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ORIGINAL CONTRIBUTION

The Relationship Between Gender and WASH Development Projects in Rural Uganda

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Abstract— The paper aims to explore the relationship between gender roles and development infrastructure projects in the Water, Sanitation, and Hygiene (WASH) sector in rural Uganda. It focuses on the influence of various factors including education and governance. Insights into developing infrastructure that addresses the needs of communities could emerge from understanding the multiple dimensions of the intrinsic and extrinsic factors that affect the roles that men and women play within the WASH sector. This study adopted a qualitative approach. Fieldwork has been undertaken in a number of rural communities in south Uganda, where group discussions and interviews were conducted with key players in the WASH sector, government representatives, and people from the communities. The collected data provided an understanding of how gender roles are influenced by other factors, as they are dependent on, and formed by, other social structures, and consequently how this relationship influences the infrastructure. The findings highlight the importance of good leadership by both men and women at community level, which leads to improvements in WASH infrastructure provision. Moreover, there seems to be a strong relationship between educating women and improved sanitation and hygiene practices. Finally, cultural attributes seem to have a strong influence on the way men and women view water and sanitation tasks, how they perform them, and how they engage with and value the infrastructure. The paper gives an overview of the findings and suggests future research which can lead to new evidence to support gender-sensitive infrastructure.

Index Terms— Water and Sanitation, Gender, Uganda, Development

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Introduction

"The right to safe drinking water and sanitation is an internationally recognized human right and integral to the realization of other human rights, most notably the right to life and dignity, to adequate food and housing, and to health and well-being, including the right to healthy occupational and environmental conditions" (United Nations, 2015c).

Although access to water and sanitation has only been recognized as a basic human right in 2010 (Scanlon, Cassar, & Nemes, 2004; United Nations, 2011; United Nations General Assembly, 2010), focus on good quality and adequate quantity of water, and good sanitation and hygiene practice has been a part of the development objectives for at least half a century, driving programmes, projects, and policies (WHO & UNICEF, 2001). The first International Drinking Water Supply and Sanitation Decade (1981-1990) called on all bodies, governmental and not, to take action, which resulted in 1.2 billion people gaining access to clean water and 770 million people to have improved sanitation (Srinivas n.d.; UN General Assembly, 1989). This coincided with a shift within the development sector from Women in Development (WID), which started in 1970 and called for a specific focus on women's role in development, to Gender and Development (GAD) in the 1980s and 1990s which additionally challenged gender relations and power structures in a society that affect women's position relative to the men's (Fisher et al., 2017; Miller & Razavi, 1995). This reflected on development WASH projects looking at women's empowerment, as well as increasing women's participation in activities such as training to fix hand pumps (Baden, 1999; Ivens, 2008; Regmi & Fawcett, 1999; Wakeman, 1995), while more focus was also paid on factors affecting women's equal involvement (Lubisi, 1997; Masika & Baden, 2017).

The new millennium brought the introduction of the United Nations Millennium Development Goals (MDGs), of which Target 7C focused specifically on access to water and sanitation: "By 2015, halve the proportion of people without sustainable access to safe drinking water and basic sanitation" (United Nations, 2015b). Although, on a global average, the target for drinking water was met in 2010, the proportion of people with access to improved sanitation did not meet the targets, especially in Africa. Furthermore, although improvements were noted in the rural areas, the indicators still show a large gap between urban and rural figures, with rural population having significantly less access to drinking water in 2015 (84%) and sanitation infrastructure (58% improved or shared) compared to urban areas (96% and 92%, respectively). The MDGs also highlighted the need for gender equality through MDG3: "Promote gender equality and empower women", However this was linked to education, income and women's position in government. The MDGs did not link gender to WASH.

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In the meantime, the second International Decade for action 'Water for Life' (2005-2015) was announced to "promote efforts to fulfil international commitments" made for the MDGs (United Nations, 2015a). Among other themes, this decade gave specific focus to the gender divide within the WASH sector in the poorest regions of the planet, emphasizing women's (and girls') roles as carriers of water, managers of water resources and hygiene within the household, and the importance of good quality water for maternal care and childbirth (WHO & UNICEF, 2005), demonstrating an increasing awareness that gender is inherently important within the WASH sector and filling in an apparent gap in the MDGs. Additionally, in the 2000s, other global partnerships were formed which recognized and promoted the need for gender considerations within the WASH sector, such as the Gender Water Alliance (GWA), which aims to "promote women's and men's equitable access to and management of safe and adequate water, for domestic supply, sanitation, food security, and environmental sustainability" (Gender and Water Alliance, 2013) and the Women for Water Partnership, which aims at having women as active agents and leaders in achieving access to safe water and sanitation for everyone (Women for Water Partnership, 2015).

In 1990, at the end of the first International Drinking Water Supply and Sanitation Decade, the WHO/UNICED Joint Monitoring Programme (JMP) for Water Supply and Sanitation was established, to report the progress made across the world in improving WASH. In 2017, the updated ladders that will be used by the JMP on water and sanitation, and a new ladder for hygiene, were introduced (Figure 1) (Joint Monitoring Programme, 2017; WHO & UNICEF, 2017). The latest report by JMP notes that 71% of world population uses safely managed drinking water (based on accessibility, availability, and quality of services, see page 2 of the JMP report), while 17% has access to basic services. However, in Sub-Saharan Africa, these figures show a worse situation, with 24% and 34%, respectively, leaving 42% of the population with inadequate access to clean water (Joint Monitoring Programme, 2017). In 2015, estimates showed that despite improvements in global coverage in water supply, 663 million people still lack improved drinking water sources, most of which, 522 million (8 out of 10 people without access), live in rural areas (WHO & UNICEF, 2017). This is expected to be an underestimate though, since it does not reflect on 'improved' sources that are not operable anymore. There are big gaps between rural and urban coverage (of improved water supply) in countries globally, with Sub-Saharan Africa having the second largest difference of 31% points, suggesting that "water quality in small systems is of particular challenge" (WHO & UNICEF, 2017).

