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Lighting, WASH and Gender-Based Violence in Camp Settings

Literature Review

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Executive Summary

“In many camp settings communal latrines are not lit at night. This limits their potential benefit. In particular, women and girls have safety concerns and feel unable to use them at night. When they do use these facilities, they are often threatened or abused. Lighting solutions in such contexts need to be cheap and sustainable. As latrines are not guarded by night, lighting systems also need to be difficult to steal or vandalise.”

(HIF, 2015)

Poor lighting at water, sanitation and hygiene (WASH) facilities may reduce the usage of latrines and other services such as bathing areas and water collection points; especially by women and children. Generally, poor lighting may contribute to fear of crime and specifically Gender-Based Violence (GBV), which may, in turn, further reduce the use of the WASH facilities. For example, in Haiti, teenage girls surveyed by the United Nations (UN) Stabilisation Mission stated that they were afraid to use latrines at night because of the lack of lighting (Emery et al., 2011). Improving lighting is intended to mitigate GBV, promote feelings of safety and increase usage of WASH facilities.

This literature review is part of a Humanitarian Innovation Fund (HIF)-funded research project, conducted by Oxfam and the Water, Engineering and Development Centre (WEDC) on lighting for safer sanitation use, with the specific aim of reviewing existing literature and good practice on lighting, fear of crime and sanitation. It also informs the development of data collection tools for use in the three fieldwork study countries of Iraq, Nigeria and Uganda.

The detailed review is focused on the following research questions:

1. Are there any existing recommendations/guidelines around lighting WASH facilities in camp settings?
2. What do WASH and GBV experts think about the potential for lighting at WASH facilities? Do they have a preference for the kind of lighting that would be logistically easiest/most effective?
3. What evidence exists that indicates improved lighting at WASH facilities in camp settings could reduce GBV?
4. What evidence exists that indicates improved lighting at WASH facilities in camp settings can improve WASH facility use?

61 articles were located through a keyword search. 38 of these had an explicit focus on lighting at WASH facilities and reported on GBV or increased use of WASH facilities and therefore were included for in-depth review and further synthesis. In terms of keywords used to search for articles in relation to GBV, the literature review focussed mainly on the aspects of physical and sexual violence of GBV, including sexual harassment, assault, verbal and physical violence, and intimidation to persons, especially those who have different sexual orientation (e.g. Lesbian, Gay, Bisexual, Transgender and Intersex (LGBTI)). Studies were included if improved lighting at WASH facilities was the main intervention and if there was an outcome measure on GBV or WASH usage.

Most of the evidence identified on GBV, lighting and access to WASH is grey literature that is qualitative and anecdotal in nature. Nearly all this literature makes mention of the

threats women and girls feel accessing sanitation facilities and the additional perceived and real threat that darkness poses to safety.

Much of the peer-reviewed literature suffers from various flaws: weak study design, inadequate measures of lighting (e.g. type of light and how the lighting was provided at WASH facilities), poor measures of GBV, and insufficient appreciation of the impact of lighting on feelings of safety. The emergency response in Haiti is the most widely documented example of where lighting is used to address GBV and WASH.

Overall, the published and grey literature found that improving lighting at WASH facilities was followed by increased feelings of safety. There is limited specific evidence of a decrease in GBV, given that reported cases of GBV are an unreliable indicator of prevalence. Fear of GBV, however, may be a more reliable indicator as it has a significant impact on behaviour and overall perceptions of safety. In saying this, lighting (or improved lighting) of WASH facilities provided some suggestion of an increase in usage of the facilities. Limitations in specific evidence of the decrease in GBV incidences may be due to people not wanting to disclose the incident because of cultural taboos, fear of rejection from their community, and threats from their attackers and others.

Based on the current state of knowledge from humanitarian practitioners and the literature reviewed, the following recommendations were suggested:

- Interventions to improve lighting should be complemented by increased security patrols, appropriate design parameters (e.g. distance between male and female latrines), mechanisms to report GBV and ensure safe and timely access to these for the victims;
- Fear affects the use of WASH facilities, thus individual factors such as age and gender are highly influential. Further attention is needed on the effects of these factors on lighting around WASH facilities and particularly for vulnerable groups such as people with disabilities and the LGBTI community. In addition, the time of day (day or night) or season was not highlighted in most studies but requires further examination as these are considered to be important contributors to fear of crime;
- Identify training materials and/or guidelines that can be implemented by WASH staff at a country level. Training materials must be designed to correlate with the main WASH activities in humanitarian settings (e.g. appropriate design features of WASH facilities in relation to solutions to increase protection, particularly to women and girls); and
- There is a lack of information regarding responsibilities in funding, maintenance and Monitoring and Evaluation (M&E) for lighting initiatives, especially during a humanitarian response. Experts recommended that responsibilities must be clearly addressed during coordination meetings, especially at the beginning of an intervention.

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List of Abbreviations

DRC	Democratic Republic of Congo
GBV	Gender-Based Violence
GiE	Gender in Emergencies
HIF	Humanitarian Innovation Fund
IASC	Inter-Agency Standing Committee
IDP	Internally Displaced Persons
IEC	Information, Education and Communication
IRC	International Rescue Committee
JSTOR	Journal Storage
LED	Light-Emitting Diodes
LGBTI	Lesbian, Gay, Bisexual, Transgender and Intersex
M&E	Monitoring and Evaluation
MHM	Menstrual Hygiene Management
NFI	Non-Food Item
PoC	Protection of Civilians
SGBV	Sexual and Gender-Based Violence
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
VAW	Violence Against Women
VAWG	Violence Against Women Groups
WASH	Water, Sanitation and Hygiene
WEDC	Water, Engineering and Development Centre

1 Introduction

“In many camp settings communal latrines are not lit at night. This limits their potential benefit. In particular, women and girls have safety concerns and feel unable to use them at night. When they do use these facilities, they are often threatened or abused. Lighting solutions in such contexts need to be cheap and sustainable. As latrines are not guarded by night, lighting systems also need to be difficult to steal or vandalise.”

(HIF, 2015)

Poor lighting at water, sanitation and hygiene (WASH) facilities may reduce the usage of latrines and other services such as bathing areas and water collection points, especially by women and children. Generally, poor lighting may contribute to fear of crime and specifically Gender-Based Violence (GBV), which may, in turn, further reduce the use of the WASH facilities. For example, in Haiti, teenage girls surveyed by the United Nations (UN) Stabilisation Mission stated that they were afraid to use latrines at night because of the lack of lighting (Emery et al., 2011). Improving lighting is intended to mitigate GBV, promote feelings of safety, and increase usage of WASH facilities. There is a clear call for lighting, especially of latrines and specifically in relation to feelings of safety for women and girls. What is less clear is what form this lighting should take to be effective and efficient.

This literature review is part of a Humanitarian Innovation Fund (HIF)-funded research project, conducted by Oxfam and the Water, Engineering and Development Centre (WEDC) on lighting for safer sanitation. This project aims to provide some evidence for the sustainable interventions, based on a review of existing knowledge and good practice in humanitarian contexts. This review has the specific aim of reviewing existing literature on lighting, fear of crime and sanitation use in camp settings. It also informs the development of data collection tools for use in the three fieldwork study countries of Iraq, Nigeria and Uganda.

1.1 Reviewing the Literature

This report is divided into two parts:

1. The main report outlines the methodology and results of a focused and structured rapid review of available literature relating to lighting, WASH and GBV in camp settings; and
2. Given that there is limited literature available, the second part of the report outlines the publications supplemented by key informants interviewed during the literature review and their identification of unpublished material.

In addition to the focused review, Appendix 3 provides background into current advice on lighting and WASH.

2 Methodology

The detailed review is focused on the following research questions:

1. Are there any existing recommendations/guidelines around lighting WASH facilities in camp settings?
2. What do WASH and GBV experts think about the potential for lighting at WASH facilities? Do they have a preference for the kind of lighting that would be logistically easiest/most effective?
3. What evidence exists that indicates improved lighting at WASH facilities in camp settings could reduce the risks and fear of GBV?
4. What evidence exists that indicates improved lighting at WASH facilities in camp settings can improve WASH facility use?

The research is centred on the point where four distinct areas overlap, as shown below in Figure 2-1:

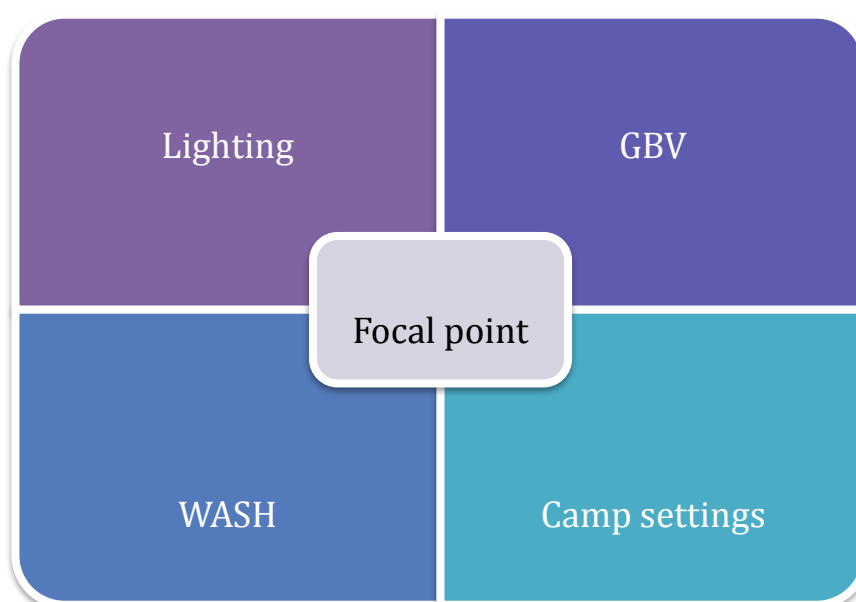


Figure 2-1 Structure of Research Study

Whilst the primary focus is where the four areas overlap, publications relating to WASH/lighting and GBV/lighting in or outside of camp settings will also be considered. These areas are briefly expanded on in Table 2-1 to frame the context in more detail and to help inform subsequent searches of literature databases.

Table 2-1 Definitions of Keywords Used for the Research

Gender-Based Violence (GBV)	<p>Gender-Based Violence (GBV) is an umbrella term for any harmful act that is perpetrated against a person's will and that is based on socially ascribed (e.g. gender) differences between males and females. It includes acts that inflict physical, sexual or mental harm or suffering, threats of such acts, coercion, and other deprivations of liberty. These acts can occur in public or in private (IASC GBV Guidelines, 2015).</p> <p>For the research, the literature review will focus mainly on the aspect of physical and sexual GBV; including sexual harassment, assault, verbal and physical violence, and intimidation to persons, especially those who have different sexual orientation (e.g. LGBTI).</p>
Water, Sanitation and Hygiene (WASH)	<p>WASH facilities in camps should ideally include:</p> <ul style="list-style-type: none"> • safe access to water points; • accessible, sex-segregated latrines and bathing facilities; and • access to handwashing facilities.
Camps	<p>Camps and camp-like settings include planned camps, self-settled camps, reception and transit centres, collective centres and spontaneous settlements. The camps may involve refugees, but also internally displaced persons (IDP). The studies refer to WASH facilities and GBV prevention and mitigation activities throughout the entire camp life cycle (IASC GBV Guidelines, 2015).</p>
Lighting	<p>Lighting is used here to refer to the physical infrastructure, including identification of appropriate technologies and products, in line with regulations and standards, method of delivery and finance, means of provision (including private-sector involvement), security against theft and vandalism, and operation and maintenance.</p>

Two separate approaches were used to answer the research questions as detailed below. This ensured that grey literature and evidence based on expert knowledge and experience were presented in this review, as well as the published literature.

The methodology for answering the following questions is described below:

1. Are there any existing recommendations or guidelines around lighting WASH facilities in camp settings?
2. What do WASH and GBV experts think about the potential for lighting at WASH facilities? Do they have a preference for the kind of lighting that would be logistically easiest or most effective?

Materials were identified through Internet and database searches and consultation with a range of sector specialists. Peer-reviewed publications, grey literature, news articles, blog posts and opinions have been included. Table 2-2 lists the sector specialists consulted for the research.

Table 2-2 List of Consulted Sector Specialists

Interviewees	Brian Reed (WEDC), Claire Quigley (Loughborough University), Dr Matthew Little (Re-Innovation), Murray Burt (UNHCR), Sharon Cook (Loughborough University), Andy Bastable (Oxfam's Global Public Health Engineer Advisor), Kerry Akers (Oxfam Global Protection Team), Drew Corbyn (Household Energy Specialist), Heather Amstutz (Danish Refugee Council), Trust Makhurane (Danish Refugee Council: Somalia ME&L Coordinator), Mattia Vianello (Practical Action Consulting), Paul McCallion (UNHCR), Raffaella Belanca (Mercy Corps), Erin Patrick (IASC GBV Specialist), Jeanne Ward (IASC author: GBV Specialist), Christine Heckman (UNICEF: Protection Specialist); Siobhan Foran (Care International: GIE Coordinator); Jennifer Melton (UNICEF: GBV Specialist); Dan Karlin (UNHCR; Protection-SGBV Officer).
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The methodology for the following questions differed from this and is described below:

3. What evidence exists that indicates improved lighting at WASH facilities in camp settings could reduce the risks and fear of GBV?
4. What evidence exists that indicates improved lighting at WASH facilities in camp settings can improve WASH facility use?

Note that these questions called for “existing evidence”. This evidence could be interpreted as either:

- direct, primary data that is collected in a structured manner as part of a research project;
- secondary material that could be anecdotal evidence providing a less robust form of information but still having some validity; and
- tertiary material from standards and guidance documents. This does give an indication of some of the issues. However, this is so far removed from the direct characterisation of the problem that in turn does not provide robust evidence. This material is included in Question 1 rather than in Questions 3 and 4.

Articles were included in this review that documented lighting at WASH facilities to:

1. reduce GBV in camp settings, and
2. improve the usage of WASH facilities.

The review also paid attention to the links between the questions. For instance, this might be where improved usage of WASH facilities can, in turn, reduce GBV due to the increased number of people using the facilities, which acts as a deterrent for malicious activities.

No restriction was placed on the study, intervention, or evaluation of the design. Articles reporting on primary data as well as single individual case studies and editorials, policy documents and literature reviews were included. 61 articles were located through a keyword search, where keywords and themes were identified in each reviewed article. From these 61 articles, 38 studies were identified for in-depth review and further

synthesis that had an explicit focus on lighting at WASH facilities and reported GBV incidences or increased use of WASH facilities. Studies were included if improved lighting at WASH facilities was the main intervention and if there was an outcome measure on GBV or WASH usage. Table 2-3 summarises the inclusion and exclusion criteria applied during the review.

Table 2-3 Inclusion and Exclusion Criteria for Literature Search

Inclusion criteria	Exclusion criteria
First Inclusion Criteria: Lighting + Humanitarian + Camps + GBV.	Applied to articles whose titles and/or abstracts did not provide sufficient information to judge whether inclusion was warranted.
Second Inclusion Criteria: WASH Criteria were applied sequentially: if an article title and abstract satisfied the First Inclusion Criteria (topical focus), then it was evaluated for the Second Inclusion Criteria. Only articles published in English were reviewed. However, articles reviewed also included case studies from French-speaking countries (e.g. Haiti, DRC).	No WASH focus Not in a camp setting Does not report on lighting at WASH facilities Does not report on outcomes for GBV or Use of WASH Study published in a language other than English

Table 2-4 lists the following major academic databases searched for the literature review.

Table 2-4 Academic Databases Used for the Review

Bioline	JSTOR	Waterlines
Development in Practice	PubMed	Elsevier
Embase	Scopus	Google Scholar

Table 2-5 summarises the studies reviewed that meet the criteria outlined in Table 2-3. The documents found with keyword search meeting the First Inclusion Criteria are outlined in Appendix 1 of this report. Appendix 2 lists the documents included in the review that meets the Second Inclusion Criteria. It also examined in detail the issues and solutions found by the authors during their studies.

Table 2-5 Summary of Studies Reviewed (n=38)

Research Questions	Articles Reviewed
What evidence exists that indicates improved lighting at WASH facilities in camp settings could reduce GBV? (n= 13)	Qayum, 2012; Lænkholm (nd); McLoughlin, 2013; Ward and Marsh, 2006; MADRE et al., 2011; Perkins, 2015; Martín González, 2016; Belur, et al., 2017; Oxfam, 2017; Oxfam, 2010; Global Protection Cluster, 2014a; Global Protection Cluster, 2014b; Rees et al., 2005
What evidence exists that indicates improved lighting at WASH facilities in camp settings can improve WASH facility use? (n= 3)	Sommer, 2016; Cronin et al., 2008; Hulland et al., 2015
Both questions (n= 22)	Iyakaremye et al. 2016; Farrell, 2014; De Lange, 2014; IASC, 2015; Le Masson et al., 2016; Some, 2008; Atuyambe et al.; 2011; Krause et al. 2015; Bott et al., 2004; Women's Refugee Commission, 2012; Schulte and Rizvi, 2012; Arend, 2012; Davoren, 2012; Wahome, 2010; Cullen et al., 2009; Sloand, 2015; IRC, 2014; Logie, 2017; Reichhold and Binder, 2013; Merieau and Egyziabher, 2012; Hynes and Dynes, 2014; House et al., 2014

3 Results

Most of the evidence identified on GBV, lighting and access to WASH was grey literature that was qualitative and anecdotal in nature. Nearly all the literature made mention of the threats women and girls feel when accessing sanitation facilities and the additional perceived and actual threat that darkness poses to safety.

Much of the peer-reviewed literature suffered from various flaws, such as weak study design, inadequate measures of lighting (e.g. type of lighting and how the lighting was provided at WASH facilities), poor measures of GBV, and insufficient appreciation of the impact of lighting on feelings of safety. The emergency response in Haiti has the most widely documented examples of lighting for addressing GBV and WASH.

