonder, the whole notion of community management I think it needs to be reevaluated” (P21).

Others felt like people were going to keep doing the same thing and wished that empirical evidence would have a greater say in guiding action:

“Sorry, ... but I just feel like people will just do the thing that doesn’t work and not monitor and take pretty pictures and keep doing that. It’s like those days are over and everybody knows it but is community buy-in that master variable that determines sustainability? I think only if the data say it is (P5).

And others expressed frustration on the focus of a ‘non-functional paradigm’:

“What do I think the barriers are? Intransigence. NGOs who continue to work with a non-functional paradigm, so community management is very cute because all we have to do is the upfront infrastructure costs and then it becomes someone else’s problem. Most NGOs find that the idea that that doesn’t work very unpalatable, so they keep banging away at trying to make it work” (P20).

On the NGO side, none were advocating for bypassing governments, but many felt that governments were not able to respond in the areas where they were working. Some that had tried either had not gotten a response back (P9) or felt that the government was not listening to elites in the country much less to poor people (P16). In addition, in situations like squatter settlements

where legal rights issues meet equity, the same participant mentioned it can get tricky working with the government because technically people have the right to water as a human right, but they do not have a right to the land.

What the leaders in this study were more concerned about was the prevalent approach they felt among NGOs to either ignore or dismiss governments. One of the biggest reasons why NGOs stated they did not want to work with government was corruption. When asked what should be done then if a government is corrupt or has challenges, one leader put it bluntly,

“Well, I would say it’s always a given. Local governments will be weak, and it’s a given that the National Government will be having problems... And you know, if you think that’s not the case, then you shouldn’t be working in development” (P18).

In the end, the question of how NGOs might support governments in practice still needs to be answered. A few examples have been highlighted like the one above, but more research needs to be done to give concrete steps that NGOs can take to support local governments. What does that look like in practice? And what kind of capacity development would be necessary to facilitate that change - including capacity development of outside stakeholders (such as NGOs)?

Further development of a functional paradigm for NGOs is needed if data show community management does not work, starting with specific steps for how to best align their efforts with government efforts and the bigger picture outlined in the PD. Specific recommendations from those in leadership positions are also needed to guide different stakeholders in how to change and align their actions with this recommendation.

Respecting local stakeholders

Respect is another main theme found both in participant responses and in the Paris Declaration, however there is also little guidance on what that looks like or how to implement it practically. In this study, respect is defined as putting local opinions, thoughts, ways of doing things, and long-term actualization above one’s own. For example, capacity building is one way of respecting local stakeholders. Instead of aiming to see a physical system built, allowing the local stakeholders to build it once they are trained is an example of alignment or respect.

In this study, there were six primary sub-themes that participants discussed for how to respect local stakeholders:

- 1) Ability to navigate and respect local culture – even when it makes no sense to you
- 2) Ability to accept differences
- 3) Working through and anchoring solutions in community dynamics
- 4) Listening, learning, acting on community wants and priorities
- 5) Treating local government as lead
- 6) Willing to let go

Some organizations are already structured to support and respect local stakeholders. For example, one participant working for a multi-lateral agency reported how her agency actually reports to the governments of each country:

“Our board of directors is actually ministers of health; so we report to them, they don’t report to us” (P13).

Rather than dictating the process of development, the organization is built in a way that puts local countries in the highest level of leadership. In doing so, the organization respects and acknowledges that local countries and their leaders have valuable insights and opinions and should be in charge of guiding the international community in how to best support the country in achieving their priorities. There are of course challenges within this approach, but the power dynamics of having local leaders serve on the board and have real decision making power is one example of what respecting local stakeholders looks like.

Some strategies that emerged for how other groups respect the government as the lead include learning about national policies and initiatives and making sure approaches are in line with them (P21). Other recommendations included working within the larger system, donating through the government, and talking to the government before taking action in order to understand and respect priorities. Some strategies for how to respect communities include being able to navigate and respect cultural norms, work through local community dynamics, and get help when you don’t know what to do.

Involving local stakeholders and ownership

The theme of involving local stakeholders and ownership in this study is divided between those who hold leadership positions in the sector and those who work on delivering services on the ground. The underlying reason for this split has much to do with the debate between two different approaches – community management and service delivery. The former tries to sustain systems through having communities take ownership while the latter focuses on the delivery of services, in this case water and sanitation beyond the lifespan of a system and preferably indefinitely.

Another leader thought that one of the challenges was that we had become too extreme in trying to involve the community. This participant thought that the community should be involved in some decisions and sorting through community dynamics; but when it comes to the technology, that’s for the scientists and the government to decide (P1).

In contrast, those delivering services on the ground found that involving communities and ownership were an important part of their approach. While some tried through typical means of financial and/or labor contribution, an important finding is that there may be some more effective ways to generate ownership than others. For example, many participants emphasized that ownership is not a trophy handed at the end but rather a process that starts at the beginning. It continues throughout the course of delivery and practically looks like allowing local people to make decisions and respecting their decisions in the face of differences.

One participant gave a particularly excellent example of how these two approaches might be reconciled – he did not involve the community in the choice of technology (a well in this case), but he involved the community extensively in deciding where that well went. Rather than automatically deciding for them, the participant held community meetings and listened to what the communities wanted. He demonstrated great respect for the communities in that even when the communities wanted to drill in places where there was no water, he did not tell them no or brush them off. Instead, he drilled enough to show them that there was no water where they wanted the well. After seeing with their own eyes, the community felt like they had been given ownership of the location because their wants and preferences were respected in the process.

The debate on the efficacy of ownership may be largely resolved by a) creating a standard definition of the strategy and b) consistently measuring the impact of ownership using the same definition across different contexts. Currently, though there are many strong opinions on whether ownership works or not, there is no standard definition of how to consistently and effectively implement the strategy in the WASH sector found either in the literature or among participants who were asked. This begs the question, if we cannot define the strategy or processes used to create it, how do we know whether or not we are talking about the same strategy much less if it works or not?

To give an example, participants mentioned that some type of contribution – usually financial, labor, and/or some other combination of resources was required of the community in order to help the communities feel ownership. However, when asked, only one of the participants (who worked in the private sector) could state exactly how much financial contribution was necessary to create the intended effect of ownership. The rest did whatever they each thought best, and as the results show, asking for an undefined amount of anything does not equal ownership. It equals an attempt to create ownership that may fail for many reasons, including but not limited to: a) the theory that ownership may not work, b) lack of data and definitions on how to create ownership in practice, c) context, d) a number of other reasons not explored here.

Further research is necessary in order to define what processes create ownership and in what contexts, if any, are most appropriate to use this strategy. Some participants would argue that ownership does not work and that such research would still miss the mark. However, I would argue that currently international agreements like the Paris Declaration are calling for ownership at a higher level – country instead of community. While a government may have the ultimate calling or responsibility to own a water system compared to a community, many of the principles of trying to create effective ownership in practice are the same. How is ownership defined? What processes specifically create ownership in a government? How do you know ownership has been achieved – i.e. how is it measured? And how does all of this change across countries and within countries but different contexts? Until we can answer these questions, the same social challenges we have faced at the community level may continue to affect us as we try to shift our focus from creating ownership in communities to government.

Preventing failure and protecting investments refer to actions that participants take that serve as insurance against likely risk factors that threaten the long-term sustainability of an effort. One would think that there would be more emphasis in the literature on this theme given the high rates of non-functionality in the sector, yet there still seems to be a dominating hope or expectation that if a WASH effort is done, it will work out. As shown before, this is not the case. One study found that 35-80% of efforts failed in Sub-Saharan Africa, one of the main regions in need of water and sanitation (Sutton, 2004). With such high rates of failure, one would think that donors would want to invest in mechanisms to protect their efforts. Many participants, however mentioned that it was often a challenge to get the funding they needed to do preventive efforts such as pre-assessments while others found that the same pre-assessments could be used as a way to engage donors as an active part of the process (P17). Therefore, future research should investigate not only the risk factors and preventive strategies but also the best ways to communicate them to donors to show them evidenced-based ways to protect their investments. In the meantime, Box 3 and Table 13 provides a list of some of the risk factors stated in this study.

Box 3: Strategies Used in Examples that Did Not Work

Risk Factors for Failure in Examples that Did Not Work

- Approach inadvertently created wrong community perceptions
- Community “imperfections” – attributes of community that might indicate they are not ready
- Perceptions or fears of religious differences between communities and donors
- Duplication - multiple sources of water and sanitation at communities
- Improper site selection
- Lack of security – parts of well were stolen
- Delivering organization left after installing infrastructure
- Failure to resolve problem in timely manner
- Delivering organization not physically present

Participants cited many risk factors, but each risk factor above was cited by only 1-2 people. The high variability of risk factors can make them difficult to plan for and can create a source of unknown threats. While there is no magic bullet approach, there are many protective strategies that donors and organizations can take to prevent failure. Learning how and committing to forming strong motivation structures, thorough pre-assessments, and rigorous monitoring are important strategies participants mention. In addition, accountability and transparency is another subtheme, which participants sought to create through forming checks and balances and cross-inspection visits to manage/prevent corruption. Finally, investing in quality, starting small, and building up a good reputation so services are trusted and scaled are other strategies participants mention. Table 13 provides a more detailed list of more specific subthemes and strategies (unit of analysis that makes up subthemes) participants believe to be effective.

Table 13: Subthemes and Strategies to Prevent Failure that Participants Believe Work

Subthemes	Strategies
Accountability and transparency	Accountability
	Checks and balances
	Cross inspection visits
	Transparency
Back-up systems	Build redundancy into system
Pre-assessment	Pre-assessment - determine community preparedness
	Community cohesion
	Community history
	Willingness to behave as part of a collective
	Capacity to carry out responsibilities
	Vetting process
	Community history
Prevention	Community demonstrates meeting certain pre-requisites before technology is introduced
	Demonstrate meeting certain pre-requisites
	Make sure there is a strong demand before you start
Protect investment	Hedging bets - spreading out investment
	Market forces as indicator of how much people want to pay
Quality	Do less - well
	Starting small
	Taking time to do it right the first time
Respect local	Willing to walk away
Security	Guards at water point
	Protecting well water from being contaminated
Take time	Time and patience
Reasonable expectations	Reasonable expectations
	Setting conservative expectations on timing

Need for Increased Commitment to Learning

The importance of learning is one of the main themes that emerged and was mentioned by 17 out of 22 participants. Learning, especially through the use of pre-assessment studies for each effort, is essential to carry out many of the other themes brought up by participants, including respect and aligning efforts with local stakeholders. Learning through pre-assessments also helps prevent failure and protect investments by mapping out the strengths, weaknesses, assets and threats of any situation. These sorts of pre-assessments were the single most referenced action participants took to prevent failure and protect investments (9 sources, 32 references).

Participants also used pre-assessments to lay the foundation for many of the other social themes that participants said were necessary for successful delivery of water services. Some examples include:

- Looking for and identifying strong local leadership
- Assessing existing capacity
- Building strong working relationships
- Making sure there is a demonstrated want – learning communities' needs, priorities
- Assessing whether or not a community is ready to maintain the outcome by looking at community attributes such as social cohesion, willingness to behave as part of a collective, and community history.

The length of time for the pre-assessments and the components chosen in each varied, but examining some of the attributes of failed efforts underscores the importance of learning in the beginning. For example, one of the main attributes participants reported they looked for was theme of social cohesion or community dynamics evidenced by factors such as division and community history. A failure to spend time learning often missed these crucial components to social sustainability, which may help explain why lack of unity or common purpose was the #3 reason participants gave for why specific examples of water efforts did not work.

The real challenge to learning is not learning itself, but rather a lack of commitment to learn. One participant remarked:

“Absolutely, the process is scalable and replicable but what you got to do is you’ve got to get organizations to buy into the idea that investing in learning and reflection is important. That means they’ve got to buy into the idea that the data is important, buy into the idea that it’s actually worth prioritizing time to talk to each other” (P15).

The participant calls for a renewed commitment to learning and understanding that the accomplishing of larger objectives – such as scaling efforts – depends on it.

Another participant and leader in the sector put out a call to action to increase learning:

“There’s a real challenge for those who are gathered here. The change of pace is fast. The need to learn and adapt is high. Governments are not good at innovation and risk taking. Where is the necessary testing and proving of new ideas and approaches going to come from? I would argue here that it is the world of humanitarian and especially non-governmental system has the potential to accelerate learning and innovation in WASH.

That would mean greater emphasis on innovation, acceptance of failure, commitment to critical evaluation, real learning, and active adaptation to confront our 21st century challenges. It's not the way most of us work today. Whether you embrace that challenge, will contribute to the pace of future progress” (P20).

Learning, acceptance of failure, critical evaluation, and active adaptation are necessary ingredients to increase the pace and scale of change. The lack of existing monitoring data shows that the sector has been shy or reluctant to commit to learning in the past. Understanding and discovering what those barriers are and addressing them would be a vital next step in transforming learning from a burden and threat to a necessary form of insurance for achieving long-term sustainable results.

Identifying and Working with the Right People

One of the main themes that people mentioned was working with the right people. “Right” of course differs in every context; but in general the attributes of “right people” that participants described can be summed up as local, leader, and respected. These are often people in formal leadership positions. More than one third of participants (8 out of 22) stated that strong local leadership and working through local leadership were attributes they both believe to work and that actually worked. The same number of participants (8 out of 22) emphasized that identifying the right people was a vital step in the process.