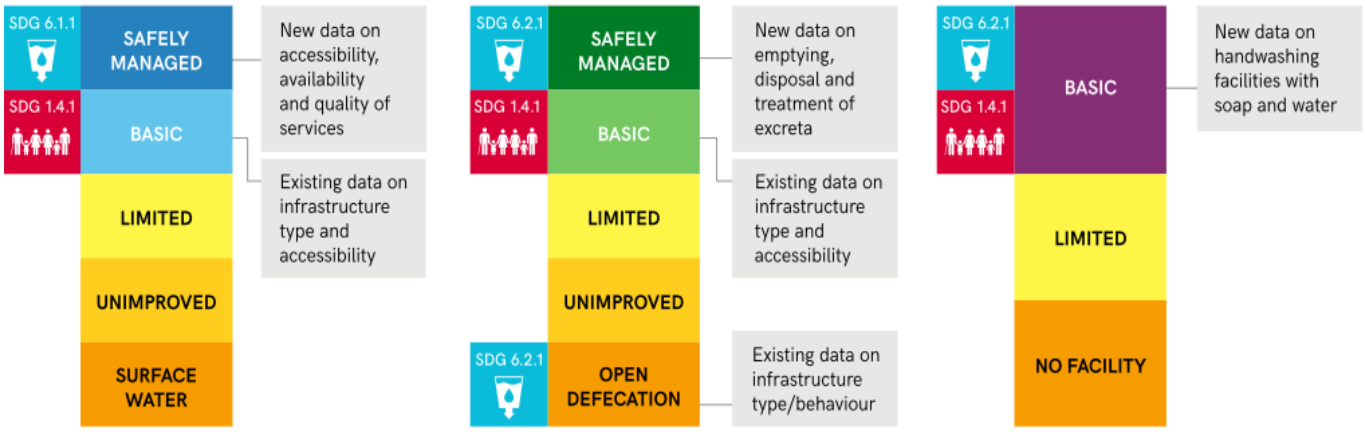

Fig. 1. Updated JMP ladders for (a) drinking water and (b) sanitation, and a new ladder for (c) hygiene (Joint Monitoring Programme, 2017)

With regards to sanitation, the numbers are worse, with 2.3 billion people estimated to still lack access to basic sanitation services, with Sub-Saharan Africa's numbers being the lowest with only 28% having access to basic sanitation (and insufficient data to estimate safely managed services). It is noted that in both cases, the access to 'safely managed services' for both water and sanitation is lower in the rural areas than in the urban areas (Geere & Cortobius, 2017; Joint Monitoring Programme, 2017). Finally, it is estimated that 15% of the population in Sub-Saharan Africa has access to facilities with soap and water for handwashing, while population growth led to an increase in the number of people practicing open defecation (from 204 to 220 million between 2000 and 2015), highlighting the need to address proper hygiene for the purpose of improved health and quality of life (Joint Monitoring Programme, 2017). This highlights the need for more effort to be employed on improving WASH services.

The Sustainable Development Goals (SDGs) followed on from the MDGs in 2015, expanding the targets and adopting 17 "integrated and indivisible" goals, recognizing the interrelationships between different aspects of development (United Nations General Assembly, 2010). SDG 6 refers to the availability and sustainability of water and sanitation for all, with the targets aiming to provide safe drinking water to all by 2030, while sanitation and hygiene access calls for appropriate consideration to the needs of women and girls (United Nations General Assembly, 2010).

Objectives of the study

The current study aims at investigating gender roles in water and sanitation infrastructure and practices, in southern, rural Uganda. The main purpose is to portray the current situation and how it compares to narratives found in literature, as well as identifying how factors such as education and governance may influence this interrelationship between gender roles and WASH, in order to provide a more holistic evidence-based understanding of this relationship. Furthermore, this study acts as contextualization for future research, which will focus more specifically on how to make WASH infrastructure more gender-sensitive. In order to achieve this, the dynamics of gender in WASH, as well as what factors influence and form them, need to be addressed, which is done in this research.

Literature Review

In Uganda specifically, more than 20% of the population still used unimproved sources for water supply in 2015 (WHO & UNICEF, 2017). According to data by the JMP, only 12% of the Ugandan population has wa-

ter supply on premises, while 28% reports spending less than 30 minutes to collect water and return home. 60% of the population spends more than 30 minutes per trip to collect drinking water (walk to source, queue if necessary, fill up container, and return home) (WHO & UNICEF, 2017). Indeed the report states that a significant proportion of the population of sub-Saharan Africa spends more than 30 minutes on the task of water collection. This burden, as well as the general participation in household activities, falls primarily on women, due to various belief systems and sociocultural norms (Baguma, Hashim, Aljunid, & Loiskandl, 2013).

Between 1990 and 2000, the rural population in Uganda increased by about 4 million (WHO & UNICEF, 2001), while in 2010, it was estimated to be 31.8 million, with poorer families having more children that act as active labor within the household, helping out with tasks like water collection, waste removal and agriculture, and reducing water shortage within the household (Baguma et al., 2013; Ministry of Finance Planning and Economic Development, 2010). During the same period, the rural water supply coverage increased from 40% to 46%, while the rural sanitation coverage decreased from 82% to 72%, as can be seen in Table I (WHO & UNICEF, 2001). This is comparatively similar to the general situation in the East African region, being slightly better in terms of water supply but slightly worse in terms of sanitation coverage (Thompson et al., 2001). With the introduction of the UN MDGs in 2000, a big focus was given internationally on improving water and sanitation for all. Uganda acknowledged the need for improvement of the situation in the country, by prioritizing water and sanitation in its Poverty Eradication Action Plan and the National Development Plan (Ministry of Finance Planning and Economic Development, 2010). In 2015, the Ugandan Ministry of Water and the Environment (MoWE) reviewed the progress in the country, noting that although the target for water supply was met, with 71% of the rural population having improved water sources , only 34% have improved sanitation (with additional 17% having shared sanitation facilities) which is less than half of the targeted 70% (World Bank, 2015). Especially for sanitation, the Table is debatable, as the JMP estimates that Uganda has an improved sanitation coverage of only 17.3% (with water supply coverage being 75.8%) (WHO & UNICEF, 2015).