Overall, published and grey literature found that improving lighting in and around WASH facilities is one of the elements that was followed by increased feelings of safety by the communities. Although there is limited specific evidence of a decrease in GBV, there were suggestions in the documents reviewed of increased use of WASH facilities. The following sections answer each of the research questions in turn.

3.1 Are there any existing recommendations/guidelines around lighting WASH facilities in camp settings?

KEY LEARNING POINTS:

- Guidelines highlighting the need for lighting at WASH facilities in camp settings were widely available. However, additional guidance and standards are needed.
- The Sphere Guidelines (2011) stated that “*communal toilets should be provided with lighting, or households provided with torches*” (Sphere, 2011, p.110). However, there was no specific guidance found for its implementation.¹
- The IASC Guidelines for Integrating Gender Based-Violence Interventions in Humanitarian Action (IASC, 2015) highlighted the importance of lighting in GBV mitigation for all sectors. Similarly, there was no specific instruction related to the type of lighting to be used for WASH in different settings. However, the Guidelines recommended that WASH actors must make decisions based on the context and community consultation.
- The Violence, Gender and WASH toolkit (House, et al., 2014) presented case studies of GBV in both humanitarian and development settings. It provided guidance to WASH practitioners in building capacity to good policy and programming practices to minimise the risks of GBV related to WASH. Similarly, as with the SPHERE and IASC Guidelines, there were no specific specifications regarding the type of lighting required for WASH facilities.
- All specialists interviewed during the literature review process were aware of the importance of lighting, especially in reducing the risks of GBV. They recommended that at least “*minimum technical standards*” (Heckman, 2017) should be addressed in the guidelines, as well as procedures in managing the project life cycle of lighting initiatives in humanitarian contexts. The project life cycle ranges from sector proposals (e.g. collaboration between sectors and funding) through to maintenance of lights post-installation.

3.1.1 Lighting and humanitarian contexts

Overall, the literature on lighting in humanitarian contexts is not extensive or detailed. However, lighting is clearly recommended in these contexts.

The Sphere Guidelines

The Sphere Guidelines (2011)² set out minimum standards for Shelter, Settlement and Non-Food Items (NFI), notably (*with added emphasis*):

Access to the settlement:

... Roads and pathways within settlements should provide safe, secure and all-weather access to individual dwellings and communal facilities including schools and healthcare facilities. Artificial lighting should be provided as required. Within temporary communal settlements or collective centres, access and escape routes

¹ See footnote ² on p.13

² Note that the Sphere Guidelines was being revised at the time of writing this literature review. Therefore, certain quotes and statements used from the Guidelines may change over time. Following discussion with its authors, it should be noted that similar language to that used in the current Guidelines is intended to be used in the revised version, in terms of the provision of ‘adequate lighting’.

should avoid creating isolated or screened areas that could pose a threat to the personal safety of users. ...” (Sphere, 2011b)

Non-food items standard 4: Stoves, fuel and lighting:

The disaster-affected population has access to a safe, fuel-efficient stove and an accessible supply of fuel or domestic energy, or to communal cooking facilities.

“Each household also has access to appropriate means of providing sustainable artificial lighting to ensure personal safety.” (Sphere, 2011c)

Key actions:

“Identify and meet household needs for sustainable means of providing artificial lighting and access to matches or a suitable alternative means of igniting fuel or candles, etc.” (Sphere, 2011c)

Guidance notes:

“Artificial lighting: 6. Lanterns or candles can provide familiar and readily sourced lighting, although the fire risk of using such items should be assessed. Provide other types of artificial lighting to contribute to personal safety in and around settlements where general illumination is not available. The use of energy-efficient artificial lighting should be considered, such as light-emitting diodes (LEDs), and the provision of solar panels to generate localised electrical energy”.

(Sphere, 2011c)

Additionally, the Sphere Guidelines (2011) also set out minimum standards for WASH facilities:

“Safe facilities: 5. Inappropriate siting of toilets may make women and girls more vulnerable to attack, especially during the night. Ensure that women and girls feel and are safe when using the toilets provided. Where possible, communal toilets should be provided with lighting, or households provided with torches. The input of the community should be sought with regard to ways of enhancing the safety of users.” (SPHERE, 2011a)

Safe and secure access is not just about adding lighting. Reed et al. (2007, p159) noted that *“Good road design can also lead to increased personal safety, by designing out dark corners rather than trying to provide lighting that needs to be managed and maintained.”* The guidance does not provide much advice on what is “required”, “sustainable” or, “appropriate”, thus making meeting any standards a challenge to measure. Methods of gathering community inputs were also not specified in the publication.

The IASC Guidelines for Integrating GBV Interventions

The IASC ‘Guidelines for Integrating Gender-Based Violence Interventions in Humanitarian Action’ (IASC GBV Guidelines, 2015) highlight the importance of lighting in GBV mitigation for all sectors. They note the important role of camp management and shelter in these efforts as well as suggestions for coordination with protection, WASH and other actors to this end.

For example, the Guidelines state the need to ‘*Prioritize GBV risk-reduction activities in camp planning and set-up*’ including ‘*Ensure adequate lighting in all public and communal areas and in all areas deemed to be at high risk for GBV. Camp management agencies should prioritize the installation of appropriate lighting in and around toilets, latrines and bathhouses*’ (IASC, 2015, p291).

Though there were no specific instructions relating to the distance between lights, location and type of lighting to be used for WASH facilities in different settings, the guidelines recommend WASH actors make decisions based on the context and with community consultation.

The IASC GBV guidelines recommend incorporating GBV prevention and mitigation strategies into the policies, standards and guidelines in WASH programmes. Similarly, this recommendation was addressed in the draft revision of the Sphere guidelines (Ward, 2017, personal comm.).

The IASC GBV Guidelines also recommend that all humanitarians, including WASH and non-protection specialists, who engage with affected populations, have written information about where to refer survivors to for care and support in the case of a disclosure. Though it is important for WASH specialists to have awareness and the basic knowledge about the referral pathways³ for survivors, providing information in an ethical and safe manner regarding survivor's rights and options to report risk and access care (IASC, 2015, p293) is not the responsibility of WASH specialists as this may put survivors at further risk. Ideally, there would be clear linkages between specialists and individuals with specific training (e.g. GBV specialist, protection specialist, medical staff and psychosocial carer).

Violence, Gender and WASH Toolkit

The Violence, Gender and WASH Toolkit was developed in response to recognising the vulnerabilities and risks of violence associated with WASH for girls, women, boys, men, people with other gender identities and those who are vulnerable and marginalised (House, et al., 2014). The toolkit presents many case studies highlighting the prevalence of GBV in both humanitarian and development contexts, aiming to build the capacity of WASH practitioners on good policy and programming practices in order to minimise the risks of violence related to WASH.

In these case studies, issues with lack of lighting were mentioned in conjunction with inadequate planning and design of facilities (especially in camp settings) and lack of awareness of policy strategies. The presence of lighting was one of the elements that made women and girls more likely to use the public facilities during the night (House, et al., 2014). The proximity between male and female sanitation facilities and the presence of robust doors and locks also played a role in increasing the use of sanitation facilities at night.

The following recommendations were presented in the toolkit as examples of WASH interventions in front-end emergency responses to improve the dignity and reduce vulnerabilities to violence against women and girls:

- Involvement of women, girls and boys in the design of facilities, with specific questions on vulnerability (pTS3-54);
- To *“ensure facilities are gender segregated and that they provide privacy and security of women and girls – such as through locks on doors, screens for privacy, making sure the walls are not opaque, and providing lighting or torches where lighting is not possible”* (pTS3-54); and

³ Referral pathways: a mechanism that safely links survivors to supportive and competent services, such as mental health, medical care, psychosocial support, police assistance and legal support (IASC, 2015, p293)

- “*Involvement of or linkages with protection and gender specialists in WASH programmes can strengthen the programme’s consideration of the needs of women and girls as well as men and boys, and in particular, to consider issues relating to safety and dignity*” (pTS3-54).

Other Recommendations

Site Planning – Guidance to Reduce the Risk of Gender-Based Violence (2016)

IOM for the Global Shelter Cluster compiled this guideline and was a trial edition written for practitioners, especially for site planners, in camp settings. The booklet provided “*guidance for measures which can be taken to reduce risks to affected populations around the camps*” (Global Shelter Cluster, 2016, p6).

The booklet followed the life cycle of camps and sites; that is from installation, potential expansion through to closure of camps. It provided insights on site planning considerations on different camp layouts, the location of WASH facilities and GBV, (e.g. distance between communal latrines, advice to lighting, etc.), market and health centre facilities and GBV, and others.

Appendix 3 – Lighting and WASH (*Site Planning – Guidance to Reduce the Risk of Gender-Based Violence*), describes the recommendation of the guideline for WASH practitioners on how to locate their water points, latrine and bathing facilities and ways to incorporate the element of GBV and protection in their design. There were strong recommendations of lighting around latrine and bathing facilities with careful consideration that “*rows of smaller lights may be more appropriate than a single strong light on a pole*” (Global Shelter Cluster, 2016, p34). However, the guidance did not give relevant numbers regarding distances between rows and the heights of the lights; given that they referred to the poles as ‘smaller lights’.

A two-tiered approach to community lighting – UNHCR Innovation (2015)

In an online article written for the UNHCR Innovation Service, Perkins (2015a) recommended a two-tiered approach to community lighting in refugee camps. The following summarises the approach that uses “*two conventional methods*” according to Perkins (2015a):

Security Lighting:

Security lighting can be mounted high from the ground to produce low-level lighting at the ground level that can be spread over a large area (Perkins, 2015a). Perkins believed that the intensity of light should be able to remove shadows and illuminate potential hazards (e.g. potential traffic-related accidents that can be linked to street junctions). Low-level lighting also discourages unnecessary gathering of community groups. Questions to address this advice are:

- At which height can the lighting be mounted above the ground to produce an ‘ideal’ low-level lighting?
- What level of brightness is ideal for pedestrian traffic and/or vehicles traffic inside a refugee camp during the night? and
- Does low-level lighting also promote unnecessary gathering of persons with malicious intentions or attempts of burglary?

Communal Lighting:

Perkins advised that high-intensity lighting can be used to promote community gatherings such as social, educational, livelihood and other community-based activities. The author advised that the light can be mounted relatively close to the ground to produce higher intensity and concentrated light which ideally can illuminate small areas. Perkins suggested that the light poles can be produced with a movable coupling so that heights can be adjusted depending on the purpose of the gathering. He also suggested that the lens⁴ of the light can also be changed. Such changes can be completed through community-based consultation. In addition to modifications, the lenses can be changed to add coloured filters (e.g. UV lighting to deter public drug use, brightly coloured light to attract insects away from a designated area).

Perkins also suggested that “*street lighting is effective for communication and awareness raising*” aside from the purpose of street and communal lighting. Perkins believed that communities are drawn to well-lit areas, therefore people gather under streetlights where they are available. “*This creates a unique opportunity for effective information sharing between the refugee populations and implementing partners through mediums of message boards*” (Perkins, 2015a).

On the other hand, implementing actors must note that providing sufficient lighting throughout the camps and/or settlements is expensive and must require careful planning between stakeholders, most especially the community.

3.1.2 What do practitioners think?

During the literature review, the team approached a few specialists (both WASH and GBV sectors, refer to Table 2-2) to address the research questions. Most of the practitioners stated the guidelines (such as the IASC and Sphere) offer recommendations on the software procedures such as mobilisation of GBV resources in WASH proposals, implementation and information sharing. However, there was no clear guidance as to the “*required minimum standards*” of applicable lighting requirements in camp settings. Technical specifications were also not covered in these guidelines.

Questions addressed by the specialists were:

- What type of lighting is applicable at different phases in an emergency, with special consideration of its context?
- What is the adequate distance between the light posts? Should there be a specific distance between lampposts in the first place? Do we only target the hotspots?
- What is the appropriate brightness for lighting? For pedestrians? For light and heavy vehicles (e.g. land cruisers, water trucks)?
- At which location can lights be installed without causing further risks of violence or harassment to the person at risk?
- How do we make sure that the guidelines and recommendations for Protection and GBV are implemented and transferred to WASH staff at a country level? What specific procedures are available to train WASH staff?

⁴ The lens located in front of the light bulb can be changed to diffuse or concentrate its beam.

In a blog⁵ written by Hynes and Dynes for the Centre for Disease Control and Prevention (CDC) in 2014, both epidemiology experts emphasised that sectors (e.g. WASH) in humanitarian settings are “*not necessarily aware of the actions they can take to increase the safety of women and girls and other vulnerable groups*” (CDC blog). They suggest that groups who are at-risk must be included in the planning process for the location and construction of latrine facilities. Provision of “*specific ways*” in which each sector can include GBV prevention in their design and projects can increase the capacity for the humanitarian field to respond to and prevent GBV (Hynes and Dynes, 2014).

The project life cycle of the programme, when installing lighting in camp settings, was also raised by the specialists due to concern about the lack of maintenance and evaluation processes post-installation of existing lights. Gaps in funding and organisation of resources were identified when it comes to the maintenance of the infrastructure.

The questions addressed by the specialists were:

- Who will fund lighting in camps and/or WASH facilities? Is this under Protection, WASH or Shelter?
- Who will maintain the lights after installation? Do we build capacity for the community to take-over the maintenance after a period of time?
- How are we going to conduct Monitoring and Evaluation (M&E) after the lights are installed and who is responsible for this?

The specialists were aware that lighting must not be “*just a recommendation*”, but also a requirement. However, there were no specifications written into the guidelines as to how to address the above questions. It was suggested that at least a “*minimum standards*” should be addressed to answer the gaps in the guidelines regarding lighting in camp settings.

3.2 What do WASH/GBV experts think about the potential for lighting at WASH facilities? Do they have a preference for the kind of lighting that would be logistically easiest/most effective?

KEY LEARNING POINTS:

- Notably, the sector experts consulted had relatively little to say on the topic of lighting at WASH facilities. Some reported no activity within their organisation, whereas others replied with apologies for having no insights or resources that they could share relating to the issue.
- The literature referred to a range of different kinds of lighting, notably with solar lanterns, lighting within the cubicle, lighting around the toilets and showers, and street lampposts. The evidence on which is the most effective of these is inconclusive, as the contexts and implementation are varied, which makes comparisons of lighting difficult.
- All experts consulted during the literature review agreed that the potential for lighting in and around WASH facilities is important in a humanitarian context. It

⁵ Note that at the time of writing this blog, Hynes and Dynes were in the process of revising the IASC GBV Guidelines. The revised edition was made available in 2015.

should be part of the package and included as a “default” parameter in site planning.

- Questions regarding funding, maintenance and M&E were referred to during consultations with the experts. Responsibilities of each cluster group when initiating lighting projects must be clearly addressed at the beginning of an intervention in humanitarian contexts.

3.2.1 Lighting Initiatives

Sector experts consulted had relatively little to say on the topic of lighting at WASH facilities. Some reported no activity within their organisation, others replied with apologies for having no insights or resources they could share relating to the issues. Given the lack of expert opinion on the potential for lighting at WASH facilities, a range of evidence is used to answer this research question which included personal communication with experts, and the use of reports (non-academic, academic, and industry-specific), media articles and expert blogs.

Lamps, torches and solar lanterns

The IASC (2015) promoted the need for torches and/or solar powered lights for individual use, alongside lighting at WASH facilities. Lanterns or torches can be used by women to light the way to the facility as well as in the cubicles. Oxfam (2010) recommended that in case electricity was not available in camps, alternative sources were recommended, such as the provision of solar lights and torches to be included as an NFI in humanitarian contexts.

Lænkholm (2007) reported that kerosene lamps helped Bhutanese refugee women feel safer in the camps in Nepal. Sommer et al. (2015) highlighted that a successful menstrual hygiene management (MHM) response in humanitarian settings required adequate lighting for night-time latrine use. De Lange et al. (2014) reported that women in camps in South Sudan requested torches to avoid stepping on snakes when they go to the toilet, rather than out of concern for GBV.

In Somalia, solar lanterns were distributed to some 247 IDPs. The purpose of the distribution was to eliminate the hazards of toxic kerosene lamp fumes and make women safer against vulnerable attacks during the night. One woman in Somaliland “*wished that the lamps had come earlier. They felt much safer and can get more work done at night [...]*” (IOM Press Release, 2015). The IKEA Foundation (2017) funded free solar lamp provision to refugees and members of host communities in Ethiopia and Jordan. There was, however, a concern that such activities may distort or threaten local energy markets.

A report on solar lanterns in Haiti described how: ‘*Women requested the increased presence of security personnel, public lighting, and better infrastructure in the camps to improve their sense of safety*’ (MADRE et al., 2011, p.9). Recipients reported liking the lamps for a range of reasons and continued using them. However, it was not found that during the study women came to feel safer and more secure in camps (though this may have been due to other changes and worsening conditions); only up to 15% of women named solar lamps as a source of protection while outside the home (IRC 2014b).

Solar lanterns may increase fear of being a potential target of theft or of revealing one's location (Dynes et al., 2016). Backlighting in cubicles might undermine dignity if people were silhouetted through plastic sheeting (Bastable, pers comm). Double ply sheeting

was recommended as a barrier wall to discourage potential perpetrators from peeping (Global Protection Cluster, 2014a).

(Solar-powered) Lights around latrines

If resources are limited, space lighting may be more important than lighting within the latrine, for instance, if assailants are hiding in the shadows. Solar lighting or urine-powered (microbial fuel cells) lighting throughout the camp is recommended (Bastable, *pers comm*). The Skyrocket Light Project works with Syrian refugees in Al Zaatari Refugee Camp in Jordan to install ‘solar-powered LED lights in critical areas in the camp, which include 42 Child-Friendly Spaces’ (Zaatarilights, nd). In a GBV assessment conducted by the GBV Working Group in Malakal, South Sudan, the focus groups requested street lighting in latrines and water points, in addition to handheld lights that were distributed on a household level (Global Protection Cluster, 2014a).