In addition to working with formal leaders, many of the participants adamantly emphasized the importance of finding opinion leaders – or people in the community or government who others respect. These may or may not be elected officials. One of the participants gives the example of how religious or cultural leaders can shape action:

“Yes. Until somebody comes up, a religious leader or some cultural leader comes in and says ‘Hey you people, look here. I’m going to bring my child to be immunized so everybody should bring their children to be immunized or I am the one who is going to be immunized’ ... Some of them are even coming up and responding due to fear. If I’m not in that meeting, how will this leader see me, if he meets me the next day and I was not at the meeting where they immunized all the children. Where are my children? I need to be there” (P1).

This example ties into the earlier discussion on motivation. It is not that local people do not want their children to be healthy, but they may not share the same understanding of the importance of the vaccine. However, they do understand the importance of love and belonging and self-esteem. Both needs are higher level sources of motivation on Maslow’s hierarchy of needs, which opinion leaders and the rest of the community following the opinion leaders amply provide.

Whether or not participants were working with the right people often was reflected in their roles and responsibilities, which is another important sub-theme. Those participants that advocated working with the right people often found themselves in a support role rather than lead role. For instance, instead of serving as the primary or permanent change maker, these participants identified local leaders who could serve or be trained and built up to fill that role. In this study,

the leaders included officials in government, coordinators in community, and entrepreneurs in business (P3, P15, P19).

Different stakeholders used different methods to identify local change makers with varying results. . As mentioned earlier, one participant hired two greatly respected people in the communities where she was working. However, the gender norms and relations in that area made it such that it sparked jealousy among the woman's husband, which dramatically ended the project (P8). In contrast, a different participant was working with a respected female leader in a different community and context. Unfortunately the leader passed away early on in the efforts. The director reported feeling very fortunate that the leader's son, motivated by his mother's commitment to the cause and a love for his mother, took over as the community coordinator. With reliable, regular, local supervision, all of their wells (60+) are monitored and working. The director stated that she did not think the project would be possible without this local community coordinator, and that it is difficult to find another person to take his place should he need to leave. Finding ways to more consistently identify local leaders to spearhead processes is another important area of research in augmenting the social sustainability of delivering rural water services.

Where there were no "right people", other participants found it effective to train and create the right people. One participant put ads in newspapers, and he learned to look for specific characteristics of people who were likely to be successful. He learned that not all people were made to be entrepreneurs – only 1 out of 7 that he interviewed from his initial cohort of 85 succeeded. The participant found in a study that the reason this entrepreneur succeeded because he had the mindset of an entrepreneur. The man had already worked as an entrepreneur in another capacity and was transferring his knowledge/skills. Applying Maslow's theory, an entrepreneur must be an entrepreneur; and so he was being motivated not only by job security but also by self-actualization. The participant (P4) found that higher-level motivation combined with capacity building enhanced the entrepreneur's skills in a way that enabled him to achieve success.

The idea of working with the "right" local people is consistent with what is found the literature. For example, working with and respecting local leaders, especially in government, is an essential part of the Paris Declaration. The fact that a third of participants also mentioned the same importance shows that there is progress towards aligning WASH sector strategies with the PD, but there is still much room to grow. Future research and strategies should explore how to better identify and strengthen local leadership, both formally with those who already hold leadership positions as well as informally with local opinion leaders. Working with the "right people" not only helps to navigate and translate otherwise difficult cultural barriers but also helps to build capacity and accomplish the ultimate goal – long-term sustainability through an equipped and motivated local leaders and workforce.

Demand refers to the extent to which local stakeholders want safe drinking water as opposed to the extent to which we (outside stakeholders) believe they need safe drinking water. A review of the literature shows that demand is a popular topic and considered an important component of sustainability (Water Aid, 2011). It is unclear, however, whether anyone has figured out how to reliably create and achieve demand. The purpose of this section is therefore to share some examples of strategies participants used to create demand as well as to share participants' recommendations and insights.

Box 4 below illustrates a number of the different characteristics (or attributes of strategies) that participants believe to be effective in assessing and creating demand. In general, participants felt that it was important to have evidence of a demonstrated want before they began an effort – essentially some sort of tangible evidence. Local stakeholders coming to participants to ask for or initiate an effort was one form of particularly strong evidence. Another common form of evidence was some type of community contribution. As discussed in the section on need for precision, we may not have clear indicators of how much contribution is enough to reliably create demand in different contexts.

Box 4: Characteristics of strategies used to create and assess demand in examples participants reported to work and believe to work

Look for demonstrated want:

- Communities come to them
- Evidence of buy-in
- If really want it, will repair it
- Make a commitment by signing an agreement
- Community contribution
- Well received – use it

Generate want:

- Generate critical mass (number of people needed to buy into a product or idea to create exponential demand)
- Promote intervention within communities
- Start production with self-supply or very small communities. Self-supply will become communal supply
- Create and keep a good reputation for the intervention

Learn:

- If there is strong demand before you start
- Market forces as indicator of how much people want to pay
- How local people perceive water
- What a community really wants – felt need

Assess and respect whether local stakeholders are convinced/believe there is a problem:

- Conduct tests in front of community
- Create awareness of importance of treating water
- Help communities see benefits of an intervention

One strategy highlighted in the box is to generate want. For example, one of the most successful examples in this study focused on creating what one participant called a critical mass, or number of people needed to buy into a product or idea to create exponential demand (P3). He did this by creating full-scale demos and by starting with a small number of families or a small community. Once it was successfully done and modeled in a smaller area, the participant described how people would naturally want what they saw a) because they saw it worked – it took the risk out of it, but b) they would want it because everyone else had it (belonging, self-esteem). Starting small allowed him to create a good reputation for the product, which was essential to scaling it later.

Example of effective strategy to generate demand – focus on quality

One specific example brought up by participants is the demand for quality. Often it is assumed that because the poor are poor, they will be ok with using “crappy services” (P6). Over one quarter of the participants mentioned in unrelated questions that the poor want quality services (P1, P3, P6, P10, P15, P20). A specific example that came up in an interview was the Tata car built in India. It was marketed as a car for the poor, but it failed miserably because no one wanted to buy it. In response, the participant said, “It’s like that \$2,000 car. We’re going to say, it’s available for this but you don’t want to come from the beginning and say ‘I’m making a cheap car for the poor’ - even the poor don’t want to be classified as poor. They have human dignity” (P1). He then discussed how the Chinese had been so successful selling cell phones in his country – which were cheap, but not marketed as phones for the poor.

Example of unsuccessful instances - conflict of interest – division

In one example, a participant reports walking into a village in which there was dissenting opinions on where the water-point should be. It was clear to him that there was a strong conflict of interest and even if the water-point was built, there was a high chance that it would not last. When I asked if he felt it was better to walk away in those cases, he responded:

“Yes, because there’s no point ... You might put a project there and then probably you put it somewhere, some people want it there, other people don’t want it there, once you put it there, people are funny, they might even come and destroy it within a day or two so it doesn’t make sense” (P22).

The participant illustrates that even when there is demand, if it is not unified demand in communal systems, there is still high risk of failure. The participant emphasizes, “*Once you have divisions, then it cannot work*”(P22). He was not alone in his experience. Division, or lack of unified demand, was the third highest reason mentioned by participants why their examples did not work.

Not forcing demand – willing to walk away

The participant above (P22) illustrates another important part of demand in the community management model: the importance of being able to walk away if there is either no demand or a conflict of demand. Water Aid in their sustainability framework states, “If real demand for the services or changes offered is weak, this can completely undermine prospects for sustainability” (2011). Yet in practice, participants report that while it is difficult to walk away, forcing something with a small likelihood of working does not lead to sustainable or beneficial results (P8, P20).

There are many difficulties with walking away, including ethical – water is a human right. Also, after investing so much energy, people want to see it through. One participant, for example, shared how she recommended to a funder to choose a different community as the pre-assessment revealed that the community had internal division that might preclude a successful outcome. However, the donor did not want to let go of this community because they had personal attachments (P19). As another participant in government reported (P1), this can actually be counter-productive because instead of being able to invest in increasing coverage with new systems, he must use the country budget to fix old broken systems.

When is it appropriate to generate demand, and in what contexts?

One of the single largest debates that came out of this research is the difference between community management approaches and service delivery. One focuses on providing technology which the community then manages, and the other focuses on delivering services (continual access to water) rather than a technology. In the community management paradigm, demand is of the utmost importance. As written in the literature, lack of demand or low levels of motivation act as a “killer factor”, or in other words a factor which can completely destroy the possibility of the service or behavior being sustained” (Water Aid, 2011).

In a service delivery system, demand is also important, but the actor to whom it is most important changes. In service delivery, there must be a high demand among those who will continue to deliver services over time, in this case most likely the governments. How demand is generated among governments is an important topic that future research should explore.

How do we more accurately measure demand, and what are the alternatives?

Participants emphasized that demand can be difficult to measure, largely because our perception of what people want is based on what we think they need, which may or may not align with what local stakeholders want or need. In this context, a want is something that that locals desire and feel is a need, regardless of outside perceptions. A need may be something that is a genuine need, but may or may not be perceived to be so by local stakeholders. Participants emphasized that being able to tell the difference between the two before beginning was a large predictor of future sustainability.

Often we mistake verbal responses as indicators of demand. Water Aid states, “A positive response to an offered intervention in a community is not sufficient evidence of that demand” (2011). Participants agree, you cannot take words at face value with demand. “*Of course people are going to tell you they want a free thing. They are not going to say no*” (P1). While no participants reported any guaranteed strategies or direct ways of measuring the level of demand, many had created proxies to at least try to measure potential indicators. Most of these assessments of demand took place in the form of pre-assessments, all of which were specific to their respective organizations. Some were more extensive than others, requiring up to months in assessing and preparing a community (P17). Others used an application process combined with site visits (P22), and others did more formal assessments and then walked away if necessary (P8).

The challenge is often discerning with certainty the degree of the demand. When asked how they measure demand, most participants did not have a clear response. Interestingly, the participant from the community seemed to have a much easier time discerning true demand. He

was able to translate not only the language but also the subtleties of the culture that would be very challenging for an outsider to do – especially respectfully (P22).

One question that arises from this then, how can we get our own biases out of the way in order to accurately assess demand? A number of the participants agree that looking for evidence is an important part of their strategy. Some participants used formal assessments and indicators (P17). Another participant reported simply looking for evidence in other areas – have they maintained the church? How have they maintained the soccer field (P10)? Another participant recommended doing what you think is best based on evidence, monitor, and tweak as necessary (P5). Future research may be able to help by providing more reliable indicators and ways of assessing demand across different contexts.

Applying Maslow’s theory, it would be worth exploring whether learning how to align WASH sector strategies with higher level needs would help reduce the need to discern the degree of demand. For example, if we know that economic security is a higher level need that motivates most people, would connecting WASH sector approaches with efforts to create economic security generate a sustainable source of demand? In this scenario, WASH is a means to an end rather for the local people, but the end that outside stakeholders wanted – clean water – is accomplished. Researching how to attach our approaches to higher level demands we know are universal such as love, belonging, and self-esteem may be a useful next step.

5.3 The Bigger Picture - How strategies align or not with the Paris Declaration

Comparing the Paris Declaration to the themes that emerge from this study helps to provide a useful benchmark by which to assess how what we are doing in the WASH sector compares to the bigger picture of what the international community is doing to improve aid effectiveness. It also serves as a useful starting point to see which strategies could be brought more in line with what has already been agreed upon internationally. The results illustrate that the discussion in the WASH sector about what participants believe to work and not work align well with the commitments in the Paris Declaration (2005). However, it is unclear to what extent the recommendations made in the Paris Declaration are being met in practice.

On the Right Track - What participants believe to work/not work aligns well with the PD

95% of the main themes that participants believe to work or not work could be placed in one of the categories of commitments outlined in the Paris Declaration (PD). The remaining theme, assumptions, was the only theme in that participants believed did not work was the only theme that did not fit into the framework of the PD using the definitions in Table 7. This theme may be important to include as blind spots can derail efforts if not properly planned for or addressed in the beginning.

Alignment between the PD and what participants believe to work

The main themes in the believe to work category can all be placed within the Paris Declaration (PD) framework using the definitions and descriptions outlined in the document itself (Table 7). For example, the need for capacity building was the second most frequently mentioned theme that

worked and is a theme found throughout many of the different categories of the PD – especially ownership and alignment.

Another major theme emphasized by participants is the need to respect local stakeholders wants, needs, and priorities. This theme fits perfectly into the PD’s call for alignment – “donors base their overall support on local partner countries’ national development strategies, institutions and procedures” (2005). Those participants who work at the national level emphasized the need to follow national policies and to make sure efforts were in line with government efforts (P1, P13, P14, P15, P18, P20, P21). For those who were working more with communities, though the context was different, the emerging theme was the same – “listen, learn, and act on local wants and priorities”.