Table I
Water supply and sanitation coverage in East Africa, 1990-2000 (WHO & UNICEF, 2001)

Country	Year	Total Population (000s)	Urban Population (000s)	Rural Population (000s)	% Urban Water Supply Coverage	% Rural Water Supply Coverage	% Total Water Supply Coverage	% Urban Sanitation Coverage	% Rural Sanitation Coverage	% Total Sanitation Coverage
Kenya	1990	23,552	5,671	17,881	89	25	40	94	81	84
	2000	30,080	9,957	20,123	87	31	49	96	81	86
Tanzania	1990	25,470	5,289	20,172	80	42	50	97	86	88
	2000	33,517	11,021	22,496	80	42	54	98	86	90
Uganda	1990	16,457	1,837	14,620	80	40	44	96	82	84
	2000	21,778	3,083	18,695	72	46	50	96	72	75
Region	1990	65,479	12,806	52,673	83	36	45	96	83	85
	2000	85,375	24,061	61,314	80	40	51	97	80	84

A study published by Thompson et al. (2001) revisited communities in Kenya, Uganda, and Tanzania that were initially studied by the authors of Drawers of Water (White, Bradley, & White, 1972), examining 30 years of change in the WASH sector, particularly in domestic water use, hygiene, and health. As a study, this is quite unique since it spans over a long time examining long-term changes about water use in rural areas, as well as over three countries in East Africa, therefore having a wider geographical scope. The study analyzed domestic water use, i.e., consumption, hygiene, and amenities, based on decision-making, cultural dimensions, and location-specific conditions such as landscape and climate. During the time period between the two studies, the economic context of water has changed from a public good to an economic good, meaning that now, there is more emphasis on the beneficiaries being willing and able to pay for their water (infrastructure). The water situation in rural areas has improved, from 1/10 to 4/10 dwellers now having access to improved water supplies. Another major change has happened in the state institutions, with the governments now acting more as regulators, with increased and continuing support from donors, as well as other private actors in the sector, such as Non-Governmental Organizations (NGOs) and CBOs. Finally, there now seems to be a greater focus on rural areas than 30 years ago (Thompson et al., 2001). The main lessons are as follows: (1) Piped households use more than threefold the water-quantity of the un-piped households, which has significant health benefits; (2) Where the infrastructure exists but is non-functional, poor families are forced to collect water from unprotected, usually polluted and distant sources, when the cost of water from private vendors is unaffordable; (3) Women are still, after 3 decades, the main carriers of water, although the introduction of the jerry-can has increased the number of young men collecting water for sale; (4) Lower-income households spend a bigger proportion of their income on water, due to limited access to public services and higher cost of alternative sources; and (5) the isolated studies of success point to the need for better policies and institutional arrangements that address the WASH needs of poor people. The overarching conclusion is that poor people bear the 'choice' between using up their limited income on water due to non-access in public services or piped systems, and bearing the cost of risk of ill health, inconvenience, and long distances when they collect water from alternative sources, with most of the responsibility, and therefore, disadvantages falling on women.

Another study published in the 1998 pointed to the shortfalls of water and sanitation policy in Uganda. Firstly, the quality of the water at the point of consumption is lower than the target, in some cases even lower than the quality at the point of collection, due to low sanitation and hygiene practices at household level. Bagamuhunda and Kimanzi, (1998) called for a sanitation programme at national and regional levels of Uganda, including all the stakeholders. The second problem identified was the quantity of water collected. Although the infrastructure was designed for 20-25L/person/day, some people were still using less, even when the source was located nearby (within 250m). This indicated the fact that they would prefer to use less water than make an extra trip to collect more. Finally, the authors discuss the effectiveness of the water committees and the communities' willingness to maintain their water infrastructure schemes. It is argued that the two assumptions on which the water schemes were designed to be sustained, (1) if communities are included in the planning and construction of the scheme, then they will feel inherently responsible for its success, and (2) they will continue to carry out their responsibilities and roles as a water committee voluntarily, are not necessarily right. Once the infrastructure is in place and working, the committee loses enthusiasm and willingness to be involved and collect the maintenance fees without any reward. The authors' recommendations for these problems include increased educational programmes on sanitation and hygiene, as well as formalizing the role of the water committees, either by linking them to the local government or by payment (Bagamuhunda & Kimanzi, 1998).

A more recent, five-year study in Lwengo District shows that women are still the main managers of water resources and responsible for carry-

ing water for home use, and suffer the most when there is water shortages, inadequate provision of infrastructure or inefficient decision-making. Women's position within the communities as well as cultural expectations define women's roles in terms of water management within the household, such as meeting men's water demands for drinking and washing (Magala, Kabonesa, & Staines, 2015). Despite increased focus by practitioners and government to raise women's participation in formal decision-making structures, for example, in village water committees, factors such as the individual's agency, or the perceived personal and social costs associated with it, such as being stigmatized by the community as 'loose women' or 'unfit mothers', influence women's decision of participation (Mandara, Niehof, & Van der Horst, 2017).

Methodology

This research was conducted as a part of fieldwork with UK-based charity Afrinspire, and therefore all of the sites visited were communities where infrastructure and projects have been funded by the organization. All of the communities visited are in the southern part of Uganda, most of them in the Districts of Manafwa and Mbale (Figure 2). These projects included (as shown in Figure 3): (a) Water tanks for rainwater storage and harvesting; (b) Protected springs; (c) Pit latrines; and (d) Functional Adult Literacy (FAL) groups.