An expert from Globalnews.ca described the dangers of using latrines at night in a refugee camp in Mogadishu: “*They simply came and waited for women between their house and bathrooms,*” said Fatima Nor, who was once attacked but escaped when her husband intervened. It was reported that the installation of 79 solar-powered lights reduced the incidence of attacks (Guled, 2013). “*We really feel a little bit safer than before. I think having light scares the predators.*” Other benefits reported include those to business, productivity and to facilitating children’s study (Guled, 2013).

In the “*Tips for Protection Mainstreaming for WASH programmes*” by the Global Protection Cluster (2014), the cluster advised the following to “*ensure the integration of protection principles in the delivery of humanitarian assistance*”:

- Ensure that the location of the WASH facilities and routes are away from actual or potential threats such as violence, risk of GBV, etc.;
- Consider installing lights near the latrines, especially in communal facilities. If lighting is not possible, consider alternatives such as torches for each household⁶;
- Provide locks in bathing and sanitation facilities. Locks should be installed from the inside to ensure privacy; and
- Sanitation facilities must be gender-segregated with clear signage between genders.

The above points were mostly adapted from the IASC and Sphere guidelines. However, it lacked information for some details such as gender segregation (e.g. what is the required distance between segregation?) and location (e.g. what guidance can be advised given that sanitation facilities must be at least 50m away from dwellings? How can we ensure these locations are safe?)

Lampposts

Emery et al. (2011) presented a model for lighting up camps in Haiti, including describing the required frequency of lampposts and method of installation. However, the report lacked detail and no mention is made of ongoing maintenance and operation. The UNHCR ‘*Light Years Ahead*’ programme was launched in 2011 and sought to raise funds to install 3,000 street lamps by 2015. UNHCR employed three types of solar street lights, depending on local needs, durability and maximum coverage to enhance security. The street lights were highly resistant to damage, more energy-efficient and with added theft protection. These lights had a lifespan ranging from 90,000 to 120,000 hours, which was

⁶ Take note that this advice was adapted from the IASC and Sphere guidelines

the equivalent of 10 to 20 years of service. 60% of respondents reported feeling safer using the bathroom at night following installation of the streetlights (UNHCR, 2012).

Perimeter lighting

A report from Haiti describes the anecdotal impact of improved lighting in Stad camp: *'Improved lighting, even though only on the perimeter, has appeared to decrease the number of cases [of rape]'* (MADRE 2010, p32). Oxfam (2010) also suggested that pathways leading to the latrines and shower facilities must also be well-lit during the night.

Operation and maintenance issues

The literature on street lighting more generally provides wider lessons on operation and maintenance issues that can be applied to the camp context. A range of familiar issues arises in the delivery of street lighting, including:

- challenges of operation and maintenance;
- availability of spare parts in the local market;
- availability of supply versus demand of beneficiaries;
- theft of solar and lighting equipment;
- battery lifetime;
- different but significant issues presented by generators; and
- the need for careful training of users (one example describes women in Haiti not realizing solar lamps needed to be left in the sun to recharge (Bellanca, 2014 p22)).

The examples presented below illustrate the challenges of keeping solar street lighting systems and hand-held lights operating after installation and distribution respectively.

- In Haiti, solar street lighting was provided by a mini-grid that was connected to five solar street lamps. The arrangement included five units of four panels per unit and a set of 40 batteries, one for each panel. The solar hub containing all the central equipment was placed in a fenced area protected by barbed wire. After a while, three batteries were stolen, and all the others were depleted and never replaced. The system, therefore, stopped working. All lamp poles except the one enclosed in the solar hub stopped providing light and broke down. Parts of them can still be seen in the camp. The remaining solar panels are still there, mostly unused. Meanwhile, those who can afford it satisfied their energy needs at home with their own solar system (Bellanca, 2014, p47).
- In 2010, an electrification project was implemented in the Subue village, Mozambique. The priority of the beneficiaries was primarily for house lighting and secondly, for street lights. Unfortunately, only school lighting and solar street lamps were installed in the village. When a lamp was broken, no one knew who was responsible for the maintenance of the facility (Almeida, 2014, p23).
- In Sukatani, Indonesia, 15 street lighting systems were installed in 1988. In 1993, all systems were operating (in eight of these, the original batteries had been replaced by locally produced car batteries). In 1997, nine systems were working although one lights a nearby household instead of the street (all systems have a broken time control unit, which cannot be replaced because local manufacturers could not supply it in such a small quantity). From the remaining six, three had been converted to solar

home systems and three were out of order (one because the PV module was broken and the other two because the battery was broken) and the village co-operative did not have any money for maintenance. Villages, however, still considered the lighting systems useful and necessary (Almeida, 2014, p23).

- In Ghana, most of the solar street lighting systems installed in urban centres have never worked because of an inadequate feasibility study of the installed systems. Most battery banks were placed underground and during rainfall, these batteries were flooded and damaged (Almeida, 2014, p23).
- In Malawi, a sanitation engineer was concerned regarding the security and maintenance of latrine lights. There were growing concerns about thieves inside and/or outside the camps stealing latrine lights, as well as the challenges of maintenance (e.g. bulb replacement, etc.) (SuSanA Forum, 2015). Another sanitation engineer advised that lighting WASH facilities alone, while leaving the rest of the camp in the dark, will not solve the issue. Sectors must also consider lighting the camp and its surrounding communities (where funding allows), to help reduce fear coming from the beneficiaries. Refugee committees must be involved in monitoring and surveillance to reduce risks of theft and vandalism (SuSanA Forum, 2015).
- In South Sudan, hand-held torches were only given to the women to reduce their risks of GBV and make them feel safer. However, it had a negative impact as the men became jealous and therefore would steal the torches from the women (Patrick, *pers comms*). As a coping mechanism, the women would instead go in groups to make them feel more comfortable and less at risk of experiencing GBV.

3.2.2 What do the practitioners think?

“Maintenance is always a problem. There is always a question in cluster meetings as to who will maintain the services after implementation [...] Then you will see people only nod in agreement...” – Heckman, C.

“Always consult the community in advance, especially the women.” – Melton, J.

“Ambient lighting around camps. [...] This can be done in “zones” during implementation process.” – Foran, S

“[...] lighting would be by poles around the latrines. This will ensure that the bulbs won’t be stolen. [...] But we must be careful that latrines are not the only ones lit [...]” – Patrick, E.

All experts consulted during the literature review agreed that the potential for lighting in and around WASH facilities is important in humanitarian contexts. Lighting reduces the perceptions of fear for the beneficiaries and/or communities after dark.

However, they advised that the type of lighting preference is dependent on the context. For example, there is the question whether lighting would pose more threats of attack in the camps, especially in fragile contexts, even when the communities are requesting these services (Heckman, *pers comms*). At present, there is no detailed research on the different types of lighting that logistically can be made available in camp settings (Patrick, *pers comms*). This issue remains a knowledge gap.

A GBV expert mentioned that apart from the positive attributes of lighting in communities, it can also increase the risk of GBV, especially for women and girls. For example, in South Sudan, an organisation installed semi-transparent PVC sheeting as walls for the latrines and showers and installed lighting inside the cubicle. The silhouette of the person inside the shower and latrines could be seen both during the day and the night. Though this was done with good intentions to address safety for the community, many of the women decided not to use the facility because they felt uncomfortable. Such scenarios may not be deliberate as it may be the only material available in the country (Patrick, *pers comms*).

Another example pointed out by an expert was that lighting can also attract people to socialise in the area that is lit during the night to drink, play cards, gossip and bring their books to study. Although they may pose no actual threat, women would prefer not to use the latrines or showers at this time, for fear of being seen and attacked (Heckman, *pers comms*).

There is no specific answer with regards to the prime location of lighting. The experts advised that the location is dependent on the context, culture, needs of the community and layout of the site. Careful planning must be considered when designing WASH facilities (including the camp layout), even in the emergency phase of an intervention.

All experts were asked about who is responsible for lighting camps. Issues regarding funding, installation, maintenance and M&E were emphasised by the experts because the clusters⁷ usually forget these during an emergency response. One expert who understood that humanitarian settings are very dependent on the context suggested that these responsibilities must be addressed clearly in cluster meetings at the beginning of an intervention in emergency situations.

In saying this, lighting must be part of the package. It must be included in the site planning as a default parameter (Foran, *pers comms*). Lighting alone will not reduce the risks of GBV in camp settings. Gender segregation of bathing and latrine facilities, the distance between the facilities, locks, doors, and location must be included at the initial stage of designing and constructing WASH facilities. Communities must also be involved in the decision-making process to encourage in them the sense of ownership (especially for maintenance and repairs) as well as an awareness of the consequences of GBV in their communities (Karlin, *pers comms*).

3.3 What evidence exists that indicates improved lighting at WASH facilities in camp settings could reduce GBV?

KEY LEARNING POINTS:

- Increasing lighting, especially if it is well targeted to what is perceived as an unsafe setting such as latrines, can be an effective way to improve feelings of safety. It is plausible that lighting at WASH facilities could also reduce incidences of GBV; although there is a lack of quantitative evidence.
- Increased lighting at WASH facilities (including toilets and bathing areas, separate from men and women) is only one element necessary to reduce GBV and increased perceived safety. Evidence from Haiti found that camps with only lighting or only

⁷ Clusters: groups of humanitarian organisations, both UN and non-UN, in each of the main sectors of humanitarian action, e.g. water, health, logistics, camp management (Humanitarian Response, n.d.).

security patrols or neither, formally reported higher incidences of rape. It must be noted that there is a wide variety of factors affecting reporting rates of GBV incidence in both humanitarian and development contexts. The study did not take this issue into account as it was beyond the scope of the project.

- Less distance to travel, separating latrines and/or bathing facilities for men and women, lighting and secure facilities (e.g. locks and sturdy doors) would all help increase the feelings of safety in both the day and night time.
- There is no evidence on lighting, WASH and transgender people. The only advice recommended by IASC (2015) was that where possible to consult the local transgender organisation to ensure that they are included in WASH programmes. The guideline lacked details on how WASH personnel can consult transgender communities bearing in mind the sensitivity of the subject.
- Lighting areas prone to GBV incidences, such as WASH facilities, is a strategy to mitigate GBV in camp settings. Though this provides a positive environment in the camp, an important question to address in this research is whether lighting only specific areas would also displace the motive of crime elsewhere in the camp?

In Browne (2013, adapted from Schulte & Rizvi (2012)), a Safety Mapping Exercise with Somali refugee adolescent girls at Sheder and Aw Barre Camps in Ethiopia, found that boys said they felt safe mostly everywhere in the camps. However, the girls said they felt safe almost nowhere, especially at night and at gathering points such as boreholes. The logistical set-up and poor lighting of a refugee or IDP camp can create the conditions for GBV (Ward and Marsh, 2006). Bott et al. (2004) cited the then U.N Special Rapporteur on Violence Against Women: “*poorly lit camps, latrines at unsafe distances and lack of privacy*” contribute to “*hostile living conditions for women*” (p29, adapted from Marshall, 1995). Arend (2012) cited a study by Amnesty International that found that “*dismal camp conditions*”, including overcrowding, inadequate shelter and lighting, and a lack of secure toilets and bathing facilities “*render women and girls particularly vulnerable*” (p1, adapted from Amnesty International, 2010) thus making it easy for assailants to strike.

Logie (2017) found that the lack of security and protection in IDP camps, combined with inadequate lighting, bathing facilities, tents, and lack of police patrols elevate exposure to violence, in particular to GBV, for IDPs in Haiti. Also with reference to Haiti, Sloan (2015) identified several reasons for an increase in the number of rapes in the camps. Such reasons were: poor lighting, long walks to a bathroom that was particularly treacherous after dark, flimsy tents that were not able to be locked at night, and a post-earthquake disruption in the usual societal norms of protection and community responsibility. Belur et al. (2017) conducted studies around toilet facilities in Mumbai slums and deduced that improper siting of toilets, unsafe pathways to access public facilities, poorly maintained toilets (e.g. broken doors and windows), the absence of lighting and lack of security, have been identified as factors facilitating crimes against women. The lack of separate toilets for men and women, the absence of lights in the camp at night and public bathing facilities contribute to the risk and occurrence of rape (Rees et al., 2005).

Martín González (2016) reported that due to the size of Mbera Camp in Mauritania, there was lighting around the perimeter, but only at some points inside the camp at night. She found that women and adolescents were afraid if they had to go to the toilet alone at night. Krause et al. (2015) also found that in Zaatar Camp, women expressed concerns about the lack of lighting and their fears of using the toilets at night. Some (2008)

reported that young girls and women displaced by the post-election conflict in Kenya (between December 2007 and January 2008) expressed fears and concerns about sexual victimization linked to refugee camp design and services, including lighting and sanitation facilities. Adolescent girls in Kyaka II camp in Uganda reported sexual harassment and assault when travelling to and from the school, the borehole and the market; and that they felt particularly vulnerable alone at night and in areas of poor lighting (Women's Refugee Commission, 2012). Le Masson et al. (2016) on the other hand, found young girls and adolescents to be particularly vulnerable to GBV (perpetrated by male adolescents and adults) due to reduced parental supervision during the day. In a helpdesk report written by McLoughlin (2013), others reported that more rape cases occur during the day than at night, because younger women and girls were often left alone in the day whilst their parents went out to seek work (Kolbe and Muggah, cited in d'Adesky, 2012, reported in GSDRC, 2013).

There is a particular lack of evidence on lighting, WASH and transgender people: *"Transgender women are often culturally prohibited from using women's spaces, yet face a high risk of violence and assault in men's spaces. Similarly, transgender men may be excluded from sex-segregated spaces and face an increased risk of violence when attempting to use these spaces. When possible, and with the assistance of LGBTI specialists, WASH actors should consult with local transgender organizations to ensure their programmes meet the basic rights and needs of transgender individuals"* (IASC, 2015, p291, adapted from Breen, D (2013) and Knight, K. (2012)). In Benjamin and Hueso (2017), the report concluded that there is little evidence on the links between sanitation and LGBTI. There was also the lack of consensus on how public toilets (and other sanitation facilities) can cater to their needs, for example, for MHM inside the male toilets for the transmen. The report recommended that the WASH sector should start developing guidance on 'specific elements' to make public toilets as LGBTI inclusive (Benjamin and Hueso, 2017, p4).

Reichhold and Binder (2013) assessed '*what works for protection*' and recommended installing adequate lighting in camp sanitation facilities to reduce the risk of rape. Similarly, Wahome (2010) reported improvement of camp lighting as the key strategy to address sexual violence against women and girls at the Kirathimo Camp in Limuru, Kenya. Iyakaremye et al. (2016) recommended separate toilet and bathrooms facilities for men and women as well as lighting around the camp to reduce GBV. Qayum et al. (2012) reported that lighting corridors in WASH facilities can improve feelings of security, combined with lighting paths to toilets and locks on toilet doors. Proper layout and design of water points are important to ensure safe access, to minimise the potential for GBV, and minimize conflict at water points (Cronin et al, 2008).

MADRE et al. (2011) stated that sexual violence is greatly deterred against when both adequate security and lighting are present in IDP camps. Camps surveyed by KOFIV, as reported in MADRE et al. (2011), had far lower rates of rape when there was both a security presence and adequate lighting. Camps with only lighting or only security patrols or neither, reported higher incidences of rape. This finding suggests that increasing lighting, especially if it is well targeted to what is perceived as an unsafe space like toilets, can be an effective way to improve feelings of safety. However, the literature suggests that lighting at WASH facilities is generally not sufficient. Increased lighting is only one element necessary to reduce GBV and increase perceived safety.

Poorly designed lighting interventions may increase protection risks. For example, by attracting people to leave their homes at night to walk through poorly lit areas to visit illuminated WASH facilities (Perkins, 2015b). Specifically, lighting is needed:

- outside the sanitation facility;
- inside the cubicle; and
- on the way to the facility e.g. torches/flashlights to light the pathway.

Lighting areas where incidences of GBV are most likely to happen, such as WASH facilities and pathways to the facilities, is a strategy to mitigate GBV in camp settings. Attackers may be prevented from undertaking a crime because they would be more easily seen and identified by someone else or their victim, and/or another person may intervene during the attack. Though this provides a positive impact, a question to address in this research is whether lighting specific areas would simply displace crime into another area which is not well-lit?

3.4 What evidence exists that indicates improved lighting at WASH facilities in camp settings can improve WASH facility use?

KEY LEARNING POINTS:

- There is some evidence suggesting that lighting at WASH facilities may encourage greater use of facilities because people (particularly women, adolescents and children) feel safer to use the facilities at night and because improved lighting can increase the clean use of the facility which contributes to their willingness to use the facilities.
- It is also plausible that increased use of WASH facilities, through improved lighting, results in better surveillance of facilities, which in turn reduces the risk of crime and promotes feelings of safety.
- There is evidence that aside from fears about personal safety and privacy, women and girls feared encountering vermin, ghosts and physical obstacles (such as thorns, stones, etc.) on their way to the sanitation facilities. According to studies (Hulland et al, 2015), these fears were mostly triggered in areas where lighting or some form of electricity are not available.
- Lighting is part of the solution to reducing perceived fears in communities. Appropriate design of sanitation facilities, such as sturdy and appropriate doors, locks and safe distance between the facilities and dwellings are also factors that encourage people, particularly women and girls, to use the facilities during the night.

The literature suggested that lighting at WASH facilities may encourage greater use of facilities. There was also some evidence to suggest that improved lighting can improve the clean use of the facility, which can also contribute to willingness to use the facilities. Atuyambe et al. (2011) reported that the absence of lighting inside the latrines, or the area around the latrines, made it difficult for people to use them, especially at night, resulting in people defecating in the surrounding bushes or on the slabs.