Alignment between the PD and what participants believe to not work

Similarly, the themes that participants believe does not work also fit well into the Paris Declaration Framework. All themes and subthemes could be placed into one of the five categories except one: “assumptions”. This finding is consistent with the literature, which also challenges many of the assumptions made by the PD (Brugha, 2009; Hyden, 2008; Schulz, 2007). One of the assumptions mentioned by participants in this study is that local stakeholders share the same perspective as outside stakeholders. In reality, the backgrounds, history, and experiences color both the understanding and priorities of foreign and local stakeholders.

Another assumption mentioned in the “did not work” category is assuming regular maintenance will be part of the subsequent government budget (P1). In this case, the participant was referring to how as part of alignment, foreign stakeholders think that they are improving sustainability by working with the local government and giving them their system or service when they are done. The PD does call for country ownership, but the participant points out that passing the responsibility in the end fails to engage country ownership from the beginning. It also creates fragmentation rather than harmonization, and it shifts the responsibility to the country partner instead of promoting mutual accountability.

Unclear to What Extent Rural Water Strategies Align in Practice – Room for Improvement

What worked and did not work in participant examples could be better aligned with the PD

While the categories of what worked and what did not work also had many overlaps with the PD, these two categories also had many more themes which were not found in the PD framework. People and processes are largely missing from the PD. For example, participants discussed the importance of process, identifying and working with right people, rights and equity, strategies for behavior change, and strategies for creating good working relationships with people as important subthemes in creating socially sustainable solutions.

In the did not work category, there were other subthemes that emerged that were also not mentioned in the PD, such as community (or country) attributes. Within community attributes,

division was one of the largest attributes mentioned that did not work. Participants themselves were divided on these subthemes as it implicated issues of human rights and equity. Do community attributes matter if water is a human right? One participant put it this way: *“Water is a human right, but there are certain pre-requisites to make the execution of that right sustainable”* (P4).

Another theme not found in the PD is “human nature”. Leaders and implementers alike were baffled over the results they witnessed. An organization had used the same approach in nearby communities, yet one worked and the other failed. The only differences participants could point to were local leadership and human nature (P21, P19, P1). Another attribute of human nature, described by Maslow is the desire for “self-actualization” or self-fulfillment. In the conscious or unconscious desire to reach outside self-actualization, the efforts participants stated that did not work were often rushed, took short cuts, and did not follow the exact process recommended. For example, one participant shared how another organization had tried to replicate his approach but failed because they tried to use the wells for more people than the technology was designed (P3).

A Need to Further Incorporate Social Aspects of Sustainability in Existing Frameworks

The Paris Declaration (2005) and other sustainability frameworks in the WASH sector (Schweitzer et al., 2014) give many indicators for how to improve aid effectiveness, but they do not give much attention to the people and processes responsible for implementing these strategies. Perhaps forming good relationships with local stakeholders and creating effective incentives are implied, but the results of this study show that they are important themes that must be addressed in their own right. For example, there may be certain processes (or ways) of aligning efforts or creating ownership that are more effective than others. Without detailed communication of best ways to implement commitments in different contexts, development professionals will continue to do what is best in their sight, which may or may not yield the results we seek. Paying more attention to the details of how to best work with people in different contexts may help us overcome some of these challenges and more reliably produce sustainable results.

Connection to Other Findings and Future Applications

A look at Maslow’s hierarchy of needs helps to shed light on some of the difficulties in creating government ownership reported in the literature (Hyden, 2008; Schulz, 2007). In Maslow’s framework, a healthy government is one that is self-actualizing –that is motivated to be what it can be, and in this case have ownership over its own development. In reality, where each country government is on Maslow’s hierarchy of needs varies. Some may be focused on physiological needs, but more often than not – just like individuals – leaders within governments also have an innate desire to reach higher levels of the pyramid. This might help explain why governments may not have been motivated to make water a priority in and of itself, unless it is tied to their own higher level need for self-actualization. Integrating the principles that have been proven to be true from frameworks on motivation like Maslow may help us to more consistently and effectively implement sustainable strategies in line with international agreements and recommendations.

5.4 Lessons Learned from Maslow to Increase Social Sustainability

Using Maslow's theory as a base, this study sets the stage for future authors to incorporate critiques, advancements and other theories to be able to more reliably create sustainable motivation infrastructure in delivering rural water services.

Why Physiological Needs May Not Be a Primary Motivator

Lack of Precise Definitions and Processes in Frameworks

Maslow's hierarchy of needs is commonly depicted by a pyramid (Figure 4) created by other people to summarize Maslow's framework. Comparing Maslow's Theory of Motivation to the pyramid reveals that in trying to simplify and communicate Maslow's theory, many important details were lost that may significantly affect whether or not his theory is correctly applied. It also illustrates how oversimplified frameworks found in the WASH sector may also be missing important details necessary to effectively deliver and scale sustainable services.

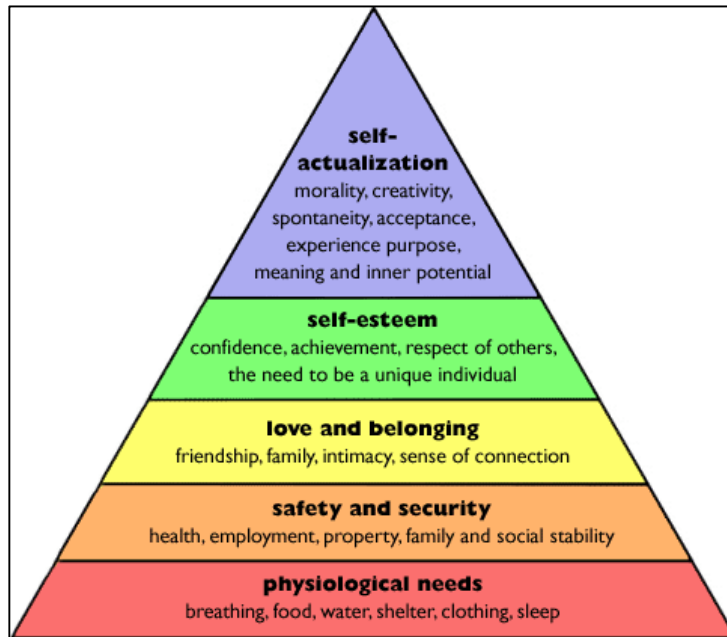


Figure 4: Example of a Pyramid Representing Maslow's Hierarchy of Needs (Wikipedia, 2014)

Figure 4 is a typical illustration of Maslow's hierarchy of needs found on popular Internet sites such as Wikipedia. As the figure shows, Maslow's hierarchy includes five primary levels of motivation – beginning with physiological followed by safety and security, love and belonging, self-esteem, and self-actualization. What it does not show is how each of the subcategories are defined and whether they are actually listed in Maslow's article. A review of Maslow's Theory of Motivation reveals that what is listed in the pyramid is neither a comprehensive list or entirely

accurate. It often uses one word to represent large concepts that without definition could easily be misinterpreted.

The over-simplification and miscommunication of Maslow's framework illustrates the dangers of using over-simplified frameworks to successfully reproduce sustainable results. As illustrated, if one based an approach on the information in the pyramid or from colloquial knowledge based on the pyramid, it could lead to the design of results that are absolutely against what Maslow described in his theory. Looking at the pyramid, "water" is included as one of the physiological needs (Wikipedia, 2014). In this simplified framework, there is no indication of how "water" is actually defined. Does "water" refer to quality, quantity, health, taste, and/or aesthetics?

Left open to different interpretations, the WASH sector has traditionally treated anything to do with water as a physiological need and a health need. Approaches to improve water therefore have followed these motivations, leading to strategies that focus on health. Increasingly public health practitioners have found that messages and approaches focused primarily on health will be useless if used improperly or not at all (Mosler, 2012).

If we looked only at the pyramid (Figure 5), it would be confusing why this is the case. Water is one of the most basic needs. Why would that not motivate people? Reading the first two sentences of Maslow's paper "A Theory of Motivation" (1943) provides valuable insights:

1. Looking at the whole person is integral to motivation theory.
2. The thought that hunger or any other physiological need is the sole driver of motivation has been rejected. Instances where physiological needs are the only driver are atypical.

Maslow states that the whole person and all of their needs – not just physiological needs - must be taken into account and addressed in order to successfully motivate someone. Maslow also rejects the idea that any physiological drive, including water, should be the center of an approach to motivation. Where it has worked, Maslow says this has been the exception – not the rule.

Therefore, reading the details of Maslow's theory, it fits that approaches in the WASH sector that have focused just on physiological needs have had difficulty except in the cases where there was true physiological need – as in the case of water scarcity. True physiological need, as defined by Maslow in his article refers to homeostasis – or "the body's automatic efforts to maintain a constant, normal state in the blood stream" (Maslow, 1943). He then lists what he means by homeostasis and physiological needs: "(1) water content of the blood, (2) salt content, (3), sugar content, (4) protein content, (5) fat content, (6) calcium content, (7) oxygen content, (8) constant hydrogen-ion level (acid-base balance), and (9) constant temperature of the blood..." In reading Maslow's theory, we see that the physiological need he was referencing with regards to water was for homeostasis: "water content of the blood". He does mention thirst, but like hunger, mentions that thirst taken alone is not the centering point for motivation except in emergency or extreme conditions where physiological homeostasis requires it.

In addition, it is not clear from the pyramid that it is a) important to address multiple needs at the same time, and b) that Maslow himself warned that focusing on a somatic need – physiological need only – was "rejected" as a model for motivation. Somehow these details were lost in communicating the framework. Maslow's physiological, quantity-driven description of water is consistent with what we see in the responses of participants. Only one participant working in the

Kenyan desert discussed a dire need for water quantity that was evidenced by people changing their whole way of living and relinquishing their nomadic lifestyle to live closer to the water-points that were built. Most of the other systems that were discussed were issues of water “quality”, which both participants and Maslow’s theory agree have not proven to be a great motivating factor in and of itself.

Lack of Precise Definitions

Much of the contention on Maslow’s theory comes from the lack of clarity on what the term “satisfaction” means. Maslow states that lower level needs must be satisfied before people pursue higher level needs, but how do we know whether someone perceives that their need is satisfied or not?

In a well-known critique of Maslow’s Theory of Motivation, Alderfer (1969) questions Maslow’s theory of pre-potency and argues that satisfaction is not a pre-requisite to move onto higher level needs. In contrast, Maslow’s model says that a person’s lower needs must be “satisfied” before moving onto higher level needs. These two theories appear to be in opposition to each other.

Considering Maslow’s model, we may at first be baffled by the fact that more people in India have cell phones than toilets (Hannon, 2012). In what we think to be Maslow’s model, we would put sanitation in the basic, physiological needs – so why then are people buying cellphones before toilets if this model is true? There are a few explanations – 1) Maslow’s theory is false, and Alderfer is right that existence needs do not need to be satisfied before higher level needs; 2) Maslow’s theory is true, and the way we are interpreting it is false, 3) some combination of the two or another reason all together.

Drawing on some of the earlier findings from this study, we see that the need for precise definitions may also help bring clarity to this question. When Maslow says, previous needs must be “satisfied” – what does he mean by “satisfaction”? While not explicitly stated in the literature, there seems to be an assumption that “satisfaction” means the complete fulfillment of a need according to our perceptions. However, in his Theory of Motivation, Maslow makes the important distinction: “But a want that is satisfied is no longer a want. The organism is dominated and its behavior organized only by unsatisfied needs. If hunger is satisfied, it becomes unimportant in the current dynamics of the individual.” According to Maslow, a need is filled when the *individual* feels like that want is satisfied – not when *we* think their need is satisfied.

This is not to say that there is not a real need to address health related issues such as water. However, using Maslow’s theory, when is water still a primary motivator for people? When in the perception of local stakeholders is that need satisfied to the point that they are willing to tolerate it and move on to higher level needs? And how can we tell from person to person and place to place? If we approach the situation from our own perspective, it would make sense that water and sanitation needs would still be strong motivators because our needs would be far from filled in those situations. One participant put it this way,

“...if you’re in the water world, you’d think ‘*Oh, water is the most important thing in the world*’, and then you go see people they have a satellite dish and they get their water out of a river, and you think, ‘*What?*’ ” (P11).

However, as participants who are from or have lived in Africa point out, these people have lived in these conditions for a long time and in many cases have just accepted that this is the way things are. One of these participants shared:

“People [local] need to move from that point of view, but quite often it is the elites who know about the benefits of good water. These people will be telling ‘Oh, I’ve been here for many years. We always fetch our water from the pond. We pick our water from there and it has not given us any problems; when actually it has given them problems but the problems of maybe disease are not that much linked” (P1).

Another participant put it more bluntly:

“Sorry, that [health] is not a motivator... Yes, for people in the WASH sector, we want people to stop cholera and diarrhea. That’s it, that’s why we do what we do, but community, pardon my French, communities don’t give a shit about it. Seriously, they don’t” (P4).

Connecting this sentiment with one of the other main themes that emerged from this study – the need to focus on what people want and the importance of perceptions - Maslow’s definition of when a need is fulfilled may help shed some light on why our approaches may not be working in some cases. For example, if an individual perceives that his needs with water and sanitation are either met, satisfactory, or as described by participants - *tolerable* – he/she may not be particularly motivated by water or health any more but more by higher levels in the pyramid. The key word here is *tolerable*. Maslow’s theory does not say each need must be satisfied perfectly before they pursue higher level needs, just satisfied, which of course varies from person to person and the history and context from which they come.