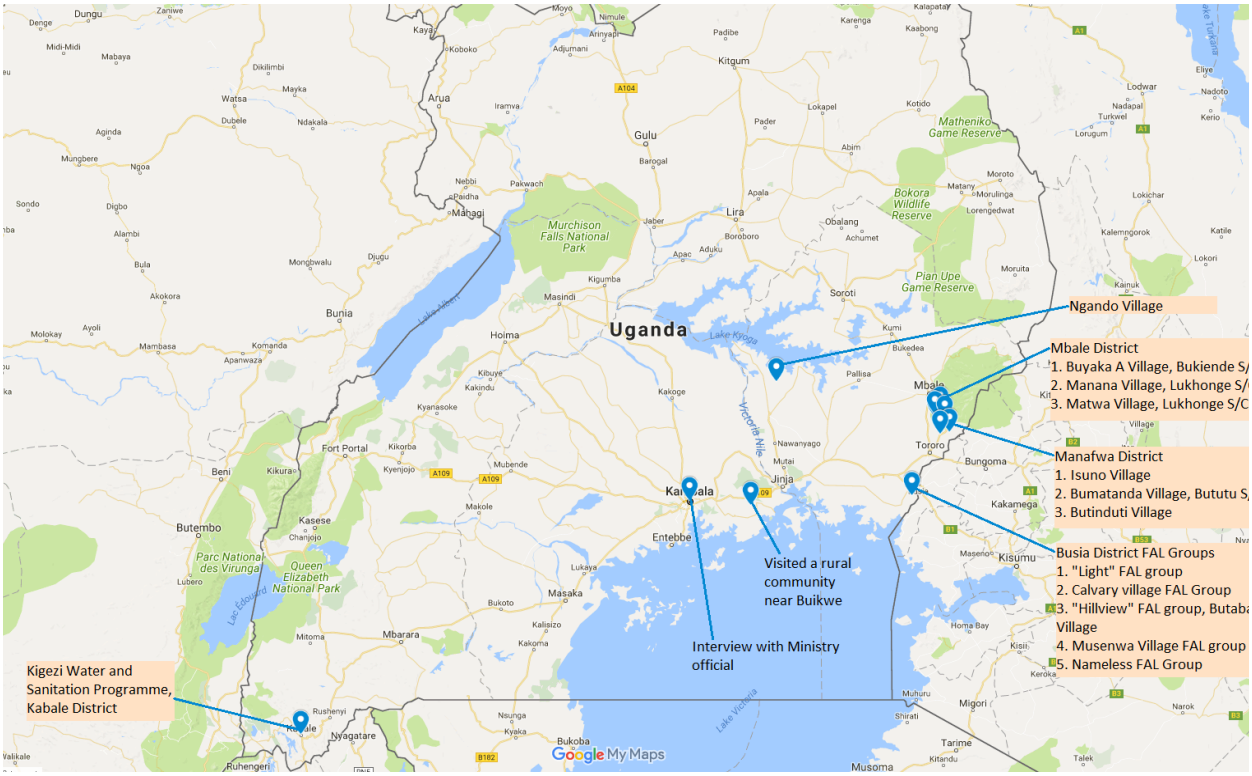

Fig. 2. A map of Uganda annotated with the communities visited

The study employed a variety of qualitative data collection methods: interviews one-to-one or in groups, focus group discussions (with the aim of understanding the current situation of water supply and sanitation and the opinions of men and women), and observations. Where a translator was needed, one of the members of the Afrinspire team on the ground assisted in translation. The participants were identified through two non-probability sampling methods: (a) purposive sampling, which refers to the selection of participants with certain characteristics that represent the population and allow the researcher to meet the specific research aims (Berg, 2014; Robson, 2011); and (b) snowball sampling, which refers to identifying a relevant contact, in this case Afrinspire, who will then suggest other participants relevant to the study (Robson, 2011). This meant that participants were either 'experts' and knowledgeable in the WASH sector in Uganda, or represented the general population of a community studied. In total, the fieldwork involved 3 one-to-one interviews (with government officials or programme coordinators) and 5 group interviews (2 of which were with the families who owned water tanks, and 3 were with organizations that are working on the ground: MIDPRO, Mount Elgon Community Development Organization (MECDO), and Kigezi). Additionally, 9 focus group discussions were held, one in each of the communities we visited (2 with community Water User Committees and 7 with the FAL groups). Finally, observations of the infrastructure and its use by community members were noted while in the field, in all of the 13 communities visited. All of the participants' names have been coded for privacy purposes, with their code names being used in this paper.

Fig. 3. (a) A water tank; (b) A protected spring; (c) Pit latrines; (d) One of the FAL groups

Results and Discussion

Evidence-based understanding of gender-WASH interfaces water supply

This research's findings show that gender roles in WASH still exist in rural Uganda, influencing unevenly men's and women's lives. Women remain the primary carriers of water from the source, in many cases walking for at least 1km and spending a long time queueing. However, access is not only a matter of time and distance. In Buikwe, for example, the protected spring, which was used by the community, was located at the bottom of a small hill, which was dangerous and risky to descend as it was slippery due to the dusty nature of the soil. Women and children (some as young as 6 years old) were observed to walk to the spring to collect water and carry the 20L jerry cans up the hill to their houses. This water is used for domestic activities, such as cooking, washing, cleaning, bathing, and drinking. On the other hand, when men collect water, it is mostly for business, such as becoming water vendors. Additionally, the men use bikes to access the water points and transport the load, and are able to carry 4-5 jerry cans at once, while women carry the jerry cans on their heads, sometimes at the same time carrying their younger child on their back and holding one by hand. Therefore, women physically carry the loads, which may affect their health, causing issues such as back pain. This shows a gender divide in both the reasons for undertaking the task of water collection and the means used to carry it.

Gender roles within the household are defined by both culture and society. During an interview, a woman leader, Rita, stated that 'the men are spoon-fed', explaining that women have to provide the water for the men, who expect to have everything ready when they come home for lunch, including food, water to drink and bathe, and clean clothes. Another female interviewee further noted that women may face, in the best case, complaints and, in the worst, abuse or violence if they fail to provide water. This clearly demonstrates the gender roles assumed within the household, where women are expected to provide for their husbands, and will be viewed negatively if they don't. This means that women are responsible for collecting water not only for consumption, but also for cooking, bathing, and cleaning, increasing their workload with regards to water collection.

The social and cultural constructs that define women's roles in the household exacerbate their position when they are more vulnerable due to physical constraints. For example, during pregnancy, women are still expected to fulfill their water collection duties, walking the long distances with heavy loads. This was observed at a protected spring but was also stated by the female participants during the focus group discussions. Moreover, a lady also stated that after birth-giving, they are also expected to return to their duties, so they carry their children with them on their backs when accessing the water points, as was observed at multiple occasions. Discussions with the locals pointed out that if women are unable to complete their water collection, then the responsibility falls on the husband's sisters, or the woman's sisters, not on the man, showing that the women even have to bear the burdens associated with their wider families rather than the husband taking over the responsibility. The men expressed fear of facing social stigma if they are seen collecting water and doing 'a woman's job'. Additionally, as conveyed by a number of the older participants in the discussions, if parents are absent for any reason, the grandmother takes over the caring of the children. But as women are getting older, health problems make it more difficult for them to cope with tasks they 'have to do', such as collecting and carrying water.

Children were also observed at water points collecting water, in some cases in greater numbers than women. It was explained during the focus group discussions that children engage more into the task of water collec-

tion during school holidays, while women do most of it during school time. However, children still participate in this task during periods of school; they wake up early in the morning to go for water before school time, and their mothers also send them after school. For children, gender did not seem to be as important, as both girls and boys were observed near water supply infrastructure. This led on to a surprising suggestion: for men, participation in water collection is as much a matter of 'marital status' as gender. When questioned about collecting water, a 20-year-old young man at a protected spring stated he was collecting water every day. When asked if he would still do it when he gets married, his reaction conveyed that he considered the question funny and the answer obvious, explaining that he wouldn't collect water because his wife will do it.

