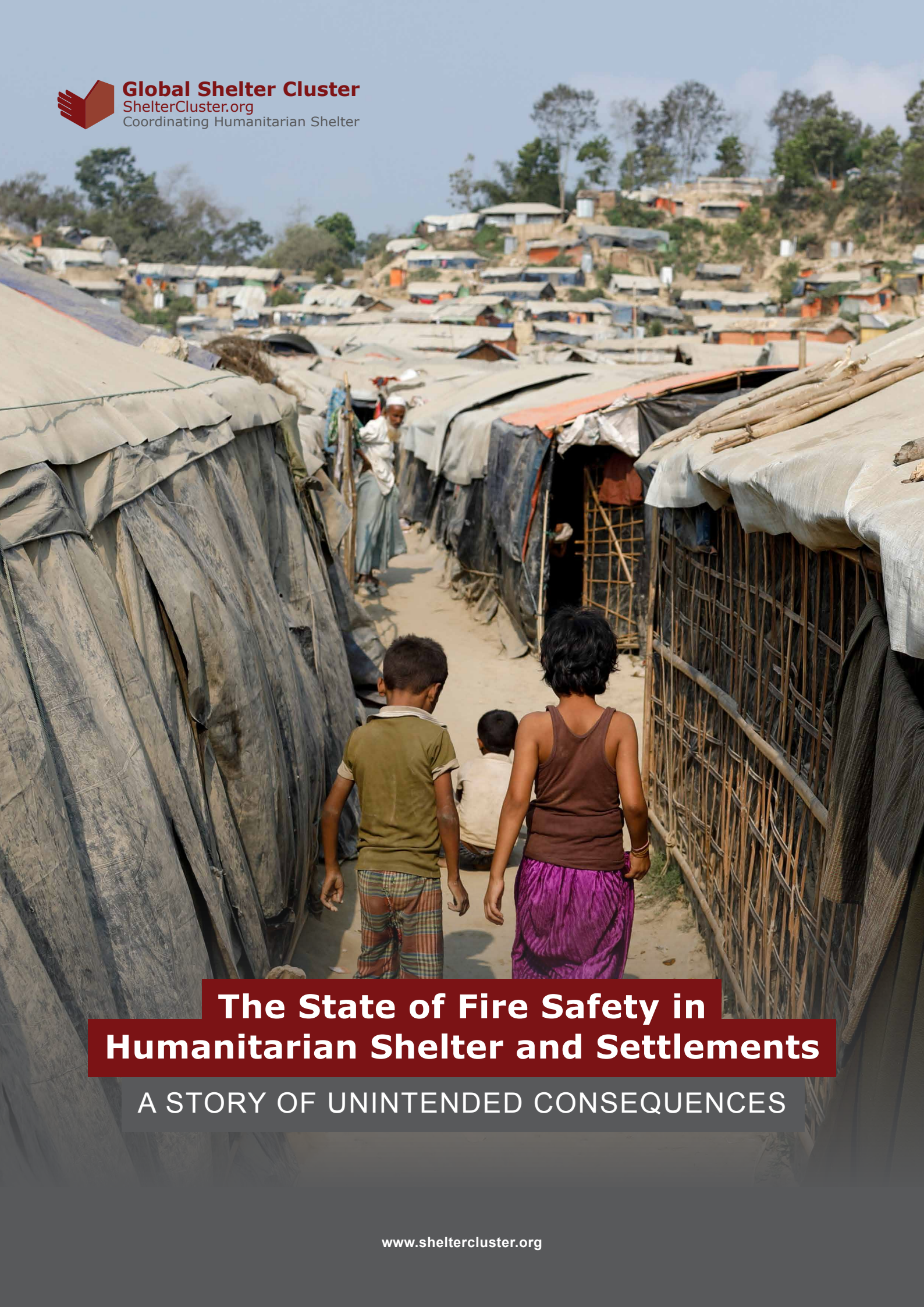




Global Shelter Cluster

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Coordinating Humanitarian Shelter



The State of Fire Safety in Humanitarian Shelter and Settlements

A STORY OF UNINTENDED CONSEQUENCES



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This is a story of unintended consequences: fire risk in humanitarian settings largely emerges from the intersection of a lack of data/evidence and knowledge, the physical environment, and the policies, systems and processes which check and implement lines of responsibility.

While significant fire incidents have called attention to this issue over the decades, this attention and related investments have been short lived: fire safety efforts have been isolated to specific contexts, focus on technical response during a fire incident, mechanisms of knowledge sharing have not been established or sustained, and few solutions have been widely accepted or applied across the sector. There is an urgent need for agreed risk management principles and practices, and for a recognition that fire safety is a matter of protection and accountability.

It is evident from those working in humanitarian settings that fire is a significant safety concern for affected populations, particularly those who have witnessed or experienced its impacts directly. Experience by practitioners can be seen as a strength because knowledge of fire risk is contextually situated and can inform appropriate safety and response measures. However, it is problematic if experiential learning remains the only method for knowledge development within the sector because it relies on fire incidents to occur and is vulnerable to staff turnover and weak knowledge sharing processes.

The weak presence of fire safety within official standards, policies and procedures is made more problematic in a sector where knowledge of both fire risk and fire safety is fragmented and what does exist is not easily or effectively shared. Knowledge of fire risk is not institutionalized or available in a form that can be easily transferred or put into practice: in short, unevenness in data, knowledge and understanding manifests as a lack of fire safety standards specific to humanitarian settings and a lack of contextualization. Based on limited or siloed knowledge, and a lack of funding to pilot and evaluate interventions, isolated approaches or 'solutions' risk being applied to contexts where they may be 'less effective' at best or result in increased risk and unintended consequences at worst.

People who live in humanitarian settings understand the impact of fire and are aware of its possible implications on loss of life, injury, and the impact on livelihoods, health and wellbeing in their context. This also relates to humanitarian practice, where knowledge of fire risk, prevention and safety is highly varied and contextually determined. Fire problems in humanitarian settings are multifaceted, often stemming from context specific factors such as limited land availability, restricted choices for building materials and energy poverty, and connect to more systemic issues such as insufficient knowledge, unclear roles and responsibilities, and limited systems of accountability. There is a strong relationship between the emergence of fire risks and the failure to effectively mitigate these risks within the realms of everyday life, such as shelter adaptations, energy usage, and waste management.

Despite the presence of fire hazards and the restrictions (such as funding constraints or the transient nature of humanitarian work) within which humanitarians operate, improving fire safety was not seen by interview participants as unachievable. However, the potential for positive change is limited by a lack of available funding to address the issue holistically. For instance, funding is difficult to achieve without empirical evidence of potential fire safety benefits where donors are convinced by a 'return on investment'. However, the case for increased funding is challenged further by the intended temporary nature of humanitarian settings. Taken together, the funding landscape allows unsafe conditions to continue.

EXECUTIVE SUMMARY

Addressing the issue of fire in humanitarian settings demands a comprehensive and systematic approach to fire safety that not only focuses on proactive measures but also acknowledges the complex interplay between human behavior, socio-cultural factors, and the built environment that contribute to fire risk. A broader understanding that recognizes various intersecting social identities (for example, to include disabilities, age, ethnic background, religion, social status, sexual orientation, or gender identification) is required to ensure any mainstreaming of fire safety within the sector is fully inclusive. By developing a deeper understanding of these factors and incorporating them into fire risk reduction strategies, humanitarian actors can work toward more effective, context-specific solutions to reduce the impacts of fires in crisis-affected communities.

Recognizing that the current state of fire safety knowledge, resources, and tools within the humanitarian sector is limited, it is crucial to prioritize immediate, life-saving and property-protecting interventions for affected populations while simultaneously working to address the significant gaps in scientific evidence and institutionalize integrated systems for fire safety across the sector. In pursuing these goals, it is essential to remain pragmatic and adaptive, ensuring that the pursuit of perfection does not hinder the implementation of effective, contextually appropriate fire safety measures.

A unique opportunity is presented by the relative newness of this area of research and practice relates to ambition: reducing fire risk in humanitarian settings is possible if care and attention is taken to understand the complexities of risk emergence and to fully evaluate programs and practices from a holistic lens of fire risk.

Despite always being intended to be temporary, many displaced people will spend years in an informal settlement, camp, or camp-like setting. Fire safety reflects the tension of the humanitarian-development nexus: investing in recovery programs could ensure humanitarian settings are safer for all and reflect an ethics of care, a principle which connects to the policy ambitions of 'building back better'. To achieve this aim, policy and practice throughout the sector must be informed by fire risk assessments and evaluations of all activities or programs. In other words, without embedding evaluation and opportunities to share learning into humanitarian programming, 'building back better and safer' becomes a fallacy because there is no clarity on what better looks like or how it links to safety. Although the consequences might be unintended, fires resulting from the failure to rebuild more safely cannot be surprising.

This report represents the first coordinated effort to pull together multiple threads of evidence to map the current state of fire safety in humanitarian settings and to make recommendations on how fire safety can be strategically addressed through advocacy, policy, and guidance. It is aimed at those within the sector who have responsibility for strategic development, program delivery and improving fire safety outcomes, and seeks to provoke discussion by providing a baseline of technical and socio-technical analysis and a foundation to improving knowledge of fire risk and safety in humanitarian settings.

STRATEGIC RECOMMENDATIONS

- ✓ **Institutionalization**
- ✓ **Embedding sector-wide collaboration**
- ✓ **Education, knowledge, and capacities**
- ✓ **Research**
- ✓ **Fire risk assessments**
- ✓ **Fire risk reduction programming**
- ✓ **Engagement with non-traditional actors**
- ✓ **Fire incident reporting**
- ✓ **Safety reporting mechanism**
- ✓ **Standards**
- ✓ **Integration with disaster risk reduction**



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Overhead Tyres on shelters Lebanon

1

Introduction

This is a story of unintended consequences: fire risk in humanitarian settings¹ largely emerges from the intersection of a lack of data/evidence and knowledge, the physical environment, and the policies, systems and processes which check and implement lines of responsibility. The humanitarian sector² is constantly seeking a balance between complex needs and limited resources that result in fire safety largely being considered only after a tragedy has occurred.

This report represents the first coordinated effort to pull together multiple threads of evidence to map the current state of fire safety in humanitarian settings and to make recommendations on how fire safety can be strategically addressed through advocacy, policy, and guidance. It is aimed at those within the sector who have responsibility for strategic development, program delivery and improving fire safety outcomes, those who seek to provoke discussion by providing a baseline of technical and socio-technical analysis as a foundation to improving knowledge of fire risk and safety in humanitarian settings.

Unintended fire risk exists in every settlement because relevant knowledge and understanding is not deep or extensive enough and is not shared. Without greater attention from all within the humanitarian sector, fire will remain an accepted risk.

¹ The phrase 'Humanitarian settings' is used intentionally throughout the report to acknowledge there are a range of shelter and settlement types and that work around settlement typologies continues to be developed. Shelter and settlement types are explored in section 3.3.1.

² In this report, the (Humanitarian) Sector refers to the network of (non-governmental and intra- governmental) organizations and agencies that engage in assistance during and after crises and disasters, and support preparedness activities. It includes humanitarian sectors, clusters and other actors involved in / supporting humanitarian operations.

The Humanitarian Charter (Sphere 2018) and Core Humanitarian Standard (2023) express the humanitarian sector's commitment and responsibility to uphold people's right to protection and security, enhance safety, safeguard dignity and rights, and avoid negative effects and exposure to further harm. To succeed in upholding these commitments and responsibilities, the sector must address fire safety more effectively.

Fires in humanitarian settings and supporting facilities have devastating effects on affected populations' lives, property and livelihoods, humanitarian budgets and programming, and the environment. While significant fire incidents have called attention to this issue over the decades, this attention and related investments have been short lived: fire safety efforts have been isolated to specific contexts, mechanisms of knowledge sharing have not been established or sustained, and few solutions have been piloted, evaluated, agreed upon, or applied across the sector.

In this report a review of diverse fire risks in humanitarian settings, as well as available knowledges, resources, and practices on fire and fire safety, was undertaken. This review aims to support integration and institutionalization of fire safety across the humanitarian sector by mapping the current state of fire safety in humanitarian settings based on evidence from across the sector: a literature review, desktop fire science-based analysis of diverse shelter and settlements, and input from a wide range of key informants via interviews and focus group discussions. The research has engaged, formally and informally, with humanitarians and fire safety professionals with experience working in the areas of disability and inclusion; livelihoods; project planning and financing; camp coordination and camp management (CCCM); recovery; disaster risk reduction (DRR); housing, land, and property (HLP); water, sanitation, and health (WASH); education; emergency telecoms; logistics; food security; shelter; site planning; and protection. Their experiences have been gained from refugee and internally displaced persons (IDP) camps, informal settlements, and other typologies in rural, urban, and peri urban settings in diverse geographies across the globe.

1.1 PROBLEM STATEMENT



Between January and April 2020, **15** fire incidents affected **15,000** people in Borno state, Nigeria. Just one of these fires, in the International Secondary School Camp, killed **15** refugees, injured **15** others, destroyed **1,250** shelters and several community buildings, and displaced **8,000** people.



In September 2020, a fire at Moria Reception and Identification Center in Lesbos, Greece, displaced almost **13,000** refugees. Further, several major fire incidents have affected the Rohingya refugee camps in Cox's Bazar, Bangladesh, since 2017.



The March 22nd 2021, fire in Cox's Bazaar, Bangladesh, killed at least **11** people, injured another **560** and displaced over **45,000**. This fire destroyed over **1,600** facilities including hospitals, distribution points, learning centers, and more. It was perhaps the largest and the most high-profile fire ever in a humanitarian setting.

Fire is highly contextual, socio-technical, and often political. Fire problems in humanitarian settings are multifaceted, often stemming from factors such as limited land availability, restricted choices for building materials, energy poverty, insufficient knowledge, unclear roles and responsibilities, and limited systems of accountability. Improving fire safety across the wide range of shelter and settlement types is complex: there is no one action, actor or approach that can address this challenge. This report and the associated guidance³ show that fire is a cross-cutting issue that requires a response from humanitarian agencies working across the sector, and in co-ordination with donors, local governments (including fire services) and affected communities.

Fire safety is just one of many competing pressures and priorities in humanitarian response. Humanitarian agencies have to balance different needs (e.g., security, healthcare, and shelter) with their attendant costs and risks (e.g., the higher cost of providing tents with increased fire performance could result in fewer tents being provided). In addition, in most humanitarian settings, shelters are usually built (and often self-built by refugees and IDPs) using locally available, combustible materials (e.g., bamboo, wood, plastic tarpaulin), filled with combustible furniture and belongings (e.g., bedding, fuel (such as propane, kerosene, firewood), and plastic non-food items (NFIs)). They are often densely built with minimal separation between shelters. Open flame sources are commonly relied upon for cooking, heating, and lighting. Access routes and water resources are often limited and not designed to support firefighting efforts.

Addressing the fire problem requires sustained focus and collaboration between academic, public, private, and non-governmental sectors. While some academics and practitioners are seeking to understand and document incidents and interrogate and test a range of solutions and interventions, there remains little published literature on fire in humanitarian settings. This gap has implications for policy and practice: there is urgent need for agreed risk management principles and practices, and for a recognition that fire safety is a matter of protection and accountability.

1.2 RESEARCH QUESTIONS AND OBJECTIVES



What knowledges (both tacit and explicit) shape fire safety practices within the humanitarian sector, and specifically within shelter and settlement programming?

The main guiding research question behind this review is:

Objective 1 To describe how fire risk emerges in humanitarian shelter and settlements.

- ✓ What common hazards and vulnerabilities lead to fire risk in humanitarian shelter and settlements?
- ✓ Do different stakeholders perceive contributing factors of fire risk in humanitarian shelter and settlements differently? If so, examples are given of differences in perception and explain any impacts on fire safety.
- ✓ Can fire risk be explained through shelter and settlement typologies? If so, what are those typologies and related fire risks?

³ The accompanying guidance supports the understanding and application of fire risk reduction in humanitarian settings. It introduces fire risk from an engineering perspective, bringing together social and technical principles for use by professionals within the humanitarian and development sectors to gain more knowledge and understanding of the complexities associated with fire across the range of humanitarian settings. In this sense, the guidance is essential reading to establish the baseline knowledge for those within the sector to begin the process of institutionalizing fire safety through standards, procedures, guidance, toolkits and associated materials.

- ✓ What standardized humanitarian institutional decision-making guides, tools and processes influence the emergence of fire risk and its reduction?

Objective 2 To explore how fire safety knowledges and expertise are or can be connected to local and global humanitarian practices..

- ✓ What are the strengths and current gaps in fire safety knowledge and expertise across the humanitarian shelter and settlement sector?
- ✓ What local fire safety strategies and practices exist at the community level?
- ✓ What factors enable or constrain the sharing of fire safety knowledge and practice?
- ✓ Who can play a role in closing the gaps in fire safety knowledge?
- ✓ How can fire safety knowledge become institutionalized and embedded in humanitarian practice?

Objective 3 To attempt to draw lines of different implicit and explicit as well as actual and potential responsibilities for fire safety in humanitarian settings.

Ultimately, this research aims to contribute to humanitarian sector wide advocacy, policy and guidance. In mapping the state of fire safety in humanitarian shelter and settlements through synthesizing relevant research and gaining insights from fire professionals with experience of humanitarian settings. The report aims to provoke discussion around the range of actions that can be taken to strengthen shelter and settlements responses, so they become more effective in meeting the fire safety needs of people affected by humanitarian crises.



Methodology

This research was designed to gather data from a range of sources which has been analyzed (separately and together) to develop an understanding of the subject through a response to the research question and objectives. Triangulation of data from multiple sources enables a more robust interpretation of ‘research problems and complex phenomena than either approach alone’ (Molina-Azorin 2016).

Published works and technical analysis informed the findings on fire risk emergence and technical discussion about fire safety in humanitarian settings. Qualitative data was collected from literature review, semi-structured interviews, and focus group discussions.

Direct quotations from the interviews are included within the report: in some cases, a brief description of the interviewee’s role is given but names and identifying features have been intentionally omitted. Comments from focus group discussions have been labelled ‘(FGD)’.

2.1 LITERATURE REVIEW

The literature review sought to identify how fire is mentioned and discussed in humanitarian sector documentation. It looked at the extent to which fire risk factors are mentioned and fire safety recommendations are provided, as well as insights from fire incidents and fire risk reduction initiatives. It covered a wide range of documents, including fire risk assessments (FRAs) of humanitarian settlements, grey literature on humanitarian shelter and settlements (i.e., guidance, reports, case studies, standards, data, policy documents) and academic literature on fire in humanitarian settlements. Materials were gathered via the Humanitarian Library (including associated metadata), cluster websites, Shelter Projects, Google Scholar, and Scopus.

Key search terms/words identified by the researchers were used singly and in varying combinations to identify relevant documents. These fell into the three broad themes:

Figure 1: Themes within literature review search



2.2 DESKTOP TECHNICAL FIRE RISK ANALYSES

In response to Objective 1, desktop analyses of fire risk investigated the effects of shelter characteristics on the risk of fire ignition and spread, drawing published fire safety engineering literature together with (limited) research focused on fires in humanitarian settings and informal settlements (see 4.3). Relevant insights from fire safety engineering are contextualized for humanitarian settings in Chapter 3.

2.3 SEMI-STRUCTURED INTERVIEWS

Qualitative semi-structured interviews were carried out with 29 interviewees. Participants were identified directly by project team members and advisors, and by stakeholders engaged with throughout this project (via snowball sampling).

It was recognized at the outset of this study that the work of individuals in the humanitarian sector is diverse and cross-cutting. Each interviewee completed an experience matrix guide developed by the research team to self-categorize their experience in terms of sector/cluster affiliations, specialisms, geographies, and settlement types worked in. This matrix was further used to monitor diversity and inclusion of those engaged via this project. Interview participants were, in many cases, experienced within the humanitarian sector where they have actively engaged in activities related to fire response or fire risk reduction, to different degrees and in diverse settings.

Each semi-structured interview took approximately 45 minutes, during which the interviewer asked a set of pre-determined questions but maintained conversational flexibility.

2.4 FOCUS GROUPS

Two focus groups were carried out – one with humanitarian practitioners and one with fire safety professionals (including firefighters, fire engineering practitioners, and fire science/engineering academics). The focus group design emphasized the following themes which had emerged from the literature review and interviews:

- ✓ Patterns of fire risk across different types of shelter
- ✓ Enablers and barriers for fire safety in the humanitarian sector
- ✓ Sharing of fire safety knowledge, including through current or potential guidance and tools
- ✓ Responsibilities (perceived, actual, and potential) for fire safety

These sessions explored these themes and their linkages with the three project objectives, in an open and collaborative way. Discussions were hosted online, and participants were invited to comment additionally via the online chat tool and an anonymous web-based collaboration tool (Padlet) which was available for five days after the discussion.

The focus group discussions were followed by the research team debrief and discussion of data in the context of other sources.

2.5 LIMITATIONS AND EXCLUSIONS

Agency-specific documentation (policies, procedures, education, and training materials) related to fire safety were not always accessible. Similarly, data on fire incidences in humanitarian settings is severely lacking, and data that does exist is not easily accessible. This has resulted in limitations in understanding the scale and nature of fires in these settings: chronic gaps in understanding relate to the causes of fires, exacerbating factors, consequences at different scales, responses to fires, and the various dimensions of post-fire recovery.

To interview professionals across the sector, a snowball sampling strategy was utilized. This introduced bias into participant selection because all participants are regarded as professionals already engaged with the issue of fire. This research therefore did not collect data on how humanitarians without experience of working on fire perceive its impacts or importance, arguably an issue that requires further examination. However, the snowball sampling method revealed insights into the question of accountability and responsibility as there were gaps in representation from many sectors, clusters and areas of practice which could contribute to improving fire safety (for example, Health, Cash Assistance, Protection, HLP).

As a result of sampling as well as due to resource and access limitations, actors such as local authorities (including fire services), where humanitarian responses are taking or have taken place, affected populations in humanitarian settings, and humanitarian actors in health and education were not directly engaged with in this research.

There was a notable gap in conversations about the legal and regulatory environments that can shape fire risk and safety in humanitarian settings, perhaps because these are accepted and well-understood within the sector. However, it is important to acknowledge that a complex wider legal context shapes the lines of responsibility and therefore what type of support (e.g., response from local fire services) is available. More consideration in the future should be given in relation to the legal status of refugees and local and global political context, as different 'host' countries adopt different approaches towards settlement residents that can (whether intentionally or otherwise) have material impacts during fire incidents.

This report does not exhaustively map different knowledges in terms of content (what is known in different spaces and by which actors) and the reach of that knowledge (to what extent these knowledges shape humanitarian policy and practice and human behavior) across the entire sector, as it is beyond the scope of this project. However, patterns have emerged which offer tentative insights towards next steps and recommendations.

2.6 RESEARCH ETHICS

To align with internationally acceptable research practice, Kindling followed the RESPECT Code for Practice for Socio-Economic Research (Respect Project, 2022) which outlines in detail how the following ethical research criteria can be achieved: (1) upholding scientific standards; (2) compliance with the law; (3) avoidance of social and personal harm.