The results of this study therefore question whether the current emphasis on health, water, and physiological needs such as diarrhea are the most effective motivators for local stakeholders. Further research should be done to determine whether or not our primary focus on physiological needs is the most appropriate and effective form of motivation. What are the alternatives? Do we have to focus on protecting human health in order to protect human health? Or is there a way to structure our strategies to focus on higher level needs that meet the health needs in the process?

Participants believe that strategies that aim at higher level needs may be more effective.

An alternative to trying to discern people’s true levels of satisfaction for physiological needs is to center approaches on higher level needs. Maslow himself says that motivation should be focused on ultimate goals. Specifically he states that motivation should center on ultimate rather than partial needs and on end goals rather than the means to the end. In the case of drinking water, it is questionable whether water is anyone’s ultimate goal in life; rather, water is a means to each person’s ultimate goal. Therefore, successful motivation according to Maslow would focus on local stakeholders’ end goals (or actualization) rather than partial means (physiological needs).

Looking at the literature, Subrahmayan and Gomez Arias (2008) also state that the lowest income consumers in the world are motivated not just by survival and physiological needs but also by higher level needs. Furthermore, they find that products that fill higher level needs, especially those that connect to jobs and education, are more likely to succeed. This is consistent with the

findings in this study. Higher level ambitions such as job offerings were some of the strongest incentives mentioned by participants. Consequently, if people have a desire to fill higher level needs, it should be expected that people would want to move on from some of the basic needs as soon as their bodies would physically allow (no perceived, immediate risk of death).

We see this in our own experience as well. Heart disease, a disease associated with lifestyle, is the leading cause of death in the United States (CDC, 2014). If our primary motivation in life was health, would heart disease still be the number one killer? Would we have the problems with smoking, obesity, and any of the other leading causes and contributors of death as well? These observations suggest that we all have higher level motivations other than health – and as long as those things do not kill us now – or we do not think they will kill us now – our internal prioritizing system may put the higher level needs first. Lack of water and sanitation may be no different. It may be a different killer, a different context, but there may be a similar rationale in prioritizing motivations.

As a result, it is worth further investigation to confirm whether approaches that are aimed at the bottom of the pyramid – such as health and water, inherently may not align well with how humans are motivated. In support of this theory, Subrahmanyam and Gomez-Arias also found, “Products that have linkages to other needs are more likely to be sustainable” (2008). An examination of strategies in this study reveals that the ones aimed at higher levels of motivation – such as the self-actualization of local stakeholders – participants believe to be far more effective (105 strategies focused on local self-actualization) compared to those focused on health (8 strategies).

There are a number of examples in this study of participants who also found that linking strategies to higher level needs proved effective. One participant did a particularly excellent job of aligning his strategy with local motivations. Knowing that mayors are primarily motivated by re-election, he used the delivery of WASH as a means to help mayors not only get re-elected but more importantly advance. In addition, this strategy further motivated incoming mayors to continue the water services, not only for their own self-actualization but also for their reputation and self-esteem. The participant explained:

“A whole new breed of mayors have come in who basically know they have to deliver and if they don’t, they’re going to be out, and if they have ambitions for higher office, which all of them do... what ends up happening is that mayors just start to demand it (WASH) (P6).”

This example shows not only how to create an approach that aligns with higher level needs, but it also illustrates that understanding human motivation and aligning our strategies with it can work at any level – not just the community. Further research on how to create approaches that effectively target and align approaches to higher level needs across different stakeholder groups may be a beneficial next step. In addition, it is important to note that aligning rural water services and WASH strategies with local motivations does not have to be mutually exclusive with the motivations of outside stakeholders. For instance, some participants were internally motivated by health, but externally they centered their approaches with local stakeholders’ desires to reach higher levels of the pyramid.

The community health clubs mentioned earlier is an excellent example of effective motivation. In Zimbabwe alone, the participant and her organization trained 17,578 people in 457 health clubs in 429 villages members in 433 communities through an 8 month curriculum on topics related to

health (P12). The participant's motivation was clearly health, but she understood that the community members' primary motivation may or may not be health. As a mother herself, she understood that every mother wanted to see their child thrive. However, she also understood how gathering in a group setting created essential aspects of love and belonging and self-esteem – two of the higher levels on Maslow's pyramid. When asked if the community members liked the clubs, she replied "they love it! They walk for miles, dressed up. For them it's like a second church – an excuse to get together..."

Finally, applying Maslow's theory to our first examples, cell phones illustrate how aligning higher level needs can lead to widespread scaling of results. From a motivational standpoint, cell phones help provide love and belonging by helping people to feel connected with each other. They also help with self-esteem as it may serve as a status symbol where it is rare or a motivator if everyone else has one. Finally, cell phones practically help people with their own self-actualization – whether as a tool for work or a way to generate income (safety needs). Cell phones might also serve as a life-saving device, but they are generally not marketed for health and physiological reasons.

Participants believe that strategies that focus on local self-actualization may be most effective.

The results clearly demonstrate that participants believe that focusing on the self-actualization of local stakeholders is a crucial component of socially sustainable solutions. In their book, *Whose Development*, Crewe and Harrison (1998) admit that the pressures of time and obligations to pay staff while showing positive results at all times are often overlooked. There are real responsibilities and challenges organizations must face to survive, which may inadvertently shift the focus to the needs of the donors and developers.

Therefore, Crewe and Harrison (1998) seek to look constructively at the complex factors that affect the process of development and to better understand the underlying motivations of involved parties. In the end, they find a challenging but perhaps useful conclusion:

"Such an examination shows that people working in development aid often overestimate their own importance. It is easy to forget that, for many intended to be on the receiving end, the effects of what developers do are peripheral or even entirely irrelevant" (pp.1).

In other words, it is easy to lose perspective and sight of the fact that development work actually makes up a small fraction of the efforts that countries and communities are undertaking.

In addition, both participants and the literature talk about the pressure to meet the Millennium Development Goals (MDGs), a list of goals and targets set forth by the United Nations to improve global poverty from 2000 to 2015. People are rewarded for fulfilling the indicated targets – in this case, constructing improved sources of water and sanitation according to the definitions outlined in the MDGs. However, the focus of the targets is short-term outcomes that do not necessarily take into account criteria needed for long-term sustainability. As a result, the quick fix remedies often slow down progress by creating more systems that break down and need to be fixed (P1; Bartram, 2007). In contrast, participants believe that the long-term sustainability of a solution depends on whether it meets the long-term needs – or actualization – of the local stakeholders, not the delivering institutions.

For people who feel called to work in the area of development, the challenge is that development can become a form of self-actualization. As Maslow writes in his theory, “A musician must be a musician, an artist must be an artist, what a man can be, he must” (1943). Applying this theory to international development, it would be fair to say that a development professional must be a development professional – someone who helps local people in his/her particular sector of development. As a result, much of the motivation behind his/her actions may come from a place of desire to self-actualize. This is not necessarily bad; according to Maslow, it is natural. The real challenge then is to realize that aligning efforts with local needs and goals to obtain self-actualization will ultimately help outsiders achieve true actualization as well.

Applying the same theory of self-actualization to local people, these stakeholders are likely not interested in approaches that focus on water, health, the environment, or engineering alone unless their personal calling is to work in water, health, or the environment. If their sense of self-actualization is not in one of those fields, water and health is a means to an end – not an end in itself. As a result, both Maslow’s theory and participants agree that strategies that are narrowly focused on only one area of expertise without incorporating the big picture do not likely create sustainable motivation.

Future directions

The results have shown that Maslow’s Theory of Motivation is a good starting point for understanding how some of the strategies used in the WASH sector align with human motivation. Specifically, it provides a useful tool for assessing a) how specific strategies may or may not contribute to sustainability depending on what needs they target, and b) how certain categories of needs such as local self-actualization may be better areas to focus our strategies on than others – i.e. physiological. Future research should further explore how to tie approaches to higher level needs as well as how to balance and work towards the actualization of all involved stakeholders.

It is important to re-emphasize that focusing on local self-actualization is not mutually exclusive with outside self-actualization. According to Maslow’s theory, every person has needs and motivations. Development professionals are human, and therefore have needs. Focusing too much on the needs of any one group to the exclusion of the other would therefore also be unsustainable. What motivation would any stakeholder have to continue if no needs are being met? Therefore, a better question may be: how can we better understand and align the higher level needs and desires for self-actualization of all stakeholder groups?

7. STUDY LIMITATIONS

General Limitations

This study has a number of limitations. First, it was constrained by limited time, resources, and personnel. The sample is small as a result and biased towards NGOs – to which I had greater access. If I had more time, I would have liked to include a larger sample from each of the different parts of the sector represented in this study – especially government, the private sector,

and communities. Consequently, the results found in this study are not representative of all stakeholders. Finally, the treatment of social-psychology and behavioral research is brief as this is not intended to be a social psychology study.

Limitations and bias from work and background in WASH

I have worked in WASH since 2005, and while I have done my best to be objective, I bring my own experiences and insights, which may or may not introduce bias. Specifically, I have worked on the ground with indigenous communities, been a consultant at a multi-lateral agency, worked as the partnership manager for an NGO, and served as the coordinator for water and sanitation efforts for the Clinton Global Initiative. Through these experiences, I have developed a passion for helping diverse stakeholders work together to create sustainable change.

My early work in WASH most greatly shapes this current research. I started by working with rural communities in the Ecuadorian Amazon, where I worked with the local director of health, health promoters, teachers, and a student group from the University of California Berkeley to deliver safe drinking water and hygiene education to 10 communities chosen by the director of health. Through my own success and failures, I learned that that trying to implement recommended frameworks may work in theory but may or may not work in practice. Moreover, I noticed that the same approaches which seemed to work in some communities failed in others. Since the technology (rainwater harvesting), finances, and approaches used in each village were the same, I wondered what could account for the difference in outcomes between neighboring villages that on paper looked the same. A review of the literature suggested that one understudied area of sustainability and potential explanation could be the different people and processes in each context. The social aspects of sustainability became the focus of my study as a result.

My experiences there greatly shaped and affected the questions I asked participants. Having led the implementation of rural water services, I was very interested in learning from other professionals and leaders in the field about their experiences in what worked, what did not and why. In particular, I wanted to understand the details of the processes other leaders and professionals use to implemented sustainability frameworks and to overcome unexpected social challenges and barriers in practice. Therefore, after asking participants to describe their overall approach to sustainability, I asked them to walk me through as detailed a process as they could give for how one would actually implement their framework on the ground. For example, if a participant mentioned that ownership was an important component of their approach, I asked follow up questions to understand how they created ownership, when they created it, how much contribution was enough, how they knew when they achieved it – essentially details that are often left out of written sustainability frameworks but that are necessary for successful delivery. These follow up questions varied from participant to participant depending on the examples they gave, which makes it difficult to aggregate and provide conclusive evidence for them. However, these follow up questions, such as how to define and measure specific social challenges and barriers, provide interesting insights and potential starting points for future research.

8. CONCLUSION

As the MDGs come to a close and the Sustainable Development Goals (SDGs) commence, 783 million people lack access to improved sources of water (Onda et al., 2012). The discussion on sustainability has grown as evidenced by the number of conferences centered on this topic. There is an increasing awareness and explosion of sustainability tools to address the issue as seen in the literature (Schweitzer et al., 2014). Finally, there is a realization that there is a need to do something different, as expressed in the actions and words of participants in this study. The question is, what will we do?

There are many pieces to the puzzle that need to be addressed and that are being addressed to varying degrees. Important areas such as financial sustainability have received attention in recent efforts such as life-cycle costing (Moriarty et al., 2010). In addition, a review of sustainability frameworks presented at the Addis Ababa conference in 2013 reveals that social aspects of sustainability are considered “weak” compared to the technical “strong” (Harvey, 2013). As a result, this study sought to explore some of the social challenges and barriers to delivering sustainable rural water services.

Twenty-two participants were interviewed to identify characteristics of approaches that work and do not work according to the specific examples, insights, and experiences of the participants. After analyzing the data using NVivo10 software and qualitative analysis methods outlined by Auerbach and Silverstein (2003), I found that there were eight main themes that emerged which were consistent across what participants believed worked and did not work and found worked and did not work: creating effective incentives, building local capacity, respecting local stakeholders priorities and preferences, learning before, after and throughout the process, preventing failure and protecting investment, ensuring on-going monitoring and maintenance, identifying and avoiding assumptions, and focusing on what people want rather than need.

These themes and their subthemes align well with the Paris Declaration on Aid Effectiveness (PD), written in 2005 by ministers of developed and developing countries to scale and increase impact of aid. This signifies that the discussion on what participants believe to work and not work align well with the bigger picture of efforts to improve development, but the degree to which efforts in the field meet the agreements made in the Paris Declaration are yet to be determined. The lack of monitoring data makes it difficult to tell, but the results of this study indicate that there is room for significant improvement. One area in particular that was largely missing from the PD was people and processes, especially practical guidance on how to create effective incentives and strategies for how to best work with local stakeholders.