The authors suggest that absence of lighting in the latrines compromises the use of latrines particularly for women, children and adolescents. According to this report, lighting is essential for 'accurate aiming of faeces inside the pit' (Atuyambe et al., 2011, p12); it reduces the fear of stepping onto faeces and reduces the fear of unknown dangers in the darkness surrounding the toilet.

"Among the heaps of faeces, we find in the morning, there are those that are big indication that they are from adults not children. I think this problem of lights also affects us adults. It also seems like among us there are people who have not been using latrines in the places where they have been and have continued with the same practice of openly defecating anywhere they feel like." (Atuyambe et al, 2011, p18, FGD Male)

"Here they use latrines all the time during the day, but at night it is very difficult to use because there is no light in these latrines". (Atuyambe et al, 2011, p18, KI Health Worker)

Hulland et al. (2015) studied the sanitation-related psychological stress during routine sanitation practices of the women in Odisha, India. 85% of the population live in rural areas where sanitation facilities are limited. 56 women participated in the study. The common environmental stressors of the women in the study were: 1) Fear of encountering snakes, mosquitoes and other animals during the night (n=32); 2) Stepping on stones, thorns and other sharp objects; and 3) Fear of ghosts (n=35). In the study, one newly married woman described that *"if someone died in our community, and there is no electricity, I feel scared. I fear going to the latrine alone during the night"* (Hulland et al., 2015, p84).

Davoren (2012) reported a survey carried out by GOAL in Port au Prince in June 2011, where 33% of women stated that they 'never' felt safe using a communal latrine and a further 6% said that they only felt safe 'during daylight' (Davoren 2012, adapted from GOAL Haiti 2011). The focus group discussions revealed that cleanliness and personal security were the primary reasons (Davoren 2012, adapted GOAL Haiti 2011). In response, GOAL set up Sanitation Management Committees within the camps and neighbourhoods to manage their maintenance and security, and to encourage the use of communal latrines by all beneficiaries.

Cullen et al. (2009) found that in addition to the lack of sufficient lighting inside the camp, there was a lack of separate latrines for men and women; severely limiting privacy is also a risk to personal security, particularly for women. Solar lights were subsequently installed in Parc Jean Marie Vincent, Port-au-Prince, which provides improved lighting coverage for much of the camp.

Farrell (2014) reported that one of the impacts of the solar lamps programme in Yemen was that women enrolled in the programme were more likely to participate in WASH programmes because the lamps had enabled them to improve their literacy such that they can read and understand Information, Education and Communication (IEC) materials.

In Merieau and Egyziabher (2012), the women and girls that were interviewed in refugee camps in Kenya expressed concern that darkness contributed to their fears, believing that it provided cover for crime and vandalism. According to the report, 60% of the respondents felt safer going to the bathroom during the night where street lighting and/or hand-held torches were available to them. Oxfam (2017) conducted a lighting assessment in Maiduguri, Nigeria, to investigate the feasibility of distributing solar lamps. Of the 3,000 households interviewed inside the camp, 30% of the population used some form of hand-held lighting (e.g. torches or mobile phones) to walk around the camp at night. 90% of the respondents felt safer when using the lights during the night, especially on their way to the latrines.

Hynes and Dynes (2014) conducted a baseline survey following a distribution of handheld solar lighting to each household in IDP camps in Port au Prince, Haiti. Both epidemiologists found that one of the primary reasons why women and girls left their shelters at night time was to use the latrines. In their focus group discussions, they found that the women and girls felt unsafe walking to the latrines during the night because “*some men would hang around the latrines and nearby paths*”. The groups described the lack of lighting in the area, as well as the lack of doors and locks to close the latrines, and men often positioning themselves so that they could see inside the latrines. Following the solar light distribution, the women reported that they would use the lights mostly to go to the latrines, to navigate around dark pathways and to allow children to complete their homework at night.

4 Key learnings

Lighting at ‘*hot spots*⁸’, like WASH facilities, is a strategy to mitigate GBV in camps. Attackers may be deterred by the concern that they will be seen or recognized by someone who may report them or else intervene to stop the attack. However, there are also examples where additional lighting (especially in latrine and bathing facilities) can result in people congregating around the lights – whether to drink, socialise and even read. These factors can discourage the use of WASH facilities, especially for women and girls, during the night.

Importantly, women and girls reported feeling safer and less vulnerable to GBV, using facilities that are well-lit and particularly when lighting is combined with increased security patrols and additional lighting in the camp or settlement. A review of the grey and published literature suggests a number of additional findings.

Technical Guidance

There is lack of technical guidance on installing lighting at WASH facilities in camp settings, e.g. for the design and construction, costing, and operation and maintenance. However, there are a few documented examples of good practice piloted by some organisations. It was advised by experts that the location of lights is dependent on the context, culture and needs of the community, as well as the layout of the site. Careful planning must be considered when designing WASH facilities, including camp layout, even in emergencies. A checklist with a set of assessment questions would be useful for practitioners to guide them during decision-making.

⁸ Hotspots – A place of significant activity, danger or violence. (Oxford University Press, 2017)

Coordination

There is lack of understanding between clusters as to who is responsible for lighting camps. The experts questioned as to whom the funding, installation, maintenance and M&E responsibility falls to, especially in emergencies. It was suggested that these elements must be addressed clearly within the cluster even at the beginning of an intervention.

Decision-making must include the views of the community to ensure that what they deemed as 'hotspots' are prioritised in the implementation stage of a lighting project. This will encourage the community to have a sense of empowerment and ownership of the facilities, which in turn will be beneficial when it comes to maintenance.

Individual factors

Certain groups of people might be more fearful of the risk of GBV (e.g. the elderly, adolescent girls, women, ethnic or religious minorities, people with disabilities and persons of different sexual orientation (e.g. LGBTI)). These individuals may be more vulnerable because family units have been disrupted, they hold less power in the community, are more dependent on others for survival, are less visible to relief workers, are otherwise marginalized and/or generally have more past experiences of GBV or crime. 75% of respondents in a HelpAge International survey (n=499) conducted in Haiti reported that having a light on at night made them feel more secure (cited in Jewell, 2011). Apart from the positive attributes of lighting, it can also encourage perpetrators to target their victims during the night since it draws attention to the fact that someone is approaching, or they are on the pathway of a potential risk area.

It is not clear in the literature on WASH and lighting in camps whether individual factors are more influential than physical factors (e.g. design or WASH facilities) in evoking the fear of crime. GBV and the fear of GBV are likely to be influenced by a combination of factors in the camp environment and personal experiences of an individual. However, the fear associated with living in poor conditions can compound the existing trauma and related mental health problems of a person (Rees et al., 2005).

Better lighting = less GBV?

Factors such as the quality of a light (such as its durability, weather-proof materials and brightness) as opposed to its quantity, can significantly impact the perception of safety of the people. However, Perkins (2015a) notes the complex relationship between light and protection, in that it is not always the case that more light is equal to more protection. Poorly designed lighting interventions may increase protection risks for instance by encouraging women to use unlit roads to walk to well-lit facilities.

Usage of WASH facilities

Alongside fear of darkness, the studies report that poor design of WASH facilities (e.g. the confined nature of a cubicle, reduced visual access), as well as signs of a lack of operation and maintenance (e.g. dirty or vandalised toilets) can evoke the fear of crime, which will deter people from using facilities. This can also indicate to criminal offenders that the facilities are not cared for or not patrolled, which reduces the likelihood that offenders will be caught.

Social behaviours

Better lighting can signal that the camp management is investing in facilities and helps promote social behaviours such as trust, which influences feelings of insecurity within the community.

Night-time

Given that fear is greatest after dark, it is assumed that by reducing darkness, fear will also be reduced. Increased lighting is predicted to reduce night time GBV. However, there are reports that in a number of contexts, GBV, especially for adolescent girls, is more common during the day time because parents may be absent due to work, market shopping, collecting firewood, etc. There is little evidence to demonstrate that better lighting at WASH facilities will lead to a decrease in GBV, but also a lack of evidence that it does not reduce GBV, or will increase the use of WASH facilities in both the day and night time.

Reassurance and feelings of safety

People feel well-lit areas are safer than darker ones. When actual and perceived risks of crime decrease, more people use the lit area, which increases surveillance and increases deterrence.

Lighting is part of a package of responses to GBV

Guled (2013) reported one woman saying that *“I see that the lights are helpful, but they cannot, sadly, prevent the rapists from coming. We are still exposed to the rape attacks because no one protects us.”* Similarly, the IRC study (2014) found that handheld solar lamps did not address women’s primary safety concerns (e.g. generalised crime, violence and mistrust, including sexual violence and harassment). Women’s perceptions of their own safety remained the same or worsened six months after the lamps were distributed. Evidence from Haiti found that lighting cannot substitute for security patrols and appropriately designed WASH facilities (e.g. locks, sturdy doors, the distance between segregated latrine and bathing facilities). Le Masson et al. (2016) reported that poor lighting and lack of security at WASH facilities and the dearth of channels in which to report violence leave women and girls at higher risk of abuse.

Unintended outcomes

Better lighting might facilitate activities like drug dealing or sex work. Newly illuminated areas – such as sanitation facilities – can be used as a meeting point by young men, which increases the sense of vulnerability. Moreover, better lighting at WASH facilities might simply displace crime into other nearby areas. A recurring theme is a question of where street lighting sits on the list of beneficiary priorities. For instance, women in Haiti complained that street lighting had been installed before they even had electricity in their homes (Bellanca 2014, p22). In some camps, the installation of street lighting had catalysed spin-off businesses, including illegal connections to the infrastructure and selling power to households from illegally-made connections to the power lines. In the Zaatar camp in Jordan, it was reported that *‘some 350 refugees with technical skills have illegally diverted electricity from the public lighting system to about 70 percent of the households, charging for hook up and maintenance’* (Daraghimeh, 2013; Bellanca 2014, p29).

5 Limitations of this review

The findings of this review are limited by the scope of the research and capture only the literature reporting on GBV and lighting at WASH interventions in a camp setting. There is more evidence available on general lighting in camps. Studies in the peer-reviewed and the grey literature are often inconsistent and imprecise in the way they refer to GBV. Formal reporting data for incidences of GBV is known to be a highly unreliable indicator of overall GBV prevalence, given the myriad of factors that affect reporting rates, including confidence in a confidential reporting system and potential for secondary victimisation or negative consequences for survivors, particularly if their identity is disclosed.

Furthermore, the effect of lighting at WASH facilities has been under-researched and poorly documented. Methodologies are diverse and poorly detailed, leading to difficulties in evaluating the effect of lighting on GBV and WASH usage. This inconsistency makes it difficult to compare results across studies or to draw general conclusions about the effect of lighting on GBV and WASH use.

6 Conclusions and Recommendations

The review addresses the following research questions:

1. Are there any existing recommendations/guidelines around lighting WASH facilities in camp settings?
2. What do WASH experts think about the potential for lighting at WASH facilities? Do they have a preference for the kind of lighting that would be logistically easiest/most effective?
3. What evidence exists that indicates improved lighting at WASH facilities in camp settings could reduce GBV?
4. What evidence exists that indicates improved lighting at WASH facilities in camp settings can improve WASH facility use?

Two separate approaches were used to answer the above questions as detailed in the Methodology. This ensured that grey literature and evidence based on expert knowledge and experience and published literature are included in this review.

The following points answer the research questions addressed in this project:

- There are guidelines highlighting the need for lighting at WASH facilities in camp settings. However, additional technical guidance and standards are needed to assist practitioners in the field, especially when it comes to planning and decision-making of lighting initiatives in camps;
- Sector experts consulted (aside from the Protection and GBV experts) had relatively little to say about the topic of lighting at WASH facilities. This is due to there being no reported activity within their organisation or no resources that they could share relating to the issue. However, all experts consulted during the review agreed that the potential for lighting in and around WASH facilities is important in a humanitarian context. It must be part of the package and a “default” parameter in site planning in emergency response;

- The literature refers to a range of different kinds of lighting: from solar lanterns to street lamp posts. The evidence on which is most effective is inconclusive, as the context and implementation are varied, which makes comparisons of lighting challenging for project initiation;
- Increasing lighting, especially if it is well targeted to what is perceived to be an unsafe space like latrines, can be an effective way to improve feelings of safety. It is plausible that lighting at WASH facilities could also reduce incidences of GBV, although there is a lack of quantitative evidence regarding this issue, and given the general unreliability of GBV reporting data, this is unlikely to be so. However, indicators around fear of GBV can serve as a proxy indicator when carefully contextualised;
- Less distance to travel, separate latrines and/or bathing facilities for men and women, lighting and secure facilities (e.g. locks and sturdy doors) would all help increase the feelings of safety in both daytime and night time;
- There is some evidence to suggest that lighting at WASH facilities may encourage greater usage of facilities, both because people (particularly women, adolescents and children) feel safer to use the facilities at night; but also, because improved lighting can increase the clean use of facilities which also contributes to the willingness to use them; and
- Increased use of WASH facilities, through improved lighting, results in better surveillance of facilities, which in turn reduces the risk of crime and promote feelings of safety.

Based on the current state of knowledge, the following recommendations are suggested:

- Interventions to improve lighting should be complemented by increased security patrols, appropriate design parameters (e.g. distance between male and female latrines) and mechanisms to report GBV. Recommended intervention techniques must be easy and feasible to execute in the field, especially in humanitarian contexts;
- Fear affects the use of WASH facilities, thus individual factors such as age and gender are highly influential. Further attention is needed on the effects of these factors on lighting around WASH facilities and particularly for vulnerable groups such as people with disabilities and the LGBTI community. In addition, the time of day (daytime or night time) or season were not highlighted in most studies but require further examination as they are considered important contributors to fear of crime;
- Identify training materials and/or guidelines that can be implemented by WASH staff at a country level. Training materials must be designed to correlate with main WASH activities in humanitarian settings (e.g. appropriate design features of WASH facilities in relation to solutions to increase protection, particularly to women and girls). Language must be used so that WASH staff (both international and national) are able to easily understand and 'protection terminologies' used should relate to WASH definitions;
- There is lack of information regarding responsibilities in funding, maintenance and M&E for lighting initiatives, especially during a humanitarian response. Experts recommended that responsibilities must be clearly addressed during cluster meetings, especially at the beginning of an intervention;
- Our findings imply a need for more resources to be devoted to research and practice on this topic e.g. the type of lighting, the brightness, and the position, potentially

drawing on the effectiveness of street lighting on crime in other settings and the social and community factors affecting lighting and behaviour;

- Consider testing the effects of improved lighting in a 'before and after' study e.g. measure feelings of safety (or reports of GBV) and usage of WASH facilities before and after lighting has been improved, where ethical and safe to do so;
- Also consider investigating whether lighting at WASH facilities leads to displacement of GBV to other unlit areas of the camp, or if improved lighting at WASH facilities has 'spill over' benefits across the camp (e.g. crime falls more generally); and
- Best practice on lighting around WASH facilities is another evidence gap that should be investigated.

7 References

ABDELNOUR, S. and SAEED, A. M. 2014. "Technologizing Humanitarian Space: Darfur Advocacy and the Rape-Stove Panacea." *International Political Sociology* 8 (June): 145–63.

ALMEIDA, RHT. 2014. "Lumisol: A Contribution to Solar Street Lighting in Developing Countries." [Online] [Viewed on 21/06/17] Available from: http://www.aler-renovaveis.org/contents/lerpublication/ulfc110307_tm_rita_almeida.pdf.

AMNESTY INTERNATIONAL. 2010. "Insecurity and Indignity. Women's Experiences in the Slums of Nairobi, Kenya." [Online] [Viewed on 21/06/17] Available from: <https://www.amnesty.org/download/Documents/36000/afr320022010en.pdf>.

BASTABLE, A. [Oxfam - Global Public Health Engineer Advisor]. 2017 *Personal Communication*.

BELLANCA, R. 2014. "Sustainable Energy Provision Among Displaced Populations: Policy and Practice." [Online] [Viewed on 01/06/17] Available from: https://www.chathamhouse.org/sites/files/chathamhouse/field/field_document/20141201E_nergyDisplacedPopulationsPolicyPracticeBellanca.pdf.

COLEMAN, R. 2014. "Bright Idea: Transforming Ghana with Street Lights." *The Guardian*, April 14, sec. Global Development Professionals Network. [Online] [Viewed on 12/06/17] Available from: <https://www.theguardian.com/global-development-professionals-network/2014/apr/14/ghana-development-improve-streetlights>.

DAVOREN, S. J. 2012. "Helping International Non-Government Organisations (INGOs) to Include a Focus on Gender-Based Violence during the Emergency Phase: Lessons Learned from Haiti 2010–2011." *Gender & Development* 20 (2): 281–94. doi:10.1080/13552074.2012.687224.

DE LANGE, R., LENGLET, A., FESSELET, J.F., GARTLEY, M., ALTYEV, A., FISHER, J. and SHANKS, L. 2014. "Keeping it simple: a gender-specific sanitation tool for emergencies" *Waterlines* Vol. 33 No. 1 January 2014.

DEVICTOR, X. 2016. "How Many Years Do Refugees Stay in Exile?" [Online] [Viewed on 21/06/17] Available from: <http://blogs.worldbank.org/dev4peace/how-many-years-do-refugees-stay-exile>.