To show how the RESPECT code of practice is met, an ethics assessment form was completed and followed.



Hargeisa, Somaliland

3

Fire Risk: Humanitarian Perspectives

3.1 DESCRIBING FIRE RISK IN HUMANITARIAN SETTINGS

Conceptually, risk has been defined in many ways, though there is general agreement that discussion of risk connotes an element of probability the outcome or result of a particular event, action or decision cannot be fully known or understood in advance of its occurrence. Thus, the emergence of fire risk may have a range of unintended outcomes or consequences due to conditions that evolve over time in humanitarian settlements.

A hazard can be considered the probability of occurrence of a potentially damaging phenomenon, whilst exposure can be considered as the assets, both in terms of physical property and human population, exposed to the potential hazard. Vulnerability, as defined within the Sendai Framework by the United Nations Office for Disaster Risk Reduction (United Nations, 2015), concerns the ‘conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards.’ Conventionally, risk is understood to be the product of hazard, exposure and vulnerability, and risk reduction can be achieved through the reduction of any of these components individually.

In this work, a distinction is drawn between the risk of ignition of the shelter of origin (denoted as ignition risks) and the risk of fire spread between shelters. Hazards and vulnerabilities leading to ignition may differ from hazards or vulnerabilities that lead to fire spread between shelters. For example, cooking can present significant ignition risk but seldom contributes to fire spread between shelters.

Several barriers to fire safety that contribute to emergence of fire risk were identified during the interviews, scientific literature, and grey literature. These are synthesized in the following sections.



IGNITION RISKS

Ignition risks are often the result of daily activities like cooking, heating, and lighting, i.e. the way people live and go about their daily lives. Energy is a particularly relevant factor when considering ignition risk. Lahn & Grafham (2015) provide a substantive and wide-ranging discussion of fire and energy issues in displacement contexts, sharing that families often face increased costs of obtaining fuel, and security risks increase as they are forced to search further afield for firewood for cooking and lighting. In 2014 household energy use among forcibly displaced people amounted to 3.5 million tonnes of oil equivalent, mostly in the form of firewood and charcoal. Open fires, candles, (often illegal and/or poor quality) electricity connections and the use of kerosene for lighting all present ignition risks (and were all mentioned as regular practices in humanitarian settlements during the interviews conducted in this project).

Displaced people tend to view lighting (which many cannot afford) as a secondary priority to cooking, but cooking is far more fuel-intensive and often uses open flame sources such as a three-stone fire (i.e., arrangement of three stones placed on the ground, supporting a pot under which a fire is lighted). In most camps and almost all non-camp situations, displaced people are responsible for meeting their own household energy needs, although there is sometimes assistance for the most vulnerable from local authorities, intragovernmental agencies and non-governmental organizations. Such responsibility means that people can become injured in their pursuit of fuel, and undue risks are posed to women and girls in a form of gender-based violence.

Traditional cooking, heating and lighting methods are widely recognised to be a frequent cause of burn and scald injuries, and of accidental fires, sometimes on a large scale. This was also clear during the interviews in this research.



“all the lighting, [...] use of candles [...] use of [...] the kerosene lamp, use of generators, either that are used [in] small shops. Quite a few of them linked to generator that are used in small shops or [...] little generator that people use to charge phones. We also actually had a fire link to [...] solar panels or like solar street light where you [...] had issues either on the quality, [or] [...] people try to access source of energy to kind of divert some of the energy of the electricity for [...] phone charging or nearby [...] lighting [for] their house and then that creates [...] a fire. But [...] poor electrical [...] set ups where people in general divert [...] power lines where people try to [...] illegally [...] connect to it for energy [are also dangerous]”. (Interview)

There are many examples of fires caused by cooking in humanitarian settings, such as the three large fires in refugee camps in Thailand in 2013, which led to a number of deaths related to use of cooking stoves or similar devices. In a questionnaire survey of Syrian refugees in the Al Za’atari camp in Jordan, fires from cooking indoors were identified as a risk by almost everyone surveyed, but the survey also showed that nearly 50% of those questioned used gasoline heaters to keep warm in winter, with an additional 10% using electric heaters (Ramadan, 2017: 279-282). The study identified ignition vulnerabilities associated with certain types of combustible prefabricated units and materials used to provide more durable and comfortable living conditions.

The interviews and focus groups supported the findings from the literature, but also highlighted the intersections of different risk factors. For example, while the majority of the interviewees mentioned specific hazards related to cooking spaces being inadequately designed and too close to combustible items, a broader critique was often offered that connected cultural and gendered practices to shelter and camp design. Constraints associated

with cooking and heating within a tented settlement draw attention to the gendered nature of ignition risk, as was identified in the Save the Children Lebanon and Operation Florian assessment in Lebanon (2017).

Interviewees were also quick to comment that shelter materials themselves contribute to the risk of ignition and fire spread, especially when cooking indoors. Shelter designs often do not accommodate appropriate cooking space, and the materials of personal belongings as well as distributed aid items present ignition hazards. While humanitarian food security assistance focuses on food availability and access, food processing (including cooking) is often neglected. Within academic literature, several studies and reports address the issue of disseminating clean cooking technologies, but there is less information specifically on humanitarian contexts: this remains a notable gap.

Barbieri et al. (2017) provide a wide-ranging review of scientific and grey literature on cooking technologies and practices in refugee camps and displaced people's informal settlements. They found that, although sustainable energy technologies can play a key role in providing access to basic services such as cooking and food preservation, unsustainable and inefficient technologies or practices have a direct impact on food preparation and indirect effects on people's health (i.e., indoor air quality), over-exploitation of biomass resources and social conflicts between hosted and hosting communities. The paper describes how, over a number of years, considerable effort and funding have gone into development and promotion of fuel-efficient cooking stoves, for both development and humanitarian contexts, resulting in a wide variety of stove types and technologies. While this work shows the deep intertwining importance of engineering, energy and fire, the emphasis across most literature and programming is on fuel efficiency rather than fire risk.

It was evident that most humanitarian practitioners interviewed understand the concept of ignition hazards and ignition vulnerabilities. However, lack of unbiased judgement was observed when discussing everyday life scenarios. For example:



“...in most cases to cook with gas, which is generally a bit safer, because you don't have such an open flame as you would with a fire. But to cook with gas is really very expensive.”
(Interview)

However, LPG typically poses a significantly larger ignition risk, since it is highly flammable and is a significant explosion hazard (also contributing to fire spread risk). When also considering the probability of occurrence versus the severity of the occurrence of the two scenarios, the issue becomes even more complex. A fire caused by an open flame is more likely to occur compared to that of a gas stove fire, but a gas explosion has a significantly higher immediate impact on life and shelter safety. There is no clear answer to the question of which one is safer (i.e. open fires or gas cooking), but it is rather a question about which risks can be tolerated, and/or mitigated, meaning that what is appropriate will be highly contextual.

Another ignition threat is arson. While the topic of arson was scarce across the interviews and FGDs, across the humanitarian settlements, arson is widely reported but it remains anecdotal, which is, to a degree, another consequence of a lack of reporting mechanisms to document fire incidents. Without quantifiable data and research to understand why arson might occur (if it has), the level of discussion within and beyond the sector may not be representative of the scale of the problem. Indeed, arson may be a bigger or smaller issue than currently presented.

Given arson is always contentious and difficult to confirm (even through fire investigations), it is important to acknowledge that it sits in a socio-political context. In the case of humanitarian settings whose residents

are often subjected to ‘othering’, attributing fire incidents to arson (as seen in Moria camp, Greece or Cox’s Bazaar, Bangladesh - see The New Humanitarian, 2023) without evidence, may derail efforts to understand and respond to the many causes and implications of fire risk, including those that may arise from broader social and political forces.

Simultaneously, not addressing arson, especially when it becomes a trend, can significantly undermine humanitarian efforts, and put the fire services and/or affected populations at risk, especially those involved in firefighting, search, and rescue.



RISK OF FIRE SPREAD

Fire safety concerns not just ignition but the risk of fire spread. The most prominent drivers of fire spread risk tends to be combustible construction materials and insufficient separation distances between structures. The density of the settlement increases the likelihood and speed of fire spread between shelters and settlements, restricts or slows down egress during a fire emergency, and prevents or limits access for emergency vehicles.

Across the interviews, settlement density was identified to be the most prominent driver behind fire spread, a perspective supported by the limited academic literature on fire risk in humanitarian settlements. Atiyeh & Gunn (2017) reflected on densely packed settlements with a high fire spread risk and high potential for uncontrolled fire spread over large areas. Within camps / camp-like settings, adequate firebreaks are rare, access is often limited, and settlements are constructed with narrow pathways between shelters and buildings.

While fire breaks were often mentioned as a solution by the interviewees it was also widely recognized that they are difficult to achieve. Firstly, because they are implemented in already congested spaces that are further congested as adaptations are made throughout the life-cycle of a settlement:



“And one of the big challenges we find is that even if we separate shelters by three or four meters, when families move in, they often basically do their own personal extensions to the shelters, and they join shelters together with their neighbours, which means you don’t have a fire gap that we would like to be able to best mitigate our fire risk.” (Interview)

Secondly, fire breaks are difficult to achieve because their application is not based on any contextual research in humanitarian settings. For instance, one respondent connected the lack of research and data specific to fire in humanitarian settings to the inappropriate reference to American and European fire codes and standards when establishing separation distances, arguing they lack contextual relevance:



“[The] standard, it’s completely wrong. And the saying between shelter and shelter [is] two multiplied by the height of the shelter... I have told [anonymised] “this is wrong, you took it from the American code in the forest” because they have to have fire break between the tree and the forest... Is the shelter a house? No. So [...], do you apply the American standard in the shelter in [country]? No, it’s completely different. The European code is talking about apartment, talking about housing. But no one talks about the shelter because there is no research about it.” (Interview)



Tented settlement, Lebanon

LIMITED SPACE, PLANNING AND RESOURCES

Humanitarian settlements are constantly evolving; despite intending to be temporary, they usually change in size and fuel load throughout their lifespan, often accommodating more people than they were initially planned for. The limited space available interacts with three further issues to increase fire risk: settlement density, combustibility of construction materials and environmental factors.

In most cases, the space available for humanitarian assistance is limited for physical, political, or social reasons, and this presents a critical issue for any attempt to reduce fire risk in humanitarian settings. As discussed, increasing the number of shelters per given piece of land reduces separation distances between shelters, which increases the fire spread risk exponentially.



“Despite the fire that we had in March, even now the camp is at high risk of fire but because it’s so congested, because of the materials we use, [...] we are really having issues even adding pedestrian access or because there’s no evacuation access because there is just no space to do it all and you would have to displace people and we have nowhere to put them.” (Interview)

Limited space acts as a compounding factor with other issues such as materials of construction and environmental conditions adding to the level of risk. To illustrate, densely packed settlements with limited fire breaks and comprising shelters constructed of highly flammable materials (such as bamboo and tarpaulin) are at greater risk in hot, dry, and windy conditions.



*“But [there is] the potential to be major and kind of like life-threatening fires, looking at the congestion and the fact that, except during the monsoon, the camp is extremely dry, there is usually strong wind, because we’re on the coast. So, all of them are at risk of major fire.”
(Interview)*

While the emergence of fire risk associated with limited space is increased by congestion, construction materials and environmental conditions, a lack of available land also compromises potential fire risk reduction measures as well as response activities in the event of a fire. For example, interview respondents regularly referred to inaccessible routes for fire services (if present) and difficulties in creating or maintaining evacuation routes. Availability of space is, therefore, not just an issue for reducing the risk of fires starting and spreading, but also has safety consequences for people who experience shelter and settlement fires under such conditions.

In planned ‘camp’ settings, limitations around access to land for an emergency settlement inevitably constrains the possibilities for the size and design of individual shelters, the standard size of which will also differ depending on climate (see UNHCR, 2021).



Figure 2: Market stall storage. Hargeisa, Somaliland

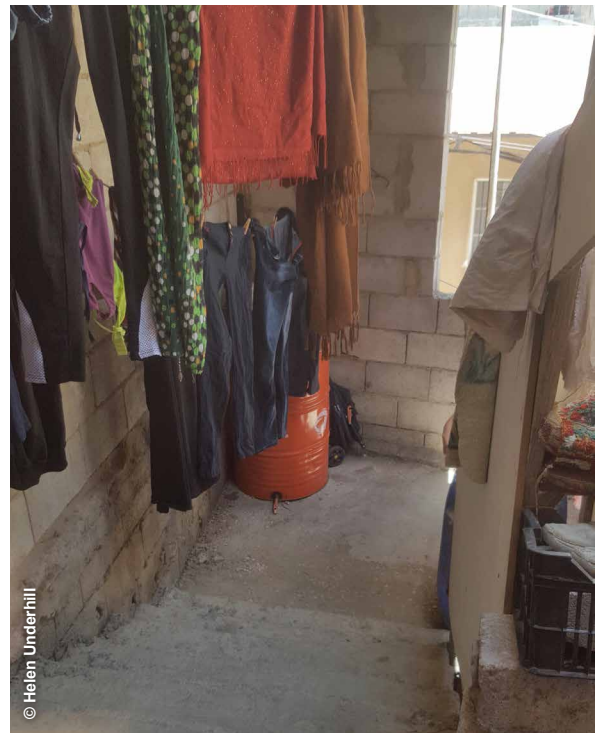


Figure 3: Storage of fuel on stairwell / evacuation route

Limited space raises issues particularly when related to storage. Since humanitarian settings are often occupied by households for long periods of time, space for storage can become a growing problem. A common practice is the storage of fuel or flammable items in corridors or stairwells, often blocking the only means of escape in the event of a fire. The images below (*Figure 2* and *Figure 3*) illustrate how daily needs unintentionally increase fire risk.

For humanitarian assistance to adequately prepare for, prevent, and respond to fires in the range of settlement types, significant funding and resources are required across different parts of the global humanitarian and development sectors. In many country contexts, fires in humanitarian settings are responded to with the

support of local authorities and fire services. However, where social and political tensions exist between ‘host’ populations and displaced people, there can be resistance to the expectation that fire services will respond to fires in humanitarian settings because of what is seen to be an already stretched resource being redirected away from ‘local’ need. Similarly, social, and political tensions can interact with access issues resulting in some communities resorting to ad-hoc and informal fire response practices.

In addition, since humanitarian activities respond to complex emergency situations and protracted crises, difficult decisions are required over resourcing, which understandably result in more immediate, visible and, therefore, urgent needs being met before funds are available to spend on fire safety. This directly impacts the materials, land, and mitigation measures available to the various sectors (notably, shelter and settlements or CCCM) to invest in research or development of fire safety initiatives. For example, water is not always readily available, and where it is, sensibility is needed to ensure drinking water is not used. This can compound already challenging firefighting circumstances.

Resource issues at the sector level exacerbate issues of resourcing at the household level which, in turn, impact fire safety and, more specifically, the actions that households can take to upgrade their shelters.

While there are arguably some possibilities for addressing issues associated with limited space and the associated increased potential for fires to ignite and spread, a further issue facing the humanitarian sector concerns planning: some humanitarian settlements emerge spontaneously, without formal planning, design, or consultation. Implementing fire safety measures (particularly those related to space) retrospectively presents unique challenges because guidance for practitioners may only be loosely applicable.



“There are many initiatives to try to bring less combustible materials to be used. And I said many times that they use them but the reality is that [the shelters are] established well before the first humanitarian action arrived to the field. [...] And most of the time, they don't get the best piece of land. It's basically the piece of land that it's available and that nobody else is using for very specific reasons. And many of the cases because they're open to the weather, for example wind and this will definitely have an impact on a fire; as well as camps are not in areas with access to water because if there will be a piece of land with access to water, [the] local may already be leaving there. But a lack of water has a direct impact on how you plan a tap to tackle a possible fire. So yes, the most of these initial conditions are from the very beginning already playing against the future possibility of fire planning.” (Interview)



POLICY AND GUIDELINES

The available guidelines on fire safety in humanitarian settlements are very limited, with different agencies or organizations producing internal documentation to raise the issue among staff. However, as this report details, improving fire safety across all the different types of humanitarian settings is challenging because risk emerges in different ways in different shelter types. It is no surprise, therefore, that of the current guidance, no one approach covers all the necessary aspects of fire safety in all humanitarian settings.

The lack of coverage of fire within policy and guidelines can make humanitarian settings more susceptible to ad-hoc approaches. For example, humanitarian agencies' approaches interact with local government policies. Where these are ad-hoc, the lack of formality can result in inability to formalize protocols.

To illustrate, without established policies and guidelines, agencies are less able to establish evacuation plans in the event of a large fire or fail to advocate for the use of safer and more permanent materials. The wider political context associated with humanitarian assistance and reflected within policies can, therefore, directly impact fire safety and fire incident response:



“It’s supposed to be a fenced camp where people cannot leave, and we never had a really strong protocol on what to do in case of a fire because [...] that would require the authorities arguing for people to be able to leave the fence gap... It was very difficult to plan escape route because we can’t say or put that on paper or even really engage the community on that.” (Interview)



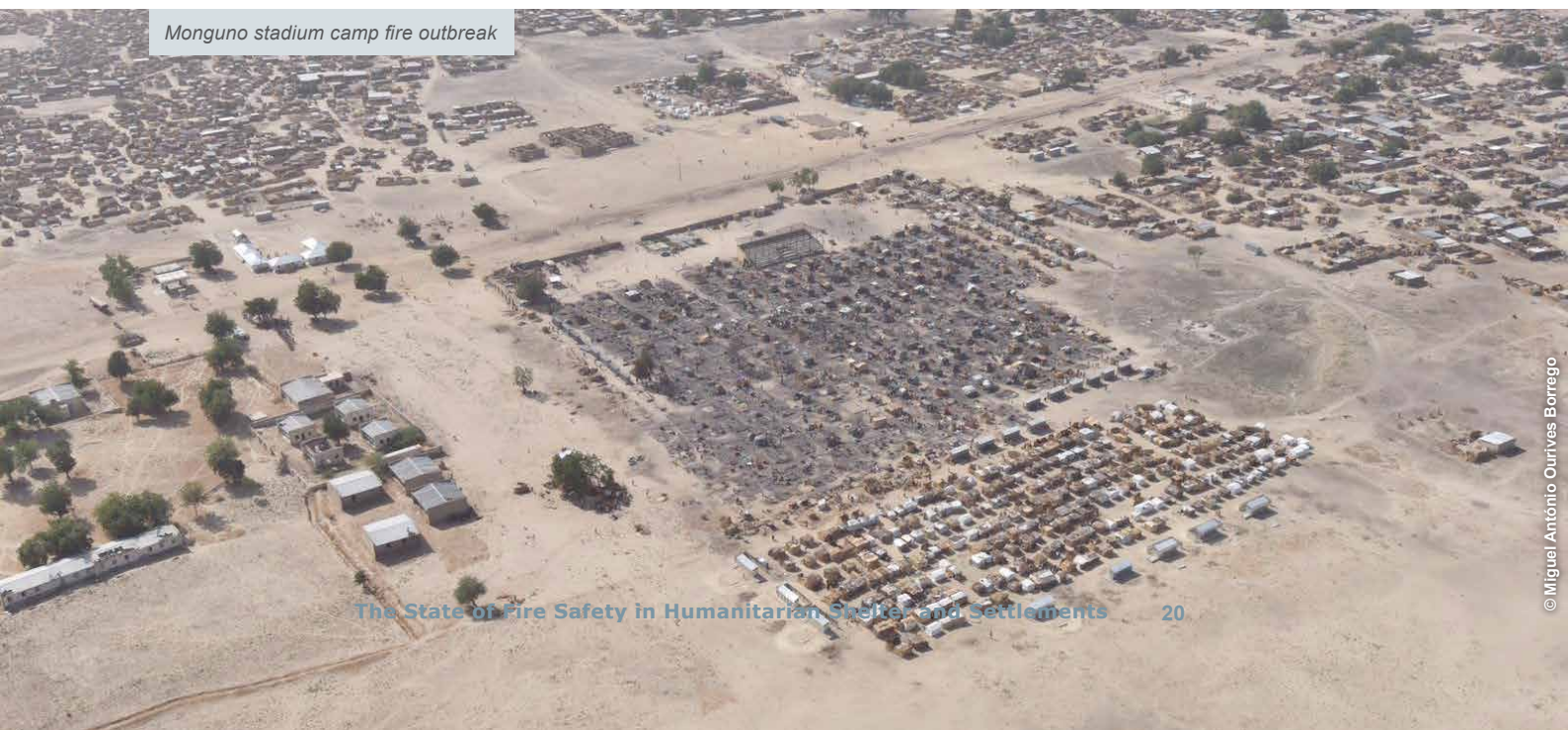
VULNERABILITIES

Across the range of humanitarian settings, people are exposed to fire hazards in different ways, and they draw on different capacities to respond to the risks that emerge from that exposure. Physical, social, economic, and environmental differences result in some people bearing more vulnerability than others in some situations and less in others (see Bankoff et al., 2004; Kelman, 2020). It is therefore important to consider how vulnerability shapes how people perceive fire risk, mitigate fire hazards or (are expected to) respond during a fire incident (Hirst and Underhill, 2023).

Improving fire safety in humanitarian settings requires understanding how people are exposed to fire hazards and the factors that lead to different vulnerabilities. As well as considering social factors such as ethnicity, age, gender, and social identity, it is important to recognize the historical experience of fire among residents (for example, having been exposed to fire in a conflict situation) may lead some to delay evacuation, while a socio-political context that segregates via ethnicity or citizenship may mean others will prioritize saving official identity documents.

Thinking about fire risk emergence, therefore, is not just a matter of how fires start but also concerns how fires are responded to by individuals, communities, agencies and services: for example, providing firefighting access roads, minimizing the response time, or using a responsible amount of water to prevent the total damage of the shelter and people’s belongings are all strategic decisions to reduce the impact of vulnerability on individuals and communities.

Monguno stadium camp fire outbreak



3.2 CAPACITIES AND CAPABILITIES TO IDENTIFY FIRE RISKS AND SOLUTIONS

In addition to academic studies, a relatively small number of detailed fire risk assessments (FRAs) and situation reports in refugee and IDP settlements have been published (see *Table 2*). These FRAs and situation reports explore challenges across different country contexts and humanitarian settings to address fire safety. Each FRA and situation report is specific to the individual camp/settlement context and events, but some common themes emerge that build an understanding of fire risk emergence in humanitarian settings and the evidence and examples indicate similar challenges across different countries and humanitarian settings (see section 3.1 and guidance document for details and illustrations of risk emergence).

While the FRA and situation reports identify risk reduction measures associated with capacity building, there remains an emphasis within the humanitarian sector on identifying technical solutions over prevention activities (e.g., construction or firefighting materials), and on judging success by operational performance (often quantifiable). This creates a self-reinforcing bias that shapes the capacities within the wider humanitarian sector because it continues to represent fire as a technical issue requiring only the input of technical specialists and operational (e.g., firefighting) expertise. In other words, the approach of technical fire incident responses and solutions laid the foundation of how fire risk is currently understood, how solutions are perceived within the sector and what capacities are needed to address the risks and deliver those solutions.