The remainder of this study examined how we might better align our strategies to create a more reliable incentive structure by comparing the strategies that participants believe to be effective to Maslow’s classic “A Theory of Human Motivation”. Results show that participants believe that strategies that align with higher level needs of local stakeholders – most notably self-actualization, self-esteem and safety and security– are the most effective in leading to sustainable results. In contrast, participants did not believe that strategies which aligned with the self-actualization of outside stakeholders or physiological needs were effective, evidenced by the low number of strategies in these categories (15 and 8 strategies out of 333, respectively).

In this study, I explored a diverse array of approaches in order to learn some of the common strategies that lead to socially sustainable results. In the end, I found that as a number of participants said, it may not be possible to form a magic bullet approach although we might like one. The importance of context is one of the most important themes raised by participants; and indeed the same approach can work or fail in neighboring communities, often depending on leadership and human nature.

Based on the research results, I advocate for more clearly defining the components of social sustainability and the processes required to implement each. I also strongly support an increased commitment to consistently and collaboratively learn, monitor, and develop more reliable strategies to determine the processes and approaches most appropriate for each context.

The insights, examples, and experiences of participants in this study are meant to provide a useful starting point for further research on how to more reliably address some of the social challenges and barriers to delivering sustainable rural water services - especially motivation. Specifically, there is a need for better assessing where, when, and in what combination some of these social components and strategies are most effective. Without a thorough and precise understanding of how to address them in different contexts, social challenges will likely continue to create blind spots and barriers that threaten the sustainability of well-intentioned efforts.

On the positive side, the results of this study show that while we may not be able to solve or predict everything, there are many steps we can take that could greatly improve the social sustainability of our efforts. Improving our understanding of how to reliably set up services that respect and support people with different priorities, processes and capacities are a few of the many social challenges and barriers that if overcome, may significantly improve the sustainability of our overall efforts. In this study, we've looked at some of what has worked and what hasn't in addressing social challenges and barriers as we finish the MDGs. As the SDGs begin, the question is - what will we do differently?

REFERENCES

- Abrams, L. J. (1998). Understanding sustainability of local water services. In *25th WEDC Conference. Addis Ababa, Ethiopia. Retrieved April* (Vol. 12, p. 2001).
- Alderfer, C. P. (1969). An empirical test of a new theory of human needs. *Organizational Behavior and Human Performance*, 4(2), 142–175.
- Auerbach, C. F., & Silverstein, L. B. (2003). *Qualitative Data: An Introduction to Coding and Analysis*. New York: New York University Press.
- Bailey, G. D., & Pownell, D. (1998). Technology Staff-Development and Support Programs: Applying Abraham Maslow's Hierarchy of Needs. *Learning & Leading With Technology*, 26(3), 47.
- Bartram, J. (2007). Improving on haves and have-nots. *Nature*, 452(7185), 283–284.
- Bartram, J., Brocklehurst, C., Fisher, M. B., Luyendijk, R., Hossain, R., Wardlaw, T., & Gordon, B. (2014). Global Monitoring of Water Supply and Sanitation: History, Methods and Future Challenges. *International Journal of Environmental Research and Public Health*, 11(8), 8137–8165.
- Benson, S. G., & Dundis, S. P. (2003). Understanding and motivating health care employees: integrating Maslow's hierarchy of needs, training and technology. *Journal of Nursing Management*, 11(5), 315–320.
- Bernard, H. R. (2011). *Research methods in anthropology*. Rowman Altamira. Retrieved from <https://books.google.com/books?hl=en&lr=&id=WhKYqATySwC&oi=fnd&pg=PR1&dq=research+methods+in+anthropology&ots=6ztgAzHZqE&sig=rZD0XH3TXJyqRN8Qf-rt6mqIzEt> on January 29, 2014.
- Brugha, R. (2009). Global health initiatives and country health systems. *The Lancet*, 374(9697), 1237–1238.

Bruntland Commission. (1987). *Our common future*. Oxford: Oxford University Press.

Busan Partnership for Effective Development Cooperation. (2011). Retrieved from <http://www.oecd.org/dac/effectiveness/49650173.pdf><http://www.oecd.org/dac/effectiveness/49650173.pdf> on October 12, 2014.

Carter, R. C., Tyrrel, S. F., & Howsam, P. (1999). The impact and sustainability of community water supply and sanitation programmes in developing countries. *Water and Environment Journal*, 13(4), 292–296.

Centers for Disease Control and Prevention. (2014, October 29). America's Heart Disease Burden. Retrieved from <http://www.cdc.gov/heartdisease/facts.htm> on August 30, 2014.

Crewe, E., & Harrison, E. (1998). *Whose development. An Ethnography of Aid*. London: Zed books.

Curtis, V. A., Danquah, L. O., & Aunger, R. V. (2009). Planned, motivated and habitual hygiene behaviour: an eleven country review. *Health Education Research*, 24(4), 655–673.

Davis, S. (2012, August 1). Sad stats: failure of water and sanitation projects. Retrieved from <https://improveinternational.wordpress.com/2012/08/01/sad-stats-failure-of-water-sanitation-projects/> on September 20, 2013.

Davis, S. (2013, April 29). Sustainability Frameworks. Retrieved from <https://improveinternational.wordpress.com/2013/04/29/sustainability-frameworks/> on September 20, 2013.

De Albuquerque, C. (2012). On the right track: *Good Practices in Realizing the Rights to Water and Sanitation*. Lisbon: United Nations Special Rapporteur on the Human Right to Safe Drinking Water and Sanitation.

Doucouliaagos, H., & Paldam, M. (2009). The aid effectiveness literature: The sad results of 40 years of research. *Journal of Economic Surveys*, 23(3), 433–461.

Droop, J., Isenman, P., & Mlalazi, B. (2008). *Paris Declaration on Aid Effectiveness: Study of Existing Mechanisms to Promote Mutual Accountability (MA) between Donors and Partner Countries at the International Level: A Study Report*. Oxford: Oxford Policy Management.

Dutch WASH Alliance. (2013, April). *Sustainability Monitoring Framework*. Addis Ababa, Ethiopia. Retrieved from <http://www.slideshare.net/ircuser/2-kempes-sustainability-monitoring-framework> on June 10, 2014.

Fisher, E. A. (2009). Motivation and leadership in social work management: A review of theories and related studies. *Administration in Social Work, 33*(4), 347–367.

Foresti, M., Booth, D., & O’Neil, T. (2006). Aid effectiveness and human rights: strengthening the implementation of the Paris Declaration. *ODI Report to the DAC*.

Gawel, J. E. (1997). Herzberg’s Theory of Motivation and Maslow’s Hierarchy of Needs. ERIC/AE Digest.

Godfrey, S., Freitas, M., Muianga, A., Amaro, M., Fernandez, P., & Sousa Mosies, L. (2009). Sustainability check: A monitoring tool for the sustainability of rural water supplies. In *34th WEDC International Conference, Water, sanitation and hygiene: Sustainable development and multisectoral approaches*. Addis Ababa, Ethiopia: WEDC.

Godfrey, S. van der Velden, M., Muiganga, A. Xaiver, A., W. and E. S. S., UNICEF. (2013, April 9). *Sustainability Checks: five year annual sustainability audits of the water supply and ODF status in the One Million Initiative, Mozambique*. Addis Ababa, Ethiopia. Retrieved from <http://www.slideshare.net/ircuser/4-godfrey-et-al-sustainability-checks>

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods, 18*(1), 59–82.

Google Dictionary. (2014). *Motivation*. Retrieved from <https://www.google.com/#q=definition+of+motivation> on October 19, 2014.

Google Dictionary. (2014). *Reliable*. Retrieved from <https://www.google.com/#q=definition+of+reliable> on December 14, 2014

Hannon, E. (2012, April 8). India's Census: Lots of Cellphones, Too Few Toilets. *NPR*. Retrieved from <http://www.npr.org/2012/04/08/150133880/indias-census-lots-of-cellphones-too-few-toilets> on January 29, 2015.

Hansen, H., & Tarp, F. (2000). Aid effectiveness disputed. *Foreign Aid and Development: Lessons Learnt and Directions for the Future*, 103–128.

Harvey, P. A. (2013, April). *Applying Sustainability Analysis to Rural Water Services*. Addis Ababa, Ethiopia. Retrieved from <http://www.slideshare.net/ircuser/7-harvey-sustainability-analysis-tool> on June 10, 2013.

Harvey, P. A., & Reed, R. A. (2007). Community-managed water supplies in Africa: sustainable or dispensable? *Community Development Journal*, 42(3), 365–378.

Hersey, P., Blanchard, K. H., & Johnson, D. E. (1988). Management of organizational behavior.

Hyden, G. (2008). After the Paris Declaration: taking on the issue of power. *Development Policy Review*, 26(3), 259–274.

Imboden, N. (1977). Planning and Design of Rural Drinking Water Projects: A research framework to analyse experiences with rural drinking water schemes. *Experiences in Rural Development Occasional Paper No. 2 OECD Development Centre*, 77(22).

Jiménez, A., & Pérez-Foguet, A. (2010). Challenges for water governance in rural water supply: lessons learned from Tanzania. *Water Resources Development*, 26(2), 235–248.

Lockwood, H., Bakalian, A., & Wakeman, W. (2003). Assessing sustainability in rural water supply: The role of follow-up support to communities. *Literature Review and Desk Review of Rural Water Supply and Sanitation Project Documents*. World Bank.(120205).

Lockwood, H., Smits, S., Schouten, T., & Moriarty, P. (2010). Providing sustainable water services at scale. *IRC and Aguaconsult*.

Marks, S. J., & Davis, J. (2012). Does user participation lead to sense of ownership for rural water systems? Evidence from Kenya. *World Development*, 40(8), 1569–1576.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370.

Merriam Webster Dictionary. (2014)/ *Social*. Retrieved from <http://www.merriam-webster.com/dictionary/social> on October 30, 2014.

Montangero, A. (2013, April 9). *Assessing the Sustainability of WASH Services*. Addis Ababa, Ethiopia. Retrieved from <http://www.slideshare.net/ircuser/4-montangero-assessing-sust-of-wash-services> on June 10, 2013.

Moriarty, P., Batchelor, C., Fonseca, C., Klutse, A., Naafs, A., Nyarko, K., ... Snehalatha, M. (2010). Ladders for assessing and costing water service delivery. *International Water and Sanitation Centre, Available at Http://www. Washcost. info/page/196* on March 21, 2014.

Mosler, H.-J. (2012). A systematic approach to behavior change interventions for the water and sanitation sector in developing countries: a conceptual model, a review, and a guideline. *International Journal of Environmental Health Research*, 22(5), 431–449 on September 20, 2014.

Nevis, E. C. (1983). Using an American perspective in understanding another culture: Toward a hierarchy of needs for the People's Republic of China. *Journal of Applied Behavioral Science*.

Onda, K., LoBuglio, J., & Bartram, J. (2012). Global access to safe water: accounting for water quality and the resulting impact on MDG progress. *International Journal of Environmental Research and Public Health*, 9(3), 880–894.

Pankhurst, H. (2013, April -11). *Research Exploring Community-Managed Water and Services*. Addis Ababa, Ethiopia. Retrieved from <http://www.slideshare.net/ircuser/1-pankhurst-care> on June 10, 2013.

Paris Declaration and Accra Agenda for Action. (2005, 2008). Retrieved from <http://www.oecd.org/dac/effectiveness/34428351.pdf> on August 20, 2014.

Rainey, R. (2013, April 9). *Sustainability Check: An Innovative Approach to WASH Sustainability Monitoring*. Presented at the Monitoring WASH Service Delivery, Addis Ababa, Ethiopia. Retrieved from <http://www.slideshare.net/ircuser/5-rainey-usaidrotary-partnership> on June 10, 2013.

Rakner, L., & Wang, V. (2007). Governance assessments and the Paris Declaration. *CMI Report*, 2007(10).

Rome Declaration on Harmonisation. (2003). Retrieved from <http://www.oecd.org/development/effectiveness/31451637.pdf> on October 14, 2014.

Roodman, D. (2007). Macro aid effectiveness research: A guide for the perplexed. *Center for Global Development Working Paper*, 135. Retrieved from http://cgdev.org.488elwb02.blackmesh.com/sites/default/files/15003_file_Guide_Perplexed.pdf on January 28, 2015.

Rosenquist, D., & Emilia, L. (2005). A psychosocial analysis of the human-sanitation nexus. *Journal of Environmental Psychology*, 25(3), 335–346.

Rural Water Supply Network (RWSN). (2012). Finding Information on Rural Water Supplies.

Rural Water Supply Network (RWSN). (2012). People, Politics, the Environment and Rural Water Supplies.

Schouten, T., Fonseca, C., Lockwood, H., & Moriarty, P. (2011). Taking a service delivery approach to monitoring water supply in low income areas and implications for the Joint Monitoring Programme. *First Consultation on Developing Post-2015 Indicators for Monitoring Drinking-Water and Sanitation Berlin, Germany*, 3(4).

Schulz, N.-S. (2007). Nicaragua: a rude awakening for the Paris Declaration. *FRIDE*. Retrieved August, 28, 2010.

Schweitzer, R., Grayson, C., & Lockwood, H. (2014). MAPPING OF WATER, SANITATION, AND HYGIENE SUSTAINABILITY TOOLS. Retrieved from

http://www.waterservicesthatlast.org/content/download/3222/30450/version/3/file/Triple-S_WP+10+Mapping+of+WASH+sustainability+tools.pdf on August 20, 2014.