All of the participants, male and female, in both discussion and interviews noted that women have to go early in the morning to the water points, in order to be able to return home and look after their younger children or do the house chores. The men even expressed fear for their wives undertaking such tasks in the morning while it is still dark, as 'different people have different motives', recognizing the harassment risks it poses to women. Women were also observed to collect water at dusk, after 6pm, showing that their working days are long, in most cases longer than men, who were observed having leisure time and drinking alcohol at the same time as women were queuing to collect water. As was observed at most of the springs visited, women face long collection times as the morning is 'peak time' at the water point, meaning there are long queues, with all women wanting to collect water promptly and return home to prepare lunch. During discussions, it was explained that they are generally allowed to fill up 1-2 jerry cans at once, even if they have more with them, as other people are waiting too. The women claim that 'peak time' queueing is mostly a problem for women, as men can go and collect water later in the day. explaining that women are not flexible with their working days, as they need to tend to the children and the husband. This, of course, is exacerbated during drought periods, as was experienced in the communities visited in East Uganda, where it hadn't rained for 3 months and the flow rate of many springs had decreased, resulting in a longer time to fill up a jerry can, thus making the queues at collection points even longer. Such long queues resulted, according to narratives, in disagreements and fights between community members, due to the stress of time. From data collected during the interviews and discussions, the average consumption per person per day among all communities is about 25L, which is half of the proposed minimum amount by the WHO for good health and living standards (Howard & Bartram, 2003). This could be avoided if better infrastructure provision and coverage were achieved to provide the quantity and quality of water required by the WHO standards, and if social change challenged the traditionally formed gender roles so that men, for example, acknowledge women's work in collecting water and provide support, which seemed to be one of the women's wishes, as interpreted through their statements during interviews and discussions.

Water supply infrastructure

Most of the communities visited were accessing water from protected springs (Buikwe, Isuno, Butinduti, 'Light', Butaba), with only a couple of communities having access to a borehole and hand-pump (Bamatanda and Ngando villages). Both of these infrastructure types would classify as sources of 'limited' access on the JMP ladder (see Figure 1), due to the fact that it would take more than 30 minutes for a round-trip. Furthermore, both have decreased outflow, as was observed in Butaba and even risk drying up during prolonged periods of draught, as observed in Isuno. Unprotected springs were also observed in some communities (Buyaka A, Bamatanda village, Calvary), which would classify as 'unimproved' on the JMP ladder. Water tanks serve clusters of households, in average 6 households, usually belonging to the same family (Matwa, Susan's house – the village is also serviced by a gravity scheme as stated by Susan, the LC5 representative; Manana, Mr. Larry's house; Bamatanda, Mr Peter's house; Ngango, Mr Mufasa's house;). These tanks have the capacity of 4000L and, when full, can last the users for 1-2 months, depending on consumption. However, the tanks have a limiting use in periods of draught, which was evident in East Uganda during the time of the fieldwork. It is important to note that in all except one occasion (Ngango village, a water tank at Mr Mufasa's house), the participants to the interviews or focus groups stated that water collected from any of these sources is not used for farming, but rather the crops are watered by rain.

When water tanks are used as a water source, it is still mostly the women who come to collect water. Usage is monitored either by locking the tap, so that only 'authorized' people can access it, or by constructed among households belonging to the same family. Usually, technical maintenance is employed from outside, but women undertake the cleaning of the tank, the tap, and the surrounding area. Water tanks in houses have the benefits of decreasing the time required to collect water. In Ngando, Mrs Mufasa stated '[she has] enough time now to sleep and rest'. In Matwa village, Susan noted that before the constructing of the water tank, water was collected from the river, more than 1km away, or from a borehole, which is 2km away. Collecting water from the tank only takes 30 minutes, which would be included in the 'basic' category if it were providing water continuously. They are also noted to 'save women from rape', as they do not need to walk alone to the spring to collect water. In visiting Manana, however, Mr. Larry claimed that both men and women come to collect water from the tank (maximum distance covered by each household serviced is 100-200m), which indicated that probably distance, and therefore time, is an important prohibiting factor for men collecting water. He also stated that he is responsible for maintenance and operation monitoring of the infrastructure, which can be explained by his feeling of pride for the ownership of it. The water collected from the tank is not used for drinking, however, because it is 'unclean'. For drinking, water is collected from a nearby spring, and it is boiled for drinking. He specified that only women go to collect water from the spring, 'not me, as it's the women's responsibility to collect water, wash, and do the cooking'. The absence of infrastructure that can support water supply all year round has financial, as well as the aforementioned health and social impacts.

The protected springs inspected also displayed a number of benefits, as stated by the communities who use them. They deliver safe water, with accounts of less cholera and diarrhea incidents. They also seem to change in dynamics not only within community but also between communities as sharing between communities occurs, where a number of nearby communities only have access to the same springs. Isuno village shares 2 protected springs with nearby villages, as theirs is the only one that hasn't dried up due to the draught. During the community meeting in Isuno village, it was furthermore stated that where available, springs are the preferred infrastructure as the water is constantly flowing and the perception is that this is safer. Where the spring is also located nearby the community, there is better access to water, women travel less and nearer for access to safe water. During the discussion with the Community Committee at Buyaka A village, the community members expressed the expectation that if the water source is closer to the village, the women will have more time to do other things at home.

This indicated that they would potentially allocate their extra time to household work rather than income-earning activities. This could have been because of the patriarchal society that might not allow for women to participate in such activities, or other cultural factors such as being viewed as a woman who causes trouble. It may also be that women feel their role to fulfill is to work at the household, although our findings from the focus groups with the FAL groups indicate that women would like to engage in

microenterprises and income-earning activities, which they do through the FAL groups. Further research would be needed to clarify this, which was out of the scope of this study.

Sanitation and hygiene

In terms of sanitation and hygiene, women have more pronounced feelings of shamefulness and uncleanliness, which was implied through data collected in the discussions, the interviews, and observations, as they have to deal with menstruation without adequate access to sanitation materials or water for washing. They cannot afford pads so, instead they use dirty clothes, which lead to infections and abdominal pains because of that. Educating and sensitizing the women on proper sanitation and hygiene practices reduces the cases of women suffering from infections, as stated by Susan, who is an elected LC5 district representative and health worker, during the interview. Girls are also ashamed during menstruation, as it is a taboo issue, and do not attend school during these days to avoid any 'accidents' that will make them the discussion of the school for the whole year. Furthermore, many girls are unprepared for it because their mothers do not talk to them about it, and women and girls do not even talk to the doctors about it [as stated by Riana from 'Hillview' FAL group in Butaba village]. This indicates that the fact that menstruation still remains a taboo subject leads to problems for the women and girls, both physical as they are unaware of proper sanitation and hygiene practices and face health risks as a result of that, and psychological as they feel ashamed embarrassed and marginalized (from school).