DYNES, M., ROSENTHAL, M., HULLAND, E., HARDY, C., TORRE, L. and TOMCZYK, B. 2016. "Handheld Solar Light Use, Durability, and Retention among Women and Girls

- in Internally Displaced Persons Camps in Haiti — 2013–2014.* International Journal of Disaster Risk Reduction 18 (September): 162–70. doi:10.1016/j.ijdrr.2016.04.016.
- EMERY, M., SHAW, M., SANTOSA, L., and BIRD, O. 2011. "Recommendations to Reduce Sexual Violence in Haitian Internally Displaced Persons' (IDP) Camps." [Online]. New Voices in Public Policy. George Mason University. Available from: <http://journals.gmu.edu/newvoices/article/view/6>.
- ENERGIA. 2016. "Preventing Gender-Based Violence within Energy Projects." ENERGIA. November 4. [Online] [Viewed on 12/06/17] Available from: <http://www.energia.org/preventing-gender-based-violence-within-energy-projects/>.
- FARRINGTON, D.P. and WELSH, B.C. 2002 "Effects of improved street lighting on crime: a systematic review". Home Office Research Study 251. [Online] [Viewed on 21/06/17] Available from: http://www.crim.cam.ac.uk/people/academic_research/david_farrington/hors251.pdf.
- FORAN, S. [Care International - GiE Coordinator]. 2017 *Personal Communication*. [via Skype, October 2017].
- FOTIOS, S. 2014. "Road Lighting and Pedestrian Reassurance after Dark. A Review of the Evidence" - Fotios 2014 Road Lighting and Pedestrian Reassurance.pdf. [Online] [Viewed on 21/06/17] Available from: <http://eprints.whiterose.ac.uk/81135/1/Fotios%202014%20road%20lighting%20and%20pedestrian%20reassurance.pdf>.
- GACC. 2016. "Gender-Based Violence in Humanitarian Settings: Cookstoves and Fuels." Global Alliance for Clean Cook Stoves. August. [Online] [Viewed on 21/06/17] Available from: <http://cleancookstoves.org/resources/478.html>.
- GLOBAL PROTECTION CLUSTER. 2014a. "Gender Based Violence Rapid Assessment GBV Working Group Malakal, South Sudan. May 22-28,2014". GBV Working Group – Upper Nile State Malakal PoC, South Sudan. Unpublished Document.
- GLOBAL PROTECTION CLUSTER. 2014b. "WASH Programs - Tips for Protection Mainstreaming". Edition 1 (May 2014). [Online] [Viewed on 01/06/17] Available from: <https://www.humanitarianresponse.info/en/operations/afghanistan/document/protection-mainstreaming-tip-sheet-wash-programs>.
- GULED, A. 2013. "Solar-Powered Lights Help Protect against Attacks in Somalia Refugee Camps - National | Globalnews.ca." [Online] [Viewed on 02/09/17]. Available from: <http://globalnews.ca/news/814736/solar-powered-lights-help-protect-against-attacks-in-somalia-refugee-camps/>.
- HECKMAN, C. [UNICEF - Protection Specialist]. 2017 *Personal Communication*. [via Skype, October 2017].
- HIF, 2015. "Call for Proposals - Research on Latrine Lighting in Emergency Context: Testing Lighting Innovations." [Online] [Viewed on 21/11/17]. Available from: <http://www.elrha.org/wp-content/uploads/2015/03/ToR-Research-on-Latrine-Lighting-in-Emergency-Context.pdf>.
- HOUSE, S., FERRON, S., SOMMER, M. and CAVILL, S. 2014. "Violence, Gender & WASH: A Practitioner's Toolkit - Making water, sanitation and hygiene safer through improved programming and services". London, UK: WaterAid/SHARE.

- HUMANITARIAN RESPONSE. (n.d.). "What is a Cluster Approach?". [Online] [Viewed on 28/11/17] Available from: <https://www.humanitarianresponse.info/en/about-clusters/what-is-the-cluster-approach>.
- HYNES, M. and DYNES, M. 2014. "Implications of Latrines on Women's and Girls' Safety". CDC. [Online] [Viewed on 10/10/17]. Available from: <https://blogs.cdc.gov/global/2014/11/17/implications-of-latrines-on-womens-and-girls-safety/>.
- IASC. 2015. "Guidelines for Integrating Gender-Based Violence Interventions in Humanitarian Action. Reducing Risk, Promoting Resilience and Aiding Recovery." [Online] [Viewed 11/07/17]. Available from: https://gbvguidelines.org/wp-content/uploads/2015/09/2015-IASC-Gender-based-Violence-Guidelines_lo-res.pdf.
- IKEA FOUNDATION. 2017. "Brighter Lives for Refugees." IKEA Foundation. January. [Online] [Viewed on 23/05/17]. Available from: <https://www.ikeafoundation.org/campaigns/brighter-lives-for-refugees/>.
- IOM PRESS RELEASE. 2015. "Global Solar Lantern Initiative Targets Displaced Families in Somalia". IOM. [Online] [Viewed on 10/10/17] Available from: <https://www.iom.int/news/iom-global-solar-lantern-initiative-targets-displaced-families-somalia>.
- IRC. 2014a. "Evaluation of Handheld Solar Lights among Displaced Populations." [Online] [Viewed on 25/06/17] Available from: <https://www.rescue.org/sites/default/files/document/657/haitisolarlightsevaluationfinalreportcleared11102014.pdf>.
- IRC. 2014b. "Lighting the Way: The Role of Handheld Solar Lamps in Improving Women's and Girl's Perceptions of Safety in Two Camps for Internally Displaced People in Haiti." [Online] [Viewed on 15/06/17] Available from: <http://www.safefuelandenergy.org/files/IRC%20Haiti-Solar-Light-Evaluation-Research-Brief.pdf>.
- JEWELL, J. 2011. "Ending isolation: solar solutions in Haiti" Humanitarian Exchange Magazine. September 2011. [Online] [Viewed on 25/05/17] Available from: <https://odihpn.org/magazine/ending-isolation-solar-solutions-in-haiti/>.
- KARLIN, D. [UNHCR - Protection-SGBV Officer]. 2017 *Personal Communication*. [via Skype, November 2017].
- LÆNKHOLM, C. 2007. "Resettlement for Bhutanese refugees". FMR 29. December 2007. p59-60.
- MADRE. 2010. "Our Bodies Are Still Trembling: Haitian Women's Fight Against Rape." <https://www.madre.org/press-publications/human-rights-report/our-bodies-are-still-trembling-haitian-womens-fight-against>.
- MADRE, KOFAVIV, FAVILEK, et al. 2011. "Gender-Based Violence Against Haitian Women & Girls in Internal Displacement Camps". Republic of Haiti Submission to the United Nations Universal Periodic Review. 12th Session of the Working Group on the UPR Human Rights Council [October 3 - 14, 2011]. [Online] [Viewed 25/07/17] Available from: <http://lib.ohchr.org/HRBodies/UPR/Documents/session12/HT/JS2-JointSubmission2-eng.pdf>.

- MOHUN, R, and BELL, E. 2015. "VAWG and Energy in Stable Urban and Rural Settings." [Online] [Viewed on 25/06/17] Available from: <http://www.sddirect.org.uk/media/1198/vawg-helpdesk-report-95-links-between-vawg-and-access-to-energy-in-stable-setting.pdf>.
- OXFAM GB. 2010. "*Ideas that Work – A Gender, WASH and Emergencies Toolkit*". [Online] [Viewed on 01/10/17]. Available from: <https://policy-practice.oxfam.org.uk/publications/ideas-that-work-a-gender-wash-and-emergencies-toolkit-334900>.
- OXFORD UNIVERSITY PRESS. 2017. "*Definition of Hotspot*". Oxford Dictionary. [Online] [Viewed on 15/11/17] Available from: <https://en.oxforddictionaries.com/definition/hotspot>.
- PARKE, A and FRASER, E. 2015. "VAWG and Energy in Camp-Based Settings." UKAID. [Online] [Viewed on 26/06/17] Available from: <http://www.sddirect.org.uk/media/1197/vawg-helpdesk-report-94-camp-based-settings-vawg-and-energy.pdf>.
- PATRICK, E. [IASC GBV Specialist]. 2017 *Personal Communication*. [via Skype, October 2017].
- REED, B., COATES, S. and PARRY-JONES S. 2007. "*Infrastructure for all: Meeting the needs of both men and women in development projects - a practical guide for engineers, technicians and project managers*". WEDC: Loughborough University, UK.
- SOMMER, M., FERRON, S., Cavill, S. and HOUSE, S. 2015. "Violence, Gender and WASH: Spurring Action on a Complex, under-Documented and Sensitive Topic." *Environment and Urbanization* 27 (1): 105–16. doi:10.1177/0956247814564528.
- SUSANA. 2015. "*Latrine lighting in emergencies*". SuSanA Network Forum. 13 February 2015. [Online] [Viewed on 21/06/17]. Available from: <http://forum.susana.org/67-challenging-environments-emergencies-reconstruction-situations-resilience-issues/12038-latrine-lighting-in-emergencies>.
- THE SPHERE PROJECT. 2011a. "*The Sphere Handbook | Excreta Disposal Standard 2: Appropriate and Adequate Toilet Facilities*." [Online] [Viewed on 22/07/17] Available from: <http://www.spherehandbook.org/en/excreta-disposal-standard-2-appropriate-and-adequate-toilet-facilities/>.
- THE SPHERE PROJECT. 2011b. "*The Sphere Handbook | Shelter and Settlement Standard 2: Settlement Planning*". [Online] [Viewed on 22/07/17] Available from: <http://www.spherehandbook.org/en/shelter-and-settlement-standard-2-settlement-planning/>.
- THE SPHERE PROJECT. 2011c. "*The Sphere Handbook | Non-food items Standard 4: Stoves, Fuel and Lighting*". [Online] [Viewed on 22/01/17] Available from: <http://www.spherehandbook.org/en/non-food-items-standard-4-stoves-fuel-and-lighting/>.
- UNITED NATIONS FOUNDATION. 2016. "*UNHCR Sets Technical Specifications for Cookstove Procurement*." [Online] [Viewed on 22/06/17] Available from: <http://cleancookstoves.org/about/news/01-30-2017-unhcr-sets-technical-specifications-for-cookstove-procurement.html>.
- UNHCR. 2012. "*Light Years Ahead*." UNHCR. [Online] [Viewed 25/06/17]. Available from: <http://www.unhcr.org/news/agenda/2012/3/4c99fa9e6/light-years-ahead.html>.

UNHCR. 2014. "Global Strategy for Safe Access to Fuel and Energy (SAFE)." UNHCR. [Online] [Viewed on 26/06/17] Available from: <http://www.unhcr.org/protection/environment/530f11ee6/global-strategy-safe-access-fuel-energy-safe.html>.

UNHCR and SAVE THE CHILDREN-UK. 2017. "Sexual Violence & Exploitation: The Experience of Refugee Children in Guinea, Liberia and Sierra Leone." Save the Children UK. [Online] [Viewed on 10/05/17] Available from: <http://www.savethechildren.org.uk/resources/online-library/sexual-violence-exploitation-the-experience-of-refugee-children-in-guinea-liberia-and-sierra-leone>.

WARD, J. [IASC author - GBV Specialist]. 2017 *Personal Communication*. [via Skype, October 2017].

ZAATARILIGHTS. (n.d.). "Skyrocket Light Project." [Online] [Viewed on 10/05/17]. Available from: <http://zaatarilights.tumblr.com/Backgrounder>.

Appendix 1

Documents found with keyword search meeting First Inclusion Criteria (n=61)

- 1) AL-KHATIB, I., JU'BA, A., KAMAL, N., HAMED, N., HMEIDAN, N. and MASSAD, S. 2003. "Impact of housing conditions on the health of the people at al-Ama'ri refugee camp in the West Bank of Palestine". *International Journal of Environmental Health Research*, 2003 Dec; Vol. 13 (4), pp. 315-26.
- 2) AREND, E. 2012. "IFIs & Gender Based Violence Case Study: Haiti" March 2012 Gender Action. [Online] [Viewed on 20/05/17] Available from: <https://pdfs.semanticscholar.org/4111/a6dc43612e488ab85e1c0309c59bbf4f78c9.pdf>.
- 3) ATUYAMBE, L. M., EDIAU, M., ORACH, C.G., MUSENERO, M. and BAZEYO, W. 2011. "Land slide disaster in eastern Uganda: rapid assessment of water, sanitation and hygiene situation in Bulucheke camp, Bududa district". *Environmental Health*. 2011 10:38.
- 4) BELUR, J., PARIKH, P., DARUWALLA, N., JOSHI, R. and FERNANDES, R. 2017. "Perceptions of gender-based violence around public toilets in Mumbai slums". *International Journal of Comparative and Applied Criminal Justice*, 41(1–2), pp.63–78. [Online] [Viewed on 29/09/17] Available from: <http://dx.doi.org/10.1080/01924036.2016.1240094>.
- 5) BENJAMIN, C. and HUESO, A. 2017. "LGBTI and sanitation: what we know and what the gaps are". In: *Local Action with International Cooperation to Improve and Sustain Water, Sanitation and Hygiene Services*, 40th WEDC International Conference, Loughborough, UK. Loughborough, UK: WEDC Loughborough University. [Online] [Viewed on 21/11/2017] Available from: <https://wedc-knowledge.lboro.ac.uk/resources/conference/40/Benjamin-2649.pdf>.
- 6) BOTT, S., MORRISON, M., and ELLSBERG, M. 2004. "Preventing and responding to gender-based violence in middle and low- income countries: a multi-sectoral literature review and analysis" [Online] [Viewed on 15/05/17] Available from: https://www.researchgate.net/profile/Mary_Ellsberg/publication/23723131_Preventin

[g and Responding to Gender-Based Violence in Middle and Low-Income Countries A Global Review and Analysis/links/09e41508ff0dc15bd4000000/Preventing-and-Responding-to-Gender-Based-Violence-in-Middle-and-Low-Income-Countries-A-Global-Review-and-Analysis.pdf](https://www.gsdrc.org/publications/09e41508ff0dc15bd4000000/Preventing-and-Responding-to-Gender-Based-Violence-in-Middle-and-Low-Income-Countries-A-Global-Review-and-Analysis.pdf).

- 7) BROWNE, E. (2013). "*Child friendly spaces for adolescent girls in emergency settings*". (GSDRC Helpdesk Research Report 932). Birmingham, UK: GSDRC, University of Birmingham.
- 8) CRONIN, A.A., SHRESTHA, D., CORNIER, N., ABDALLA, F., EZARD, N., ARAMBURU, C. 2008. "A review of water and sanitation provision in refugee camps in association with selected health and nutrition indicators - The need for integrated service provision." *Journal of Water and Health*, 6 (1), pp. 1-13, DOI: 10.2166/wh.2007.019.
- 9) CULLEN, K., IVERS, L.C. and Senior Aide to the Chief of Mission for Partners in Health, Haiti. 2009. "*Human Rights Assessment in Parc Jean Marie Vincent, Port-au-Prince, HAITI*" *Health Human Rights*; 12(2): 61–72.
- 10) DAVOREN, S.J. 2012 "*Helping international non-government organisations (INGOs) to include a focus on gender-based violence during the emergency phase: lessons learned from Haiti*" 2010–2011, *Gender & Development*, 20:2, 281-294, DOI: 10.1080/13552074.2012.687224.
- 11) DE LANGE, R., LENGLET, A., FESSELET, J.F., GARTLEY, M., ALTYEV, A., FISHER, J. and Shanks, L. 2014. "*Keeping it simple: a gender-specific sanitation tool for emergencies*" *Waterlines* Vol. 33 No. 1 January 2014.
- 12) DYNES, M., ROSENTHAL, M., HULLAND, E., HARDY, C., TORRE, L. and TOMCZYK, B. 2016. "*Handheld solar light use, durability, and retention among women and girls in internally displaced persons camps in Haiti 2013–2014*". *International Journal of Disaster Risk Reduction* 18 (2016) 162–170.
- 13) EMERY, M., SHAW, M., SANTOSA, L., and BIRD, O. 2011. "*Recommendations to Reduce Sexual Violence in Haitian Internally Displaced Persons' (IDP) Camps*." *New Voices in Public Policy*. George Mason University. [Online] [Viewed on 21/06/17] Available from: <http://journals.gmu.edu/newvoices/article/view/6>.
- 14) FAFI Integrated Development Association (FaIDA) and United Nations High Commissioner for Refugees. 2013. "*Testing the acceptability and suitability of Waka Waka solar lamps*." [Online] [Viewed on 11/06/17] Available from: [http://us.waka-waka.com/media/wakawaka_unhcr_faida_\(1\).pdf](http://us.waka-waka.com/media/wakawaka_unhcr_faida_(1).pdf).
- 15) FARRELL, J. 2014. "*Promoting Literacy and Protection with Solar Lamps in Yemen*". *Stability: International Journal of Security & Development*, 3(1): 15, pp. 1-7, DOI: <http://dx.doi.org/10.5334/sta.dm>.
- 16) GLOBAL PROTECTION CLUSTER. 2014a. "*Gender Based Violence Rapid Assessment GBV Working Group Malakal, South Sudan. May 22-28,2014*". GBV Working Group - Upper Nile State Malakal PoC, South Sudan.
- 17) GLOBAL PROTECTION CLUSTER. 2014b. "*WASH Programs - Tips for Protection Mainstreaming*". Edition 1 (May 2014). [Online] [Viewed on 01/06/17] Available from: <https://www.humanitarianresponse.info/en/operations/afghanistan/document/protecti-on-mainstreaming-tip-sheet-wash-programs>.