Scott, B., Curtis, V., Rabie, T., & Garbrah-Aidoo, N. (2007). Health in our hands, but not in our heads: understanding hygiene motivation in Ghana. *Health Policy and Planning*, 22(4), 225–233.

Shannon, M. A., Bohn, P. W., Elimelech, M., Georgiadis, J. G., Marinas, B. J., & Mayes, A. M. (2008). Science and technology for water purification in the coming decades. *Nature*, 452(7185), 301–310.

Subrahmanyam, S., & Gomez-Arias, J. T. (2008). Integrated approach to understanding consumer behavior at bottom of pyramid. *Journal of Consumer Marketing*, 25(7), 402–412.

Sutton, S. (2004). Preliminary desk study of potential for self supply in sub-Saharan Africa. *WaterAid and the Rural Water Supply Network, London (October)*.

Taormina, R. J., & Gao, J. H. (2013). Maslow and the motivation hierarchy: Measuring satisfaction of the needs. *The American Journal of Psychology*, 126(2), 155–177.

UNICEF and World Health Organization. (2012). Progress on Drinking Water and Sanitation 2012 Update. Retrieved from <http://www.unicef.org/media/files/JMPReport2012.pdf> on January 13, 2014.

UNICEF. Children dying daily because of unsafe water supplies and poor sanitation and hygiene, UNICEF says. (2013). Retrieved from http://www.unicef.org/media/media_68359.html on May 20, 2014.

Wahba, M. A., & Bridwell, L. G. (1973). MASLOW RECONSIDERED: A REVIEW OF RESEARCH ON THE NEED HIERARCHY THEORY. In *Academy of Management Proceedings* (Vol. 1973, pp. 514–520). Academy of Management.

WaterAid. (2011). Sustainability Framework. Retrieved from www.wateraid.org/publications

Whittington, D., Davis, J., Prokopy, L., Komives, K., Thorsten, R., Lukacs, H., ... Wakeman, W. (2008). How well is the demand-driven, community management model for rural water supply systems doing? *Brooks World Poverty Institute Working Paper*, (22).

Wikipedia. (2014). *Maslow's Hierarchy of Needs*. Retrieved from http://en.wikipedia.org/wiki/Maslow%27s_hierarchy_of_needs on August 27, 2014.

Wood, B., Betts, J., Etta, F., Gayfer, J., Kabell, D., Ngwira, N., ... Samaranayake, M. (2011). The Evaluation of the Paris Declaration, Phase 2. *Final Report*. Copenhagen: Danish Institute for International Studies. Retrieved from http://www.web.net/~group78/English/Events/June2010_BerWood.pdf on June 29, 2014.

World Bank. (2011). Trends in rural water sector development and implications for international aid delivery. Retrieved from <http://water.worldbank.org/sites/water.worldbank.org/files/event-discussion-paper.pdf> on June 29, 2014.

Yalch, R., & Brunel, F. (1996). Need hierarchies in consumer judgments of product designs: Is it time to reconsider Maslow's theory. *Advances in Consumer Research*, 23(1), 405–410.

Appendix A: Letter of Informed Consent

UNIVERSITY OF WASHINGTON

CONSENT FORM

A Closer Look at the Social Determinants of Sustainability:

How does the process of defining and implementing social indicators compare in projects with sustainable outcomes and those without?

Researchers: Lia Marshall, Graduate Student in the Department of Human Dimensions of Natural Resource Management within the School of Environment and Forest Sciences, University of Washington. +001 510 388 3641; liamarsh@uw.edu

RESEARCHER'S STATEMENT

We are asking you to participate in a research study to help improve the understanding of how social indicators in existing frameworks are successfully defined and implemented in process. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions, you can decide if you want to be in the study or not. This process is called "informed consent." We will give you a copy of this form for your records.

PURPOSE OF THE STUDY

Background

A review of sustainability frameworks by major NGOs and INGOs reveals that there has been significant work done to better understand what overarching factors or indicators are likely to increase the sustainability of water and sanitation projects. Many organizations have put these factors into major categories such as technical, financial, organizational, social, etc. These frameworks go into varying detail on how each of these indicators are defined or measured. However a further analysis of the individual criteria reveals that even the organizations themselves report that social indicators – measures that assess to what extent we are overcoming social challenges and barriers to sustainability - are important yet not well understood. The USAID presentation in Addis Ababa Ethiopia on monitoring in 2012 goes so far as to even call social indicators "weak" compared to financial "strong" and technical/management "medium" (Rainey, 2013).

Purpose

The purpose of this research therefore is to help increase sustainability of services in WASH by increasing understanding of how to better define and incorporate characteristics of approaches

that have successfully overcome social challenges and barriers to implementing sustainable water services. Specifically, this research explores different processes used to overcome these social challenges by examining examples of projects/efforts that have both failed and succeeded. The end result will lead to a set of characteristics that can be used to better define some of the social indicators in existing sustainability frameworks and provide useful insights on successful strategies to overcome social challenges and barriers when implementing sustainable services.

STUDY PROCEDURES

Organizations will be included based on the following criteria:

- 1) Have experience* in doing rural water projects _____
- 2) Are willing to share an example of a process that led to sustainable outcomes and one that did not _____**
- 3) Are willing to be recorded with identifying information being removed before publication and other recordings being destroyed after transcribed _____
- 4) Are willing to be included in the results, potentially as examples, without any identifying information that could link the results to you or your organization. If the example is not possible to share in a written paper without revealing your identity, we either ask that you pick another example or give us written permission to share it. _____

*Experience = At a minimum, you must have done at least two rural water projects – one that led to sustainable outcomes**, and one that did not. Most will have done more. You must also have evidence of the outcomes through some sort of recent monitoring (within the last year).

** Sustainable outcomes in rural water for the purposes of this research = safe and regularly used over time. The amount of time may vary from project to project. Safe means there has been some kind of water quality testing to assure that the water being drunk will not cause disease. Used means that a significant portion of the population that the project was intended for uses the system as their primary source of drinking water. Significant portion is ideally 80-90% plus or minus 10%.

Each participant will be scheduled for a 30-60 minute interview. Interview questions will be broad and focused on different processes you use to overcome social challenges that affect sustainable results. In the interview, you will have the chance to tell us about a process that worked well and a process that didn't work well. Our intention is not to focus on failures – it is to learn more about effective strategies to overcome social challenges that are associated with sustainability and to help create a more comprehensive set of social indicators for existing and future sustainability frameworks. If you do not feel comfortable answering a specific question, you have the right to refuse. We do ask though that you re-read the criteria listed above and make sure you agree with each before we begin.

All interviews will be recorded on two Olympus recorders and will be used only for the purposes of this research. Interviews will be transcribed, and all identifying information will be removed – including the name of your organization and any potential identifiers that could link what you share with you or your organization. If you wish for your examples to be published in written

results or referenced in a presentation with your name, you must give explicit written consent from both you and your director (if different).

RISKS, STRESS, OR DISCOMFORT

Your Rights

You have the right to decide whether or not you participate in this research. You also have the right to change your mind and leave at any point during the research or interview – including changing or asking us not to use and/or share information after the interview. You have the right to review any of your recordings and delete any portions. You have the right to ask to review the final results/written paper to make sure your projects (unidentified) are accurately portrayed.

Risks

Risks of participating are few as all information shared will be kept confidential. The research will not be published with the names or organizations and their projects – successful or unsuccessful without their written consent. Information will be used to gather general characteristics of social processes that fail and those that succeed rather than singling out individual organizations. The greatest risk perhaps is sharing an example of a project that did not work out that your organization did not feel comfortable sharing or that you did not feel comfortable sharing if audio records were stolen or the identity was somehow linked. This is unlikely, but it is still wise to pick examples that you and your organization would feel comfortable sharing with other colleagues.

Stress

This interview is meant to be a conversation and should not feel stressful. The only things that could potentially be stressful are talking about things that didn't go well or the lack of time to go into as much detail as the participant would like. All efforts will be made to make the participants feel at ease, mainly through answering questions and concerns prior to starting the interview as well as during and after as appropriate.

ALTERNATIVES TO TAKING PART IN THIS STUDY

If you are not able to meet the criteria under the study procedures but are still interested in learning more or contributing, you are encouraged to talk to the researcher to see if it's possible to set up alternative arrangements. For example, if you don't have projects that have been sustainable or that you have evidence of being sustainable but you have lessons from the implementation process you would like to share, your insights would still be very welcome.

BENEFITS OF THE STUDY

You will be contributing to a practical body of knowledge that will help the sector learn and overcome some of the challenges associated with social determinants of sustainability. In doing so, you will be helping to solve an important and missing piece of the puzzle towards sustainable outcomes and water for all. You may also discover additional ways you can improve your own process or gain insights from peers who are also participating in the study.

SOURCE OF FUNDING

This study on social determinants of sustainability is primarily self-funded by the researcher.

FINANCIAL INTEREST

Lia Marshall has minimal financial or leadership relationship with Blue Planet Network, who was Lia's employer. Blue Planet paid for Lia to be at the study site location (UNC Water and Health Conference) but paid only for responsibilities related to the organization, including leading a session at the conference but not interviewing people related to her thesis. Lia stopped working at Blue Planet Network after the conference on 10/25/13 to focus on her studies. Blue Planet is not paying Lia to do the study as Lia designed this study out of interest based on personal experiences and observations. The intended purpose and benefits is to help organizations overcome some of the social challenges and barriers that have played a role in limiting the sustainability of WASH services.

CONFIDENTIALITY OF RESEARCH INFORMATION

All of the information you provide will be kept confidential unless it will explicitly cause harm to yourself or others, in which case it must be reported. All identifying information will be removed from recordings when transcribed and explicit permission in written form will be required to publish or present results that would in any way link your identity to your projects – both good and bad.

OTHER INFORMATION

You may refuse to participate and you are free to withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled.

INFORMED CONSENT

Printed name of study staff obtaining consent

Signature

Date

Subject's statement

This study has been explained to me. I volunteer to take part in this research. I have had a chance to ask questions. If I have questions later about the research, I can ask one of the researchers listed above. If I have questions about my rights as a research subject, I can call the Human Subjects Division at (206) 543-0098. I have received a copy of this consent form.

Printed name of subject

Signature of subject

Date

When subject is not able to provide informed consent:

Printed name of representative Signature of representative

Date

Relationship of representative to subject

Copies to: Researcher

 Subject

Appendix B: Interview Script

General

- 1) Definitions – Before we get started, let’s define some important terms.
 - a. How do you define sustainability?
 - b. Within the context of sustainable frameworks, what do you consider to be “social indicators”?
- 2) Intro
 - a. Tell me what you think about sustainability in the WASH sector. Is it a problem? Have we sufficiently addressed it?
- 3) Approach/Framework
 - a. What approach, framework, or theory of change – if any - have you used to create sustainable WASH projects in the past or services in the present?
- 4) Specific examples
 - a. Please give me some examples of your rural water projects or services.
 - i. Specifically, please describe the **process** of implementation for a project or service that was functional five years after completion.
 1. Initiation, organization, implementation, monitoring and maintenance
 2. Probe deeper into social factors – where people (behaviors, beliefs, motivations) could play a role in the sustainability of outcomes
 - ii. Please describe the process of implementation for a project that was not functional within five years of implementation. (Repeat process)
- 5) Strengths and Limitations
 - a. What have been some of strengths of this approach in addressing social challenges/barriers? Limitations?
 - b. If you have experience using the service delivery model, how does this approach compare? What were the advantages and/or disadvantages?
 - c. How do you think the process you used affected the outcome of your projects?
 - i. How did including or excluding social indicators affect your outcome?
 - d. What were some expected and unexpected challenges you faced in using this approach? What insights did you learn, and what can you share with others?

What would you have done differently to address some of the social challenges/barriers you faced in the processes you described?
- 6) In the future – Conclusion and Recommendations
 - a. Based on your experience, what would you recommend to other organizations to address social challenges associated with rural water projects?
 - i. What social indicators would you include in existing sustainability frameworks?
 - ii. How would they change or stay the same as there is a shift towards service delivery or government led projects?
 - iii. How would you define and measure these indicators?