There are implications of the bias towards technical understandings of risk and solutions that are challenged by bringing technical knowledge and social perspectives together. First, there is danger that interventions will not be evaluated or assessed to understand the extent to which the solution is appropriate for that context: it is easier to ‘do what has always been done’ and assume that was the best option, even if the solution being used was applied in a very different context. The simplest example here is fire extinguishers that are distributed per group of shelters: taken at face value, agencies have provided residents with a technical fix – a tool to enable them to fight a fire:



“And clearly, somebody sat in an office somewhere, realized they need fire extinguishers in a refugee camp, seen a fire extinguisher in their office and thought that’s clearly what they need. Forgetting the fact that a fire in a refugee camp is not a compartment fire, because traditionally that, you know, the walls and the ceiling in the floor that form that compartment [do not] now become part of the fire load itself. And that is the fundamental misunderstanding.” (Interview)

Regardless of the construction method or whether being used in a permanent or temporary shelter, fire extinguishers are designed for the early stages of a fire and are not suitable to fight post-flashover, fully developed fires. In addition, the extinguisher can become a point of social tension and control, it may be sold to pay for other household items or give a false sense of confidence and result in people placing themselves at greater risk.

While humanitarian practitioners are aware of the ignition and fire spread risks settlement residents face (as evidenced from literature and interviews), there appears to be a lack of understanding of the factors affecting the level of risk and also how to mitigate or manage the risk, exemplified by the following:



“Tarpaulin have been tested to be much more fireproof, not exactly fireproof but more resistant to fire.” (Interview)

“Plastic sheeting tends not to burn as much as just smolder or melt.” (Interview)

These two comments highlight that, while it is important to be mindful that people interpret available information to the best of their capacity, areas like fire testing are complex and often difficult to make rigorous judgement about without specific technical background. Decisions on combustibility require the right test to be selected, and a person with competence for understanding the constraints and limitations of the test to interpret the results. Where misconceptions are translated into programming, fire risk can increase and lead to unintended consequences. It is important to consider how technical knowledge is shared within the sector and connected to context-specific experiential and operational knowledges.

A further implication of technical bias within the dominant understanding of fire in humanitarian settings concerns knowledge and innovation: when disciplines and fields of expertise intersect and collaborate, and when people break away from siloed thinking, the capacity to explore new approaches or solutions is expanded. This is not to say that the technical work is not significant: just that it is one type of knowledge needed, as illustrated in *Figure 4* (below). If the sector is going to be more resilient to fire, then it is time to build capacity and capabilities within the system by connecting that technical knowledge and expertise to experiential and operational knowledges of how humans living within humanitarian settings live with and experience fire risk, how they behave before, during and after a fire incident, and how they learn about their role in fire safety.

In addition to the literature, the interview and focus group data collected within this research highlighted that the emergence of risk is complex and largely relates to camp density and practices related to daily life.



“Looking at how people how people live, and where the fire risks are, whether it’s a fallen candle, or smoking, or, and so forth. So, people’s lifestyles, I think, have a huge impact to play, as of course, density and, and security concerns, often you find problems of people locking doors, barring exits, and so forth. Because they think that that’s improving security. Whereas in fact, it’s really preventing fire egress.” (Interview)

Research and practice informed by social, cultural, and political sciences have shown that fire risk in humanitarian settings is a complex socio-technical issue and changes within each context. Building capacities at sector, cluster, agency, and individual levels requires collaboration and connection between actors with these different knowledges. By engaging a range of disciplines and areas of expertise in mutual learning (including from success and failure), it is possible to understand and respond to different aspects of fire risk emergence, create and evaluate risk reduction approaches, implement and assess a range of potential models for fire incident response and management, and prepare for and the various dimensions of recovery and the needs that emerge as a result of fire.

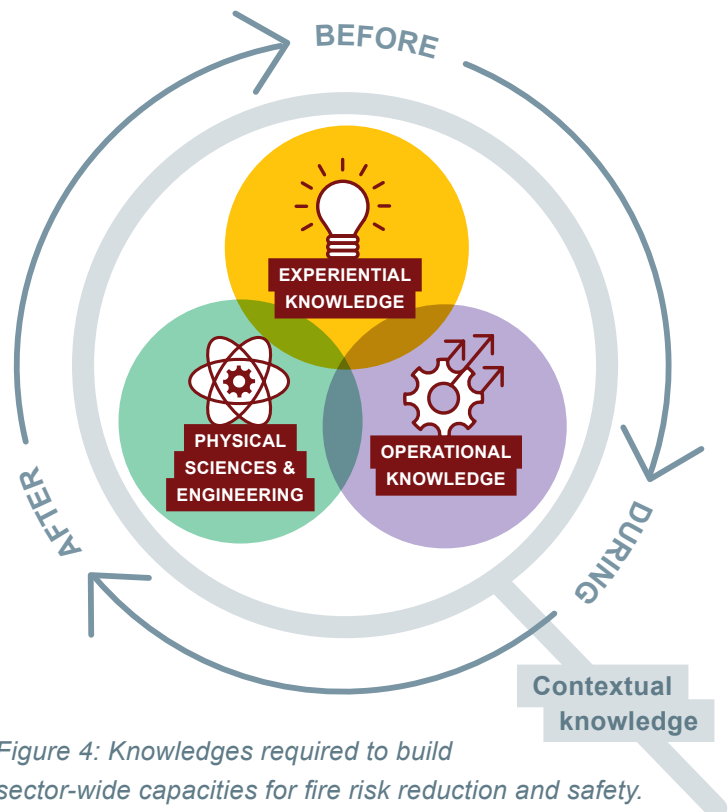


Figure 4: Knowledges required to build sector-wide capacities for fire risk reduction and safety.



Institutionally, there is a gap in capacity within the humanitarian sector in the intersection of physical sciences and engineering, experiential and operational knowledges. While individuals and specific sectors are adept at gaining knowledge that relates to their area of expertise, building capacity to respond to fire risk demands a concerted effort to understand the complexities of fire risk and vulnerability in different contexts. There needs to be greater understanding of how social factors, such as daily life, social norms, cultures, politics and practices, can influence who is at risk, how and why, and how different actors approach the before, during and after phases of fire.

It is important for practitioners and communities to work together to understand how human behavior and local circumstances can affect the content and delivery of education and training, and that agencies must seek multiple opportunities and mechanisms to build capacity. For example, devising and conducting fire risk assessments (FRAs) with community members is an educational opportunity for all involved. The information should be used in planning and handover processes to mitigate the potential impact of staffing changes. Similarly, seeking and harnessing capacity within the system through collaboration is important given the wider global context of humanitarians needing to ‘do more with less’. For example, collaboration could help raise the profile of fire safety among humanitarian professionals and within communities by connecting fire to other related activities, like burns prevention or treatment by health practitioners. Where context (e.g., in conflict affected areas where access is limited) necessitates fewer interactive forms of education and training and relies on sensitization and messaging, it is essential to create materials and resources that are suitable for the specific context to ensure information does not lead to unintended consequences.

The subsequent sections explore the barriers to building up knowledge base about fire and fire risk to further probe the potential for change in the humanitarian sector and its approach to fire safety.



© Helen Underhill

Fire risks in a tented settlement, Lebanon

4

Knowledge and Practices

Embedding fire safety knowledge within humanitarian practice is a goal that must be informed by reflecting on a range of critical issues: the actors who are involved in creating and sharing knowledge; what counts as essential knowledge for fire safety in humanitarian settings, and for whom; and how implicit and explicit knowledges are acquired, shared, and institutionalized.

There are multiple knowledges at work here: knowledge of fire safety in humanitarian settlements is technical, operational, social, and political; it is lived and experienced, and is acquired and shared primarily through academic research, policy papers, practitioner guidance, protocols and toolkits, and information, communication and education materials and resources. Importantly, residents of humanitarian shelters and settlements also gain and share experiential knowledge and understanding of how they live with and mitigate fire risk in their specific contexts.

The research into **Objective 2** revealed:

+ STRENGTHS

- + Among professionals within the humanitarian shelter and settlements sector, there are pockets of relevant knowledge that is well-understood and applied.
- + Informal ‘champions’ with different roles within and beyond the humanitarian sector recognize the complexity of fire safety in humanitarian settings and interdisciplinary working is increasingly recognized as key to addressing fire as a cross-cutting issue.



CHALLENGES



Across the sector, there is a limited understanding of seasonal risk, particularly in relation to winterization programming.



The transient nature of humanitarian work results in the loss of experiential and context-specific knowledge of fire risk and programming that might impact fire risk in a particular setting.



Residents themselves have the least consistent access to, or understanding of, how to ensure their environment is safe.



There is no standardized reporting mechanism for logging fire incidents or ‘near misses’, so the scale of the problem is not fully known. Senior staff within the sector who champion this issue argue there are substantially more fire incidents than numbers currently suggest.



There has been limited or no evaluation of interventions, including information, education, communication, and engagement activities (including train-the-trainer initiatives) on the issue of fire safety in humanitarian settings.

4.1 FIRE SAFETY KNOWLEDGE BASE WITHIN THE HUMANITARIAN SECTOR

Knowledge of fire safety (prevention, mitigation, preparedness, response, and recovery) varies significantly across the sector and different people for whom fire safety is a concern. At the sector level, reflections on the state of knowledge focused on the lack of data and understanding of the scale of the problem. ‘Champions’ within the humanitarian sector are sustaining a focus on fire safety in their work but recognize the limitations in what they can do as individuals. There are some within the sector who understand there is much more to be done to ensure fire safety knowledge is shared, continues to develop, and informs policy and practice, and advocate for the inclusion of fire as a critical issue. However, some of the humanitarians consulted within this research argued that the lack of understanding of the social and economic impact of fire prevent it from being prioritized. One argued that “prioritization will be driven by the visibility of the risk - in terms of loss of life, displacement, loss of investment in facilities, shelters, equipment...” (FGD). Without establishing the connection between “every dollar” spent on prevention and the potential financial savings, and without understanding “how much money goes up in smoke every time the camp burns” (FGD), there is little motivation to invest in strategies that will reduce risk.

When asked what is needed in the sector to reduce risk, those working within the sector were clear on the implications of allowing the data gap to continue:



“Data. Nobody will fund [fire risk reduction programs] until they know how big a problem it is. That’s basically it... At least three fires that I know about that were not in the report. So, you can see it’s the data and the quality of data has, to me it’s going to be the hard and fast way to get this addressed and analysis, and evaluation of fires. It’s critical... One of the priorities and one of the biggest issues in motivating change, funding, any support for this for this risk.”
(Interview)

As well as ensuring accurate data of fire incidences, cost-benefit analysis have the potential to motivate advancements that improve fire safety:



“Donors now need to understand and lead to transform the culture of fire-retardant materials and accept that, that for 1 million USD, it will reach 10,000 instead of 20,000 [people]. It’s not important now that I would reach 20,000. Rather, I will reach 10,000 and know that those 10,000 are protected with fire retardant material. So, this is the culture that I’m telling you about. This is where it should happen. It should now be acceptable for donors to listen, the cost per beneficiary is high, because I’m using high specs of material, and he should not accept a competitor proposal that is not using the same specs that I’m offering. This is where it differed in the language and the engineering background for donors to have that notion to understand what is the difference between what [we are] proposing and what x is proposed.” (Interview)



SHELTER PRACTITIONER KNOWLEDGE

This research saw particularly high levels of participation from humanitarians who identify most closely with shelter and settlements work. These respondents generally showed their understanding of fire ignition risks within humanitarian settings by referencing how different fuel sources can increase risk for certain residents in certain contexts. However, it was evident that interview participants perceive such knowledge and understanding to be fragmented and what does exist is not deep enough:



“We don’t have in depth knowledge or expertise within those clusters, for the most part.” (Interview)

Fire risk is often an unintended consequence of interventions or programs, which unintentionally increase the fuel/fire load within a settlement. Although some interview respondents said they have reached out to people within the sector who had been working with fire safety professionals for support to consider fire risk within projects, this is not common practice.

It was often suggested in interviews that shelter specialists take up the issue of fire risk if they have experienced it through a significant fire incident: attending a settlement destroyed by fire is a stark lesson. Other interview respondents commented that, without experiential knowledge, fire safety is not considered because it is not part of the disaster cycle:



“If fire become[s] part of the disaster risk reduction, it will change... as they care about flood in the settlement... they care about the cyclone, they will care also about the fire. [It does] not mean they are not caring now but it’s not part of the neither protocol or guidance to keep them. It’s advisory or the one who has an experience or he, or he or she has knowledge may applied the rest – no. So is not a common practice.” (Interview)

Improving the knowledge base at the practitioner level requires a recognition that thinking about fire risk currently happens in silos and so practices reducing risk can lead to unintended consequences. There is little sector-wide collaboration and without fire specific protocols, guidance, or clarity around responsibility (see **Objective 3**), fire will continue to be overlooked as a critical issue for people living in humanitarian settings.



Settlement residents share knowledge through photovoice activities, Lebanon



COMMUNITY KNOWLEDGE

Sharing strategies for fire prevention that can be adopted by communities and settlement residents has shown to be even less evolved, especially because of how fire risk changes during the life cycle of a settlement. This could be because embedding fire safety plans within the settlement through planning process, a combination of deep technical and social knowledge of fire risk is needed, and it currently is not documented for this purpose.

Nonetheless, people who live in humanitarian shelters are said to understand the impact of fire and are cognizant of the possible loss of life, injury, and impact on livelihoods. However, it is important to recognize that *“the level of knowledge of fire safety among people is ‘very low’”* (Interview).

This comment related particularly to low levels of knowledge of prevention and the steps an individual household or group of residents can take to reduce risk of ignition and spread. People also tend to be more aware of fire risks after fire incidents in their locality: experience of fire leads to sensitization and potential engagement with fire risk as something that concerns them. Addressing the relationship between experiencing fire and behavior change is a critical issue for future approaches to fire education, communication, and engagement.

Increasing knowledge cannot be expected to automatically result in behavior change, however. A common theme within the interviews concerned the extent to which people within low-income and displaced/refugee communities have the personal financial resources to adapt their living environments in ways that they know can reduce risk. For example, in a tented settlement in Lebanon, one resident installed non-combustible (metal) sheeting around the cooking area to create a barrier between the stove and the tent's combustible walls. It should be noted that this person had external income and personal savings so was able to make a physical adaptation that others in the same settlement could not. It is clear, therefore, that for many residents of humanitarian settings, increasing the breadth and depth of knowledge may not increase the capacity to act on that knowledge and to do so in a way that is safe - in the example above, the barrier may have unintentionally increased the risk of burns since the metal will heat up rapidly and retain heat for a period after the stove is used. A key issue for the sector, therefore, also concerns the fire safety knowledge that does not require financial investment:



“Families know that there are more safe ways of cooking than the things they are using but they don’t have the resources to do that and it’s really hard to get donors to pay for cooking stoves and gas cylinders and supplies of gas for cooking... they don’t have an option... we have seen examples of some really nice kitchens, but it tends to be in sites which are informal and scattered as opposed to in a formal site... It really comes down to resource. Families who have the least resources are burning anything they can find to cook on, which increases the fire risk.” (Interview)

It was considered among the interviewees that one way to address the need for ‘more’ knowledge on a community level is to tackle the existing lack of understanding about how certain behaviors or adaptations associated with daily life create risk. A common example noted in interviews and published literature is the blocking of exits and hence evacuation routes, storing flammable materials or extending shelters into fire breaks. A key challenge facing the sector, therefore, is how to plan, account for and respond to the dynamics associated with daily life that increase fire risk.

During fire incidents, communities respond in different ways and employ different tactics to prevent the fire from spreading. One participant, whose organization working with refugees displaced by conflict, made significant efforts to include fire specific training and education in settlements, commented that *“knowledge of fire prevention was very low... and this was the main trigger for us to expand the training modules for the communities”*. This was also reflected in the published documentation, particularly findings from Fire Risk Assessments (FRAs, see [Table 2](#)) which recommend significant investment in context-specific fire safety education, communication, and engagement.

Most residents in humanitarian settings arrive from very different living situations and will not be immediately conscious of the fire risks in their new environment. For instance, cooking appliances, fuels, techniques, spaces, and foods can present fire risks that the resident has not previously encountered. Interview respondents remarked on the knowledge gap for people displaced from an urban apartment building to a semi-rural tented camp: daily living and experiences of fire risk in these contexts differ enormously and learning opportunities tend to be through experience or through hearing about fire incidents in the local area. The lived experiences of residents are, therefore, an important factor to inform recommendations for fire safety planning and in designing mechanisms for reporting and learning from fire incidents and when engaging with community focused education.



Fire professionals hold in-community meetings



FIRE SAFETY PROFESSIONALS

Those working on fire safety from a more technical perspective or in roles specific to fire response understandably spoke in more detail about the technicalities of ignition, fuel, ventilation, and fire spread. For example, they were more likely to refer to different types of risk being heightened depending on the design and materials used within humanitarian settings (such as noting the size of openings within the shelter as a factor to consider).

As well as lamenting the lack of data on the scale, nature and impacts of fires in humanitarian settings, those with technical expertise called for a better platform (i.e., a practical / regulated space) and system of sharing knowledge. They argued that the lack of such a forum has prevented knowledge sharing across the sector and has resulted in knowledge being within silos rather than joined together to develop a holistic approach to risk reduction.

Although the number of technical experts applying their knowledge of fire science and engineering to the humanitarian settlements is very small, they advocate strongly for greater attention to be paid to the issue. Conversations within technical teams, therefore, can examine issues such as vulnerability and how social and cultural norms need to be considered as we think about the application of science and engineering through shelter and settlement design.

4.2 UNEVENNESS OF AND GAPS IN KNOWLEDGE

It is important to reiterate that research participants were people for whom fire safety was already an area of interest. The content and depth of fire safety knowledge varies according to an individual's role, experience, interest, and the contexts in which they have been and are currently situated. It should not be assumed that the knowledge (or level of interest) among research participants is representative of the sector more broadly. Indeed, the qualitative data collected established that the level of knowledge and understanding is fragmented: one interview respondent commented that it is *"all very circumstantial"*. Stakeholders in different contexts have gained different levels of knowledge of fire risk and safety in humanitarian settings (and subsequently continued to engage and acquire more knowledge) through experiencing fire in that context. The result is that the breadth and depth of knowledge varies within agencies in each country context and consequently between different settlements, residents, and the local population.

Therefore, different interviewees and FGD participants brought in elements of knowledge they are most comfortable and experienced with, allowing us to grasp what knowledges could be built on more widely across the sector. For example, one technical specialist highlighted the importance of understanding social context, citing an example from Yemen which highlighted that shelter window openings need to be understood in relation to residents' need for privacy. Similarly, some practitioners understand that residents balance competing demands and risks, and that these are culturally situated: outside communal cooking spaces, often situated at the periphery of a settlement, while safer in terms of fire risk and spread, are not compatible with family life or with security concerns experienced by women.



"Despite [the] fact that people had access to, for example communal kitchens, so that we could reduce the exposure to fire inside of commercial temporary shelters, people were still cooking in their shelters, because it is your home, it is the privacy [you are] looking for." (Interview)



"People are choosing to buy their own food if that's possible which means that they can't do that in a communal space, it's much, much harder. You've got to, if you're storing it within your own shelter, then you want to be cooking it close to that shelter, you don't want to be dragging it halfway across the camp to cook it somewhere else and then bring it back to your family as well." (Interview)

Seasonal risks (for example, the fire season in Nigeria or winterization adaptations in Lebanon) were referenced in some interviews but did not emerge as a prominent theme, indicating a potential gap in knowledge across the sector.

There was widespread criticism of the provision of firefighting equipment to communities because, it was argued, reliance on giving equipment reflects a lack of understanding of how people live (for example, extinguishers are often sold to pay for basic needs). Moreover, any equipment requires a coordinated program to ensure maintenance or replacement, especially where like fire extinguishers, the items are a single-use resource (*Figure 5*).

Most gaps in knowledge relate to the lack of data on the fire incidences and their social and economic impacts on humanitarian settlements; understanding of the cultural dimensions of risk; fire as a seasonal risk and the risks associated with winterization programs; and unintended consequences of adaptations and behaviors

Figure 5: Empty fire extinguisher box in tented camp



PROVISION OF FIRE EXTINGUISHERS

Fire extinguishers can offer an unfounded sense of safety, given that they are only useful in a settlement fire for a small window of time.

They can place inexperienced people who are not familiar with the equipment in more danger as they try to fight a rapidly growing fire with equipment not designed for that purpose. Some argued that continued provision reflects donors' focus on providing visible, tangible, and quantifiable interventions, rather than investing in longer-term, holistic ones. This is not to say the effectiveness of such equipment should be discounted: only that technological solutions can only be regarded as solutions if they are situated contextually with enough capacity to be used appropriately and when required.

associated with daily life in shelters and settlements. Within fire science and fire engineering, significant gaps remain in understanding of fires in the range of humanitarian settings. A key objective for future programming, therefore, is the reduction of siloed thinking and working, from donors to cluster and sector specialists, to acknowledge and mitigate dynamic fire risk whilst retaining the humanitarian commitment towards recovery in all its forms. Notable connections between fire science and engineering and the humanitarian sector include but are not limited to: fire within the range of settlement typologies; the impact of different environmental conditions in relation to ignition and fire spread; the physical impacts of fire in humanitarian settings; the interaction with human behavior, and subsequently the possibilities of education, communication and engagement specific to fire in humanitarian settings; finally, further evidence is urgently needed into understanding the effectiveness and full range of impacts of technical and social interventions.

4.3 PUBLISHED KNOWLEDGE OF FIRE RISK IN HUMANITARIAN SETTINGS



ACADEMIC RESEARCH

Overall, academic literature about fire safety in humanitarian settings is very limited, in terms of the extent of coverage and the level of detail. Key findings from the small number of academic studies focusing on refugee and IDP camps or other sites of forced displacement that connect to fire safety are summarized in *Table 1: Summary of published academic research*.

⁴ Winterization activities often include the distribution of non-food items such as blankets and insulation, which increase the overall fuel load of individual shelters and settlement. Fire risk is increased further by limited options for heating.