- 18) GUNNING, R. 2014. "*The current state of sustainable energy provision for displaced populations: an analysis, Energy, Environment and Resources*". The Chatham House, The Royal Institute of International Affairs, 2014. [Online] [Viewed on 21/06/17] Available from: http://www.chathamhouse.org/sites/files/chathamhouse/field/field_document/20141201EnergyDisplacedPopulationsGunning.pdf.
- 19) HOUSE, S., FERRON, S., SOMMER, M. and CAVILL, S., 2014. *Violence, Gender & WASH: A Practitioner's Toolkit – Making water, sanitation and hygiene safer through improved programming and services*. London, UK: WaterAid/SHARE.
- 20) HULLAND, K. R. S., et al. 2015. "*Sanitation, stress, and life stage: A systematic data collection study among women in Odisha, India*". PLoS ONE, 10(11). <https://doi.org/10.1371/journal.pone.0141883>.
- 21) HYNES, M., ROBERTSON, K., WARD, J. and CROUSE, C. 2004. "*A determination of the prevalence of gender-based violence among conflict-affected populations in East Timor*". Disasters, 28, 294-321.
- 22) IRC. 2014 "*Lighting the way: The role of handheld solar lamps in improving women's and girl's perceptions of safety in two camps for internally displaced people in Haiti*". New York: IRC. [Online] [Viewed on 17/06/17] Available from: <http://www.safefuelandenergy.org/files/IRC%20Haiti-Solar-Light-Evaluation-Research-Brief.pdf>.
- 23) IYAKAREMYE, I. and MUKAGATARE, C. 2016. "*Forced migration and sexual abuse: experience of Congolese adolescent girls in Kigeme refugee camp, Rwanda*". Health Psychology Report, 4(3), 261–271. DOI: 10.5114/hpr.2016.595.
- 24) JEWELL, J. 2011. "*Ending isolation: solar solutions in Haiti*". Humanitarian Exchange Magazine. September 2011. [Online] [Viewed on 25/05/17] Available from: <https://odihpn.org/magazine/ending-isolation-solar-solutions-in-haiti/>.
- 25) KOHL, H. 2008. "*Women and Girls in Refugee and Internally- Displaced Camps Carried Out By Men in Power*". Produced for IRC and the INEE Gender Task Team/ IASC Education Cluster Gender Working Group.
- 26) KRAUSE, S., Williams, H., Onyango, M/A., Sami, S., Doedens, W., Giga, N., Stone, E. and Tomczyk, B. (2015) "*Reproductive health services for Syrian refugees in Zaatri Camp and Irbid City, Hashemite Kingdom of Jordan: an evaluation of the Minimum Initial Services Package*". Conflict and Health 2015 9 (Suppl 1): S4.
- 27) LÆNKHOLM, C. 2007. "*Resettlement for Bhutanese refugees*". FMR 29. December 2007. p59-60.
- 28) LE MASSON, V., LIM, S., BUDIMIR, M. and PODBOJ, J.S. (2016). "*Disasters and Violence against women and girls – Can disasters shake social norms and power relations?*". Overseas Development Centre. [Online] [Viewed on 21/06/17]. Available from: <https://www.odi.org/sites/odi.org.uk/files/resource-documents/11113.pdf>.
- 29) LEATHERMAN, J. and GRIFFIN, N. 2014. "*Unsafe Spaces: Trends and Challenges in Gender-Based Violence*" (2014). Enduring Questions - Publications. Paper.
- 30) LEHNE, J., BLYTH, W. LAHN, G., BAZILIAN, M. and OWEN, G. 2016. "*Energy services for refugees and displaced people*". *Energy Strategy Reviews, Volumes 13–14, November 2016, Pages 134-146*.

- 31) LOGIE, C. H., DANIEL, C. A., AHMED, U. and LASH, R. 2017. "*Life under the tent is not safe, especially for young women': understanding intersectional violence among internally displaced youth in Leogane*". Haiti, Global Health Action, 10:sup2, 1270816, DOI: 10.1080/16549716.2017.1270816.
- 32) MADRE, KOFAVIV, FAVILEK, et al. 2011. "*Gender-Based Violence Against Haitian Women & Girls in Internal Displacement Camps*". Republic of Haiti Submission to the United Nations Universal Periodic Review. 12th Session of the Working Group on the UPR Human Rights Council [October 3 - 14, 2011]. [Online] [Viewed 25/07/17] Available from: <http://lib.ohchr.org/HRBodies/UPR/Documents/session12/HT/JS2-JointSubmission2-eng.pdf>.
- 33) MAHEEN, H and HOBAN E. 2017. "*Rural Women's Experience of Living and Giving Birth in Relief Camps in Pakistan*". PLOS Currents Disasters. 2017 Jan 31. Edition 1. DOI: 10.1371/currents.dis.7285361a16eefbeddacc8599f326a1dd.
- 34) MARTÍN GONZÁLEZ, O. 2016. "*Refugees and 'host communities' facing gender-based violence: developing an area-based approach to gender-based violence around Mbera Camp, Mauritania*". Gender & Development, 24:3, 375-390, DOI: 10.1080/13552074.2016.1233669.
- 35) MCLOUGHLIN, C. 2013. "*Violence against women and girls in Haiti*" GSDRC Helpdesk Research Report, Birmingham, UK: Governance and Social Development Resource Centre, University of Birmingham.
- 36) MERIEAU, L. and EGYZIABHER, G.A., 2012. "*Light Years Ahead: Innovative technologies for better refugee protection*". UNHCR. pp.1–12. [Online] [Viewed on 25/09/17] Available from: <http://www.unhcr.org/4c99fa9e6.pdf>.
- 37) MILLER, L. (nd) "*The Irony of Refuge: Gender-Based Violence against Female Refugees in Africa*". Human Rights and Human Welfare.
- 38) OXFAM INTERNATIONAL. 2015. "*Pee-power to light refugee camps*". Focus on Catalysts, Volume 2015, Issue 9, September 2015, Page 6.
- 39) OXFAM. 2017. "*GBV & Lighting Assessment Report – Oxfam in Nigeria*". July 2017. Unpublished internal document.
- 40) PARKE, A. and FRASER, E. 2015. "*VAWG and Energy in Camp-based Settings*" VAWG Helpdesk Research Report No. 94.
- 41) PERKINS, S. 2015b. "*Lighting impacts SGBV but not in the way you think*". Blog posting on UNHCR Innovation website. [Online] [Viewed on 21/06/17] Available from: <http://innovation.unhcr.org/light-impacts-sgbv-but-not-in-the-way-you-think/>.
- 42) PITTAWAY, E., BARTOLOMEI, L and REES, S. 2007. "*Gendered dimensions of the 2004 tsunami and a potential social work response in post-disaster situations.*" International Social Work 50(3): 307–319 DOI: 10.1177/0020872807076042.
- 43) QAYUM, M., MOHMAND, S. and AROOJ, H. 2012. "*Frequency and physical factors associated with gender-based violence in the internally displaced people of Pakistan*". Journal College of Physicians and Surgeons Pakistan, 2012, Vol. 22 (1): 63-65 [Online] [Viewed on 25/5/17] Available from: <https://www.jcpsp.pk/archive/2012/Jan2012/20.pdf>
- 44) REES, S., PITTAWAY, E. and BARTOLOMEI, L. 2005. '*Waves of Violence: Women in Post- Tsunami Sri Lanka*', *Australasian Journal of Disaster and Trauma Studies*".

[Online] [Viewed on 17/05/17] Available from:
<http://trauma.massey.ac.nz/issues/2005-2/rees.htm>

- 45) REICHHOLD, U. and BINDER, A. "Scoping study: what works in protection and how do we know?" March 2013. GPPI Report [Online]. [Viewed on 15/06/17] Available from: <http://www.gppi.net/publications/humanitarian-action/article/scoping-study-what-works-in-protection-and-how-do-we-know/>.
- 46) ROSENOW-WILLIAMS, K. and BEHMER, K. 2015. "Gendered Environmental Security in IDP and Refugee Camps." *Peace Review*, 27:2, 188-195, DOI: 10.1080/10402659.2015.1037627.
- 47) SCHULTE, J. and RIZVI, Z. 2012. "In Search of Safety and Solutions: Somali Refugee Adolescent Girls at Sheder and Aw Barre Camps, Ethiopia." New York: Women's Refugee Commission. [Online] [Viewed on 12/06/17] Available from: http://www.womensrefugeecommission.org/resources/doc_download/834-in-search-of-safety-and-solutions-somali-refugee-adolescent-girls-at-sheder-and-aw-barre-camps.
- 48) SLOAND, E., KILLION, C., GARY, F.A., DENNIS, B., GLASS, N., HASSAN, M., CAMPBELL, D.W. and CALLWOOD, G.B. 2015. "Barriers and Facilitators to Engaging Communities in Gender- Based Violence Prevention following a Natural Disaster". *J Health Care Poor Underserved*. 2015 November; 26(4): 1377–1390. doi:10.1353/hpu.2015.0133.
- 49) SOME, J. 2008. "GBV in Post-election Kenya." *Forced Migration Review* (30):56-56.
- 50) SOMMER, M., SCHMITT, M. L., CLATWORTHY, D. BRAMUCCI, G., WHEELER, E. and RATNAYAKE, R. 2016. "What is the scope for addressing menstrual hygiene management in complex humanitarian emergencies? A global review" *Waterlines* Vol. 35 No. 3 July 2016 Practical Action Publishing, 2016.
- 51) SONTAG, D. 2010. "Sexual assaults add to miseries of Haiti's ruins". *New York Times*. Jun 24.2010. [Online] [Viewed 27/06/17] Available from [http://www.nytimes.com/2010/06/24/world/americas/24haiti.html?emc=eta1;Brookings-Bern Project on Internal Displacement](http://www.nytimes.com/2010/06/24/world/americas/24haiti.html?emc=eta1;Brookings-Bern%20Project%20on%20Internal%20Displacement).
- 52) THE ENGINEER. 2015. "Urine powered fuel cells are set to light up refugee camps". *Engineer* (Online Edition). 3/5/2015, p5-5.
- 53) THE GLOBAL WOMEN'S INSTITUTE and INTERNATIONAL RESCUE COMMITTEE. 2016. "Evidence brief: What works to prevent and respond to violence against women and girls in conflict and humanitarian settings?" Washington DC: George Washington University and London: IRC.
- 54) TORGAN, A. "Haitians living in fear "under the tent"". Atlanta, GA: CNN (website); 2012 Oct 18. [Online] [Viewed on 26/06/17] Available from: <http://www.cnn.com/2012/10/18/world/americas/cnnheroes-haiti-rape/>.
- 55) VOGLER, P. 2006. In the absence of the humanitarian gaze: refugee camps after dark Research Paper No. 137. NEW ISSUES IN REFUGEE RESEARCH, Oxford University.
- 56) VU, A., ADAM, A., WIRTZ, A., PHAM K., RUBENSTEIN, L., GLASS, N., BEYRER, C. and SINGH, S. 2014. "The Prevalence of Sexual Violence among Female Refugees in Complex Humanitarian Emergencies: A Systematic Review and

Meta-analysis". PLOS Currents Disasters. 2014 Mar 18. Edition 1. DOI: 10.1371/currents.dis.835f10778fd80ae031aac12d3b533ca7.

- 57) WAHOME, M.N. 2010. "*Effects of Post-Election Sexual Violence Against the Internally Displaced Women and Girls at the Kirathimo IDP Camp in Limuru, Kenya.*" University of Nairobi. November 2010. [Online] [Viewed on 5/5/17] Available from: <http://erepository.uonbi.ac.ke/bitstream/handle/11295/4693/Wahome-Effects%20Of%20Post-%20Election%20Sexual%20Violence%20Against%20The%20Internally%20Displaced%20Women%20And%20Girls%20At%20The%20Kirathimo%20IDP%20Camp%20In%20Limuru,%20Kenya.pdf?sequence=1>
- 58) WAKABI, W. 2008. "*Sexual violence increasing in Democratic Republic of Congo*". Lancet, 371, 15-16.
- 59) WARD, J. and MARSH, M. 2006. "*Sexual Violence Against Women and Girls in War and its Aftermath: Realities, Responses, and Required Resources.*" A Briefing Paper prepared for Symposium on Sexual Violence in Conflict and Beyond. [Online] [Viewed on 25/06/17] Available from: http://www.operationspaix.net/DATA/DOCUMENT/1045~v~Sexual_Violence_Against_Women_and_Girls_in_War_and_Its_Aftermath_Realities_Responses_and_Required_Resources.pdf.
- 60) WATTS, C. and ZIMMERMAN, C. 2002. "*Violence against women: Global scope and magnitude*". Lancet, 359, 1232-1237.
- 61) WOMEN'S REFUGEE COMMISSION. 2013. "*Scattered Dreams, Broken Promises. An Assessment of the Links between Girls' Empowerment and Gender-based Violence in the Kyaka II Refugee Settlement, Uganda*". [Online] [Viewed on 01/06/17]. Available from: http://www.womensrefugeecommission.org/resources/doc_download/921-scattered-dreams-broken-promises.

Appendix 2

Documents included in the review (e.g. meeting the Second Inclusion Criteria, n=38)

	Issue	Solution	Location	Q3	Q4	Q3+4
1. Iyakaremye et al. 2016	The factor of adolescent sexual abuse in Kigeme refugee camp was the camp layout and security problem. Men and women used the same toilets and bathrooms. This facilitated opportunity for some men to rape women and girls when they were already naked in these facilities. Rape also happened to those who tried to take a bath in other hidden places. The other problem related to the camp layout and security was the lack of external fences and inside lighting. Because the camp was also intersected by the National Road from Kigali, the capital to the South West of Rwanda and South Kivu in Congo, and was quite active, girls were caught by passengers in the darkness of the evening or night and raped. The lack of fences and lighting also facilitates people from outside who come in the night to sexually abuse women and girls, as well as girls who escape for trafficking and commercial sex. However, some girls were raped when sent outside the camp to fetch water or firewood.	The camp layout and the security system should be improved to ensure greater safety. Concerning the camp layout, there should be a fence surrounding each side of the camp at either side of the main road to monitor refugees and the local population's movements. This monitoring should also be reinforced by lighting the camp in the night. Infrastructures should also be gender-friendly and respond to gender-specific needs. This means for example that women and girls should have their own restrooms and bathrooms with adequate equipment and installations, and similarly for men and boys.	Kigeme Refugee Camp, Rwanda			X
2. Qayum, 2012	Location of basic services such as latrines at a considerable distance, no locking facilities in washrooms, and poorly lightened camps, sharing communal living space with unrelated	To safeguard women and children proper lighting of passages and locking mechanisms in the washroom should be ensured. Reporting of gender-based violence should be ensured	Pakistan	X		

	Issue	Solution	Location	Q3	Q4	Q3+4
	families and lack of security personnel expose women and girls to attack of gender-based violence. The research team reported, by families, that walking routes were not patrolled by security (73%, n = 45) and streets were unlit (68%, n=42). During a detailed interview, the team discovered that washrooms were not illuminated (68%, n=29) and lacked locking mechanisms (82%, n=31). Security patrols, particularly by trusted members of the displaced community, should guard the camp at night. Lighting should be provided on paths and in washrooms. The community must be consulted at every stage of planning with physical and social organization of the camp.	through education on gender-based violence. Women's protection committees should be present and functioning, and they should be involved at every stage. The presence of a psychologist in health clinics should be ensured.				
3. Lærkholm (nd)	Without kerosene, the camps had no lighting at night, which impacted on the studies of young people. Women complained that conditions in the camps, with large numbers of people being forced to live in close confinement in deteriorating circumstances, were not conducive to creating a safe environment for women and girls.		Nepal	X		
4. Farrell, 2014	Women spoke about being able to better manage and control their own lives. Women enrolled in the program were likely to participate more actively in health, nutrition, protection, and water/ sanitation/hygiene programs because	Promoting Literacy and Protection with Solar Lamps in Yemen	Yemen			X

	Issue	Solution	Location	Q3	Q4	Q3+4
	they can read and understand simple brochures and texts					
5. De Lange, 2014	In all consultations with women, the issue came up of having no torch to go to the latrine with at night, but this was never resolved. Interestingly, the desire for lighting was not linked to a risk of GBV, but rather to the fear of stepping on a snake in the dark.	Other complaints related to sanitation included the lack of torches.	South Sudan			X
6. Sommer, 2016	The provision of flashlights also contributed to other humanitarian aims (e.g. safety, dignity) and so are viewed as part of broader programming led by specific sectors (e.g. WASH, protection).	Multiple components are needed for a successful MHM response (e.g. adequate lighting for night-time latrine use).	Lit Review			X
7. IASC, 2015	Is lighting sufficient throughout the site, particularly in areas at high risk of GBV?	Prioritize the installation of appropriate lighting in and around WASH facilities, particularly in areas deemed at high risk of GBV. Distribute torches and/or solar powered lights for individual use. Lighting for personal use is needed.	Review			X
8. Le Masson et al, 2016	In refugee and displacement camps, cramped living conditions, poor lighting and lack of security at water and sanitation facilities and the dearth of channels in which to report violence, sexual exploitation and cases of early marriage leave women and girls at higher risk of abuse (IFRC, 2012; Asgary et al., 2013; CARE, 2014).	Risk of domestic violence was predominant in urban areas, where affected people had to cohabit for extended periods with host communities in crowded spaces, with inadequate lighting and sanitation facilities. Young girls and adolescents were particularly vulnerable to GBV (perpetrated by male adolescents and adults) due to reduced parental supervision during the day, when parents typically went to clean up and rebuild their damaged houses.	Review			X

	Issue	Solution	Location	Q3	Q4	Q3+4
9. Reichhold and Binder, 2013	One well-known example was the provision of adequate lighting inside IDP camps to reduce the exposure of women to sexual violence at night. Other measures seek to keep vulnerable groups inside protected environments.	Install adequate lighting in camp sanitation facilities to reduce risk of rape.	Review			X
10. Rees et al, 2005	The lack of separate toilets for men and women, absence of lights in the camp at night and at public bathing facilities contributed to the risk and occurrence of rape. Fear associated with living in these conditions can compound the existing trauma and related mental health problems.		Sri Lanka			X
11. Some, 2008	Three agencies: the United Nations Population Fund (UNFPA), the United Nations Children's Fund (UNICEF), and the Christian Children's Fund (CCF), have found that the risk of rape and sexual abuse was high for young girls and women displaced by Kenya's post-election conflict between December 2007 and January 2008. As per the agencies' assessment of gender-based violence (GBV), women in Nairobi have expressed fears and concerns about sexual victimization linked to refugee camp design and services, including lighting and sanitation facilities.		Kenya			X
12. Atuyambe et al; 2011	Latrines were few (23 for 5000 people), shallow, dirty (70% reported flies, 60% faecal littering),	The latrines were also very dirty, littered with faeces, smelly, and infested with flies. These factors obviously impeded use and de-motivated latrine users. Absence of lighting in the latrines	Uganda			X