Appendix C: Full Lists of Themes – What Participants Reported Worked, Didn't Work and Believed to Work or Not Work

Themes found in participant examples that <u>worked</u>	Number of Participants Who Referenced Theme	% of Participants	Total Number of References to Theme
Creating effective incentives	12	55%	69
Building local capacity	11	50%	78
Focusing on what people want rather than what we think they need - assessing and generating demand	11	50%	31
Ensuring on-going monitoring and maintenance	11	50%	27
Involving local people and creating ownership	10	45%	38
Respecting local priorities and preferences	9	41%	47
Preventing failure and protecting investment	9	41%	31
Learning and basing action on evidence	7	32%	38
Identifying and using strong local leadership	8	36%	28
Strategies for creating good working relationships	6	27%	11
Identifying right people who can help navigate local culture and politics	5	23%	18
Taking time necessary to do job well	5	23%	10
Partnerships - Collaboration	5	23%	5
Behavior change takes place in the organization; paradigm shift	4	18%	11
Rights and equity	4	18%	8
Strategies for behavior change	3	14%	14
Convenience	2	9%	8
Context-specific	2	9%	6
Technology	2	9%	4
Process	2	9%	2
Convinced	1	5%	1

Themes participants believe work	Number of Participants Who Referenced Theme		Total Number of References to Theme
Respecting local priorities and preferences	20	91%	175
Building local capacity	18	82%	77
Learning and basing action on evidence	17	77%	87
Preventing failure and protecting investment	17	77%	84
Creating effective incentives	17	77%	81
Focusing on what people want rather than what we think they need - assessing and generating demand	16	73%	73
Ensuring on-going monitoring and maintenance	16	73%	66
Involving local people and creating ownership	16	73%	61
Approaches need to be context specific	14	64%	54
Creating effective working relationships with local stakeholders	14	64%	47
Strong local leadership	13	59%	43
Understanding bigger picture	12	55%	32
Identifying right people who can help navigate local culture and politics	12	55%	25
Sustainable finance	10	45%	38
Partnerships-Collaboration	10	45%	29
Context-specific	8	36%	37
Equity	7	32%	15
Technology	6	27%	15
Precision	4	18%	6

Themes participants believe do not work	Number of Participants Who Referenced Theme	% of Participants	Total Number of References to Theme
Failing to prevent failure and protect investment - rushed-quick fix solutions	15	68%	32
Failing to ensure on-going monitoring and maintenance	12	55%	33
Acting on assumptions	12	55%	19
Being driven by needs of delivering stakeholders	11	50%	38
Not creating effective incentives	11	50%	29
Failing to build up local capacity	10	45%	18
NGO approach and community management	9	41%	28
Failing to recognize poor people want quality systems and services	6	27%	11
Failing to respect local priorities and preferences	5	23%	11
Failing to learn and take evidenced based action	5	23%	10
Lack of unity - common purpose - collaboration	5	23%	9
Lack of clear roles and responsibilities	5	23%	8
Lack of understanding the big picture	3	14%	6
Political challenges and environment	3	14%	4
Lack of understanding how people work	3	14%	3
Lack of strong leadership	3	14%	3
Behavior change	2	9%	6
Unrealistic expectations	2	9%	3
Technology	1	5%	3
Failure to effectively involve-create ownership	1	5%	1

Themes found in participant examples that <u>did not work</u>	Number of Participants Who Referenced Theme		Total Number of References to Theme
Failing to prevent failure and protect investment	9	41%	43
Not creating effective incentives	8	36%	23
Failing to respect local priorities and preferences	6	27%	15
Acting on assumptions	6	27%	10
Not communicating effectively to precisely scale solutions	5	23%	13
Failing to ensure on-going monitoring and maintenance	5	23%	9
Lack of understanding how human nature affects outcomes	5	23%	7
Failing to focus on what people want rather than what we think they need - assessing and generating demand	4	18%	15
Lack of focus on equity	3	14%	9
Failing to effectively involve local people and create ownership	3	14%	8
Political challenges and environment	3	14%	6
Not convenient	2	9%	11
Doing an intervention when people are not convinced	2	9%	7
Unintended consequences	2	9%	5
Lack of financial sustainability	2	9%	2
Technology	2	9%	2

Appendix D: Definitions Used to Code Strategies to Maslow's Hierarchy

Taken directly from Maslow's "A Theory of Motivation" (Maslow, 1943)

The need for self-actualization. – "Even if all these needs are satisfied, we may still often (if not always) expect that a new discontent and restlessness will soon develop, unless the individual is doing what he is fitted for. A musician must make music, an artist must paint, a poet must write, if he is to be ultimately happy. What a man *can* be, he *must* be. This need we may call self-actualization." "Desire for self-fulfillment... the desire to become more and more what one is, to become everything that one is capable of becoming.[p. 383] "Will vary greatly from person to person", "depends on satisfaction of other needs".

Self-esteem: General: "Stable, firmly based high evaluation of oneself", "Self-respect", "Esteem of others", "Real capacity, achievement, respect of others". 1) "Desire for strength, achievement, adequacy", "Confidence in the face of the world", "Independence", "Freedom"; 2) "Desire for reputation" – "prestige (as defined by respect or esteem from other people)", "recognition", "attention", "importance", "appreciation". Thwarting of these feelings produces "inferiority", "weakness", and "helplessness" that can then lead to "discouragement" or "neurotic" trends in severe cases. Satisfaction leads to "feelings of confidence", "worth", "strength", "capability", and "adequacy".

The love needs. – Feel the absence of friends, a sweetheart, wife or children. Will hunger for affectionate relations with people in general and a place in his group, and will strive with great intensity to reach this goal. Thwarting of these needs can result in maladjustment and psychopathology. "Love is not synonymous with sex." "Love needs involve both giving and receiving".

The safety needs. -- Discussed primarily in the context of infants and children because more easily observed. They react to anything that might endanger them - anything that makes them feel unsafe, that the world is unstable. Exhibits preference for predictable, orderly world – free from injustice, unfairness, inconsistency and in children some sort of routine, things that can be counted on. Threats to this include types of division – including quarreling, physical assault, separation, divorce, death, harsh punishment. Adverse to new, unfamiliar, strange, unmanageable stimuli, uncontrollable objects... The fortunate adult has safety needs met, but others may be a dominating motivator – responding as if in an emergency situation. Other motivating situations include job security, insurance, and desire for financial savings. It also includes the preference for familiar rather than unfamiliar things, for the known rather than the unknown. Religion and science both fall into this category.

The 'physiological' needs. -- "homeostasis: "Homeostasis refers to the body's automatic efforts to maintain a constant, normal state of the blood stream. Cannon (2) has described this process for (1) the water content of the blood, (2) salt content, (3) sugar content, (4) protein content, (5) fat content, (6) calcium content, (7) oxygen content, (8) constant hydrogen-ion level (acid-base balance) and (9) constant temperature of the blood. Obviously this list can be extended to include

other minerals, the hormones, vitamins, etc.”; “appetite (preferential choices among foods)”, “hunger”, “sleepiness, sheer activity and maternal behavior in animal” “sex”, “thirst”, “food”

Not all physiological needs are homeostatic: That sexual desire, sleepiness, sheer activity and maternal behavior in animals, are homeostatic, has not yet been demonstrated. Furthermore, this list would not include the various sensory pleasures (tastes, smells, tickling, stroking) which are probably physiological and which may become the goals of motivated behavior. Physiological needs are unusual in that they are isolable, and localizable somatically. They can be used to meet other needs and other needs can be used to meet them – i.e. hunger. It is all dominating if a person lacks, especially in emergency situations. However, Maslow says “who will measure all of man's goals and desires by his behavior during extreme physiological deprivation is certainly being blind to many things.”

Pre-requisites: “Freedom” (whatever that means in context) – “freedom to speak, freedom to do what one wishes so long as no harm is done to others, freedom to express one's self, freedom to investigate and seek for information, freedom to defend one's self, justice, fairness, honesty, orderliness in the group are examples of such preconditions for basic need satisfactions.”

Basic Needs Cognitive (although Maslow argues not necessarily separate – “The desire to know and to understand are themselves conative, i.e., have a striving character, and are as much personality needs as the 'basic needs' we have already discussed”

Desire to know and understand: “Curiosity, exploration, desire for the facts, the desire to know, be aware or reality, get the facts, satisfy curiosity”, “see rather than be blind”, “desire to understand, systematize, organize, look for relations and meaning

Operational Definitions from Taormina and Gao (2013)

“Physiological” – The physiological needs can be operationally defined as the lack of chemicals, nutrients, or internal (e.g. exercise/health) or environmental (e.g., temperatures), conditions necessary for the body to survive, such that the extended absence of these things could lead to psychological stress or physical death.

“Safety-security” – “the lack of protections such as shelter from environmental dangers and disasters, personal protection from physical harm, financial protection from destitution, legal protection from attacks on one’s rights to a peaceful existence, or lack of stability in one’s life.”

“Love needs” - Lack of close, lasting, emotionally pleasant interaction with other people in groups as well as intimate dyads that yield personal relationships of mutual affective concern.

“Self-esteem” - A lack of respect a person has for him/herself or the lack of respect a person receives from other people.

“Self-actualization”- the process of becoming what he or she really/uniquely is

Based on the literature (Maslow, 1943; Taormina & Gao, 2013):

“Outside self-actualization” – the process of helping outside (delivering) stakeholders become what he or she really/uniquely is

Appendix E: Additional Tables and Graphs

Table i: Most Commonly Mentioned Themes with Number of Sources & References

Theme	Worked	Believe Works	Didn't Work	Believe Doesn't Work
Creating effective incentives	#1 (12, 69)	#5 (17, 81)	#2 (10, 41)	#5 (11, 29)
Building local capacity	#2 (11, 78)	#2 (18, 77)	#13 (3, 3)	# 6 (10, 18)
Respecting local priorities and preferences	# 6 (9, 47)	# 1 (20, 171)	#3 (8, 30)	#9 (5, 11)
Learning before, after, and throughout the process	#9 (7, 38)	# 3 (17, 87)	# 9 (4, 23)	#10 (5, 10)
Preventing failure and protecting investment	#7 (9, 31)	#4 (17, 84)	#1 (8, 40)	#1 (15, 32)
Ensuring on-going monitoring and maintenance	#4 (11, 27)	# 7 (16, 66)	#6 (5, 9)	#2 (12, 33)
Acting on Assumptions	N.A.	N.A.	#4 (6, 10)	# 3 (12, 19)
Focusing on what people want rather than what we think they need (assessing and generating demand)	#3 (11, 31)	#6 (16, 73)	#8 (4, 23)	#4 (11, 38)

Table i illustrates how the main themes were identified. It was formed by selecting the top three most frequently cited themes from each category based on the number of participants referencing each theme followed by the total number of references.

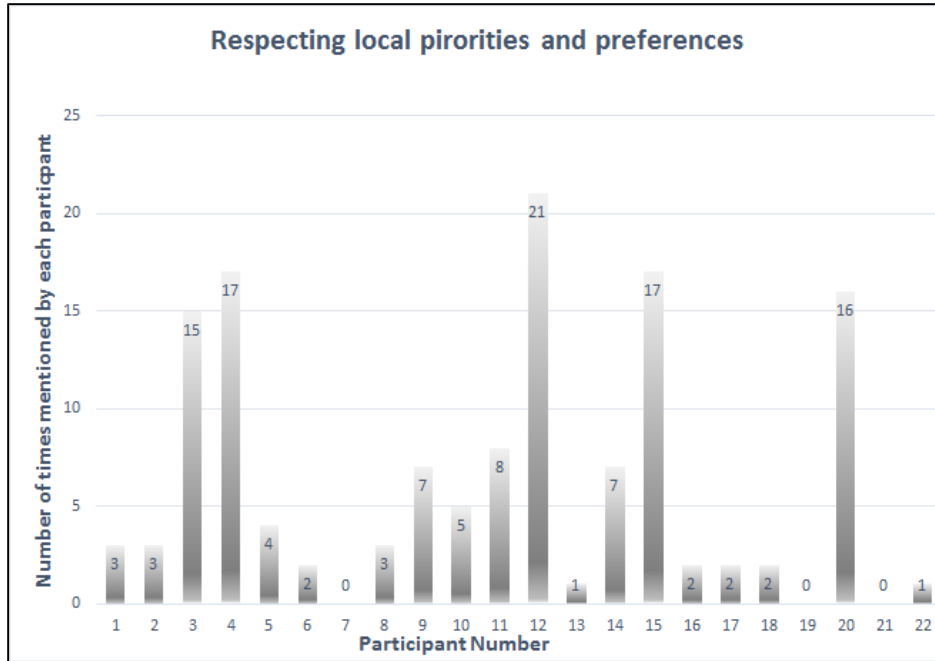


Figure i: Distribution of number of times each participant mentioned the theme “Respecting local priorities and preferences” as a strategy they believe works

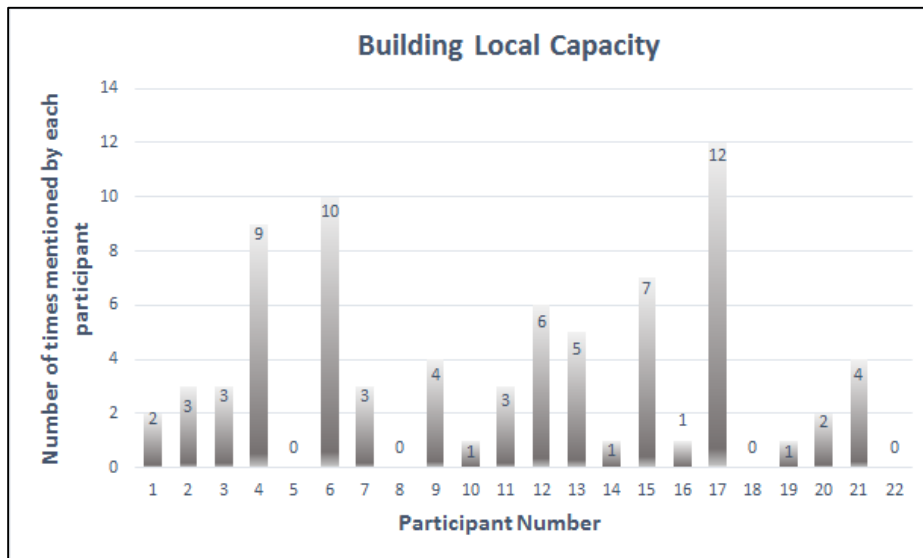


Figure ii: Distribution of number of times each participant mentioned the theme “Building local capacity” as a strategy they believe works