Table 1: Summary of published academic research

AUTHORS & FOCUS	KEY FINDINGS
<p>Flores et al. (2023) Fire incident analysis</p>	<ul style="list-style-type: none"> Reconstructed the 22 March, 2021 fire in Cox’s Bazar, Bangladesh, through firefighter statements, media reporting and satellite images. Argue fire spread is analogous to wildland fires.
<p>Kazerooni et al. (2015) Fire incidence & impact</p>	<ul style="list-style-type: none"> Systematic review of 131 reports from 31 countries between 1990-2015. 87 deaths, 790 burn injuries, displacement of 382,486 individuals and destruction of 50,509 shelters. 25-fold increase in the rate of these fires from 1990 to 2015 Lack of comprehensive guidelines.
<p>Kuligowski et al (2023) Evacuation</p>	<ul style="list-style-type: none"> Reports on simulation exercises using the Pathfinder method of evacuation for humanitarian settlements. The impact of 4 key factors on evacuation performance are tested (e.g., settlement density, pre-travel delays, route choice, route delays).
<p>Twigg, et al. (2017) Fire Risk Assessments</p>	<ul style="list-style-type: none"> Reviewed the literature to assess the potential of a range of methods and tools for identifying, assessing, and addressing fire risk in low-income and informal settlements. Proposed that community-based risk and vulnerability assessment methods, enhanced by crowdsourcing and citizen science could be adapted to urban fire risk assessment. Suggested a modified Haddon matrix to assist urban planners, emergency managers, and community organizations who are working in resource-constrained settings to identify and assess relevant fire risk factors.
<p>Atiyeh & Gunn (2017) Risk factors</p>	<ul style="list-style-type: none"> Poorly planned, densely packed settlements. Shelters built of combustible materials without adequate fire breaks. Lack of firefighting capabilities or water resources. Unsafe cooking practices; the use of open fires, kerosene stoves, lamps, candles, and faulty electrical equipment. Inadequate storage of fuels or other combustible materials. Holistic approach recommended.
<p>Lahn & Grafham (2015) Fire and energy issues in displacement contexts</p>	<ul style="list-style-type: none"> Links between fuel, security issues, financial costs of energy. Prevalence of using (and collecting) firewood and charcoal; open fires, candles, illegal electricity connections and the use of kerosene for lighting noted as health and safety risks. Inadequate funding for energy solutions in protracted crises, or consideration of local contexts or end-user preferences. Draw on examples from South Sudan, Thailand, and Jordan to illustrate fire risk. Traditional three-stone fires, cooking stoves and kerosene lamps are widely recognized to be a frequent cause of burn and scald injuries, and of accidental fires, sometimes on a large scale.

<p>Thomas et al. (2021) Energy within humanitarian cluster system</p>	<ul style="list-style-type: none"> • Lack of integration of energy into humanitarian planning and insufficient funding. • Call for a comprehensive approach, integrating energy issues and interventions across several clusters (e.g., protection, shelter, health, WASH, food security and nutrition, CCCM) rather than establishing a separate energy cluster.
<p>Barbieri et al. (2017) Cooking practices in refugee camps</p>	<ul style="list-style-type: none"> • Wide-ranging review of scientific and grey literature on cooking technologies and practices in refugee camps and displaced people's informal settlements. • The emphasis of this paper is on fuel efficiency rather than fire risk.
<p>Jahre et al. (2018) Camps as long-term settlements</p>	<ul style="list-style-type: none"> • This study and cross-case analysis of four camps in four different countries aimed to increase understanding of the approach within humanitarian organizations to view camps as long-term settlements. • As camps mature, there is a shift in overall approach to camp design, though most are still established using traditional top-down, temporary, and one-off approaches.
<p>Clarke (2018) Atiyeh & Gunn (2017) Maud (2022) Agency, Mobilization, and leadership within camps</p>	<ul style="list-style-type: none"> • Syrian refugees in Jordan demonstrate high levels of mobilization to demand better services, likely due to strong informal leadership networks. These same networks are absent in Turkey and Lebanon. • Resistance to formal interventions in camps which attempt to control settlements and local practices - includes acts of protest involving arson as seen in Moria refugee camp in Greece and Za'atari camp in Jordan.
<p>Ramadan (2017) Identification of fire risk in camps</p>	<ul style="list-style-type: none"> • Questionnaire survey of Syrian refugees in the Al Za'atari camp in Jordan, fires from cooking indoors were identified as a risk by almost everyone surveyed. • But nearly 50% of those questioned used gasoline heaters to keep warm in winter, with an additional 10% using electric heaters. • Identified fire risks associated with certain types of flammable prefabricated units and materials used to provide more durable and comfortable living conditions.
<p>Awwad (2018) Resident participation in camp design</p>	<ul style="list-style-type: none"> • Formal camp planning in Za'atari, with shelters laid out in rows (to give easy access to the camp, prevent fire spread, and for sanitation procedures), was not negotiated with camp residents. • Exclusion from camp design process led to anger and resistance by refugees who saw the layout as an expression of the authoritarian nature of camp management.
<p>Kelman and Ashmore (2011) Community approach</p>	<ul style="list-style-type: none"> • Bossasso, Somalia: a project worked with communities to improve solid waste disposal, install fire breaks, and establish fire prevention committees.
<p>Kahraman et al. (2017) Firefighting capacity</p>	<ul style="list-style-type: none"> • This publication notes the issue of fire-fighting capacity in refugee and displaced persons camps is not discussed in the academic literature, but all the indications are that it is inadequate, particularly regarding trained firefighters. • For example, the Syrian refugee camp at Harran in Turkey, built in 2012-13, initially housed about 12,000 refugees but employed only two firefighters.

<p>De Corte and Temptra (2010) Fires as an opportunity</p>	<ul style="list-style-type: none"> • Cite the example of IDPs in Bossasso, Somalia, a camp previously characterized by neglected shelters and frequent fires. • Consider how to 'build back better' within new UN-HABITAT plan, including fire breaks, mobile shelter kits (with use of metal poles and fire-retardant canvas rather than wooden sticks and cardboard), coupled with community awareness raising and training displaced people and local authorities in fire response. • Changes to emergency response after fires, upgrading temporary settlements by planning access and firebreaks, creating community facilities, building latrines and water points, stocking mobile shelter kits, and planning sustainable local resettlement to integrate some of the displaced with the host community. • A simple training guide for upgrading temporary settlements, aimed at municipal officials and community leaders, was developed to allow for a quick transfer of basic skills and to empower displaced people to initiate improvements themselves. In 2008 the number of families who suffered fires fell by 50% compared to 2007.
<p>IRIS-FIRE Project Papers produced by University of Edinburgh and Stellenbosch University Including: Beshir et al (2021a, 2021b, 2021c); Centeon et al (2020), Cicione (2019), Cicione et al (2019), Cicione et al (2020a, 2020b, 2020c), Cicione et al (2021), de Koker et al (2020), Gibson et al (2019a, 2019b), Gibson et al (2021), Rush et al (2020), Stevens et al (2020), Walls et al (2017), Wang et al (2020a, 2020b), Wang et al (2021a, 2021b, 2021c).</p>	<ul style="list-style-type: none"> • This research project generated significant knowledge and data pertaining to fire behavior of Cape Town informal settlement dwellings with corrugated steel sheets, timber structures, and combustible internal linings (i.e., cardboard), and evaluated the effectiveness of various physical fire safety interventions on reducing the risk of fire spread between dwellings. • The project included experiments: quarter and full-scale laboratory experiments were conducted to understand time to flashover, fuel loads, and effect of ventilation (vertical and horizontal openings). A database of flammable material was created through laboratory testing of materials collected in informal settlements in Cape Town. • The largest outdoor informal settlement dwelling experiments in the world, conducted in South Africa, were led by Stellenbosch University where 12 and then 20 full scale dwelling were burned as a model settlement. • FDS modelling was used to together with experimental results to test hypotheses. • Surveys of informal settlements were conducted to understand residents experience of fire risk and physical surveys of the layout of dwelling were conducted. • Remote sensing was used to map historic informal settlement fires, LiDAR imagery and high-resolution aerial photography was used to determine the spatial layouts which represented a high fire spread risk and analysis of wind speed as a contributing factor to fire size was determined. • It was innovative in many ways including in how it combined geographic information systems with experimental data to determine critical separation distances in informal settlements. <p>Research papers published by University of Edinburgh and collaborators are housed on a university repository: IRIS Fire, UoE</p>
<p>Spinardi et al (2020)</p>	<ul style="list-style-type: none"> • Critique and expansion of the concept of proximal design which is the ways in which users design or adapt technologies to meet the needs of their environment. • The concept fails to seriously consider the structural social, economic, and political context as it is limited by the physical environment whereas informal settlement fires are a societal problem born out of urbanization and poverty.
<p>Hirst and Underhill (2023) Social identities and risk</p>	<ul style="list-style-type: none"> • Establishes the need for a socio-technical perspective and an inclusive approach to gender to address complex social dimensions of vulnerability. • Draws on case studies from informal settlements in Kenya and humanitarian settings in Lebanon to show risk is unevenly distributed across many social identities.



FIRE RISK ASSESSMENTS AND SITUATION REPORTS

A relatively small number of detailed FRAs and situation reports in refugee and IDP settlements have been published (for FRA application discussion see section 3.2). *Table 2* focused on what types of knowledge emerge through such assessment processes. The examples indicate similar challenges across different countries and refugee/IDP/informal settlement settings.

Table 2: Fire Risk Assessments and Situation Reports

CASE STUDY	KEY INSIGHTS
<p>South Sudan: Bentiu and Wau Protection of Civilians (PoC) sites</p> <p>IOM and FireAid (2018 & 2020)</p>	<p>Known fire risks identified in the two sites included congested spaces, indoor cooking, cramped living environments and extensive use of temporary shelter materials (including flammable materials such as bamboo/wooden poles, grass thatch, bamboo screens and plastic sheeting).</p> <p>Wau</p> <ul style="list-style-type: none"> · Limited available space made it impossible to meet Sphere Minimum Standards for shelter spacing (this appears to be a common problem in IDP sites). · Higher fire risk in the dry season. · No systematic record of incidence and impact of fires in IDP camps. · IDP communities were certainly aware of fire risk, but knowledge of fire safety was low. · Lack of firefighting equipment, coverage, and alarm systems. · The responsibilities of different humanitarian actors for preparing and responding to fires were not formalized and were disputed; appropriate protocols and procedures were needed. <p>Bentiu</p> <ul style="list-style-type: none"> · Short-term tasks identified included: post-fire meetings and debriefs; sharing key learnings; removing combustible materials; creating community fire safety teams to promote safety messages; and setting up alarm systems. · Medium-term tasks identified included: improve recording and tracking of fire incidents; record and analyze fire incidence and impact; set up and test inter-agency evacuation and contingency plans; foster collaboration between agencies; carry out public education, awareness, and training campaigns; and incorporate fire safety issues into spatial planning. · Longer-term aims included reviewing specifications for fire-resistant plastic sheeting, increasing street lighting, greater use of fuel-efficient stoves, and fitting fire valves to the water network.
<p>Cox's Bazaar, Bangladesh (Egardt et al. 2018)</p>	<ul style="list-style-type: none"> · FRA exercise identified a wide range of elements needed for an effective fire safety strategy. · High density of the camps, together with the flammable construction materials used for shelters and tents, raised significant safety concerns. · Fires were mostly caused by unsafe cooking practices, electric short circuits and overloading, candles, kerosene lamps and burning waste. · Need to promote risk awareness and promote safe use of gas and liquid fuels. · Fire prevention actions included risk mapping, creation of firebreaks, planning debris removal and clearing access routes, in coordination with the government's Department of Fire Safety, Civil Defense and the Cyclone Preparedness Program. · Need to enhance lines of accountability and responsibility.

<p>Ban Mae Surin, Thailand</p> <p>Operation Florian/ FireAid (Bryant and Jordan 2013)</p>	<ul style="list-style-type: none"> · Fire needs assessment in four refugee camps for the Coordinating Committee for Services to Displaced Persons (CCSDPT). · Analyzed hazards and risks; identified existing capacities, vulnerabilities, and susceptibilities in the camp; and presented over 40 practical recommendations to prevent, mitigate, prepare, and plan for fires. The team reviewed secondary sources (internet, social media, photos), delivered a questionnaire to CCSPDT members, conducted semi-structured interviews and focus groups, undertook hazard and risk mapping, used incident data from news accounts, and held meetings with local organizations. · 'It was evidential within the four visited camps that historical events and time had led to the development of consequential risks: congestion, encroachment, and limited access. Families have expanded, markets have grown and well-planned camps with adequate fire breaks have now been compromised. This has largely developed in an uncontrolled manner. It would also appear that no one authority had taken responsibility for averting or alleviating these issues' (p31).
<p>Dadaab, Kenya</p> <p>Operation Florian (2016)</p>	<ul style="list-style-type: none"> · Approached fire needs assessment as above (see Ban Mae Surin, Thailand). · Most fires occurred in markets or in/near homes as the result of cooking practices, smoking, the transfer of an ignition source, arson, and electrical faults. Fires were facilitated by building materials, foliage, fuel, encroachment, congestion, prevailing winds, and the dry environment; and they were a threat to a range of vulnerable groups within the camps. · Range of short-, medium- and long-term recommendations.
<p>Bekaa Valley, Lebanon</p> <p>Operation Florian / Save the Children International / Lebanese Civil Defense (2017)</p>	<ul style="list-style-type: none"> · FRA completed in 2016. · Most fires occurred in high-density informal settlements, in tents and other 'sub-standard' buildings. · Vulnerability and Capacity Assessments conducted by the Lebanese Red Cross revealed that fire was perceived by the local population to be the joint second most concerning hazard after flooding. · However, there was a low level of fire safety knowledge among displaced populations. · Vulnerable groups such as children and the elderly were particularly at risk. · Vulnerability was higher in smaller informal settlements, particularly those of under 20 tents, whose inhabitants lacked training and equipment. · Government prohibition of formal settlements for displaced populations made it difficult to provide fire safety assistance. Local fire services were committed but were inadequately funded and equipped.
<p>Hargeisa, Somaliland</p> <p>Kindling (2022)</p>	<ul style="list-style-type: none"> · This baseline fire risk assessment was in direct response to the fire that devastated Waheen marketplace on 1 April 2022, causing numerous direct and indirect economic, health and social impacts. · Intersecting social identities such as disability, age, ethnicity, IDP/refugee status were also identified as potentially increasing vulnerabilities in terms of recovery and inclusion in fire safety planning. · Psycho-social vulnerabilities including potentials for emotional trauma in a post-civil war context were identified, as were the longer-term cascading health and economic impacts beyond immediate loss of life and injury.



GUIDANCE WITHIN HUMANITARIAN PRACTICE

Three core documents were most referred to by interview respondents: Sphere Handbook, Minimum Standards for Camp Management, and Construction Good Practice Standards (2021).

Table 3: Guidance within humanitarian practice

HUMANITARIAN GUIDANCE DOCUMENT	RECOMMENDATIONS
<p>Sphere Handbook (2018 edition, 458pp).</p>	<p>The section on shelter and settlement states that fire risk assessments should inform site planning, with 30-metre firebreaks every 300 meters in built-up areas in camp settings.</p> <p>The space between buildings should be at least 2 meters; and ideally double the building height to prevent collapsing structures from touching adjacent buildings.</p> <p>It also suggests considering local cooking and heating practices (e.g., stove types and preferred location), provision of safe stoves and fire safety equipment, and awareness training to residents.</p> <p>It notes fire-resistant construction materials and household items should be preferred, and residents should be informed about fire prevention, management, and evacuation plans.</p>
<p>Minimum Standards for Camp Management (2021, 90pp)</p>	<p>This standard aims to clarify the role of site management agencies in humanitarian settings by setting out minimum actions and levels of quality.</p> <p>Sphere's§ shelter and settlement standard 2 (location and settlement planning) requires fire risk assessments to inform site planning, with at least 2-metre spaces between buildings (ideally double the building height) and 30-metre firebreaks every 300 meters in built-up areas in camps.</p> <p>It also advises provision of safe stoves, fire safety equipment, fire-resistant construction materials and fire awareness-raising among residents. Standards should apply to all contexts where displaced people seek shelter, protection and other support, not just specific camp contexts. They apply to all sites and contexts where displaced people seek shelter, protection, and other support.</p> <p>"Fire risk assessments should inform site planning. Include 30-metre firebreaks every 300 meters in built-up areas in camp settings. The space between buildings should be at least 2 meters; ideally it should be double the building height to prevent collapsing structures from touching adjacent buildings. Consider local cooking and heating practices (such as type of stoves and preferred location. Consider providing safe stoves, fire safety equipment and awareness training to residents. Prefer fire-resistant construction materials and household items. Inform residents (including those facing mobility or accessibility barriers) about fire prevention, management, and evacuation plans."</p>
<p>Construction Good Practice (2021, 38pp)</p>	<p>The guidance "represents the action across all sectors to be accountable in ensuring the safety, timeliness, and quality of the construction projects for which the agencies are responsible. Construction is an essential part of a wide range of development and humanitarian programming."</p> <p>It specifies Guiding Principles, Proposal Development, Design Stage, Construction Phase and Handover / Maintenance. Fire is only mentioned in the Design Stage under the architectural requirements for recognition of 'spatial, incremental improvement potential, fire safety, gender, useability of the space, materials selection, maintenance, community engagement/participation."</p>

As seen in *Table 3*, sector-wide guidelines on fire safety in humanitarian settlements are very limited. Some organizations have developed their own resources and materials (see Save the Children International, NRC and IOM, for example), while the Global CCCM Cluster along with IOM/NRC/UNHCR included one full page of generalized guidelines on fire within the 2015 Camp Management Toolkit (see below for an extract from page 231), outlined below in *Table 4*.

Table 4: CCCM Cluster guidance for fire safety

CLUSTER SPECIFIC GUIDANCE	RECOMMENDATIONS INCLUDE:
<p>Camp Management Toolkit (IOM/NRC/Global CCCM Cluster, 2015: 282pp)</p>	<p>“Firebreaks: 50 meters of empty space every 300 meters of built-up area.”</p> <p>Prevention:</p> <ul style="list-style-type: none"> · sites should have regular firebreaks. · shelters should ideally be spaced at a minimum of twice their height apart. · prohibit open fires or bare flames inside shelters unless in a well-contained area – please note that national policies on this may vary. · regulate when cooking fires are allowed in dry seasons. · ensure candles – if allowed in the camp – are placed in lamps or in jars. · remind camp residents to never leave a candle lit while sleeping or when they leave the shelter. · provide sensitization training on the risks associated with smoking inside or near shelters. · ensure stoves do not touch or adjoin flammable walls. · ensure chimneys project through a solid wall or through a fireproof plate. · ensure electric light bulbs are at least 20 cm from tent canvas or other flammable materials. · regularly inspect electrical wiring. <p>Preparedness:</p> <ul style="list-style-type: none"> · provide fire stations with buckets (with small holes to reduce risk of theft), sand, fire beaters and fire extinguishers. · note that spraying water will only cause kerosene fires to spread. · provide a fire bell to alert other camp residents to large fire outbreaks. · set up community fire committees to train camp residents on preventing and dealing with fires. · enforce fire breaks and keep them free of debris and ensure fire stations are equipped to help deal with fires. <p>In case of fire:</p> <ul style="list-style-type: none"> · check that there is no-one inside the shelter/tent and only then knock it down to help prevent the fire from spreading. · remember to teach camp residents the “stop, drop and roll technique” – if your clothes are on fire, stop where you are, drop to the ground and roll to extinguish the flames.”

In response to the limited guidance in these core documents, we identified areas where further fire safety actions could eventually be integrated, with attention paid to opportunities within specific sectors and clusters where issues of water, solid waste, fuel, food safety, external hazards etc. require additional attention to fire hazards, or provide an opportunity to integrate fire safety. Whilst it is understood that improving fire safety within humanitarian settings is at an incipient stage with basic actions understandably being prioritized, it is important to introduce more advanced, long-term and aspirational fire safety actions that should be considered as the field develops. These areas of consideration relate to existing standards and reinforce the idea that fire safety should eventually be mainstreamed and embedded across the entire humanitarian system.



Water Access and Firefighting

When designing general water access and infrastructure, the integration of strategic water access points for firefighting, and their ongoing maintenance, should be considered. For example, this could include the development of recycled water systems to not reduce limited supplies of potable water or water reserved for crop irrigation. Where recycled water systems are introduced, they should not produce negative health impacts by becoming stagnant. Furthermore, consideration of the potential contamination of potable water during and after firefighting response is also important.



Solid Waste Management and Combustibility

Combustibility of the range of materials used and stored within settlement contexts is an important issue. The collection and management of solid wastes should consider proximity to ignition sources, the potential for certain kinds of waste to self-ignite via methane production, and potential as a fuel for fire spread. The combustibility of shelter materials is a key concern in terms of the direct fire hazard and the public health issue this may present. As well as identifying the structural risk of damaged or destroyed housing or shelter, the fire risks associated with the combustibility of materials is a factor to be considered.



Cooking Fuel and Food Safety

The fire safety of appropriate cooking fuel, tools and environment should be taken into account, as well as that of food itself; food provided should be able to be cooked using fire safe methods and with packaging that is resistant to melting and/or catching fire. Consideration of the environmental impact of cooking fuel could be expanded to consider its fire risks both internal and external to settlements.



External Hazards and Community Safety

Fire hazards from outside sources, such as wildfires should be integrated into risk assessments, as well as deliberate fire setting (arson), with measures to mitigate these risks integrated into comprehensive risk reduction assessments and planning.



Health Facilities and Fire Safety

Fire risk assessment for health facilities should be incorporated into wider fire safety measures, to include the protection of medical supplies as well as integrating fire risk into the care they provide via burns treatment for example. Integration of fire related injury and illness into health data collection could further aid understanding of localized fire risk impact.



FIRE SAFETY PRACTICES AND SYSTEMS - TECHNICAL RESOURCES

A range of technical resources cover a range of issues, including materials, and design and layout of shelters (Al-Mahdawi, 2019). A summary of key documents is listed in *Table 5*. It is important to note that the use of the term 'informal settlement' within these guidelines can be ambiguous. In some settings, informality is related to refugees and forced displacement, but this is not made clear in every case.