	Issue	Solution	Location	Q3	Q4	Q3+4
	<p>not separated by sex, had limited privacy, and no light at night. This affected their use.</p> <p>Also noted was the absence of lighting in the latrines or latrine areas at night. This made it difficult for people to use latrines especially at night. This factor reportedly resulted in people defecating in the surrounding bushes or on the slabs as indicated in the quote:</p> <p>“Among the heaps of faeces, we find in the morning, there are those that are big indication that they are from adults not children. I think this problem of lights also affects us adults. It also seems like among us there are people who have not been using latrines in the places where they have been and have continued with the same practice of openly defecating anywhere they feel like” (FGD Male).</p> <p>“Here they use latrines all the time during the day but at night it is very difficult to use because there is no light in these latrines” (KI Health worker).</p>	<p>further compromised their use. Lighting is essential for accurate aiming of faeces inside the pit, fear of stepping onto the faeces, and reduces fear of unknown dangers in the darkness surrounding the toilet. Children and adolescents that would fear to visit the latrine due to darkness get motivated to use the latrines. Besides, females who otherwise would fear sexual violence such as rape as they visit latrines at night are protected due to lighting.</p> <p>The pit latrines should be segregated for women and men with adequate lighting at night.</p>				
13. Krause et al. 2015	In Zaatari Camp, women expressed concerns about the lack of lighting and their fears of using the toilets at night.		Zaatari Camp			X
14. Bott et al., 2004	Increasing evidence of sexual violence in refugee settings (see review by Dugan, Fowler and Bolton, 2000) prompted international agencies to review the way they designed	<p>Water and Sanitation projects</p> <p>In many low-income cities, large proportions of the urban population lack access to adequate (or any) sanitation facilities, including, for</p>	Review			X

	Issue	Solution	Location	Q3	Q4	Q3+4
	<p>refugee camps and distributed goods. The U.N Special Rapporteur on Violence Against Women, Radhika Coomaraswamy has noted that “poorly lit camps, latrines at unsafe distances and lack of privacy” contribute to “hostile living conditions for women” (Marshall, 1995). UNHCR guidelines (1999) recommended the following: locate latrines, water points and fuel collection areas in accessible places; make special arrangements for housing unaccompanied women and girls; lock washing facilities; provide adequate lighting on paths used at night; provide security patrols; and avoid shared communal living space with unrelated families. UNHCR guidelines also recognized the need to place women in charge of distributing goods so that men cannot pressure women to exchange sexual favours in return for vital necessities, such as food (UNHCR, 1991). These guidelines have been widely field-tested, albeit in informal ways.</p>	<p>example, nearly one-quarter to one-half of the population in Indian cities (United Nations Habitat, 2003). Burra, Patel, and Kerr (2003) profiled a relatively successful ten-year program to build community designed, built and managed toilet blocks in urban slum areas of various Indian cities (funded in part with World Bank financing). Women’s cooperatives played a key role, both in advocating for the toilets and by ensuring that they met women’s needs. No information directly linked this project with specific outcomes related to gender-based violence. However, before the toilets were built, many women and men in urban slums were forced to defecate in outdoor public spaces. To obtain some privacy, many women waited until nightfall. Thus, the public toilets may have improved women’s safety by eliminating the need to go out at night for sanitary reasons.</p>				
15. McLoughlin, 2013	<p>Lack of consistent electricity or lighting at night in some camps had been associated with reduced security (Human Rights Watch, 2011). On the other hand, one report by the small arms survey found that more rape cases occurred during the day than at night, because younger women and girls were often left alone in the day whilst their parents went out to seek work (Kolbe and Muggah, cited in d’Adesky, 2012).</p>	<p>In 2011, UNHCR reported that the living conditions in IDP camps were exacerbating women’s vulnerability to violence. It noted: ‘the primary and secondary displacements and subsequent loss of traditional community, family structures and mechanisms, combined with the loss of livelihoods and impunity for perpetrators have increased the vulnerability of many women and girls’ (UNHCR, 2011,4).</p>	Review	X		

	Issue	Solution	Location	Q3	Q4	Q3+4
		Similar findings were made in a study undertaken by the Centre for Human Rights and Global Justice, which found significant correlations between limited access to adequate food, water and sanitation, and increased vulnerability to sexual violence in IDP camps (CHRGJ, 2012). It found that in 14 per cent of the households surveyed, at least one person had been a victim of rape or sexual assault since the earthquake. Seventy percent of respondents said they were more fearful of sexual violence since the earthquake (CHRGJ, 2012). The report concluded that the people most vulnerable to sexual violence were likely to be young and female, to reside in a household with three or fewer members, to have limited access to food, water and sanitation, and to live in a camp without participatory governance (ibid).				
16. Ward and Marsh, 2006	This paper succinctly pooled together research on sexual and gender-based violence against women and girls from different humanitarian crises over the last two decades. The authors focussed on identifying actors in these types of violent settings, and state upfront that: "Sexual violence may be systematic, carried out by fighting forces for the explicit purpose of destabilizing populations and destroying bonds within communities and families." The authors then explained how this systematic process		Review	X		

	Issue	Solution	Location	Q3	Q4	Q3+4
	occurs and how it can have tragic long-term physical and mental effects on the women and girls even after the conflicts are over. This paper also discussed the conditions for which sexual and gender-based violence were easier to come by, e.g. the logistical set-up and poor lighting of a refugee or displaced camp. Lastly, this paper took a holistic approach when recommending how to address sexual and gender-based violence by identifying key figures/entities in the different sectors that must play a role in the strategic plan to address this problem: government, health, psychosocial, legal/ justice and security sector.					
17. Women's Refugee Commission, 2012	The Kyaka II camp had 1,500 adolescent girl refugees (between the ages of 10 and 16), mostly from DRC but also Burundi and Rwanda. Sexual harassment and assault were the key forms of violence experienced by girls here. Many describe violence happening when they travelled to and from school, the borehole and the market, and said they felt particularly vulnerable alone, at night, and in poor lighting.		Kyaka II Refugee Settlement, Uganda			X
18. Schulte and Rizvi, 2012 (adapted by Browne, 2013)	Girls in this camp were at extreme risk of sexual violence, exploitation and harmful traditional practices. Few programmes reached them, and they were isolated and vulnerable. Education enrolment rates for girls were only 50% at primary and 15% at secondary levels. There	More secure housing, less distance to travel, single latrines and lighting would all help.	Sheder and Aw Barre Camps, Ethiopia			X

	Issue	Solution	Location	Q3	Q4	Q3+4
	were very few female teachers. Girls were particularly unable to move around freely, build social networks, develop economic assets and livelihoods skills, and were lacking basic needs. In a safety mapping exercise, boys said they felt safe mostly everywhere, but girls said they felt safe almost nowhere, especially at night and at gathering points such as boreholes. Girls with heavy domestic burdens are isolated and lack peer networks, and are less likely to attend school.					
19. Arend, 2012	A report by Amnesty International found that “dismal camp conditions,” including overcrowding, inadequate shelter and lighting, and a lack of secure toilets and bathing facilities “render women and girls particularly vulnerable” and made it easy for assailants to strike. GBV survivors report having limited access to medical care and legal services, and fear stigma and retaliation if they dare to report GBV to the police (Amnesty International, 2010).		Haiti			X
20. Davoren, 2012	In a survey carried out by GOAL in Port au Prince in June 2011, 29% of people reported that more than 50 people were using the same latrine (GOAL Haiti 2011). The SPHERE emergency standard is a maximum of 50 people per latrine. In the same survey, 33% of women stated that they ‘never’ felt safe using a communal latrine and a further 6% said that they	In response to these findings, GOAL set up sanitation management committees within the camps and neighbourhoods to manage their maintenance and security, and to encourage more use of communal latrines by all beneficiaries.	Haiti			X

	Issue	Solution	Location	Q3	Q4	Q3+4
	only felt safe 'during daylight' (GOAL Haiti 2011). Focus group discussions revealed that cleanliness and personal security were the primary reasons behind these views: It's far to go to the toilet and girls can be afraid at night. (GOAL Haiti 2011)					
21. Wahome, 2010	The intervention strategies employed to address sexual violence against women and girls in camps included; provision of security, improvement of camp lighting, involving group leaders in problem solving, forcing abusers out of the Camp, assisting in repatriation and resettlement and meeting basic needs of the persons in IDP camps.	In response, several organizations, under the umbrella of the United Nations Protection Cluster, have come together to ensure that new camps are constructed with separate toilets for men and women, sufficient lighting and more organized sleeping quarters. When the respondents were asked to mention the strategies used to address sexual violence against women and girls at the Kirathimo Camp, the majority of them mentioned the provision of security and improvement of camp lighting as the key strategies.	Kirathimo Refugee Camp, Kenya			X
22. Cullen et al., 2009	A lack of sufficient lighting also contributed to security issues. There were no lights inside the camp at the time of this assessment. For both women and children, there was a perceived risk associated with fetching water at night, and sexual violence was reported. As the risk of gender-based violence increased over time in camps due to disrupted family units and lost livelihoods. This was of growing concern. Additionally, there were not separate latrines for men and women, severely limiting privacy, which	Solar lights have been installed that provide improved lighting coverage for much of the camp.	Haiti			X

	Issue	Solution	Location	Q3	Q4	Q3+4
	was also a risk to personal security, particularly for women.					
23. Sloand, 2015	Many women and girls who were displaced into tent camps became even more vulnerable to GBV, partly because they often lost the support and protection normally provided by parents, brothers, husbands, boyfriends, and other family members. In addition, anecdotal and media reports identified several other reasons for the increase in the number of rapes in the camps: poor lighting, long walks to the bathroom that were particularly treacherous after dark, flimsy tents that were not able to be locked at night, a post- earthquake disruption in the usual societal norms of protection and community responsibility.		Haiti			X
24. MADRE et al., 2011	Sexual violence is greatly deterred when both adequate security and lighting are present in IDP camps. Camps surveyed by KOFAVIV report far lower rates of rape in camps with both a security presence and adequate lighting. Camps with only lighting or only security patrols or neither reported higher incidences of rape. Despite some increase in these services, to date, few camps possessed adequate lighting and security necessary to ensure the safety of residents. To strengthen respect for human rights in the country and foster a strong rule of law it was critical for Haiti to implement the IACHR's	Implement effective security measures in the 22 camps provide street lighting, an adequate patrolling in and around the camps, and a greater number of female security forces in police patrols in the camps and in police stations in proximity to the camps	Haiti	X		

	Issue	Solution	Location	Q3	Q4	Q3+4
	<p>Recommendations and accountability mechanisms for human rights violations. Considering Haiti's current crisis, the Women's Ministry should be recognized as a key body in designing strategies to enhance and protect women's rights and in implementing the IACHR's recommendations that provide a clear blueprint for such strategies.</p> <p>Implement effective security measures in displacement camps provide street lighting, an adequate patrolling in and around the camps and a greater number of female security forces in police patrols in the camps and in police stations in proximity to the camps.</p>					
25. IRC, 2014	<p>IRC study evaluated the impact of the distribution of handheld solar lights on women's and girls' perceptions of their own safety in these camps. The study involved a baseline survey with 875 females aged 14 years+ before the lamps were distributed on August 2013, three monitoring surveys conducted every other month, and an end-line survey on April 2014. In addition, focus groups discussions were conducted with 80 participants at baseline and end-line, as well as safety audits to capture changes in the observable physical camp environment at night. Key findings from the study include:</p>	<p>Handheld solar lamps are an important personal resource for women and girls and donors should continue to support their distribution. However, the root causes of VAWG are complex and cannot be addressed by a stand-alone distribution of lamps. Instead, the brief recommends a more comprehensive risk-reduction package for women and girls in humanitarian settings.</p>	<p>Port-au-Prince, Haiti two camps for people displaced during the 2010 earthquake.</p>			X

	Issue	Solution	Location	Q3	Q4	Q3+4
	<p>95% women and girls reported using the handheld solar lamps at least once a day and said they would recommend them to friends. Women and girls reported using the lamps for a wide range of daily activities: cooking, to light their way to the toilets, to light their homes and vendor stalls, for studying/reading, or to charge their mobile phones.</p> <p>Lamps replaced more hazardous forms of lighting - like candles or kerosene lamps – reduced the risk of fire and the negative health consequences of burning kerosene indoors.</p> <p>However, solar lamps did not help women feel safer or more secure in the camps. The handheld lamps did not address women's primary safety concerns (generalised crime, violence and mistrust, including sexual violence and harassment). Women's perceptions of their own safety remained the same or worsened six months after the lamps were distributed. Women in one of the camps - Camp Sinai - reported a decrease in their sense of safety at night from 42% (baseline) to 24% (end-line), which was largely attributed to broader security concerns - general physical violence, rock and bottle throwing, and gunshots.</p>					
26. Perkins, 2015	The blog noted the complex relationship between light and protection. Access to light was often linked to reduction of SGBV risks, both by	It is not always the case that more light = more protection. Poorly designed lighting interventions may increase protection risks. For	Blog	X		

	Issue	Solution	Location	Q3	Q4	Q3+4
	refugees themselves and through a “natural” logic that “if a street is lit, people feel safer”. The blog noted that dialogue around light intervention was often simplified, treating light as a “single unchanging thing”.	example, by attracting people to leave their homes at night to walk through poorly lit areas to visit illuminated communal areas on the other side of camps				
27. Martín González, 2016	Women and adolescents reported that they were afraid at night if they must go out alone because of the lack of light in the camp. Due to the size of the camp, there was lighting around the whole of the perimeter, but only in some points inside the camp at night		Mbera Camp, Mauritania	X		
28. Logie, 2017	Lack of security and protection in internally displaced person camps, combined with inadequate lighting, bathing facilities, tents, and a lack of police patrols elevate exposure to violence – in particular to SGBV – and precarious living for internally displaced persons in Haiti.		Haiti			X
29. Cronin et al., 2008	Proper layout and design of water points was important to ensure safe access, minimise the potential for gender- based violence and minimise conflict at water points.		Review		X	
30. Belur et al., 2017	Improper siting of toilets, unsafe pathways to access public facilities, poor maintenance of toilets, absence of lighting and lack of security in toilet facilities were identified as factors facilitating crimes against women.	90% of the respondents (n=142) recommended that improved lighting outside of the toilets would improve the security of the public toilets. Provision of a 24-hr caretaker for the toilet facilities followed by better water supply and maintained facilities were also suggested by the	Mumbai, India			X

	Issue	Solution	Location	Q3	Q4	Q3+4
	75% of the respondents (n=142), reported that only one bulb lit the toilets. The route to the toilets were illuminated by lighting, however it was reported to be not enough.	respondents to improve the use and security of the facilities.				
31. Hulland et al., 2015	The study examined the range of sanitation-related psychosocial stressors during routine sanitation practices in Odisha, India. The common environmental stressors were: fear of encountering snakes, mosquitoes or other animals, stepping on stones, thorns and other sharp objects, and fear of ghosts.		Odisha, India		X	
32. Merieau and Egziabher, 2012	Women and girls did not feel comfortable being out at night, especially going to the latrines and/or washing areas. Darkness contributed to their fears and it provided cover for crime and vandalism which placed women and girls at risk of rape and sexual harassment. According to the report, roughly 40% of GBV happened at night in refugee camps in Kenya. A significant number of the survivors were children.	60% of the respondents felt safer going to the bathrooms during the night where there were street and/or handheld lighting. Many of these were anecdotal evidence based on questionnaire surveys asked to populations in camps.	Kenya	X		
33. Oxfam, 2017	Most types of violence that affect women and girls in the IDP camp were: sexual and material exploitation for the physically challenged, men grabbing girls during the night, domestic violence, forced child marriages, women exchanging sex for NFI's and women with mental illness being sexually abused.	Improved safety for civilians through lighting and other safety mechanisms such as locks in the latrines and bath spaces. Solar lighting of sensitive areas within the camp.	Maiduguri, Nigeria	X		

	Issue	Solution	Location	Q3	Q4	Q3+4
34. Hynes and Dynes, 2014	Using the toilet was one of the primary reason why women and girls go out at night time. The women and girls felt less safe at night, especially when going to the toilets, because men would hang around the pathways and nearby latrines. Their motives were unknown to the authors. There was lack of lighting in the latrines and they do not have any form of privacy (such as locks and doors).	Hand-held solar lighting was distributed to the women and girls in the IDP camp. The women and girls valued the lights. The women reported to use the lighting to help them navigate dark pathways to the latrines. Meanwhile, the children also used the lights to complete their homework during the night.	Port au Prince, Haiti			X
35. House et al., 2014	Case studies were presented highlighting the prevalence of GBV in both humanitarian and development contexts. Advice on building capacity for WASH practitioners on good policy and programming practices to minimise the risks of violence related to WASH. In the case studies mentioned in the toolkit, issues with lack of lighting were mentioned in conjunction with inadequate planning and design of facilities (especially in camp settings) and lack of awareness for policy strategies.	The presence of lighting was one of the elements that made women and girls more likely to use the public facilities during the night (House, et al. 2014). The proximity between male and female sanitation facilities and the presence of robust doors and locks also played a role in increasing the use of sanitation facilities at night.	Review			X
36. Oxfam, 2010	One of Oxfam's approach to intervening in humanitarian situations was to provide privacy and dignity in designing sanitation facilities. This was by designing in detail the enclosure of the sanitation facility (such as heights), providing doors, locks, privacy screen at the entrance and safe wastewater outlet. The recommendations also included as: " <i>design the roof that ensures</i>	The publication suggested lighting must be integrated in sanitation facilities for use during the night. Paths leading to the sanitation units must be lit as well. In case that electricity is not available (due to disruptions), alternative sources are recommended such as solar lights and torches to be included as an NFI during humanitarian contexts.	Bangladesh			X

	Issue	Solution	Location	Q3	Q4	Q3+4
	<i>privacy yet allows natural light in the absence of electric lights” (p12).</i>					
37. Global Protection Cluster, 2014a	<p>The assessment was conducted on May 2014 outside of the PoC in Malakal, South Sudan to understand the community perception of women and girls’ safety, GBV and response to GBV survivors.</p> <p>The fear of rape inside the latrines was perceived to happen a lot inside the PoC in Malakal. The assessment also mentioned that young men/gangs sat on pathways to the latrines and threatened adolescent girls on their way to the facility.</p>	<p>The community and members of the focus groups made a list of suggestions in mitigating risks of GBV when accessing latrines.</p> <ol style="list-style-type: none"> 1) Separated male and female latrines; 2) Request for street lighting around latrines and water points; and 3) Additional security guards during the night. 	Malakal PoC, South Sudan			X
38. Global Protection Cluster, 2014b	<p>Tips for Protection Mainstreaming in WASH programs.</p> <p>These tips were presented to ensure the integration of protection principles in the delivery of humanitarian assistance. It sets priority to improve safety and dignity, and avoiding further harm to the beneficiaries.</p>	<p>Ensure that the location of and routes to WASH facilities are away from actual or potential threats such as violence, risk of GBV, etc.</p> <p>Consider installing lights near the latrines, especially if there are communal or away from homes. If lighting is not possible, consider alternatives such as providing torches for each household. (This suggestion is similar to the IASC guidelines and Sphere standards).</p> <p>Provide locks in bathing and sanitation facilities. Locks should be placed from the inside to ensure privacy.</p> <p>Toilet facilities must be gender segregated and clear signage between genders.</p>	Review	X		

Appendix 3

Additional reviews of literature

The first round of the literature review noted several gaps in knowledge. This additional section has been added to provide an overview of the current advice on lighting and WASH.