All of the communities visited had pit latrines, although it was noted that open defecation is still practiced and poor sanitation remains a problem for both men and women. In Buyaka A village, the sanitation practices involved the use of pit latrines and African pots at home, but it was noted that men practiced open defecation while they work in the fields. Even the women would resort to it if they are far from the house, despite of being close to the water source. They acknowledged the problems it causes, such as contamination of the water source, but they indicate that they have no choice if they are far from the home and the pit latrine. This shows that such communities, would be classified best as 'open defecation' on the JMP ladder because despite of pit latrines being available, they are not used all the time.

In Matwa, Susan mentioned that since the higher provision of pit latrines in households, decreased cases of illness, such as diarrhea, have been reported. This places Matwa on the 'basic' level of the JMP sanitation ladder. Prior to the construction of the pit latrines, people expressed feeling shameful towards other people in the community, as well as towards visitors because they couldn't provide them with good infrastructure. In different communities, various research participants also mentioned incidents of crime, and people being attacked while practicing open defecation. These have all been improved since each household was sensitized to the benefits of using pit latrines and have access to one.

In terms of the JMP hygiene ladder, only 2 cases (Mr. Mufasa's household and the school pit latrines at Butaba village) were observed to be of 'basic' standard. In all other communities visited, 'no services' were observed near the pit latrines for handwashing. This indicated that hygiene is still a big issue and highly neglected in rural Uganda.

Governance and leadership

In order to understand how infrastructure provision is facilitated in rural Uganda, the study aimed at understanding the governance structure and the way different actors interact from the higher levels to the lower levels of governance, as well as any possible gender implications within this. Based on the interviews that were conducted, the governance structure is described as shown in Figure 4.

Uganda follows a decentralized structure for provision of WASH infrastructure and services, where authority is given to the lower levels of governance to distribute money. Once the districts receive the annual budget from the government, they have the freedom to allocate it as they see best. It also seems to follow both a top-down and a bottom-up approach. Top-down happens when the Ministry of Water and Environment (MoWE) provides infrastructure near key locations, such as health clinics, or identifies uneven distribution of water sources in a region and targets that region for the next projects. This is in accordance with their motto "Some for All", aiming to achieve balance between regions. Both the MoWE and the organizations, however, have limiting capacity, both financial and in terms of skilled labor, so progress is slow. For example, in Bumatanda, it was noted that the non-functional hand-pump that was observed on sight might take up to two years to be fixed.

In Buyaka A village, the LC1 councilor (male) stated that "the government has not come to provide such a service [of a protected spring]. We have cried out to them but they have not come in to help us". This indicates an expectation of the community that the government should provide for them, but also seems to reflect the male attitude of expecting things done for them. Additionally, when asked what factors stop them from taking action themselves, "poverty is the answer. We do not have the money to buy the materials to do it". They seem to feel immobilized and unable to act due to poverty. However, this indication comes in contrast with evidence from other communities, as well as findings from FAL groups, which demonstrate that despite of similar levels of poverty, households could in some cases have the ability to save money, and act to improve their condition. It is surprising the statement of poverty is made by the community leader, who is expected to mobilize the community to act towards their own development, and it was a unique incident in the data-set.

Bottom-up happens in most other cases, where the communities themselves need to initiate change and development for themselves, in the form of applications, either to the district council or to the NGOs and CBOs that operate in the region. These organizations decide which projects to fulfill based on their own capacity and capability, and then report back to the government through their respective sub-counties, on the work they have completed on an annual basis. For example, during the group interview with the MECDO team, the applications from various communities were observed (in the form of a letter from the LC1 councilor, who is the elected community leader, and which is the first level of formal governance) as well as the government certificate recognizing MECDO's work. This shows the linking between formal government structures and independent NGOs or CBOs.

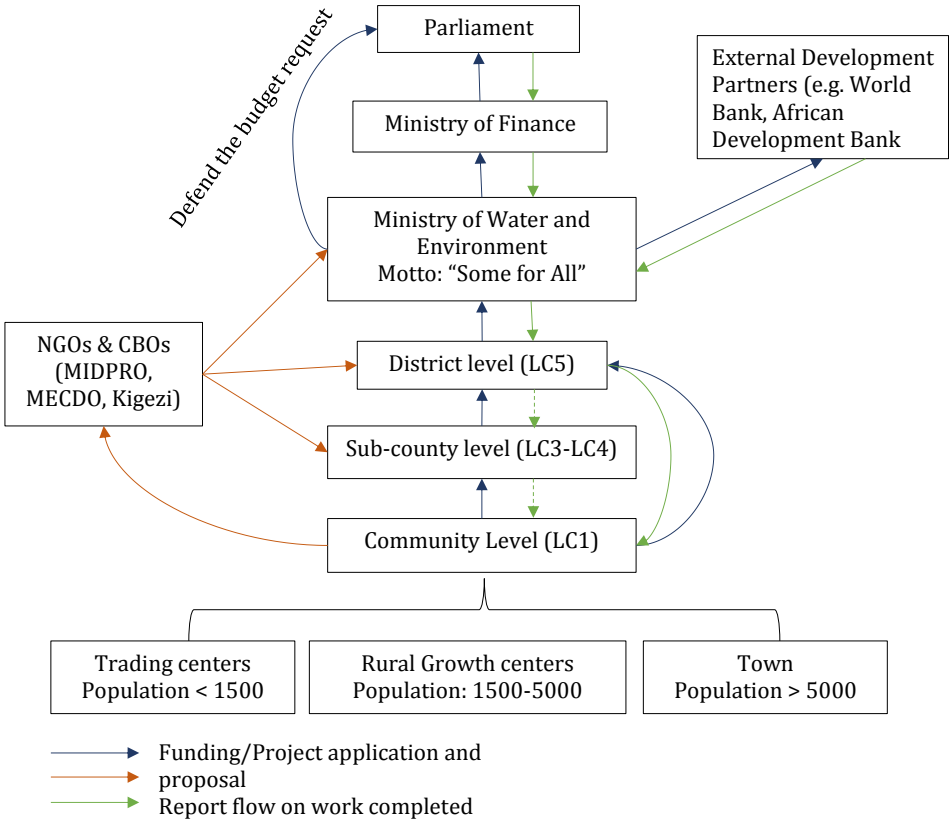

Fig. 4. The governance structure in Uganda, with the flows of money, applications and reports

Leadership is important to initiate development in a community and raise awareness for lack of infrastructure to the appropriate agencies. For example, the LC1 councilor in Buyaka A village made an application to MIDPRO for a protected spring, which initiated the process for the project. However, difficulties such as transport, delay access to areas in need, as stated by the MIDPRO team, and, therefore, delay development in WASH sector. Another factor that delayed infrastructure delivery was the delay of the community contribution to the project (required by the organization as a way of creating a feeling of ownership and responsibility of the infrastructure). Past experiences of failures to collect money for simple repairs highlight the need for community mobilization, for which leadership is important to ensure the sustainability of the project.