Table 5: Summary of published technical guidance

AUTHORS, TITLE & PAGES	KEY INSIGHTS
<p>A framework for fire safety in informal settlements (Arup, 2018: 17pp)</p>	<ul style="list-style-type: none"> • Relevant to displacement settings. • This work identifies 12 key aspects of fire safety and actions to improve fire safety in informal settlements at the household, community, and city/settlement scale. It is organized around the disaster cycle emphasizing the importance of fire mitigation, preparedness, response, and recovery.
<p>Turkey Hub. Fire Prevention and Response Guidance (CCCM and Shelter/NFI Cluster Cross-Border Operation, undated: 12pp)</p>	<ul style="list-style-type: none"> • IDP sites in north-west Syria are at particularly high risk of fire. • Provides stark evidence of the scale of the problem of fire: the CCCM Cluster reported 84 incidents in IDP sites over 9 months from the start of 2020: 60 were fire incidents that affected 201 households. • Identifies misuse of fuel, cooking and heating devices, and lack of awareness and appropriate equipment to respond to fires. Deteriorating economic situation and shortage of resources led to negative coping mechanisms (e.g., use of particularly hazardous or inappropriate fuel types for heating and cooking). • Lines of responsibility assigned to different actors in Turkey: CCCM: fire response camp committees, fire warden systems, fire response taskforce and training, provision of fire response equipment, monitoring and co-ordination of IDP site services, incident reporting, information management of IDP sites, and awareness raising. • Shelter/NFI: delivery of NFIs (e.g., fuel, stoves, cash/vouchers), shelter provision and monitoring, advocacy for better shelters, site planning support, shelter and infrastructure rehabilitation and repair, guidance on shelter and NFI assistance, assistance for winterization, and awareness raising. Not clear how effective these arrangements are in practice. • Outlines a range of factors in relation to fire. Recommendations include community awareness raising and training, establishing fire response committees and fire warden systems, developing fire safety contingency plans, improving fuel storage and distribution facilities and practices, provision of more spacious and better-quality shelters, improved site planning and maintenance, and advocacy
<p>Humanitarian shelter and settlement guidelines (DG ECHO, 2017: 102pp)</p>	<ul style="list-style-type: none"> • Principle 4 is notable: ‘make shelter and settlements more resilient and safer from hazards and risks’. • Action should be taken to protect shelter, settlements and their occupants from natural hazards and human-induced threats. Measures include strengthening the built environment through hazard resistant construction, safety standards (e.g., lighting in public places, electrical and fire safety – fire safety being understood as incorporating fire breaks, using non-flammable tents and construction materials, and reducing fire risks from household heating and food preparation practices), and preparedness actions, such as early warning, evacuation, and protective shelter. Based on technical advice, to achieve serious risk mitigation, relocation may be envisaged. • More detail is needed regarding types of support available (technical, financial, material, social), how decisions are made and implemented, the roles and capacities of stakeholders, opportunities and obstacles, and importance of fire risk reduction relative to other issues

<p>Emergency Capacity Building Project: Shelter Accountability Resources (Hugh, 2013: 17pp)</p>	<ul style="list-style-type: none"> • Practitioner guide to ‘improving accountability to disaster-affected populations during implementation of humanitarian shelter programmes’. • Accountability is generally acknowledged to be an important issue in shelter planning, design, and provision. However, it is not always clear where responsibility/ accountability specifically for fire safety belongs in practice. • There are examples of organized voluntary action to respond to fires, such as the trained first aiders and responders in refugee camps in Cox’s Bazaar, Bangladesh, but it is unclear how widespread such initiatives are.
<p>A Burning Issue for Shelter Programming (Antonellis, D., Duloy, P., Kennedy, J. & Palmer, L., 2021)</p>	<ul style="list-style-type: none"> • Situates fire risk specifically within shelter programming (design & implementation) and acknowledges the lack of global statistics. • Context specific programming is required and engaging with affected communities is essential. • Fire risk reduction strategies should address 5 key principles: prevention, detection and communication, occupant protection, containment, and extinguishment. • Humanitarian actors in the shelter and settlements cluster lack the resources to improve fire safety. • Fire risk reduction must be mainstreamed to share learning and practice.
<p>Guidelines for Fire Prevention, Preparedness and Response (Save the Children, Temporary Technical Committee, Inter-agency shelter sector co-ordination working group, 2018: 32pp).</p>	<ul style="list-style-type: none"> • There is a recognized need for greater harmonization and standardization of fire risk mitigation activities across humanitarian agencies. Interventions have often been conducted by agencies individually, with little co-ordination. • In 2016, Save the Children Lebanon and Operation Florian conducted a FRA in Syrian refugee communities in Lebanon which produced a series of recommendations leading to the development of a temporary technical committee responsible for developing national guidelines on fire prevention, preparedness, and response. • UNHCR and SCIL developed a fire safety training tools and resources online platform, containing standardized training material and guidance; and a fire risk mitigation standard operating procedure was developed to give guidance on minimum technical fire safety standards in informal settlements, residential and non-residential buildings.
<p>IFRC shelter safety handbook (2011: 62pp)</p>	<ul style="list-style-type: none"> • General guidance includes advice on shelter siting and settlement, building materials and preparedness. • An IFRC presentation (undated) addresses a range of relevant issues including fire as a hazard, site planning and resettlement, building materials, domestic and community preparedness, evacuation centers and camp planning.
<p>Construction Good Practice Standards (2021)</p>	<ul style="list-style-type: none"> • Provides Guidance on: Good Practice Guiding Principles, Proposal Development, Design Stage Construction Phase, Handover / Maintenance. • Fire mentioned in the Design Stage under the architectural requirements: spatial, incremental improvement potential, fire safety, gender, useability of the space, materials selection, maintenance, community engagement/participation

<p>CareBox Low Resource (Arup, 2020: 15pp)</p>	<ul style="list-style-type: none"> • A design guideline to install temporary medical care facilities in existing buildings in low resource contexts – specifically for implementing or adapting spaces into Covid-19 treatment centers. • Introduces key fire safety principles and provides practical recommendations for design, construction, and management of facilities, highlighting the specific risks that emerge for these types of facilities, e.g., oxygen enriched environments. • Due to significant constraints posed by these complex contexts, residual risk is expected to cascade through each project stage, and some will remain during operations. Preparedness for fire incidents therefore becomes critical to avoid catastrophic fires which could affect not only the healthcare facility but also the surrounding community
<p>Fire safety engineering guideline for informal settlements: Towards practical solutions for a complex problem in South Africa (Walls, 2020)</p>	<ul style="list-style-type: none"> • It is shown how fire safety engineering can be applied to informal settlements. • Many interventions, strategies and devices are discussed, looking at what could be adopted to improve fire safety. It is important to realize that a basket of solutions is typically needed, and a single intervention may have a very limited impact. • A list of tasks that communities can undertake before, during and after a fire incident provides a useful resource for organizations working with communities.
<p>UNHCR Safe Sites fire risk mitigation guidance</p>	<ul style="list-style-type: none"> • The settlement layout should establish a 30-metre firebreak every 300 metres between built-up areas. A minimum distance of twice the height of the shelters (to the ridge) should be left open between structures. • Collective accommodations must include an emergency exit route to enable quick evacuation. • It is recommended that sliding latch locks are used for internal locks, and that padlocks are avoided, to facilitate rapid evacuation in the event of a fire. • As soon as feasible, distribute information on fire safety and fire risk education throughout the community. Adopt a range of formats to ensure that all groups can obtain the information, including people who are illiterate, housebound, blind, have difficulty communicating, etc. Make a specific effort to reach marginalized members of the community who might not be reached through obvious channels. • Establish fire points at every firebreak. These should be equipped with basic fire-fighting tools (shovels, sand buckets, etc.).

4.4 CONNECTING KNOWLEDGE AND PRACTICE

Knowledge of fire safety within the humanitarian sector is both tacit and explicit: it can be assumed, acquired through experience, and situated in a specific context, but may also be formal, written and generalized. Connecting these knowledges to practice is critical to a holistic approach to fire safety.



THE ROLE OF EVALUATION

There is no agreed approach within the humanitarian sector to evaluate fire safety interventions systematically, despite evaluation being an essential component of developing effective fire safety approaches, tools, and

guidance. Effective evaluation encompasses a range of approaches and methodologies, each serving a unique purpose. While diagnostics evaluation focuses on identifying and diagnosing challenges, process evaluation interrogates whether the program is operating as planned, outcome evaluation focuses on whether the program is achieving its objectives, and impact evaluation assesses what predicted and unpredicted impacts have the program had. Together, the different approaches enable formative evaluation which feeds into the knowledge and learning process that is required to assess risks comprehensively, measure the effectiveness of mitigation strategies, and enable learning from ‘failure’.

Thus, we argue that in the context of fire safety, a standardized understanding of risk levels alone falls short, as it merely tallies items (e.g., distributed fire blankets or fire extinguishers, shelters burned, etc.) without true assessment and measurement of risk reduction as experienced by people. Therefore, it is crucial to adopt a flexible and comprehensive approach to evaluation in humanitarian settings. By introducing various types of evaluation, a more nuanced understanding of fire safety can emerge.

This is also relevant because humanitarian organizations have long advocated for evaluations that transcend a binary view, which is exactly what fire risk prevention requires: in other words, a level of fire risk will always be present, so the question concerns a spectrum of ‘what does success look like in this specific context?’ Recognizing the complexity of fire safety challenges, evaluations need to be tailored to the specific context, acknowledging the unique circumstances and intricacies involved in the range of humanitarian settings.

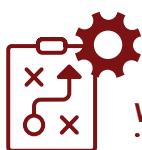
A common challenge in fire safety evaluation is the absence of a well-structured evaluation plan. Without a comprehensive roadmap detailing goals, milestones, outcomes and measurements of success/failure, evaluation efforts become fragmented and fail to provide meaningful insights. To address this, it is crucial to explore and implement diverse evaluation methodologies, bridging the existing gaps in evaluation practices.

For example, the definition of success and the criteria for evaluation should be clearly defined within fire safety training programs. This ensures that the assessment of training programs is not solely based on quantitative measures (e.g., recording attendance or the scores on a multiple choice quiz which tests memory not understanding) but also uses qualitative analysis to consider different aspects of delivery and impact. Furthermore, fire has diverse impacts on health, so evaluation of fire safety programs must recognize physical, mental, and emotional trauma which all require proper evaluation and support in the aftermath of fire incidents. It is therefore essential to advocate for evaluations that embrace a multidimensional perspective, considering economic, social, health, and governance implications. Evaluations should explore the political dynamics and relationships among key actors involved in fire safety programs.

It is important to also note that the concept of durable solutions is closely linked to fire safety evaluation. Without robust evaluations, the identification and understanding of sustainable fire safety solutions remain elusive. Furthermore, the lines of responsibility become blurred without appropriate evaluation frameworks, hindering effective prevention, mitigation, preparedness, response, and recovery measures for fire safety within humanitarian settings. If vital insights into the effectiveness of fire safety programs, allowing for informed decision-making and responsible implementation are not provided using evaluation, then it is impossible to know who should achieve what to improve fire safety outcomes for people.



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WORKING WITH THE GUIDANCE

Although explicit technical knowledge of fire safety exists within guidance and protocols (see previous section), this research uncovered strong concerns from practitioners about the existing tools, echoing critiques within the literature (see Kazerooni et al, 2015). “[within] all the documents available in the humanitarian sector are quite limited in information” (Interview).

As observed in the previous sections, Sphere is a key piece of global guidance for professionals within the humanitarian sector, setting out the minimum standards for humanitarian assistance. For interview respondents who have worked with this document and sought guidance for fire safety, the lack of coverage of fire is a significant failing. To illustrate more specifically, within the 458-page document, fire breaks are referred to twice and there are only nine lines specifically addressing the issue of fire safety.

Beyond the Sphere handbook, fire remains a notable gap within guidance issued to humanitarian actors. Most notably, fire is missing within guidance targeting professionals within CCCM, a cluster that was seen by many interviewees as having the most responsibility for fire safety. Nonetheless, the interviews evidenced that when guidance is available, it establishes reasonable parameters to provide resources or infrastructure.



“When we build homes which are wooden, which also can provoke risks, we don’t do the electrical installations, we don’t have capacitated personnel, it’s up to the families to contract someone to do them properly. We then check that they’re good. In Argentina or central America, we have installed electrical kits which were safe. In some rural areas like Haiti, we install solar panels that reduce fire risks. In the manual of the user of the house we say that the fire shouldn’t be used – you can’t cook. 18sq.m; family has to construct a safe kitchen like clay or brick, so that the fire doesn’t propagate. It’s in the user manual or protocols.” (Interview)

Guidance specific to fire risk within the UNHCR Emergency Handbook (n.d.) is also limited. In reference to the online Safe Sites documentation, humanitarian practitioners involved in a FGD noted that guidance from agencies typically refer to establishing strategies in settlements and delivering education and ‘train-the-trainer’ activities, but the ‘what’ and ‘how’ these should be done are not clearly articulated.

Fire safety as a specific issue for humanitarian settings remains cursory also within existing practice and protocols. In other words, where fire safety is specifically mentioned, practitioners regard it as lacking in detail and depth at best, and may be creating more dangerous situations for people living within some settlements at worst:



“So, are there any protocols that are followed? No. The system that has been demonstrated on two occasions here where we’ve had quite big fires has been fundamentally flawed. The belief is that what we should be doing is sending refugees to fight this fire with five kilo dry powder fire extinguishers in my opinion, you know, concepts and protocols like that are actually putting the lives of the refugees at risk. So, for me some of the decision making around Firefighting is, is very, is incredibly poor. To design a protocol, you need to understand what you’re designing that protocol for.” (Interview)

For some humanitarians, implementation of any kind of guidance in relation to fire remains ‘basic’:



“I think the level of information and guidance and practices that we do [are] pretty basic... we’d often work with other sectors and agencies to develop some kind of key kind of messages and things. But these are, like, ‘don’t leave a candle burning’... That’s, I think that’s the sort of level of knowledge and expertise that that we do.” (Interview)

Alongside the issue of the guidance content is the importance of its relevance and timeliness: a common critique concerned the lifespan of guidance, with interviewees commenting that it can be out of date within 6 months. It is understandable, therefore, that fire scientists argued that the humanitarian sector needs to ensure people have “been trained well enough make contextually-relevant and appropriate solutions” (FGD) and that there is an urgent need to improve the baseline of technical knowledge which is currently limited.



KNOWLEDGE ACQUISITION AND SHARING

Knowledge is gained through lived experience and through various formal processes such as engaging with research and guidance (both directed and self-directed), and through education, communication and engagement activities and training. Because fire safety knowledge is social and technical, it can be acquired formally or informally. The separation of experiential and technical knowledge can exacerbate unintended consequences whereby the lived experiences of those in humanitarian settings appear to be treated as separate from the technical aspects of how shelters and settlements are planned, designed, and maintained.

Experiential, programmatic knowledge

Professional knowledge about fire safety in humanitarian settlements emerges largely through work related to response and recovery from fire events:



*“Looking at [and] talking to people about what has happened is the primary way of learning.’
(Interview)*

Interviewees remarked that talking with people about fire events is critical to their acquisition of knowledge of fire ignition and spread, but that they also came to understand the social dynamics of how and why fires start, spread and impact residents. An integrated approach that recognizes fires occur within a system is a helpful way of approaching knowledge acquisition: fire safety is built into the design, construction and maintenance (which raises questions of responsibility explored in Chapter 5) and is also lived by residents. Programmatic knowledge, therefore, must be holistic:



“I could see the fire risk whenever I was visiting... from the fire hazards that I was witnessing to debris on the ground, burning materials that were laid down...I would see tires, used tires, that that have been used on the rooftops of the tents in order to protect the roofs from flying or from to withstand wind, for example, but those are the high flammable material. To be honest, I think, in my personal opinion, I would see a big fire risk. And in the end, the materials that humanitarian agencies are distributing to refugees build up so it's self-made”. (Interview)

Practitioners gain deeper and more expansive knowledge of fire risk and safety as they become more involved in site planning or through considering fire directly, for example by seeing how climatic variations can determine the impact of fire on particular people and contexts. Experiential learning is, therefore, a key method of learning about fire risk and safety. This can be seen as a strength because the knowledge created this way is contextually situated and can inform safety and incident response measures appropriate to that context, and might shape how needs after a fire are considered. However, it is problematic if experiential learning remains the dominant or assumed method for knowledge development and sharing because it is ad hoc: it depends on fire events happening and implies that responsibility for gaining knowledge resides with those humanitarian actors who are involved in response or recovery.

Learning: context and communities

Knowledge of fire risk and safety within shelters and settlements is shaped by local conditions and cultural practices, although more research is needed to understand what this means in different settings and across different times of the year.

Many of the interviewees worked in different country contexts, and across planned and spontaneous settlements. As well as demonstrating the experience of this ‘lived’ approach to knowledge acquisition, the interviews revealed the complexities associated with applying standardized guidance to very different contexts whilst showing that there are valuable opportunities to learn through the different experiences to ensure knowledge and practice are connected:



“At the end of the day the particular context is what matters, you know, I can learn something that worked in Rwanda and trying to apply in Yemen, it may not work. So, you learn a lot of things from kind of guidance and lessons, that is being disseminated, like SPHERE for example, right? But when you apply, often you need to take that and kind of and speak with the communities, on how it is going to affect [them]. So, your learning often comes from the communities more, than what scientifically or, you know, other ways of economically knowledge, that is available.” (Interview)

Self-directed and ad-hoc

When asked about their experiences of fire safety education or training, interview respondents revealed that acquisition of knowledge about fire safety and fire risk within humanitarian settings appears to be largely self-directed and relies on the individual to be motivated to learn. Few have experienced specific training or in-depth support to understand how to identify or respond to fire risk:



“It’s been very much, sort of, self-propelled and probably and still with a lot of gaps in the middle”. (Interview)

While there have been some programs (such as the ‘train-the-trainer’ program in Lebanon funded, coordinated, and delivered via collaboration between UNHCR, Save the Children Lebanon and Operation Florian), the motivation to learn about fire safety is not universal: for the most part, engagement with fire safety comes after responding to or witnessing the effects of a fire incident. Therefore, relying on experiential learning of fire risk and safety creates a significant problem for the sector because it depends on fire incidents to happen for people to perceive and respond to the risk, or for them to have contact with a ‘champion’ within the sector (see section 4.5). This in turn leads to a significant gap in recognition of fire as a critical issue because the risks and impacts are not understood across the humanitarian sector as a whole:



“In all, all the staff or the person, the technical person who are working in humanitarian agencies, they are not taking it that serious... fire safety is mostly neglected... in this humanitarian sector.” (Interview)

This results in a system of knowledge acquisition that is self-directed so potentially viewed as optional, as the interviews reveal:



“We do something kind of ad hoc or if we do something that we always do from the programmatic perspective, but we never tried to be to the more sophisticated knowledge in terms of fire safety.” (Interview)

“I’ve always found literature or case studies or information communication campaigns, that include the prevention on fire. I can’t think of a specific kind of set of resources” (Interview)

Learning from failure – from fire incidents - within a systematized approach to sharing knowledge is critical and begins with accepting there are limitations within the current system:



“I think the humanitarian sector isn’t very good at learning., A very, very poor learning curve in the sense of we’re not very good at documenting and learning from our own experience but also from learning from experience in another country and in another camp, unfortunately.” (Interview)

“I think the incident tracking things that were mentioned before... We have one in Cox’s Bazaar and [X] has a good one in Nigeria. I think they are good in terms of that learning aspect... knowing where incidents are taking place and really examining the root causes of those fire incidents and getting that understanding and learning and institutionalizing it - making sure it’s not just one or two people who know.” (Interview)

Institutionalizing knowledge through guidance and protocols

Humanitarians seek knowledge and are expected to engage with new knowledge through existing platforms and processes (for example, Humanitarian Library, agency specific websites and within written protocols and guidance such as Sphere). However, since fire safety is neglected in the humanitarian sector, reliance on knowledge in written formal guidance and documentation is problematic. Questions were raised by interviewees about whether existing documents cover the breadth of what is required to go beyond thinking about fire safety as issues of site density and fire breaks, arguing that “none of that [complexity] is described let alone given an indicator in the guidance” (Interview). Therefore, many argued that further analytical research is necessary for evaluating existing practices and exploring new approaches to training and fire safety education and engagement:



“I honestly think that even if we’re looking at, sort of trying to squeeze in interventions into already existing sites, planned or unplanned, we can only start to do that or have the confidence about it if there’s a lot more thought being done, a lot more analysis in the field, about what else to squeeze in apart from the 3 things that are already in the guidance.” (Interview)

Although Sphere was often cited in interviews as the key point of reference for knowledge of fire safety, it was criticized for lacking contextual detail or depth. For some, the issue of fire is missing entirely:



‘We don’t even mention it at all in the WASH chapter.’ (Interview)

Such omissions point to a (perhaps unconscious) bias towards fire as a technical issue and the perception that knowledge of fire safety is dependent on technical expertise. This would imply that responsibility for fire safety resides with technical teams, hindering institutionalization of fire safety in humanitarian settings, and in turn contextualized knowledge sharing and practices.



Affected community fighting fire in Dadaab, Kenya. Communities are almost always the first responders to fires in informal settlements and the settlements of displaced communities. Where the host country’s fire services do respond, their response is often not timely or effective due to delays in communication, limited fire response infrastructure (roads, water, etc.), and other factors.

4.5 CLOSING THE KNOWLEDGE GAP(S)

What is known by different people is social and political: the discussions of guidance, protocols and knowledge within the sector highlighted the distinction between technical knowledge and other kinds of knowledge required for improving fire safety. Different technical questions might be asked to inform site planning and settlement design if they were created through a consideration of geographical, cultural and social contexts, and the practicalities of daily life of people who live in humanitarian settings. For example, thinking about fire risk through an inclusive understanding of gender can highlight the complex ways in which social, cultural, and religious norms interact with fire risk to make some people more vulnerable than others and different times and for different reasons. Recognizing that class, income, ethnicity, sexuality, age, marital status, education, literacy, and disability all intersect with gender is critical for inclusive fire safety programs and education. However, the prevalence of silos prevents the holistic knowledge being created and limits the routes for knowledge to be shared within the sector.

Connecting knowledge of fire safety to humanitarian practice requires sustained effort in embedding a baseline of knowledge across the sector, and ensuring technical knowledge is continuously updated and deepened. This would include shelter and settlement design and materials, how residents adapt and live within shelters and settlements, and how best to engage the range of actors for whom fire safety is and should be a concern through education, communication and engagement.

Build on the foundation of ‘champions’ within and beyond the sector

Technical knowledge of fire risk and risk emergence in humanitarian settings largely resides within the small group of engaged individuals for whom this issue has become a concern, we called them ‘champions’. Some of those who are working on this issue are seeking to innovate using technology to gather data related to fire incidents. For example, fire scientists and humanitarian actors recall engaging in testing materials or using drones to survey settlements to assess the scale of an event. One interviewee noted that, while understanding where people are located (mapping populations) is not necessarily providing data on fire, it is providing some of the overall background to understanding the level of risk of a fire emerging in a particular area, and the potential impacts. Specialists commented on a desire to gather data that can be connected to the humanitarian standards to see how they overlap. This would assist with identifying “high fire risk areas”, particularly if data on population, density and topography could then be factored into the standards of settlement design.

Harness existing practices and ways of working

Understanding of the diverse knowledges at play in any context has significant implications for humanitarian practice. There are opportunities to raise the profile of fire safety within agency work, as illustrated by some country contexts that established technical working groups and retain fire safety on the agenda at global meetings such as the “global CCCM retreat, which happens once a year.” (Interview) These formalized spaces within the sector are critical to knowledge sharing and creating new opportunities for documenting, understanding and responding to fire risk in humanitarian settings. This could also include harnessing technology to create a “community of practice”:



“Tweet work coming up with a fire response plan or we want to do an assessment. We don’t necessarily come up with from scratch - we rely on our peers and colleagues and institutional knowledge that, even if it might not be super well systematized, it is present [...] through your network [...] of kind of help you. So, it is sort of a collective mind and not just necessarily be remade every single time.” (Interview)

Engaging with fire safety professionals

People with specific expertise related to fire are critical to addressing the problem of fire safety in humanitarian settings. Informal champions beyond the humanitarian sector (particularly within the fire services) have been integral to raising the profile of fire safety in humanitarian settings:



“Luckily, we came by a movement or a group of professionals that they have, not a NGO, but it’s more [...] as a I don’t know how they call it... it’s called Operation Florian.” (Interview)

Operation Florian, a group of fire service professionals in the UK, have provided expertise to the sector voluntarily and, along with informal champions within the humanitarian sector, have sustained focus on reducing fire incidences and their consequences in humanitarian settings. Collaborating closely with Save the Children Lebanon, Operation Florian drew from a comprehensive fire safety assessment to implement a train-the-trainer program. The gathering of data then led to local practitioners conducting their own tests alongside the Lebanese Civil Defense, to understand technical aspects of the shelter materials and design and how they function in the Lebanese context that continues to support Syrian refugees (see Save the Children International, 2018 for further details).