LIGHTING and WASH

Guidelines and Recommendations for Lighting and WASH

The Sphere Project (2011) set out minimum standards for WASH facilities:

“Safe facilities: 5. Inappropriate siting of toilets may make women and girls more vulnerable to attack, especially during the night. Ensure that women and girls feel and are safe when using the toilets provided. Where possible, communal toilets should be provided with lighting, or households provided with torches. The input of the community should be sought with regard to ways of enhancing the safety of users.”

(The SPHERE Project 2011)

The role of lighting in the usability of latrines has been neglected in the past, with minimal advice for people providing sanitation facilities. Early publications focus on the role light has on influencing fly movement rather than its impact on the user. The VIP latrine has been widely promoted as a technical solution to managing smells and flies through controlling light and ventilation within the pit, but at the expense of visibility within the superstructure.

“Lighting in general a latrine that is bright and light is more attractive to its users. A ventilated pit requires a partially darkened superstructure so that any flies in the pit are attracted by the daylight at the top of the vent pipe rather than light from the inside of the latrine. However, the internal walls of the superstructure may be whitewashed, and some light allowed through ventilation openings. Where possible, the opening spiral or door of a ventilated pit latrine should not face east or west as the low sun in the morning or evening would light up the inside of the structure and encourage the movement of flies out of the pit.”

(Franceys, Pickford and Reed 1992, p130-131)

More recently, the issue of lighting has begun to be recognised.

“Often the most important issues for women are those of privacy and convenience. In some cultures, the need for privacy means women without access to sanitation suppress urination and defecation until after nightfall to the detriment of their health. Personal safety is also important, as going out at night to urinate or defecate in the open or at a communal toilet can expose women to rape or violence. This is a particularly strong concern of women, but men’s fear for the safety of their wives and daughters can be a powerful incentive to build a latrine.”

(Reed et al. 2007, p132)

“Privacy and security in relation to using excreta disposal facilities is a key issue. Women’s safety may be compromised if toilets are too far from their dwellings and they may not use them if they think they are not safe. Night lighting may be provided to avoid this problem, although this is rarely possible. Sexual harassment often increases in the confines of a camp in an emergency situation and the location of sanitation facilities should ensure that the risks to women are minimized.” (Harvey, 2007, p36)

“To ensure the proper use of latrines by children, they must be made safe for children and must be usable at night (which may entail the provision of lighting and guards).”

(Harvey, 2007, p40)

The issue of lighting is not mentioned in other recent relevant publications (e.g. Harvey, Baghri and Reed, 2002).

There are two main aspects:

- visibility within the cubicle (both during the day and at night); and
- enabling the journey to and from the facility.

Both have practical elements (e.g. being able to see the toilet, cleaning, trips and slips) and the no less real issues of perceptions and fears (e.g. spiders, snakes, scorpions, faeces within the cubicle and attacks or other dangers en-route). The solutions are not just restricted to lighting, but windows, door positions, building layout, wall and floor colours and pathways.

Most of the focus relating to WASH and lighting has focused on latrines, but there is also evidence that water supply may require consideration.

“The engineers who had set up the water system for a camp for Burmese refugees in Bangladesh were confused that the water tanks and systems set up in the camps did not seem to be used. No one was using them but the water level in the tanks was going down on a daily basis. One night they stayed up, hiding away, and what they saw was that the women of the camps, who were Muslim and living in Purdah [a cultural practice of women remaining secluded] were collecting water in the night by darkness so as not to be seen. The Oxfam engineers, therefore, changed the hours of availability of water to suit the women’s cultural needs.”

(Gary Campbell, quoted in Reed et al. 2007, p163)

Other cultural factors may include fasting during the daylight hours of Ramadan, leading to eating (and cooking) when it is dark. Evidence for 24-hour access to bathing facilities is also emerging (Bhakta et al. 2017), where irregular menstruation may necessitate urgent access to hygiene facilities.

The IASC Guidelines for Integrating GBV Interventions in Humanitarian Action (2015) provided recommendations for including lighting in WASH programs.

The Guidelines recommended the following for lighting in WASH programmes:

- Possible areas of inquiry questioning if WASH facilities are secure: *“Is there sufficient lighting (e.g. alternative lighting for periods with no power, adequate lightbulbs)?”* (IASC 2015, p285).

A question to address with this inquiry is what do the Guidelines suggest as an adequate type of lighting for the WASH facilities?

- Resource mobilization: Include lights for toilets, laundry, kitchen and bathing facilities when drafting proposals for emergency preparedness (IASC 2015, p288);
- Implementation: *“Ensure adequate lighting both inside and outside WASH facilities. Identify strategies to ensure lighting even without electricity. For example:*
 - *Provide temporary lighting or solar lighting in early emergencies;*
 - *Explore and implement electricity alternatives in times of flooding or other natural disasters; and*
 - *Provide families/individuals with torches.”* (IASC 2015, p291)

Questions to address the recommendation are: what does the guideline mean by “adequate lighting” and at what distance between light poles is suitable to illuminate

pathways or roads within the camp? Another question to address with regards to the provision of torches is: how logistically feasible is it to provide torches as a blanket NFI distribution, especially for transient populations?

The rest of the Guidelines recommend incorporating GBV prevention and mitigation strategies into the policies, standards and guidelines in WASH programmes. This is currently being addressed in the draft revision of the Sphere guidelines.

The IASC GBV Guidelines also recommend that all humanitarians, including WASH and non-Protection specialists, who engage with affected populations, have written information about where to refer survivors for care and support in the case of a disclosure. Though it is important for WASH specialists to have awareness and the basic knowledge about the referral pathways⁹ for survivors; providing information in an ethical and safe manner regarding survivor's rights and options to report risk and access care (IASC, 2015, p293) is not the responsibility of WASH specialists as this may put survivors at further risk. Ideally, there would be clear linkages with specialists with individuals with specific training to do so (e.g. GBV specialist, protection specialist, medical staff and psychosocial carer).

Other unpublished site planning guidelines relating to GBV such as the "*Site Planning – Guidance to Reduce the Risk of Gender-Based Violence*" compiled by IOM for the Global Shelter Cluster in 2016, provide advice on site planning considerations on different camp layouts, location of WASH facilities and reducing the likelihood of GBV to occur due to poor site planning in camp settings.

The image below was extracted from the site planning guideline (Global Shelter Cluster, 2016, p34) detailing the risk, preventive actions and key considerations when siting latrines and showers outside of the shelter plots.

⁹ Referral pathways: a mechanism that safely links survivors to supportive and competent services, such as mental health, medical care, psychosocial support, police assistance and legal support (IASC, 2015, p293)



Image 22: A latrine block in a camp.

RISK	Physical attack, including rape, when approaching, inside or leaving the latrines and showers
	Intimidation and exclusion from use

Prevention Actions	Key Considerations
Install security lighting around the latrines. Lighting can remove the shadows where attackers might hide, and enable the latrines and showers to be used on 24-hour basis.	Lighting can attract groups of men, who use the lit area as night-time social space, making women and girls well-lit targets for attackers hiding in the dark. <i>Rows of smaller lights may be more appropriate than a single strong light on a high pole.</i>
Place the latrines with space all around, not at the edge of a pathway. Making a latrine or shower approachable from all sides is better than having a latrine tucked into the side of a narrow pathway, where the entry or escape can be easily blocked by an attacker.	If a latrine is too far away from any structures, it becomes 'un-owned', used by strangers more than by a community, and un-maintained. <i>Even in a clear space, a latrine needs to be close enough to be watched over, and for people to hear shouts for help.</i>
Put the latrines in watch-able spaces. Inside a shelter cluster, the households can watch over the safety of a latrine or shower. Outside the cluster, placing a latrine close to a shop, community centre or religious building can also put it where it is not isolated.	Latrines or showers near shops can be 'privatised' by shopkeepers, who then charge women an illegal fee in to use them. If local community centre or religious building is used predominantly by men, it is unlikely that women or girls will use a latrine nearby. <i>Consult with women and girls to find out which places they visit, or feel comfortable placing the latrines and showers near to.</i>

Case Study 1 – Perceptions of GBV around Public toilets in Mumbai Slums (Belur et al., 2017)

Belur, J. et al., 2017. Perceptions of gender-based violence around public toilets in Mumbai slums. International Journal of Comparative and Applied Criminal Justice, 41(1–2),

The purpose of the research was to understand the perspective of women regarding the provision and quality of sanitation facilities in informal settlements in Mumbai and their views on crime and insecurity around the use of the public facilities. It investigated whether the fear of crime and insecurity is related to perceptions of crime; and/or are rooted in technical factors such as siting, specific structure, accessibility and provision of water, electric supply and other security features of the sanitation facility.

The study interviewed 142 women. 64% of the women used the communal toilet facilities between 8 am – 12 pm; whereas only 10% of the interviewed used the toilets between 8 pm – 4 am. This was due to the women taking precautions and reducing the risks of being attacked during the night.

Technical Factors:

- **Lighting:** 75% of the respondents reported that only one light bulb lit the toilets. The route to the toilets was illuminated, but only 56% reported that the area around the individual cubicle was lit at night. The study indicated that 45% of the respondents believed that inadequate lighting was a source of insecurity;
- **Water Supply:** Intermittent water supply leading some women to argue with the caretaker regarding payments for toilet use. One woman said during the FGD *“There is always friction between the ladies and caretakers [...] Women fight back by saying if you are not allowing us the use of water, then why we should pay?”* (Belur et al 2017, p.68). Some caretakers lock the toilets when there is no water supply (Belur et al 2017, p.68);
- **Security:** One woman stated that *“The caretaker was responsible for the women’s safety, if there would be any incident of assault or eve teasing, the caretaker would first be beaten up by the mob”* (Belur et al 2017, p.69). An important question to address in this study is: Are caretakers also at-risk of violence by potential perpetrators and how often does this occur in different contexts?
- **Siting of toilets:** Toilets for both male and female were adjacent to each other. In some toilets, there were no partitions between male and female, therefore, some men would cat-call and/or indecently expose themselves to the women. On some occasions, the men would hang around the toilets and drink, play cards and gamble; and
- **Lane vs Non-Lane toilets:** 55% of the women reported that lane toilets were perceived to be the source of insecurity by the women due to lack of and/or inadequate lighting. Lane toilets have more dark corners than non-lane toilets. A third of lane toilet users (n=no number) cited inadequate lighting and lack of police support contributed as a source of insecurity for women.

Case Study 1 – Perceptions of GBV around Public toilets in Mumbai Slums (Belur et al., 2017 (cont'd))

Experience and perception of crime and insecurity:

- 22% of the women reported being subject to eve teasing, 12% have been robbed on their way to the toilets and 1.5% experienced indecent exposure from men (Belur et al 2017, p69);
- The biggest source of insecurity was “eve teasing” that included whistling, passing explicit comments, singing lewd songs and sometimes inappropriate touching; and
- Robbery was the second perception of insecurity in Mumbai.

Suggestions for improving perceptions and latrine usage:

- The importance of lighting in and around the toilet facilities was highlighted by the respondents (n= 115) as key to improving perceptions of insecurity;
- The next popular measure was the provision of a 24hr caretaker for the toilet facilities (n= 95), followed by better maintenance and water supply in the facilities (n=75); and
- 82% of the respondents felt that community interventions would improve security around the use of public toilets. 33% felt that community involvement in the form of setting up community groups to facilitate the provision of toilet facilities would be the most effective way of motivating the community.

Case Study 2 – GBV and Lighting Assessment Report (Oxfam Nigeria, July 2017)

OXFAM. 2017. “GBV & Lighting Assessment Report – Oxfam in Nigeria”. July 2017. Unpublished internal document.

The objective was to assess the link between lighting and GBV and whether lighting helps to improve the safety of vulnerable communities in an IDP camp in Maiduguri, Nigeria (Farm Centre).

3,000 households were interviewed inside the camp. 30% of the respondents said that they used hand-held lighting such as torches or their mobile phones to walk around the camp during the night.

Most types of violence that affect women and girls in the IDP camp are domestic and violence from a stranger. When the research team asked their FGDs regarding fictional scenarios of GBV occurrences inside the camp, the respondents stated the following scenarios that most likely happen inside the camp:

1. Sexual and material exploitation of the physically challenged;
2. Men grabbing girls at night time and raping them;
3. Domestic violence (e.g. wife battering);
4. Forced child marriages;
5. Cases of women exchanging sex for humanitarian NFI (e.g. food); and
6. Women with mental illness being sexually abused or taken advantage of.

Case Study 2 – GBV and Lighting Assessment Report (Oxfam Nigeria, July 2017) - cont'd

The study suggests the following recommendations from the respondents:

1. Improved safety of civilians through lighting and other safety mechanisms such as locks in the latrines and bath spaces;
2. Solar lighting of sensitive areas within the camp;
3. Gendering latrines to help reduce the incidences of abuse or fear of assault; and
4. Strengthening of referral pathway to empower IDPs to respond adequately to sexual exploitation.

Case Study 3 – “Ideas that Work – A Gender, WASH and Emergencies Toolkit” (OXFAM, 2010)

OXFAM GB. 2010. "Ideas that Work - A Gender, WASH and Emergencies Toolkit".

One of Oxfam’s approaches when intervening in humanitarian situations is to provide privacy and dignity when designing sanitation facilities. The toolkit was piloted in Bangladesh. It recommends that design must include details of an enclosure for the sanitation facilities (e.g. heights), provision of locks, doors, privacy screen at the entrance and safe wastewater outlet for MHM (menstrual hygiene management).

The toolkit also recommended to include “design of roof that ensures privacy, yet allowing natural light in the absence of electric lights” (p12). Though this is a good initiative, the recommendation does not provide advice on lighting during the night. This is something that should be considered in the design. A question to address with this recommendation is: do we install artificial lighting outside of (and surrounding) the latrines and design the roof that can allow both natural and artificial lighting through the cubicles during the day and night.

The siting of sanitation facilities was also critical in Bangladesh as the toilets were at a lower ground level. Oxfam observed that the toilets could be seen from the higher ground where men would often congregate during their leisure time. The motive of this behaviour was unknown.

Recommendations from the toolkit:

- Integrate lighting into sanitation facilities. Paths leading to the sanitation units must be lit as well;
- In the absence of electricity (due to disruptions or logistic challenges), alternative sources are recommended such as providing solar lights and torches as part of an NFI in camp settings; and
- Design sanitation facilities based on consultation from women (via individual interviews and FGDs) and employing female staff as health promoters and engineers.

Case Study 4 – GBV Rapid Assessment Malakal, South Sudan (GBV Working Group, May 2014)

Global Protection Cluster. 2014a. "Gender-Based Violence Rapid Assessment GBV Working Group Malakal, South Sudan. May 22-28, 2014". GBV Working Group - Upper Nile State Malakal PoC, South Sudan

An assessment was conducted on May 2014 inside and outside the PoC in Malakal by the Global Protection Cluster to understand the community perception of women and girls' safety, GBV and the response to GBV survivors.

Interviews and FGDs were conducted with 102 individuals and 82 participants that were living inside of the PoC respectively. Four of those interviewed mentioned that young men/gangs sat on the paths to some of the latrines and threatened adolescent girls. It was not mentioned in the report if those paths were lit during the night.

19 key informants were also interviewed and provided GBV scenarios. The key informants identified what type of people were affected by the GBV scenarios. 12 out of the 19 key informants perceived that sex and harassment on the street happened inside the PoC. In relation to WASH, the fear of rape inside the latrine was perceived to happen a lot by nine of the interviewed key informants.

Suggestions to mitigate risks of GBV were later asked for and the community and the focus groups listed a number of ideas to make the access to latrines safer:

1. Separation of latrines for men and women (n=3);
2. Even distribution of facilities such as water points, bathing spaces and latrines per sector inside the IDP camp;
3. Bathing facilities and latrines include doors with locks inside, metal sheeting separating the male side from the female, and a barrier wall of double ply sheeting to discourage peeking;
4. Request for street lighting around the latrines and water points (n=4). Distribution of hand-held lighting at a household level; and
5. Additional security guards during the night.