Various examples from the data collected indicate that leadership can significantly improve WASH in a community, and that both men and women can use formal structures, such as participating in government committees, to attract funding for projects to their region. Susan, an LC5 representative for her region and a health worker, explains that she goes to the district-level meetings and raises the problems about the drinking water in her community. After her request, the district has installed a gravity-fed system, serving eight of the villages represented by Susan. In Bumatanda village, Peter was a community-elected LC3 councilor and his wife, June, was one of the FAL group leaders in the area. As leaders in the community, they applied for a water tank in their community, which was then built at their house since they were identified as responsible people. Furthermore, during Peter's time as an LC3 councilor, a borehole was installed in the community following his application to the district council. Peter mentions that as a political leader, he is expected by the community to build such projects.

Leadership is equally important for enhancing sanitation and hygiene as improvement observed in communities where there is an initiative by a person or a group of people. At district level, village health workers are appointed. These positions have both a male and a female representative. Their responsibilities include weekly sensitization of people and educating them on sanitation issues and proper hygiene. These also act as a way for the government to monitor and evaluate community sanitation, on an annual basis. Female councilors are mostly involved in women programmes by going to women committees, forming women groups and discussing various issues, from child marriage to sanitation and education. Susan claims that women are more active in the district, as they are more sensitive to the issues faced and, therefore, more motivated to change the situation, and they are also more accepted by the women in the community than their male colleagues. This belief agrees with the findings from Lwengo District in south Uganda, which indicated that women's participation in committees makes them more active and results in improved access to safe water and sanitation (Asaba, Fagan, & Kabonesa, 2015). In terms of WASH, this reflects women's capacity of catalyzing development through being active leaders.

Based on various examples observed, our data indicate that communities, where there is good leadership, have experienced more development and benefits from infrastructure projects. Women are the ones who are mostly engaged in WASH activities, and are affected by these at a personal and intimate level. Thus, increasing their influence within the decision-making process concerning WASH projects, which have an impact on their day to day existence by, for example, including them in leadership or consulting positions, encourages to align the infrastructure project aims to the needs of those that primarily use the infrastructure. However, as our data

have suggested, in many cases, men are also taking up leadership within WASH, driving initiatives for their communities. This points to a need for a more holistic approach on community involvement, as the sustainability of projects is dependent on a mutual understanding of each gender's social roles and personal needs, and enhanced cooperation between men and women to allow for the development of more effective mechanisms of governance within pre-existing social structures to guide infrastructure development.

How does education shape gender roles in WASH?

In 1997, the Ugandan government, with help from various NGOs and donors, launched the FAL programme to address low literacy rates among adults and "empower [them] to participate fully as equal partners in development programs" (Ministry of Gender Labor and Social Development, 2008). WASH is a part of the curriculum, which is taught in rural areas in a group of 20 adults in each community, providing education on access to and importance of clean water, good sanitation, and hygiene practices for the purpose of improving health. This study explores the role that FAL groups play in the provision of WASH infrastructure, and how gender integrates with this.

Figure 5 shows the gender distribution in each of the FAL groups visited, highlighting that most of the members were women. This has been explained by a number of reasons, as extracted through interviews and focus group discussions. Firstly, although the groups are not exclusive to men, they are aimed towards women, who are believed to drop out of school at an earlier stage due to their responsibilities and domestic roles, such as spending hours collecting water (which was also mentioned in the National Report (Ministry of Gender Labor and Social Development, 2008)). Also, during the focus group discussion in Butinduti village FAL group, it was said that women did not get educated when they were younger because of the belief that women were only for marriage and not for school, or their parents marrying them early so that they wouldn't keep baring their expenses. Additionally, it was noted that early pregnancy is another reason for girls to drop out of school. Secondly, these groups are mainly formed through church connections, where women meet and socialize. Thirdly, during the focus group discussion with Calvary FAL group, a female member stated that 'the men are busy finding income for the family and do not see the value to learn how to read and write', which indicated that the men either do not have the time or are not as interested as the women. It is important to note, however, that the women would only join and attend a FAL group after getting permission from their husbands.

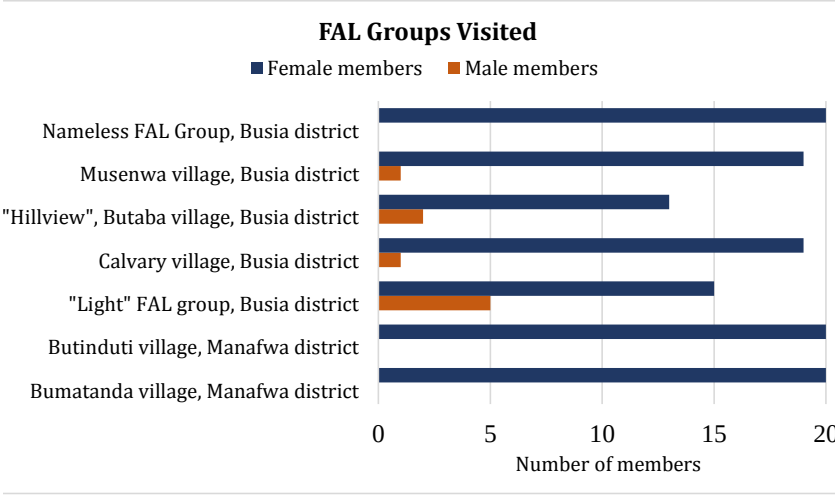

Fig. 5. Gender distribution of the members of the FAL Groups

Water supply

In Manafwa district, FAL groups played an important role in the development of water supply infrastructure. 20 of the FAL groups in the region joined together to create the MECDO), a community-based organization, that constructs protected springs and water tanks around the region in order to provide clean and safe water. The organization works on the basis that the communities themselves send them 'applications' in the form of letters to request the infrastructure. Higher literacy rates through FAL groups enable the communities to reach out to organizations like MECDO, or even to the local district, in order to improve their infrastructure. This was also mentioned in Rogers' study in two different districts in Uganda, who notes that increase in literacy means the community members would now, for example, be able to read hand-pump manuals for operation and maintenance (Rogers, 2008).