A similar innovation around gathering technical evidence of fires within humanitarian shelters and settlements continues in Cox’s Bazaar, Bangladesh where experiments and assessments are being conducted into fire ignition and response, for example by testing materials and equipment through burning down shelters in-situ to understand how fire behaves within the context. Although such activities were described as not being “palatable to everyone” (FGD), those working in this way insist these insights are “necessary” (FGD). MOAS furthered this through a program to train community-based fire responders developed and trialed throughout 2022-23.

The discussions of guidance, protocols and knowledge within the sector highlighted the distinction between technical knowledge about fire ignition and spread, and the different kinds of knowledge required for improving fire safety. Therefore, investment in continued work on gathering contextually situated evidence by and through collaborations between fire scientists, engineers, responders, social scientists, and humanitarian practitioners is an approach to testing that is critical to developing resources that are underpinned by relevant contextualized data, technical insights and an understanding of how people live with and experience fire risk in their daily lives.



5

Responsibility, Organization, and Fire Safety

Responsibility and organization in fire safety have been shown to be fundamental for the effective transition from understanding risks and using knowledge to address them. It is crucial to note that the operational failures of the responsibility lines put humanitarian settlement residents at fire risk. Thus, clear lines of responsibility that entail listening, referring, monitoring, assessing, and re-visiting can ensure that the concerns of the people who experience fire risk are adequately dealt with. Without clear lines of responsibility and organization the mechanisms to ensure a household's reports of fire risk (e.g., electrical cabling spark) will be dealt with will not practically materialize. However, to date, few such mechanisms exist, and fewer still (if any) specifically for fire safety. However, there are innovations that suggest coordinating responsibility for fire safety is possible: e.g., a Refer and Escalate System (RES), designed to track and enable coordination and camp management activities, operates in limited country contexts within the CCCM cluster. Attached to defined lines of responsibility and other tools within the sector (such as a fire safety reporting process), a mechanism that connects residents' concerns to appropriate actors would generate knowledge of fire risk in different humanitarian settings and enable contextualized risk reduction activities.

Reflections within the interviews and focus groups reiterated that fire safety should be seen at the core of humanitarian principle of 'do no harm' and was therefore implicitly understood as a key responsibility for all working within the sector to provide humanitarian assistance. While humanitarian actors understand the importance of fire safety, overall, they regard it as an issue which is falling between the cracks precisely because the lines of actual responsibility for fire safety are unclear. Without an eventual solution for responsibility delegation, responsibility recognition and ultimately fire safety institutionalization, it seems to be nearly impossible to advance and radically improve fire safety in humanitarian sectors.



“You know some of the action that as a humanitarian community we need to work to try to reduce the risk of fires, to try to mitigate the risk of fire, also build capacity within the community and observe the authorities and all of the humanitarian actor in potentially responding to fire.” (Interview)

5.1 WHO IS RESPONSIBLE FOR FIRE SAFETY?

Interviewees have distinguished two types of responsibilities for fire safety in the humanitarian sector: explicit, or in other words formally institutionalized, and implicit, which is informal and not specified through guidance or individual humanitarian roles. Humanitarians who were interviewed often admitted that they are not formally required to take fire safety into account or explicitly assigned responsibilities regarding fire safety (e.g., are not asked to perform fire risk assessments, among other activities).

However, humanitarians felt that it would be helpful to draw the lines of responsibility clearly and often questioned whether someone else was responsible for fire safety if it was not them. Different lines of responsibility and different understandings of them is a challenge that should be recognized throughout the lifetime of the humanitarian settlement. For example, the lines can be drawn between:

- ✓ implementation responsibility for reducing the impact of fires (loss of life, injury, damage to shelter), ensuring effective use of available funding.
- ✓ fire incident response and maintenance responsibility, which should be considered beyond the initial funding for settlement planning/ building.
- ✓ responsibility of the funding / donors’ impact for fire safety.
- ✓ the responsibilities of the enabling environment (political / policy), including the government.

Regardless of whether the responsibility is implicit or explicit, it was also shown to be hierarchical, and it was recognized by the interviewees that decision-making regarding fire safety can often be challenging where such hierarchies are unclear.



“who’s responsible for governance, you know, if it’s a displacement settlement, and the camp managers, which might be UNHCR, or IOM, or NRC, if it’s an informal settlement, or sort of neighborhood, or municipality, then it could be your local municipal authorities or local authorities, or it could be community leaders, it’s a tribal structure, then often, it’s just really down to the local, you know, clans or community leaders to do everything. So, they can be informal as well as formal responsibilities.” (Interview)

Humanitarians also felt that their responsibilities vary across different humanitarian settings. Those who felt that they have the biggest responsibility inputting into fire safety were those recalling their work on newly planned sites, where they felt that fire safety measures had the biggest contribution. In contrast, those who mentioned working on established settlements felt the most hopeless about their ability to contribute to fire safety and were less explicit about any formal responsibilities that they were assigned.

Interviewees were also keen to explore the potential responsibilities and relationships regarding how fire risk emerges. Some perceived ultimate responsibility for fire safety to lie with stakeholders putting restrictions on sites where humanitarians operate, where these restrictions promote the emergence of fire risks, are contentious and create discomfort, and have political and social implications (e.g., government restrictions of the settlement space lead to inability to formalize protocols for evacuation or leaving the settlement in case of a large fire).



“It’s supposed to be a fenced camp where people cannot leave, and we never had a really strong protocol on what to do in case of a fire because [...] that would require the authorities arguing for people to be able to leave the fence gap... It was very difficult to plan escape route because we can’t say or put that on paper or even really engage the community on that.” (Interview)

Another critical issue identified was local governments’ restrictions on the use of specific materials, which would suggest a ‘permanence’ to the structure, leaving fewer options for safer construction materials and methods.



“...materials use in this kind of shelters or settlements is very, like fire prone. I will say a good example is again, this Rohingya camp they use bamboo [...] because the government don’t allow permanent structure; you can use limited concrete, which is good in fire. Even for biggest building like hospitals, we were not allowed to use concrete or brickwork. So, we use steel CGI, and that when the fire is happening, it’s getting hot very soon, and then it bends. And also, for the shelter like bamboo tarpaulin. It’s very easy when it’s dry season to get fired. And then it’s bad in a very high speed. So, these are all the limits, you know, some rules or restriction from the specific governments in each country.” (Interview)

The contestation associated with appearing to legitimize a settlement through infrastructure delivery further reflects how socio-political context can shape fire risk. For example, Jahre et al. (2018) identify a shift among humanitarian organizations towards viewing camps as long-term, evolving settlements rather than temporary holding facilities, in response to the unprecedented scale of human migration and relocation worldwide. Their study and cross-case analysis of four camps in four different countries, based on interviews and a review of camp design literature, aims to increase understanding of this proposed new approach to camp design and to identify challenges. The findings suggest that, as camps mature, there is a shift in approach overall, although most camps are still established using traditional top-down, temporary, and one-off approaches. These results can support improvements in camp design (towards a more evolutionary approach) and trade-offs between permanent and temporary solutions, which should be sought in close collaboration with all key actors.

5.2 A CROSS-CUTTING ISSUE: INSTITUTIONALIZING (MAINSTREAMING) FIRE SAFETY FOR INTEGRATED RESPONSE

Fire safety is regarded as a cross-cutting issue. This means that fire issue is at the heart of the safety and security of the residents during their residency, and any recovery after local events. For example, while HLP play a role in recovery with NFIs, there is a lack of recognition that following a fire event there should also be a mental and emotional support and recovery mechanism alongside. Thus, there is a gap in the holistic understanding of fire risk reduction and fire safety that makes it easy for different actors in the sector to not take responsibility.

However, when addressing the lack of institutionalization of fire safety across the sector, care should be taken to ensure interventions and guidance are contextually situated and appropriate. A shared responsibility involving all actors is seen to be the most legitimate way forward, allowing for reciprocal feedback between different the actors.



“Different shelter actors have the responsibility to make sure to take measures to prevent fire regardless of whether the kitchen space would be inside or outside, and also the CCCM, or in here, we call it site management actors, whoever provides food, so it’s going to be food security sector, or cluster, or whoever provides that [cooker], um, would be those are primary responsible for seeing through how to ensure the fire safety for the beneficiaries.” (Interview)

The possible paths for institutionalization of fire safety are a multi-layered topic, acknowledged as challenging by all the interviewees, but suggested that all relevant institutions - donors, humanitarians, and government - should adopt fire safety as a condition for their involvement in humanitarian assistance. This also resonated with interviewees’ perceptions that the humanitarian sector should play an important role regarding fire safety at the design stage of the settlement, with the donors’ role seen as the most impactful one in the entire system, since it is where the funding restrictions may potentially act as a barrier to considering fire safety in competition with other needs. Interviewees commented:



“We are responsible when humanitarian agencies and the governments and like in a first step, because we are the one designing implementing the camp setting.” (Interview)

“And the donors do everything, right, if that enabling environment is not there... And then themselves should say there’s a regulatory body and they should be the ones.” (Interview)

5.3 ROLE OF FUNDING IN DRIVING INSTITUTIONALIZATION

Despite the presence of fire hazards and the restrictions within which humanitarians operate, improving fire safety was not seen by interview participants as unachievable. However, the potential for positive change is limited by a lack of available funding to address the issue holistically. For instance, funding is difficult to achieve without empirical evidence of potential fire safety benefits where donors are convinced by a ‘return on investment’. However, the case for increased funding is challenged further by the intended temporary nature of humanitarian settings. Taken together, the funding landscape allows unsafe conditions to continue and prevents contextualization of fire mitigation strategies where knowledge can be applied from non-humanitarian to humanitarian settings.



“We know that bamboo is extremely flammable, the reality is, either for logistical reason or just funding, there is, you know, we can’t necessarily consider better materials to shelter just because there is no local availability or then it will take your average cost through the roof. And it’s easy to think about solution, you know, but when you have to scale them for 200,000 people, 500,000 people or a million people cost is important. And I think this is also why it’s not, you know, it’s not necessarily easy and some of the guidance needs to be very country specific.” (Interview)

Within research literature, ‘building back better’ with the support of the funders was shown to offer a safer alternative to the status quo. For instance, De Corte and Tempra (2010) presented the argument for seeing

fires as an opportunity, using the example of IDPs in Bossasso, Somalia, a camp previously characterized by neglected shelters and frequent fires. Key components of a new UN-HABITAT plan included: changes to emergency response after fires, upgrading temporary settlements by planning access and firebreaks, creating community facilities, building latrines and water points, stocking mobile shelter kits, and planning sustainable local resettlement to integrate some of the displaced with the host community. The emergency response adopted a ‘build back better’ approach, taking the opportunity to introduce firebreaks and distribute mobile shelter kits (with use of metal poles and fire-retardant canvas rather than wooden sticks and cardboard), coupled with community awareness raising and training displaced people and local authorities in fire response. A simple training guide for upgrading temporary settlements, aimed at municipal officials and community leaders, was developed to allow for a quick transfer of the basic skills needed and to empower displaced people to initiate improvements themselves. In 2008 the number of families who suffered fires fell by 50% compared to 2007.

This example illustrates the possibilities which emerge from institutionalizing improvements to shelters through investing resources in rebuilding programs. Supporting this idea, one interview respondent with significant experience as a fire safety professional in humanitarian settings argued:



“Site replanning needs to take place before and event: recovery is time compressed... there needs to be a pre-recovery build-back plan.” (Interview)

The line of impact between housing, land and property (HLP) and fire safety requires further research to understand how more novel approaches to humanitarian assistance, including those within the humanitarian-development nexus, can support improved fire safety. Tenure and ownership of property is a significant but under-recognized issue in approaches to improving fire safety and the risk of burns. For example, security of tenure, legal status (e.g., citizenship and rights) and immediate security concerns can determine the level of investment or effort a household will put into shelter upgrading for fire safety.

5.4 INFORMALITY WITHIN FIRE SAFETY AND RESPONSE

The lack of institutionalized responsibilities and funding across the sector has resulted in practitioners taking informal responsibility for improving fire safety. These informal champions have become advocates for fire safety and have knowledge and expertise which could be harnessed within an explicitly defined set of educational activities, formal guidance, and protocols.

To some extent, these humanitarians, self-identified as ‘disruptors’, break the hierarchical structure of decision-making, or find creative ways to shape it, and should be encouraged to mentor other actors in the field, share their knowledge and forge influential relationships across the sector, open to critiques, validation and contextualization of their practices:



“So, with regards to the operations here, I describe myself as a bit of a disrupter. And, and someone who gets very fed up very quickly, when I see things not working, and not being thought through properly.” (Interview)

Informal leadership, knowledge and practice exchange among settlement residents are equally as important, although we did not uncover enough information through the interviews about the existing examples across

the sector to draw conclusions about how widespread these practices are. Gaining a better understanding of how communities navigate fire safety is critical to ensure they are co-creators in the design and delivery of appropriate, context-specific capacity building activities.

5.5 BUILDING A COMMUNITY OF PRACTICE

There is potential to draw on the small but not insignificant number of engaged and experienced practitioners who understand the need for an integrated approach to fire safety in humanitarian settings and could create a Community of Practice. However, as with any practically applicable issue, fire safety needs to be practiced for a shared understanding and community of practice to be built: this means theoretical knowledge and dissemination of such knowledge exclusively in a form of guidance will have only a limited impact. For most humanitarians who do not come from fire safety engineering backgrounds, the practical application element is crucial, as one of the interviewees explained:



“I don’t think from my personal experiences [you can learn about fire safety] reading it from a book, I think that if I had done some sort of simulation with it, or it had better training, you know, [...], then I would add that too. But to be honest with you, I feel like you know, [...] they don’t really show you how to use it, they don’t really, you know, make a point of that.” (Interview)

This is not to be confused with experiential learning, also identified in this report as process of learning about fire safety within the humanitarian sector (Section 4.4.3). An interdisciplinary and sector-wide Community of Practice would draw on experiences, expertise and related knowledge through continuous training and education, mentoring and reflective practice, and institutionalized approaches knowledge sharing. Humanitarians are not the only actors on the ground who can actively contribute to fire safety while other institutions bear the responsibility by way of simply demanding for it to be in place: a Community of Practice, therefore should recognize that a range of interactive and adaptive approaches and mechanisms are needed to foster collaboration and mutual learning.

Beyond humanitarian professionals, an effective Community of Practice would also consider how it works with affected communities and how their experiences and knowledges inform discussions across the sector. For instance, Clarke (2018) explored informal agency and leadership in refugee camps, and how marginalized and dispossessed groups develop autonomous political strength (refugee groups mobilize to demand better services and greater rights). This paper examined levels of mobilization among Syrian refugees living in camps and informal settlements in Turkey, Lebanon, and Jordan. It attributed the high levels of mobilization in Jordan’s Za’atari camp (compared to the relative quiescence of refugees in Turkish camps and Lebanese informal settlements) to a set of strong informal leadership networks. These emerged due to the concentration of refugees in the camp, and a fragmented governance system. In Turkey and Lebanon, these conditions were absent, and as a result refugees did not develop the strong leadership networks needed for effective mobilization. Similarly, Jack (2018) examined another aspect of informality – rumor - in the context of voluntary repatriation plans by the Thai and Burmese governments and UNHCR, and the lack of access to reliable information. In this study, refugees on the Thai-Burma border were unable to voice their concerns and perspectives formally but used rumors as an alternative platform of communication. Thus, an effective Community of Practice working towards improved fire safety must also recognize the many ways in which knowledges and beliefs circulate within humanitarian settings because they can impact the ways in which programs or interventions are perceived and responded to by different residents.



6

Discussion

Fires in humanitarian settings have a range of impacts that are felt and experienced long after a shelter or settlement is rebuilt. Progressive approaches to fire safety require a holistic understanding of the problem and how it is experienced, and a recognition that fire risk emerges when technical and social factors interact.

6.1 SETTING THE SCENE FOR FIRE SAFETY

This research set out to understand the state of fire safety in humanitarian shelters and settlements, with a focus on exploring the knowledges (both tacit and explicit) that shape fire safety practices within the humanitarian sector, and specifically within shelter and settlement programming. Having outlined findings in relation to three research objectives (risk emergence, knowledge, and responsibility), this discussion explores a range of issues raised by this research.

While it is acknowledged within the humanitarian sector that decisions around shelter design and materials and settlement planning directly impact fire risk, the technical dimensions of risk emergence are a focus of continued investigation for fire safety professionals. To achieve fire safety integration, interdisciplinary investigations will be needed to understand shelter and settlement typologies and how fire risk is experienced by different residents in different settings.

Moreover, the decisions that are made during the lifecycle of a settlement as part of humanitarian programming, can lead to unintended increased fire risk with potentially devastating consequences. However, when considering lines of responsibility for fire safety in humanitarian settings, placing the emphasis solely on shelter and settlement design and planning is problematic as it diminishes the possibilities that are available through a sector-wide co-ordinated response. Various possibilities arise once fire safety is recognised to be a socio-technical issue that concerns all within the sector. For example, managers could prioritise education and training to ensure fire is integrated as a holistic issue for all staff; logistics teams could adopt safe combustible materials storage; CCCM might take responsibility for the inclusion, maintenance and upkeep of fire breaks; while gender specialists would play an active role in ensuring all people, whatever social identity, access and engage with appropriate fire safety education.

Advances in understanding and application of improvements in fire safety in humanitarian settings are currently being driven by individual champions and organizations external to the humanitarian sector. Acknowledging the fire gap within discussions and programs related to WASH, Logistics, Health, Education, HLP, Gender and Environment, and other spaces within the wider humanitarian sector, is an important step towards institutionalization and integration of fire safety across the sector.

Therefore, improving fire safety for affected populations requires a greater understanding across the humanitarian sector that fire risk emerges because of decisions, practices, and gaps in knowledge, and that there are steps that can be taken by individuals to reduce risk as well as significant changes at the institutional level. Cross-cutting and holistic discussions are necessary to connect specific fire safety issues that fall through the cracks such as waste management and storage issues at household, settlement and agency levels, and further research could find opportunities to embed fire safety and burns education within health programming.

6.2 TECHNICAL KNOWLEDGE AND RESEARCH GAPS

Evidence-based knowledge is critical for the sector to address the complexities of fire risk in humanitarian settings. The gathering of evidence, data and explorative research related to fire risk and safety specifically within humanitarian settings was universally regarded by fire scientists, engineers, and those within the humanitarian sector and specifically the shelter cluster, as critical to ensuring more effective practice and interventions. Some of the interview respondents commented that if the financial impacts of fire in humanitarian settings were understood, there might be more focus on solutions. While such calls may allude to the reframed Grand Bargain (2021) which seeks 'improved efficiency, effectiveness and accountability' within humanitarian programming, this research warns against simply quantifying the cost of fire to agencies and donors through number of shelters lost / financial cost of rebuilding, since reducing fire risk in shelters and settlements requires both technical and social understandings of fire ignition and spread, human behavior and social vulnerabilities, and dealing with the impacts must acknowledge the many complexities associated with recovery, such as loss of employment or livelihoods, access to education or social networks, or short and long-term mental and physical health impacts.

To properly account for existing risks, research and data need to consider the range of longer-term implications for different people within the humanitarian settings and establish paths for shaping design and practice across the sector that acknowledges and supports fire safety and risk reduction education, communication, and engagement activities for staff and communities. Three key gaps arising from this

research are briefly discussed here that points to potential interventions. Addressing these gaps require concerted efforts from various actors, including fire safety professionals, humanitarians, researchers, affected communities, and policymakers. Coordination, collaboration, and co-production are essential for generating the necessary scientific evidence and developing contextually appropriate engineering methodologies that consider both technical and social aspects, combine experiential and theoretical knowledge, ultimately leading to the successful reduction of fire risks in humanitarian settlements.

Humanitarian sector lacks technical knowledge about fire, fire risk and fire safety

As described in Chapter 4.1, humanitarians and affected populations gain most of their knowledge about fire through experience. This is an important type of experiential knowledge for which the value cannot be understated. However, without this lived and practical knowledge being grounded by theoretically sound technical knowledge about fire, it can be dangerous.

Fire is a complex phenomenon that can change in an instant based on a multitude of factors, not all of which are well understood or quantified scientifically. The phrase ‘knowing enough to be dangerous’ applies here – experience with actual fire (controlled or uncontrolled) can lead to a false confidence and someone to believe they understand how a specific fire will behave, thereby influencing their perception of risk and possibly their individual behaviors or even messaging they provide to others about actions to take during a fire emergency.

Outside the acute timeline of actual fire emergencies, the sector’s lack of technical knowledge contributes directly to the creation of a fire problem (i.e., fire risk emergence) and to missed opportunities for fire risk reduction (leading to cascading risk).

Fire science and engineering disciplines lack knowledge about the humanitarian sector

Fire safety professionals tend to view fire problems in humanitarian settings through a technical lens without appreciating the complexities within sociopolitical context. Oversimplified understandings of the sector, its mechanisms, and constraints hinder the effectiveness of technical assessments and advice.

Fire science and engineering disciplines have a critical role to play in capacity building of the sector, scientific discovery, and development of contextually appropriate engineering methodologies. But this cannot be done in isolation nor without deeper inquiry and learning about how the humanitarian sector functions.

Scientific evidence and contextualized engineering methodologies are insufficient

While evidence-based scientific understandings of fires in human settlements can support the development of achievable and effective fire risk reduction strategies, help to identify higher-risk settlements for prioritization, and inform actions taken during fire incidents in humanitarian settings, there are several gaps in scientific evidence and contextualized engineering methodologies that were identified as those that hinder the progress:

- ✓ The absence of comprehensive, reliable, and publicly available data on fire incidents (e.g., frequencies and consequences of fires) in humanitarian settlements makes it difficult to assess the scope of the problem and allocate resources effectively.

- ✓ Insufficient understanding of fire behavior at the shelter scale – how fires develop and spread within different individual shelter types – considering factors such as building materials, construction methods, and shelter designs specific to humanitarian contexts.
- ✓ Limited evidence of fire spread mechanisms between shelters and across settlements hinders understanding of the dynamics of fire propagation between shelters and settlements, making it challenging to develop effective fire prevention and mitigation strategies. Practical, socially acceptable solutions that address fire spread are essential for successful implementation.
- ✓ Inadequate evaluation of existing and proposed fire safety interventions, responses, and systems, assessed not only for their technical feasibility but also for their socio-economic and socio-political acceptability, to ensure their success in practice.
- ✓ Evidence for decision-making processes in response to fire risks and resident behavior during fire emergencies is scarce.
- ✓ Limited evidence demonstrating that fire safety can be improved in human settlements with measurable outcomes.



6.3 CONNECTING SOCIAL AND TECHNICAL KNOWLEDGE FOR ADDRESSING FIRE SAFETY

Even without recorded data, it is evident from those working in humanitarian settings that fire is a significant safety concern for residents, particularly those who have witnessed or experienced its impacts directly, although residents' knowledge of fire risk prevention remains low. Therefore, while experience of fire leads to engagement with the issue, it does not necessarily ensure understanding of prevention.