Appendix F: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
<p>Understanding the bigger picture and broader context in which WASH efforts are taking place</p> <p>(Issues that are related to WASH – i.e. affect WASH but are bigger in scope. Examples include the physical, political environment. Additional examples are listed on the right.)</p>	<p>One main subtheme that emerged in this category is taking a step back and checking the way delivering institutions or organizations are approaching WASH.</p>	<p>Ecologically sound</p> <p>Economic growth of countries</p> <p>Keep in mind the big picture</p> <p>Look at feasibility now and in the future</p> <p>Pay higher costs upfront</p> <p>Stepping back and realizing how water works in the developed world</p> <p>Creating broader environment for infrastructure to continue</p> <p>New paradigms for how policies are made</p>
<p>Building capacity of local actors and systems</p> <p>(Commonly referred to as capacity building, this theme includes assessing capacity, building capacity, and strengthening existing capacity.)</p>	<p>Assess capacity</p> <p>Build capacity</p>	<p>Consider whether or not a stakeholder has the capacity to carry out responsibilities even if they have the mandate</p> <p>Continuity</p> <p>Build national capacity</p> <p>Building trust</p> <p>Commitment to long-term training</p> <p>Help community members build social capital within communities</p> <p>Invest in training</p> <p>Build capacity of NGO's</p> <p>Parallel component to developmental, cultural tendencies</p> <p>Continuous training and retraining</p>

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
		Train communities to know details of how something is going to be fixed when it breaks
		Walk communities through the process
		Goal of organization is to work their way out of existence
	Use and strengthen existing capacity	Build on existing resources
		Hire local contractors
		Involve the local private sector
		People need to learn they can solve their own problems
		People who are trained
		Support government
		Train - don't build systems yourself
Use local materials, supply chain, and spare parts		
Context specific (Strategy or outcome depends on the place, circumstances, time or other external factors which prevents generalization of approaches.)	No specific subthemes.	Key words included “it depends”, anything with the word “context”.
Focus on want rather than need - strategies to generate and assess demand (A major theme that is found both in practice and the literature is the need for	Demonstrated want	Communities come to them (organization) Evidence of buy-in If really want it, will repair it Make a commitment and demonstrate it by signing an agreement

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
<p>a real demand in order for local stakeholders to pay or maintain a system. Demand is often overestimated, and this section focuses on creative strategies participants have used to try to assess and assure the presence of demand as well as to create it.)</p>		People will pay if they really want it
		Community contribution
		Well received because able to access safe drinking water
	Generate want	Generating critical mass
		Promoting intervention within communities
		Start production with self-supply or very small communities. Self-supply will become communal supply
		Create and keep a good reputation for the intervention
	Just want water - good service - at affordable price	Good service
	Make sure there is demand	Make sure there is a strong demand before you start
		Market forces as indicator of how much people want to pay
	Learn	Thorough understanding of how local people perceive water
		Understand what community really wants - felt need
	Need for people to be convinced before an intervention can be sustainable	Conduct tests in front of them instead
		Convince people
	Creating awareness of importance of treating water	
	Seeing benefits of an intervention	
Equity (Includes issues related to equal access to water and human rights.)	Include anything related to securing equal access or human rights.	Ex) Not pass down the maintenance costs to community
Strategies for building good working relationships with local stakeholders	Building good relationships	Be careful when starting a project - especially what you offer
		Building trust

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
(Tips, recommendations, and processes used to build good relationships and partnerships with local stakeholders)		Physical contact - presence in communities
		Work in places where you have an introduction
		Being honest, fair and reasonable in dealings with other actors
		Set clear boundaries before you start
		Setting a precedent
		Transparency
	Roles and responsibilities	Clarifying shifting roles
		Clear roles and responsibilities
		Mutual relationship - stakeholders give some and take some
		Set clear boundaries before you start
		Setting a precedent
		Clear consequences
Incentives that work (Incentives used by participants that participants believe yield sustainable results)	Human nature	Cell phones filling different and immediate needs
		Inherently high demand for communication technologies
		Interventions that require less behavior change
		People just want water - don't want to have to think about it
	Economic	Affordable
	Status	Earn respect by providing solution
		Fear of losing status
	Incentives	Incentives that work
	Visible benefits	Communities seeing benefits of an intervention

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
	Check/Change way intervening parties think	Thinking through, strategically, thinking comprehensively about on-going needs
		Reattachment to community cause - public office - common goal
		Consider whether or not communities have the capacity to carry out responsibilities
		NGO had more guts in telling donors what they think works and doesn't work in terms of making things sustainable
		Political, structural change
		Central commitment (commitment from leaders)
	Understanding the bigger picture and broader context in which WASH efforts are taking place	New paradigms for how policies are made
	Convenience	Bundle quality with convenience
		Convenience
		Easy to maintain
		Simple
Creating ownership through involving local stakeholders (Strategies participants used to engage local stakeholders at any level- community or government)	Buy-in	Buy-in
		Hold community meetings
		Involve community - in the beginning and every step of the way
		Community contribution
	Communication	Public communication
	Engagement	Level of engagement of institutions who led process
		Help community feel engaged
Let go	Letting go is a process that starts at the beginning, not a cutoff point	
	Making decisions	Include in process of deciding

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
		Let local people make decisions
		Let local people decide whether they want to be part of it or not
	Ownership	Ownership
	Participatory process	Participatory design and processes
		Full participation
	Positive perception of intervention and interveners by community	Help community feel engaged
		Help community feel power
		Felt need
	Ground-up	Ground up - not imposed
	Trust	Have trust of local people - see as credible
Difference between rural and urban (Not a main theme but important point a participant made)		Communities that live in rural areas take more pride and ownership
Importance of learning and evidence-based action (Important theme that includes both formal and informal types of learning – evaluations, focus groups, conversations, commitment and willingness to learn, etc.)	Learn	Closure survey
		Communication - replication through sharing cases and stories
		Feedback loop
		Indicators of sustainability
		Use an iterative process and monitor and tweak it until you get it right
		Learning
		Program evaluation
		Realization that not everything goes perfectly the first time
		Spend time in stakeholder consultations

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
		thorough understanding of community's sources of water and alternative sources
		Understand existing constraints
		Understand how new technology fits into existing belief system
		Understand religious component
		Understand what community really wants - felt need
		Understand what other partners or activities are already on the ground
		Understand what the community has been doing in terms of safe water
		Understand why something has not continued
	Evidenced-based action	Basing evidence - decisions on the data
		Bringing people together with data
		Commitment to critical evaluation
		Engage community in acceptability and ownership of technology - but call in science to decide and testing technical feasibility
		Field studies to help scale
		Look at what works in different contexts, do that, monitor, and tweak it to do what works in that context
		Market forces as indicator of how much people are willing to pay
		Rigorously measuring impact
		Routine visits and monitoring
		Action research
		Communication - replication through sharing cases and stories
		Being upfront and rigorous about how well we are doing

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
		Being objective and self-critical
<p>Maintenance</p> <p>(Refers to post-construction evaluation and up-keep of technology to allow for sustainable access to water)</p>		<p>Be available to communities to help</p> <p>Long-term follow up support</p> <p>Monitoring</p> <p>Reparability</p> <p>Stock and sell parts to the community</p> <p>Strengthen partnerships with other local actors</p> <p>Community management</p> <p>External objective support</p> <p>External support</p> <p>Routine visits and monitoring</p>
Partnerships/Collaboration		<p>Thorough, strategic, and comprehensive thinking and planning</p> <p>Water committees</p>
<p>(Also known as “Harmonization” in the Paris Declaration. Refers to stakeholders working together to increase sustainable change and efficiency with which the change is made).</p>		<p>Agree to endorse common principles</p> <p>Building relationships</p> <p>Circuit rider</p> <p>Common value and appreciation of what you are trying to achieve</p> <p>Connect local people with local government</p> <p>developing principles and best practices</p> <p>Engaging stakeholders at all levels</p> <p>Partnering</p> <p>Shared priorities and responsibilities</p> <p>Working together - network, conferences, collaboration</p>

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
<p>Precision</p> <p>(Refers to paying attention to important details while delivering services – including the definitions of key components, order in which things are implemented, degree to which they are done).</p>	<p>Process</p>	Do all the details right
		Make a distinction between universal aspects of sustainability and context specific ones
		Make sure approaches are passed down in the right way
		the way we implement an intervention
		Ways of measuring social indicators
<p>Preventing failure; protecting investment</p> <p>(Refers to preventative strategies to keep the effort from failing).</p>	<p>Accountability and transparency</p>	Accountability
		Checks and balances
		Cross inspection visits
		Transparency
	<p>Back-up systems</p>	<p>Build redundancy into system</p>
	<p>Pre-assessment</p>	<p>Pre-assessment - determine community preparedness</p>
		<p>Community cohesion</p>
		<p>Community history</p>
		<p>Willingness to behave as part of a collective</p>
		<p>Consider whether or not communities have the capacity to carry out responsibilities</p>
		<p>Vetting process</p>
		<p>Community history</p>
	<p>Prevention</p>	<p>Community demonstrates meeting certain pre-requisites before technology introduced</p>
		<p>Demonstrate meeting certain pre-requisites</p>
		<p>Make sure there is a strong demand before you start</p>

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
	Protect investment	Hedging bets - spreading out investment
		Market forces as indicator of how much people want to pay
	Quality	Do less - well
		Starting small
		Taking time to do it right the first time
	Respect local	Willing to walk away
	Security	Guards at water point
		Protecting well water from being contaminated
	Take time	Time and patience
	Reasonable expectations	Reasonable expectations
		Setting conservative expectations on timing
		Behavioral norm - work in alliance with each other - NGOs agencies esp.
		Behavioral norm - work in line with government planning and structure
		Potential NGO approach
	Think about governance	
	Think creatively and collaboratively	
	Think about systems instead of technology	
	Think of water not just as technical problem	
Respect local stakeholders (Referred to as “Alignment” in the Paris Declaration, it is the mental attitude and	Ability to navigate and respect local culture - even when makes no sense to you	Ability to navigate and translate cultures
		Cultural knowledge of practices
		Go through the same structures through which people have evolved

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
physical act of honoring local stakeholders through respecting their systems, their policies, leadership, and preferences).		Put ourselves in the shoes of the people living there
		Respect cultural norms
		Tapping into and reinforcing certain cultural norms
	Accept differences	Acceptance of differences
		Understand and respect cultural differences and norms - even when they don't make sense to you
	Adapt	Active adaptation
	Ask and answer hard questions	Answering all the hard questions that people ask
		Ask questions and understand what are the challenges they are facing
		Get help thinking about why they do the things they do
	Community dynamics	Anchor intervention in community dynamics
		Use knowledge of community dynamics and cultures to design appropriate solutions
		Work through the community dynamics (persevere)
		They do not choose communities themselves. Communities and NGOs choose them.
	Give time	Give communities the time they need to adequately prepare - don't push them
	Listening, learning, and acting on community wants and priorities	demonstrate listening to what they want and willingness to give what they want where possible
		Learn, ask, respect community priorities
	Listening	
	Respect - whoever they are, understand their needs as legitimate	

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
		Picking a location that is good for the technology and that the community feels good about
		Provide the resources people need - whether technical, financial, distribution, etc.
		Take into account local level of education
		Pre-assessment - determine community preparedness
	Treating local government as lead	Talk to government about what you see before taking action - understand and respect priorities
		in line with government efforts - initiatives
		in line with national policies
		Work within the larger system - NGOs
		Donate through the government
	Willing to let go	Willing to walk away from a WASH effort if likely to fail
	Respecting local perceptions and beliefs	Thorough understanding of how local people perceive water
		Understand how new technology fits into existing belief system
	Understand religious component	
Work through local leadership	If community can't solve own problem, go to next line of leadership or government	
Identifying right people to work with and help lead (Participant strategies to find local leaders and participant approaches to work through local leaders and mechanisms).		Identifying right people
		Work with health promoters
		Work with local people
		Work with mothers
		Talk to government about what you see before taking action - understand and respect priorities

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
		Work within the larger system - NGOs Donate through the government Make internal change agents
Rights – equity (Not a theme, but important point brought up by participants in reference to water being a human right)		Equity
Strong local leadership (Participants believe that the presence of strong local leadership is an important attribute of socially sustainable efforts).		Strong local leadership Knowing your team and following up Management Water committees
Sustainable finance (An important theme not covered in this study, but acknowledged here).		Everyone pays More talk on life cycle cost Sustainable finance Help community to develop finance mechanisms
Technology		Gravity flow systems Piped water Technical sustainability -functionality Technical veracity

Appendix F Continued: Strategies Participants Believe to Work

Theme	Sub-Themes and Definitions	Examples of when to use
(Another important theme not covered in this study, but acknowledged).		Utility service management