Also, learning about the benefits of clean water supply motivates the community members to 'recognize their needs and be actively involved in the projects to improve their situation' [Interview with June, a woman FAL group member and later leader, Bumatanda village, Bubutu sub-county, Manafwa district). The data also indicated that although the women bear most of the burden of water supply collection for the household, the men recognize the difficulties faced by the women, and are aware of risks such as snake bites and harassment. This leads to them being active in improving the water supply nearby the community so that their wives do not need to walk as far. For example, during the construction of the protected spring in the community of 'Light' FAL group, the men were involved in the construction of the spring.

Women's participation in the FAL groups raises awareness of what they need in terms of water supply, while at the same time, it empowers and encourages them to convey the message to their husbands, who are the main decision-makers in the communities. This also allows them to express their needs, which means that critical, gender-specific information is disseminated across all decision-making groups, which can lead to improvements in the WASH sector.

Sanitation and hygiene

Educating the FAL group members on the importance of good sanitation and hygiene and the impacts on their health, such as the incidences of diarrhea, increases their appreciation of the use of pit latrines. This was a uniform statement in all focus group discussions with all FAL Groups, with some women specifically expressing increased feelings of dignity and pride. A male member from Musenwa FAL group, Busia district, said he feels proud because he considers himself 'one step further in development', showing that these feelings are important to both men and women. Furthermore, both men and women expressed feeling cleaner, while a woman specifically mentioned that she learnt the importance of handwashing after using the latrines, and 'throwing away waste is not good because it leads to diseases'. A lady from 'Hillview' FAL group stated that the pit latrines provide them with privacy, which is important to them, while they also feel less marginalized now. This shows that FAL groups directly influence sanitation and hygiene practices positively.

A woman during the discussion with the Calvary FAL group stated that she had a pit latrine before, but she did not understand its value, so they were not using it, but now everyone is using it in her family. This was a universal finding across all FAL groups visited, where the members stated that they now appreciate the use of pit latrines, and all of them now have a pit latrine at their household even if they didn't previously. This shows that a woman's participation in the FAL groups leads to improved practices in the household by all members, which consequently improves the situation in the community. Improved hygiene was also observed in Ngando village (which did not have a FAL group programme but, instead, had a hygiene training by an organization, Uganda Development Services). During the interview, Mr. Mufasa demonstrated the use of the 'tip-tap', a simple structure used to wash hands after the use of the pit latrine without touching the water container and, therefore, avoiding contamination. This is in agreement with Okech's study in different districts in Uganda (Okech, 2005), demonstrating that education has positive results in the community's water and sanitation situation, while all members of the community now follow better practices, not only the ones who attended the FAL group programme meetings, agreeing with the findings by the World Bank evaluation in 8 different districts in Uganda (Okech et al., 2001).

Community mobilization facilitated the provision of pit latrines to all the households within each community. The men, who had the skills to construct them, built them for the households who didn't have the skills or the labor force. This improved infrastructure provision and coverage within the communities. Women, who attended the FAL group programme, act as catalysts within the community for better sanitation and hygiene by mobilizing the men to act for improvement. This indicated that FAL groups are empowering women to become the driving force for change, but shows that there has to be collaboration and coherency between all the members of the community.

Baguma et al. (2013) stated that "given the low levels of education and the poor reading culture in developing countries, encouraging women to join local active water-related associations would improve the women's knowledge about water resource management [...]". This study's findings from FAL groups indicate that educating women, with curriculum especially targeted towards WASH, has positive impacts towards improvement in communities and development of WASH infrastructure and practices.

Limitations and Future Research Directions

With a general understanding of the gender-WASH interrelationship, further research focusing on more technical aspects of the infrastructure and how it can be linked to the social impacts that are gender-biased, would allow for more gender-sensitive WASH infrastructure.

Conclusion

The paper presents the findings from research in rural areas in southern Uganda. It demonstrates that gender roles within WASH are still prevalent, with women, mainly, and children undertaking the task of water collection. With regards to sanitation and hygiene, the study indicates that both men and women are affected by the lack of adequate infrastructure, although in fundamentally different ways, as women also have to deal with personal factors such as menstruation, increased feelings of shamefulness, and higher risks of harassment or violence.

The situation unveiled displays that there is still lack of adequate infrastructure for safe water and sanitation. It also points to the need to continue addressing gender within WASH, highlighting, however, the lack of meaningful change in the last 40 years, with regards to the roles of men and women in WASH. This raises the question of why this is the case, despite of the increased effort in mainstreaming gender and focusing on women in development projects.

Following on from that, education and governance were investigated to understand whether they have any impact on WASH and how these relate to gender, in an attempt to have a deepened understanding of the gender-WASH interrelationship. The findings from the FAL groups signify that education has a strong, positive impact on WASH and the provision of infrastructure, both in terms of mobilizing communities to act on development, and encouraging the women to voice their opinions, thus initiating the discussion around issues within WASH that are important to them as women. It was also evident that women can act as catalysts for improved practices in their communities, as well as being empowered to drive change by influencing men's participation in WASH development such as building pit latrines. For further improvement, educational material could include the dissemination of critical, gender-specific information, raising awareness of gender issues within WASH across all decision-making groups.

Additionally, it was highlighted that governance and good leadership within communities is an important factor to drive change, attracting attention to the lack of infrastructure, and, therefore, funding or projects in a region. The cases studied portrayed both men and women in leadership roles that enabled infrastructure provision in their communities, although it was noted that women leaders are, in some cases, more active in sensitizing community members towards good WASH practices, and, having experienced the problems themselves, are more motivated to push their requests up the governance structure to improve their community's WASH situation. Women leaders also seem to be more aware of the gender issues related to WASH, and, therefore, can drive more gender-sensitive change within their communities, such as improving sanitation during menstruation. These findings suggest that education programmes and promotion of leadership initiatives can lead to improvements in the WASH sector.

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