On the other hand, knowledge of fire prevention and safety is highly varied, contextually determined and "circumstantial", in part because knowledge acquisition and sharing within the sector also often relies on individuals: professionals who have witnessed, responded to, or supported recovery from fires. Even acknowledging the existence of professionals who champion fire safety, interviewees report the significant gap in recognition of fire as a critical issue among individual practitioners and the humanitarian sector as a whole with an overall sentiment that fire safety is "neglected". Together, the lack of sector-wide experiential, theoretical and technical knowledge, and lack of understanding of the different impacts of fire on humanitarian settlements and the practices that can reduce risk and improve safety, prohibits progress in addressing the problem of fires in humanitarian settings.

The 'ad-hoc' nature of knowledge acquisition by humanitarian professionals makes it hard to share and institutionalize it across the sector. This exacerbates the unevenness of knowledge in terms of what is understood and how deeply, by whom, how knowledges are shared and subsequently inform practice. Thus, knowledge of the different aspects of fire safety, prevention and risks in humanitarian settings resides within silos and there is little interdisciplinary or sector-wide collaboration. Moreover, formal documented evaluation activities appear to be generally lacking and when added to a lack of reporting mechanisms to record fire incidents (including near misses), the opportunities to learn within a community of practice are being lost. The sector is losing context-specific knowledge and expertise, at the same time failing to harness the opportunities for collaborative learning.

When viewed in combination with a weak presence of fire safety within formal guidance and protocols, the unevenness of already siloed knowledge and lost learning opportunities suggests that no-one possesses all the necessary knowledge to ensure effective fire safety in all contexts, but this incomplete knowledge is all that individual practitioners have to work with. The result is a sector where knowledge of both fire risk and fire safety is fragmented and what does exist is not easily or effectively shared. Nonetheless, there appears to be a reliance within the broader humanitarian sector on a 'trickle down' approach to knowledge of fire safety alongside a 'trickling up' of data. However, because of this fragmentation, this is not how it works in practice. There are those who have 'firsthand' experience - such as those who work with settlement residents or have experiential knowledge of fire risk - who argue that more fire incidents with bigger consequences occur than are recorded. Then there are the technical knowledge experts of fire risk and safety in shelters and settlements, where knowledge largely resides with specialists and professionals who have a particular remit for (or have taken a particular interest in) understanding fire in these contexts. And then there are residents, who have the least consistent access to or understanding of how to ensure their environment is safe. Although communities create their own knowledge of fire risk, this often happens through lived experience of fire. Aside from being a dangerous approach where fire risk appears to be an afterthought, relying on communities to experience a fire incident to understand fire risk and change behaviors neglects the practices available to practitioners throughout the life cycle of a settlement (such as

within shelter and settlement design or within camp co-ordination and management processes) to embed fire safety knowledge that connects to the before, during and after phases of a fire incident.

The consistency in any connection between social and technical dimensions of fire safety are further complicated by the transient nature of humanitarian work that arguably needs short-term contracts but results in expertise and context-specific knowledge moving with the individual. The turnover of staff demands an adaptive system of knowledge sharing that also recognizes humanitarians work within increasingly complex contexts and respond to intersecting issues. It is understandable that many practitioners seek a set of universalized guidelines for fire safety that can be applied to the range of humanitarian settings for which fire risk is a growing concern. However, fire risk emerges in different ways for different people in different humanitarian settings so until there is deeper, more consistent understanding of how to reduce fire risks for all people across all settings then universalized guidance cannot be prescriptive. Although attempts to point out the pressure points for fire safety have been documented widely, and there are pockets of secure knowledge and understanding of fire risk, notably in relation to ignition and spread and particularly concerning fuel for cooking, heating, and lighting, they remain aspirational and feature within recommendations rather than practice. Similarly, while there is some knowledge produced within the literature regarding fire risk which drives the practical recommendations for fire risk management, there is not enough knowledge on the existing disconnect between what is materially possible within the range of humanitarian settings, and what is not. This invites thinking of the opportunities that exist to harness technology beyond the written form, and an overwhelming amount of documentation, that has been shown to constrain the level of engagement from humanitarians rather than facilitate it.



6.4 TAKING RESPONSIBILITY

Although the sector holds a set of established and universally shared values through the humanitarian principles, application of these principles through homogenized practices in every area of work is uniquely challenging: there is no one professional or independent institution that determines, guides and regulates all aspects of humanitarian work, and the application of national standards is blurred through legal issues related to jurisdiction that sees state governments' responsibilities differ in relation to internally displaced people and those who have crossed borders.

The fragmented knowledge of fire risk and the lack of responsibility mechanisms mean that there is a lack of practice of fire risk management. However, there are important opportunities available to the sector. Establishing fire as a cross-cutting issue and connected to other cross-cutting issues such as environment, was shown to be a favorable strategy across the interviewees. Thinking through a cross-cutting issue lens allows a more flexible view of fire safety across all levels of humanitarian sector. For example, fire risk reduction and safety practices can be established in ways that also consider environmental issues: reducing reliance on the provision of single-use items that are limited in effectiveness while acknowledging the potential of increased fire risk due to rising global temperatures could subsequently put fire safety on the agenda for the sector's overall strategic planning.

Responsibility should also be taken to mitigate cascading and inherited risks of fire. Every time fire risk is not considered, it 'cascades' or 'jumps' further down the system with the potential impacts only increasing. While the cascading risks concept is recognized as part of the everyday practice for those in Disaster Risk Reduction (DRR), fire is not part of the 'classic' DRR approach, leaving humanitarians to deal with and mitigate competing and cascading fire risks. It is important to note that portraying risks (such as fire) that are cascaded downward to affected populations as inevitable is against the very basic principle of humanitarian work. Therefore a useful approach would be to raise fire issues at the start of any project or program, and revisited throughout, thereby allowing DRR to accomplish its task and reduce risk to as low as reasonably possible.

To conclude, a unique opportunity presented by the relative newness of this area of research and practice relates to ambition: reducing fire risk in humanitarian settings is possible if care and attention is taken to understand the complexities of risk emergence and to fully evaluate programs and practices from a holistic lens of fire risk. Despite always being intended to be temporary, there is widespread acknowledgment within the sector that many displaced people will spend years in an informal settlement, camp, or camp-like setting. Therefore, embedding fire safety into recovery programs could ensure humanitarian settings are safer for all and reflect an ethics of care, a principle which connects to the notion of building back better: to achieve this aim, policy and practice throughout the sector must be informed by fire risk assessments and evaluations of all activities or programs (including but not limited to approaches to cooking areas, shelter materials, fire incident response, training and community-based fire safety education, post-fire relief and recovery). In other words, without embedding evaluation and opportunities to share learning into humanitarian programming, building back better becomes a fallacy because there is no clarity on what better looks like. Although the consequences might be unintended, fires resulting from the failure to rebuild more safely cannot be surprising.



7

Strategic Recommendations

Fire is highly contextual, socio-technical, and often political. The problems related to fire in humanitarian shelters and settlements are multifaceted, stemming from unclear roles and responsibilities, lack of accountability, and limited systems in place to ensure fire safety.

The Humanitarian Charter, Protection Principles, and Core Humanitarian Standards commit practitioners and agencies to ensuring the safety and protection of affected populations, however, the lack of specific guidelines and protocols for fire safety and accountability often leads to fire safety falling through the cracks. Improvements in fire safety that have been observed in some settings have often been the result of informal ‘champions’ within a specific country context, agency, sector or cluster, with little provision (or budget) for evaluation or knowledge sharing.

It is fair to say the issue of fire has been neglected in the humanitarian sector. A systems-based approach to institutionalize fire safety as a sociotechnical issue into humanitarian policies, procedures and programming is critically needed. Mainstreaming fire safety will require acknowledgement of existing gaps in policy and practice, and the commitment of practitioners and agencies to do better.

7.1 INSTITUTIONALIZATION

Fire safety is often overlooked until a fire incident occurs. It is a notable gap within policy, procedures, and training/education. Where it is acknowledged, fire is treated as a technical issue requiring technical solutions, so responsibility largely falls to shelter design and site planning – this reinforces the gaps within different parts of the sector.

FROM

Fire Risk and Safety is understood to be a socio-technical issue and is integrated within all aspects of humanitarian policies, procedures, and programming. The mainstreaming of fire is supported by an overarching goal to ensure sustained and effective shift to integrated fire prevention and safety that is supported by donor funding processes.

TO



CHALLENGES

- ✓ Limited data on fire incidences and their consequences, especially in financial terms.
- ✓ Insufficient data to develop cost-benefit analyses of fire safety interventions, meaning the cost-effectiveness of investing in fire prevention, mitigation and preparedness is not clear.
- ✓ The humanitarian sector experiences considerable funding pressure and must balance competing agendas.
- ✓ The sector has competing demands and fire is one of many issues being dealt with by different parts of the humanitarian system.
- ✓ For fire to receive the ‘buy-in’ necessary for it to be adopted as a cross-cutting issue, more evidence is needed to establish the impact fire has on the delivery of humanitarian assistance.
- ✓ The sector will need to agree boundaries and accountability processes for sector-wide shared responsibility for fire safety, a process that is not clear-cut or easy.

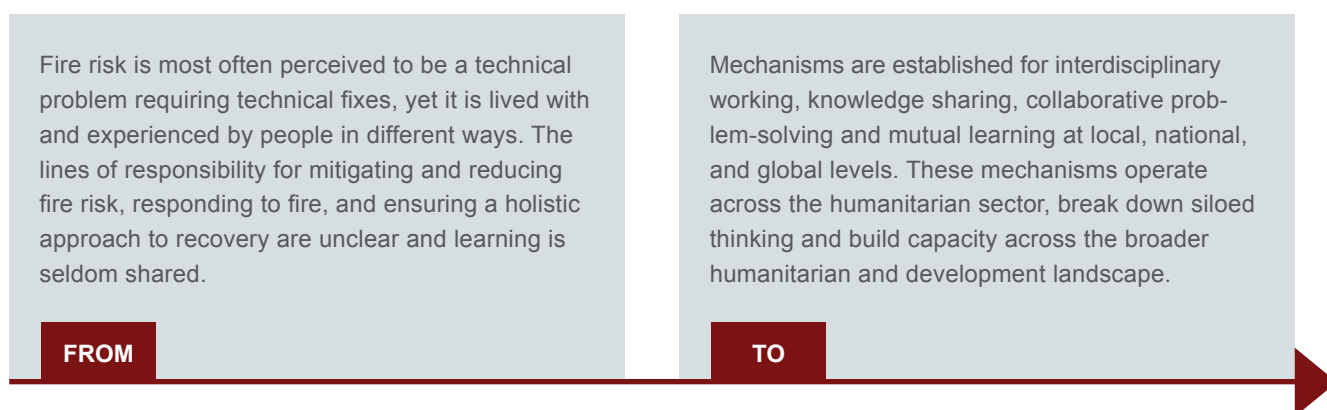


WAYS FORWARD

- ✓ Funders have the capacity to influence the humanitarian sector through resources, policies, and procedures, and through expectations for ways of working. For example, mainstreaming fire risk reduction within funding proposal forms and reporting processes would ensure all programs have considered unintended consequences of the proposed work and evidenced the steps to be taken to mitigate any increased fire risk by completing appropriate fire safety plans.
- ✓ At the agency level, fire risk reduction must be evident within internal processes and policies and become embedded in how agencies work.
- ✓ Fire safety should be integrated into funder and implementing agency safeguarding policies and procedures to avoid unintended consequences.
- ✓ Organizations and individual practitioners must consider and address fire risks and fire safety practices within their own buildings and warehouses (e.g., storage of resources and materials, staff housing), as well as within the humanitarian settlements their work is focused on.

- ✓ Fire safety must be recognized and institutionalized as a cross-cutting issue that is relevant to all who work within and support the humanitarian sector. Understanding how fire impacts the lives of people living in humanitarian settlements is critical to ensuring a sustained and effective shift to fire prevention. However, this should not be to the detriment of ensuring effective mitigation and preparedness activities immediately.
- ✓ One way of embedding fire safety across humanitarian programming would be to integrate it within the existing standards and guidance where relevant. Such integration could offer a way forward for both institutionalization and clear, sector-wide responsibility sharing. See Section 7.10.
- ✓ Donors to invest in fire risk assessments and fire risk reduction programming (including targeted fire prevention programming) in addition to fire response mechanisms. Interventions need to be supported by evidence: evaluations should be integrated into funding schemes to assure data collection and learning is prioritized, so investments lead to capacity building across the sector.

7.2 EMBEDDING SECTOR-WIDE COLLABORATION



CHALLENGES

- ✓ Throughout the humanitarian and development sectors, agencies, organizations and individuals are being asked to do more with less. Collaboration can, at first, appear time-consuming and without immediate benefit. Mechanisms for working across the sector are not always clear or easy to facilitate.
- ✓ A coordinated effort is needed to establish effective mechanisms for knowledge sharing, interdisciplinary working, collaborative problem-solving, mutual learning, and to enable coordinated fire safety advocacy. Such a system is crucial for building capacity and breaking down 'siloed thinking' that leads to unintended fire risks. Establishing communication channels for sharing good practices and lessons learned can contribute to the development of more effective fire risk reduction strategies and sector wide guidance.

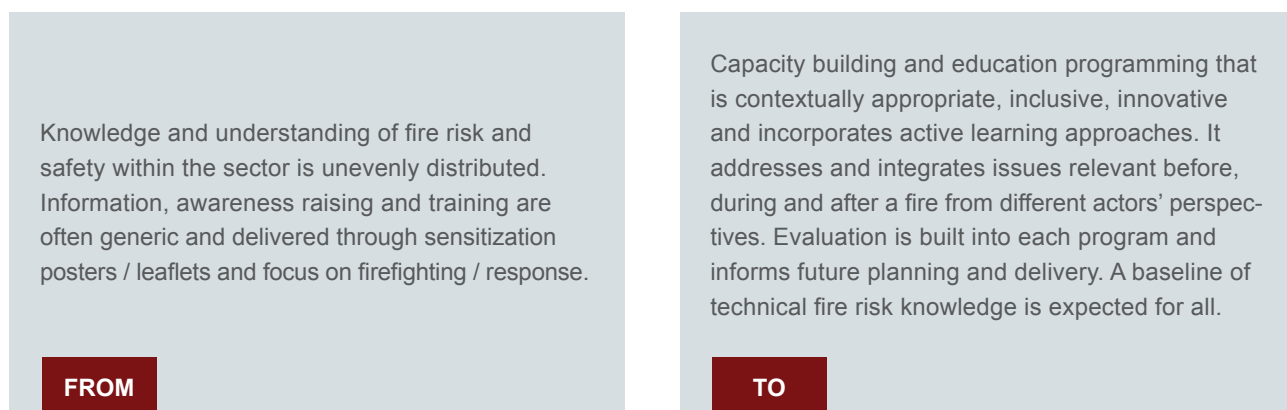


WAYS FORWARD

- ✓ Establish sector-wide Fire Risk and Safety Community of Practice (CoP) to devise mechanisms and communication channels for sector-wide interdisciplinary working, knowledge sharing, collaborative problem-solving and mutual learning.

- ✓ Donors should enable opportunities for practitioners and interdisciplinary researchers to work at the humanitarian-development nexus to ensure that the before/during/after dimensions of fire are explored holistically. Knowledge of fire risk at the nexus could open up new funding opportunities and would clarify lines of responsibility, leading to more complete and sustainable fire mitigation, prevention, response and recovery initiatives.

7.3 EDUCATION, KNOWLEDGE AND CAPACITIES



CHALLENGES

- ✓ Education and capacity building activities are dominated by 'top-down' approaches and filter into a bias towards technical solutions delivered by 'experts'.
- ✓ The nature of humanitarian work involves short-term contracts / postings which can result in knowledge and capacities being lost in the handover cycle.
- ✓ Fire science and fire engineering practitioners lack a comprehensive understanding of the humanitarian sector or experience of working in low resource, unregulated settings.
- ✓ Current fire safety training for humanitarian practitioners is focused on their safety in the office and accommodation premises they occupy.

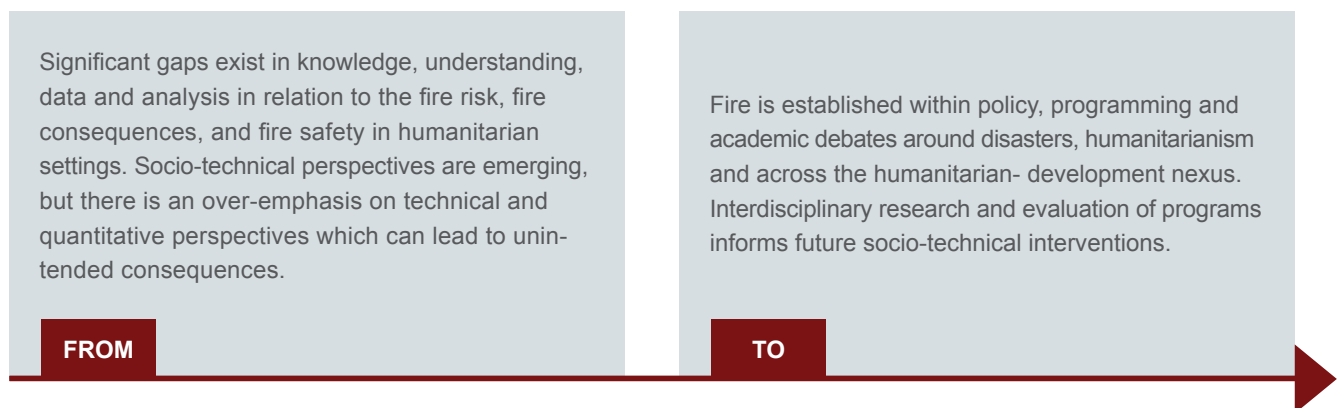


WAYS FORWARD

- ✓ Knowledge of fire risk and prevention can be gained through formal, informal, and non-formal learning, and understanding can be deepened through creative learning approaches and active engagement with fire safety practices.
- ✓ Accredited professional development training and education should be available to humanitarian staff from across the sector with specific applicability to the range of roles and contexts.
- ✓ Integrate socio-technical fire-specific capacity building and knowledge sharing processes across the humanitarian sector by engaging with education and fire safety professionals.

- ✓ Engage with settlement residents to learn how fire emerges in their daily lives and how they respond.
- ✓ Develop a suite of resources by contextualizing existing development-oriented materials for the humanitarian sector.
- ✓ Respond to identified knowledge gaps through the design, piloting, evaluation and delivery of contextually appropriate capacity building, education, communication, and engagement (ECE) activities.
- ✓ Fund programs to design and deliver community centered ECE and capacity building programs that are co-created with a range of actors to ensure activities are inclusive and contextually appropriate.
- ✓ Use qualitative methods to uncover the potential immediate and long-term impacts of different approaches that can engage with different audiences and build knowledge and fire response capacities within the system when evaluating activities.
- ✓ Share evaluations and lessons learned from successes and failures.
- ✓ Ensure FRA and data on fire incidents, training and ECE is included in handover process during staff transition.
- ✓ Explore the potential of technology to reach the most marginalized populations.

7.4 RESEARCH



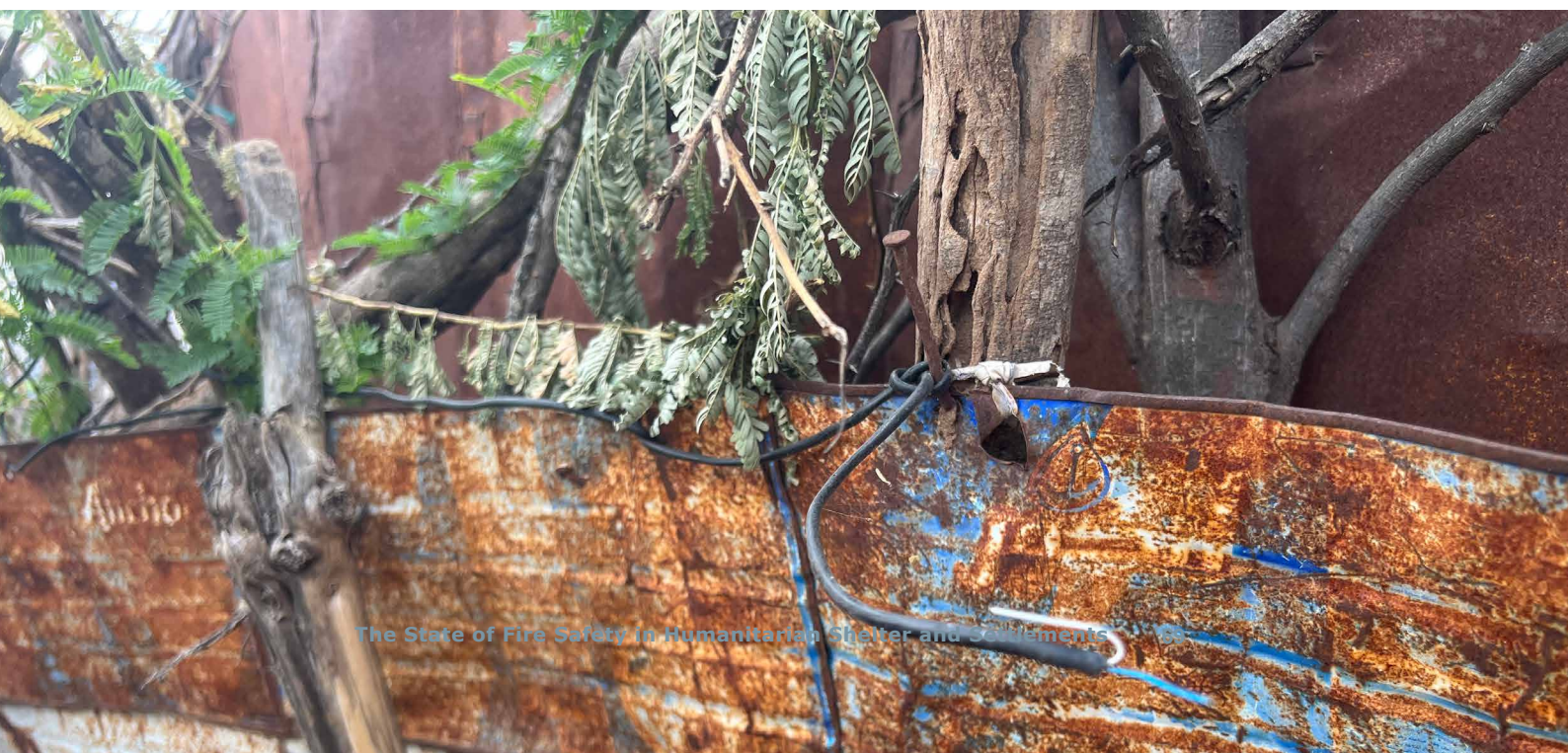
CHALLENGES

- ✓ Fire safety is often overlooked until a fire incident occurs.
- ✓ Fire being an emerging topic within research on humanitarian settings, there is a lack of data (longitudinal and global) on its many impacts. Broader and deeper knowledge and understanding of fire in humanitarian settings is needed to ensure contextually appropriate programming and interventions.
- ✓ Availability of funding for interdisciplinary research is limited as there is a history of preference for technical ('visible' and 'quantifiable') solutions that can demonstrate an immediate impact. Donors are in a unique position to reverse this trend.
- ✓ Funding for cross-cluster and sector collaboration is also limited, as are projects that pilot activities working at the humanitarian-development nexus.



WAYS FORWARD

- ✓ Investment is needed to understand, document, disseminate, and evaluate examples of fire risk reduction activities and practices undertaken by various actors in diverse settings, including ,in-situ' approaches to testing. This is critical for connecting knowledge of fire safety in different contexts with the appropriate, reasonable, and feasible practices tailored to specific settings.
- ✓ Further technical research is needed that explores fire spread mechanisms between shelters in relation to different materials and environmental conditions.
- ✓ There is an urgent need for greater understanding of fire risk emergence: how fire risk manifests and changes throughout the life cycle of a shelter and settlement, especially with households making adaptations to meet the demands of daily life.
- ✓ Investment is needed in interdisciplinary research that connects technical aspects of fire risk (e.g., how a fire spreads) to social, cultural, and lived experiences that shape what happens before, during and after a fire. Socio-technical collaborations can expose social practices and adaptations that increase or decrease the effectiveness or suitability of a technical ,solution'.
- ✓ Funding is needed for pilot projects that explore Fire Risk Assessments, approaches to contextualization, critically engaged fire education, communication and engagement activities, and institutionalization of community risk reduction programming.
- ✓ Flexible funding opportunities are needed that allow for collaboration and innovation with scope to develop longitudinal work to assess impact and sustainability.
- ✓ Financial costs associated with property loss, relief, recovery, and other needs that arise from fires need to be quantified, e.g., expenses related to replacing shelter materials, non-food items (NFIs), and rebuilding infrastructure and community facilities. Cost-benefit analyses for fire safety interventions need to be developed that consider the range of economic, social and health impacts of fire in the long term, not just immediate post-fire consequences.
- ✓ A Fire Risk and Safety Community of Practice must be established to ensure learning feeds into policy, programming and resources for use across the sector.



7.5 FIRE RISK ASSESSMENTS

Fire Risk Assessments (FRA) are rarely implemented within the humanitarian sector. There is no standardized FRA methodology for humanitarian settings. This results in a gap in knowledge of fire risk which filters into programming gaps and unintended consequences.

FROM

A standardized methodology to assess local fire problems, capacities and capabilities for risk reduction and response, and opportunities for risk reduction programming that harnesses fire safety knowledges and technological developments. The FRA approach would embed evaluation to ensure plans and programming can respond to changes (and therefore needs) in each specific context.

TO



CHALLENGES

- ✓ The Sphere Handbook's guidance notes recommend that "fire risk assessments should inform site planning." However, due to the contextual nature of fire and the incredible diversity of humanitarian settlements, FRAs are needed for programming in general, not just to inform site planning.
- ✓ Despite their value, FRAs are rarely implemented. The small number of FRAs that have been published are specific to the individual camp/settlement context and events.
- ✓ A standardized methodology to assess fire risk in humanitarian settings does not exist, and the approaches previously implemented are largely expert opinion based and biased towards operational perspectives without sufficient engineering input, experiential input, and contextual grounding.
- ✓ Capacities of fire safety professionals and humanitarians have minimal overlap – both perspectives are critically needed, and few individuals have a robust understanding of both sectors.



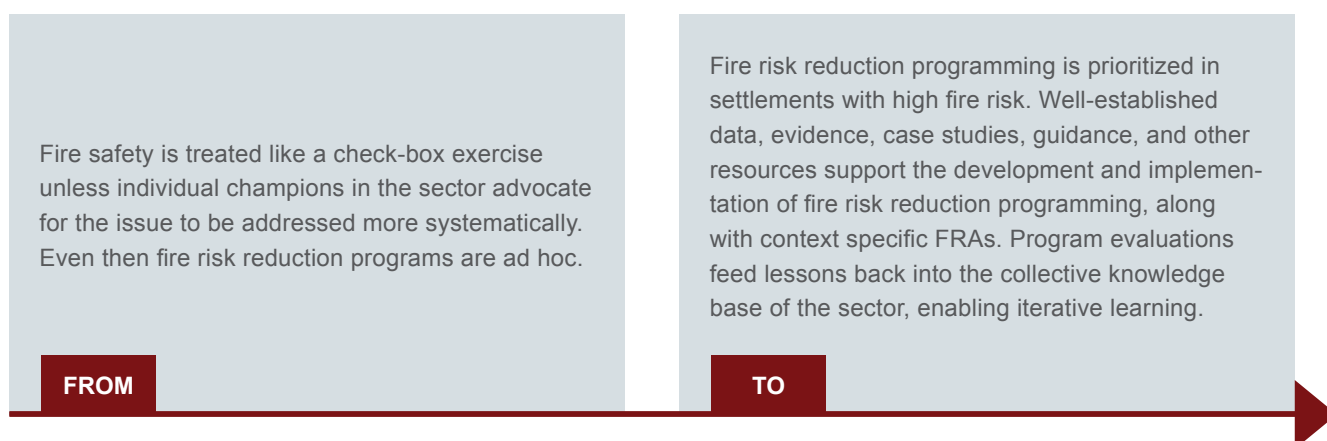
WAYS FORWARD

- ✓ FRAs can be used to establish a baseline understanding of local fire problems, both experienced and anticipated, based on emergent risks and socio-technical context; to evaluate existing capacities and capabilities for fire risk reduction, and fire response specifically; and to identify opportunities for fire risk reduction programming and integration of fire safety into other humanitarian programming.
- ✓ Funding is needed to develop standardized FRA methodologies and to build capacity within the sector to conduct FRAs. It is recommended that this be developed through a series of pilot projects, where FRA methodologies are developed, tested, and refined in diverse settlement types and contexts. This program could be connected with fire risk reduction pilot projects and their evaluation, capacity building of affected populations and humanitarian practitioners, and the establishment of a fire incident reporting system.
- ✓ Prioritize interdisciplinary working, and participatory engagement and co-production with affected populations, non-traditional actors (e.g., national fire services), and a cross-section of humanitarian

sectors / agencies in the development of FRAs in specific contexts to establish a foundation for holistic fire risk reduction programming.

- ✓ Opportunities exist to harness technologies to target and enhance fire safety interventions and the global scale, such as GIS mapping, remote sensing, and data analytics, to identify geographic areas or settlements with relatively higher fire risks.

7.6 FIRE RISK REDUCTION PROGRAMMING



CHALLENGES

- ✓ Funders are drawn to immediate and visible quick wins that focus on fire response or providing 'kit', rather than holistic fire safety strategies with hard and soft interventions.
- ✓ Resource constraints, especially limited funding and a shortage of appropriately trained personnel.
- ✓ Population dynamics and mobility can make it difficult to implement long-term fire safety measures, conduct community education programs, or ensure consistent adherence to fire prevention protocols as populations may be continuously changing.
- ✓ Sociocultural factors such as language barriers and cultural beliefs can lead to misunderstandings and resistance to change. Culturally significant practices may even contribute to fire risk and need to be addressed sensitively.
- ✓ Coordinating efforts, sharing responsibilities, and ensuring effective communication and information sharing can be challenging due to diverse mandates, different operational approaches, etc.
- ✓ A multidimensional approach is needed with adequate resources, partnerships, community engagement and capacity building.

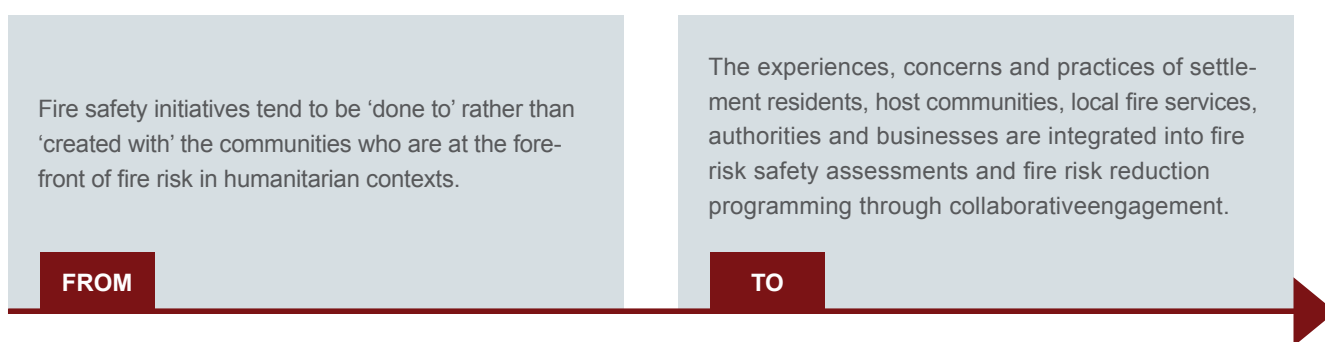


WAYS FORWARD

- ✓ Fire safety governance needs to be intentionally developed in such a way that allows for flexibility and adaptation to take into account diverse and shifting knowledges and practices.

- ✓ Evaluate fire safety programs that have been established in recent years, e.g., in Lebanon and Bangladesh, to learn lessons and assess potential for the successes to be contextualized to other humanitarian settings. Engage with examples of community-centred fire safety initiatives in low-income settings such as informal settlements (e.g., Cape Town) to explore lessons learned.
- ✓ Donors could launch a funding call targeting innovations around fire risk reduction.
- ✓ Link fire risk reduction programming to holistic fire risk assessments to ensure investments are contextually appropriate.

7.7 ENGAGEMENT WITH NON-TRADITIONAL ACTORS



CHALLENGES

- ✓ Exploring socio-technical solutions within interdisciplinary teams is critical to reduce the likelihood of unintended consequences arising from humanitarian programming but requires the will, political space and opportunity to bring different actors together.
- ✓ Co-creating solutions requires innovation and an openness towards new approaches and methods. Sustainable solutions are unlikely to be a 'quick-fix' and so may require longer-term commitments from stakeholders.
- ✓ Balancing formal and informal politics of fire and its various impacts can be challenging.
- ✓ Engagement with the range of actors who are potentially impacted by fires in humanitarian settings is critical for the development of effective fire safety strategies. Alongside the range of residents within a settlement, fire incidents can have implications for host communities, local fire services and professionals, local governments, and private sector and local business in many ways - economically, socially, in terms of physical and mental health. Fire risk assessments should include the perspectives of a wide range of actors and their experiences to understand the many factors that might cause fire risk to emerge and shape effective fire safety programming in a given context.



WAYS FORWARD

- ✓ Capacity building and education activities should inform perspectives from a range of actors to widen the scope of 'voices' who are included within the experience of and response to the fires in humanitarian settings.

- ✓ At a strategic level, there is the need to identify different actors, their roles, responsibilities and potential 'ways in' for collaborative solution-finding and the creation of a sector-wide Fire Risk and Safety Community of Practice (CoP). The CoP will seek representation from and engagement with non-traditional actors (e.g., fire services and public health) to meet quarterly with a specific agenda to leverage mechanisms that can embed fire safety across the sector.
- ✓ More broadly, there is a need to build connections and collaborations between the humanitarian sector and the international community of fire safety professionals, including fire scientists, fire engineers, firefighters, fire safety researchers (including social scientists and public health specialists), and fire safety educators who can support context specific fire safety programming and institutionalization of fire safety across the humanitarian sector more widely.

7.8 FIRE INCIDENT REPORTING



CHALLENGES

- ✓ Practitioners working in camp settings reported that fire incidents are only recorded if four or more shelters are destroyed.
- ✓ Coordination for data collection and sharing is severely lacking, so it is not currently possible to calculate the total cost of fire.
- ✓ Embedding consistent approaches across the sector that do not introduce undue administrative burden.
- ✓ Unclear lines of responsibility for fire risk reduction, safety and fire response.
- ✓ Inadequate investment of funding / resources in a holistic approach to integrated fire risk reduction.

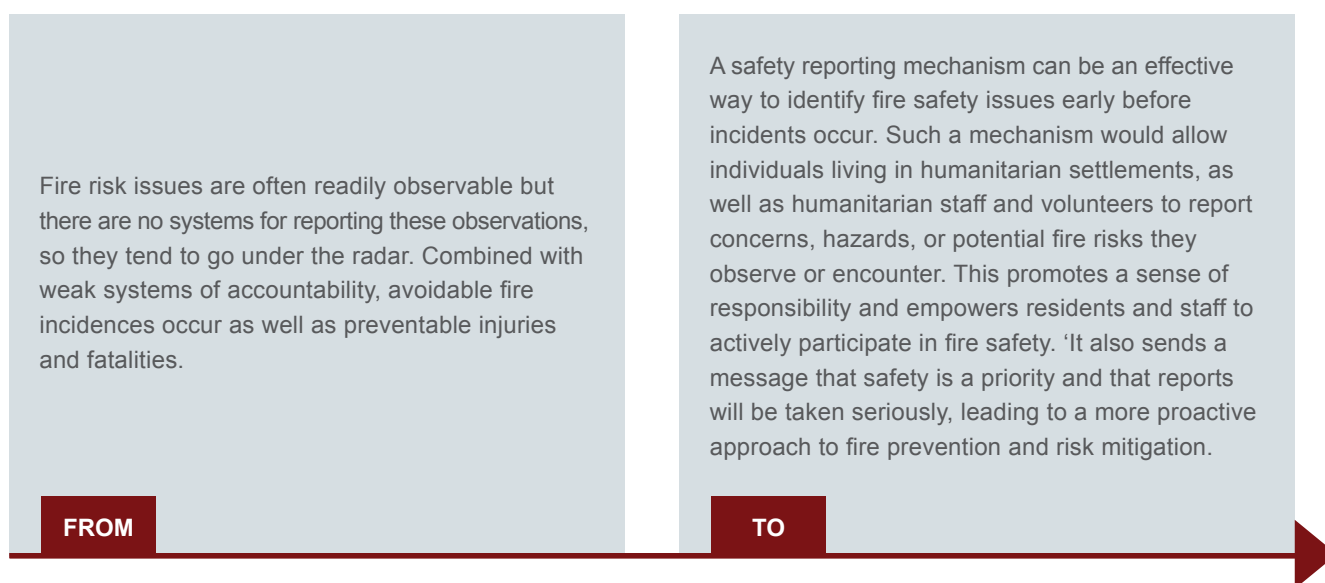


WAYS FORWARD

- ✓ A systematic approach to collecting, analyzing, and disseminating data on fire incidents and impacts in humanitarian settings should be developed. It should include establishing a centralized database and repository, allowing for the systematic collection and analysis of data on fire incidents, their causes, and impacts and to support evidence-based decision-making in fire safety planning and response.

- ✓ Establish and engage Fire Risk Reduction and Fire Safety Community of Practice (CoP) comprising expertise from within and beyond humanitarian sector to analyze data, integrate fire incident reporting into existing procedures, and share learning.
- ✓ Funding is needed for evaluation and analysis of fire safety initiatives where learning can inform policy, tools, guidance and programming.

7.9 SAFETY REPORTING MECHANISM



CHALLENGES

- ✓ Risk within the sector remains high where knowledge of fire safety and response remains situated in a particular context or assumed by a specific group of people and a bias towards providing technical solutions.
- ✓ Adds a layer of documentation and reporting for humanitarian practitioners in the field; seek opportunities to integrate a safety reporting mechanism into existing reporting mechanisms.
- ✓ The reporting mechanism is only as good as the system to review reports and take appropriate action, which may involve conduction inspections, repairs, maintenance, or implementing safety protocols to mitigate identify risks. Swift response and follow-up actions can prevent potential fire incidents and enhance overall fire safety – but delayed or unreliable fire incident responses will erode trust and may even cause unintended consequences.



WAYS FORWARD

- ✓ To support all within the sector in the commitment to maintaining accountability and professionalism, a recognized fire safety reporting mechanism is needed to enable reporting of issues that create or exacerbate fire risk. This could be combined with reporting of incidents and near-misses (where incidents were averted).

- ✓ Establish and engage the proposed Fire Risk Reduction and Safety CoP in the design, implementation, monitoring, and evaluation of a fire safety reporting mechanism.
- ✓ Launch mechanism through multiple communication channels to ensure sector-wide engagement with a holistic approach to fire safety that includes an open discussion of responsibility and accountability, and recognizes the need for technical, operational, and experiential knowledges.
- ✓ Any mechanism to report concerns of fire safety should extend to reporting issues of capacity building, knowledge and understanding. Overall risk of fire within the sector remains high when knowledge of fire safety, prevention and fire response remains situated in or assumed by individuals or in a particular group of people. Therefore, governance and lines of responsibility for fire safety, improving knowledge of fire prevention, safety and response should be made explicit and linked to recovery.
- ✓ Safety reports collected through the mechanism can be analyzed and used to identify trends, common issues, or recurring problems related to fire safety. This data can inform decision-making processes, allowing prioritization of resources, funding allocations, and implementation of targeted interventions to address the identified fire safety issues.
- ✓ Safety reporting mechanisms can be used as a platform to provide education and training materials on fire safety. When individuals submit safety reports, they can receive relevant information on fire prevention, evacuation procedures, proper use of fire extinguishers, and other fire safety practices. This helps raise awareness, improve knowledge, and empower individuals to take proactive steps in fire prevention.
- ✓ It is important to ensure that the safety reporting mechanism is accessible, user-friendly, and culturally sensitive to encourage participation. Regular communication, feedback mechanisms, and a transparent process for addressing reported concerns can further enhance the effectiveness of the mechanism in identifying and addressing fire safety issues.

7.10 STANDARDS



CHALLENGES

- ✓ There is an excessive amount of guidance, toolkits and supporting materials for practitioners to manage the complex range of issues – fire can be lost and only become a consideration after an event.
- ✓ Addressing fire risk through an integrated approach is not a quick or easy solution.

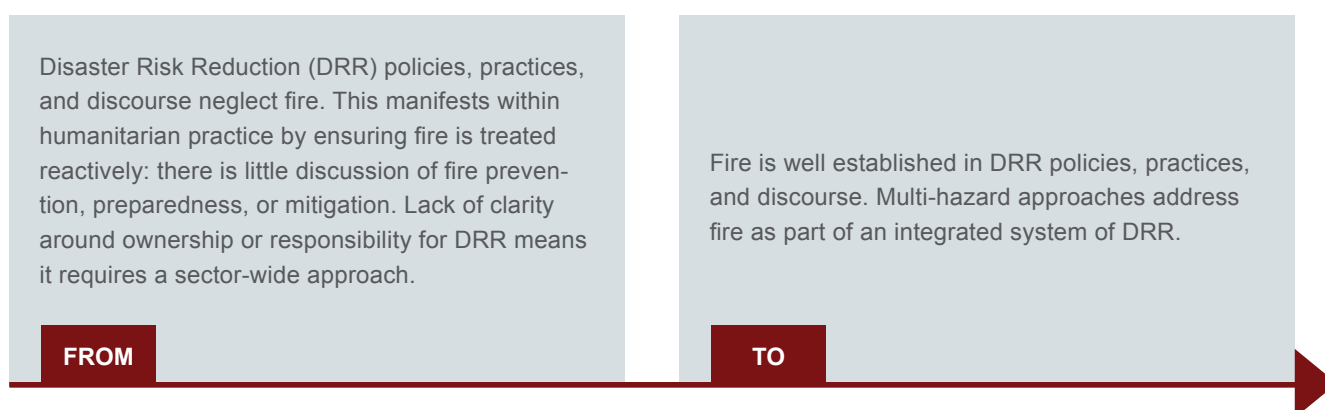
- ✓ The humanitarian sector relies on standards and guidelines for humanitarian programming. Of these, The Sphere Standards and Camp Management Minimum Standards play a substantial role in assuring shelter and settlements safety and bear major responsibility in communicating the importance of key issues to donors, agencies, and practitioners. Despite the significant influence of these standards on the emergence of fire risk in humanitarian settings, fire safety is only tangentially brought to focus with few exceptions – guidance notes, e.g., fire breaks in camp settings and minimum space between buildings.
- ✓ Fire safety codes and standards (including fire test standards) designed for regulation of the built environment in development contexts (especially in high-income countries) are generally inappropriate for humanitarian settings, especially without significant contextualization, and could lead to unintended consequences.



WAYS FORWARD

- ✓ There is a great opportunity for the development of fire safety standard for humanitarian settings, and to integrate its component parts (i.e., fire safety considerations) across other humanitarian standards. Establishing a committee with representation from across the humanitarian sector as well as fire safety professionals would be an appropriate way forward. The associated guidance document serves as an initial prompt for the committee to establish a fire safety standard and a plan for integration. Integration is an ongoing process as knowledge of fire safety continues to grow and practices develop, but it is vital for establishing a more robust approach to fire safety governance.
- ✓ A Fire Risk and Safety CoP comprising fire safety professionals and representatives from across the humanitarian sector could achieve a robust approach to fire safety through integration of fire safety standards for humanitarian settings within humanitarian standards, policies, procedures and working practices.

7.11 INTEGRATION WITH DISASTER RISK REDUCTION



CHALLENGES

- ✓ Fire incidents can have cascading effects and exacerbate other disaster risks. Integrating fire safety into DRR policies ensures that this critical threat is adequately addressed alongside other hazards, such as floods, earthquakes, or conflict situations.

- ✓ Fire risk reduction seeks to reduce risk to as low as reasonably practicable (similar to DRR), but what is 'reasonable', 'acceptable', or 'possible' differs based on the perspective taken. These differences make planning for DRR activities more challenging because it requires open and transparent discussion about what risks different actors and parts of the system will tolerate.
- ✓ Fires in humanitarian shelter and settlements commonly meet common definitions of a disaster, yet, fire is neglected in DRR discourse, and disaster management responses to fire are generally reactive.
- ✓ Currently, there is no one stakeholder or group with designated responsibility for managing disaster risks in the humanitarian sector. As a result, disaster risk reduction (DRR) requires a cross-sectoral response, which is also true for fire. There may be resistance to introducing another 'cross-cutting' theme under or alongside DRR.



WAYS FORWARD

- ✓ Incorporating fire safety into DRR policies allows for the development of sustainable solutions.
- ✓ DRR aims to reduce vulnerabilities and build resilience in communities facing various hazards. By integrating fire safety, DRR initiatives can take a more holistic approach to risk management. This ensures that fire prevention, preparedness, response, and recovery measures are integrated into overall emergency planning, rather than being addressed in isolation.
- ✓ DRR offers highly relevant frameworks, methodologies, solutions, and case studies for fire risk reduction. Fire risk reduction systems that are integrated and coordinated with DRR are needed to pool resources to effectively reduce risks.
- ✓ Engage and collaborate with universities and professional qualification providers of DRR, disaster management and humanitarian studies programs to promote knowledge of fire risk alongside other disasters.
- ✓ Research can identify and quantify impacts, costs and benefits of integrating fire into DRR.

LIST OF ACRONYMS

CCCM	Camp Coordination and Camp Management
CGI	Corrugated Galvanized Iron
CoP	Community of Practice
DRR	Disaster Risk Reduction
FGD	Focus Group Discussions
FRA	Fire Risk Assessment
HLP	Housing, Land and Property
IDP	Internally Displaced Person
IOM	International Organization for Migration
NFI	Non-Food Item
NGO	Non-Governmental Organization
NRC	Norwegian Refugee Council
UNHCR	United Nations High Commission for Refugees
WASH	Water, Sanitation and Health

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Woman bending over flame with stack of wood





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