

SCCCM SECTOR-LESSONS LEARNED & BEST PRACTICE UPDATES-2024

Sub-Sector theme: SHELTER

Subject: To address safe cooking areas and improved ventilation

Version-1

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Disclaimer:

This document is a live resource and will be periodically updated to reflect ongoing learnings related to the technical aspects of shelter programming in refugee camps. The content herein has not been edited to official publication standards, and the SCCCM Sector assumes no responsibility for any errors or omissions.

1. Introduction:

In the context of **emergency shelter programming** for Rohingya refugees in Cox's Bazar, the design and maintenance of **safe cooking areas** and **improved ventilation** within shelters are critical to the health and safety of displaced populations. The current shelter environment presents significant risks, including **fire hazards, smoke inhalation, and poor indoor air quality**, which can lead to respiratory issues and other health problems. This document outlines the **lessons learned** and **best practices** related to these challenges, with a focus on ensuring **dignified and resilient shelter programming** that incorporates **fire safety** and **adequate ventilation**.

2. Background:

The total number of Rohingya refugees in Cox's Bazar is approximately 958,614 individuals as of the UNHCR monthly population factsheet in August 2024. Through emergency shelter assistance, regular shelter assistance, and new shelter programming, approximately 194,907 households still have gaps for regular shelter assistance for 93,829 households, new shelter for 7,085 households and emergency shelter support for 6,478 households as of the 4W matrix August 2024. In response to the shelter needs, a combination of **emergency shelter assistance, regular shelter upgrades, and new shelter programming** have been implemented. This includes in-kind assistance, technical assistance, community training, and strengthening of self-help community-led participation, including women, men and various types of age groups.

In addition, beneficiaries have been provided with **Information, Education, and Communication (IEC) booklets** containing essential messages on **disaster risk reduction** and **fire safety**. These resources aim to increase awareness and empower refugees to implement **fire safety measures** and ensure their shelters remain safe and resilient.

Despite the progress, significant challenges remain in terms of **fire safety** and **ventilation in cooking areas**. One of the primary concerns is that, since 2017, **materials used on shelter walls** have not always been fire-resistant. **Fire protection** on the walls of cooking areas, when applied, has been shown to reduce fire risks, but many shelters still lack these safety features. There is a noticeable **gap in the standardization of fire-resistant materials** used across shelters, with some households applying Iron sheets, concrete covers, **mud** or other materials around cooking areas to mitigate risks.

Moreover, **community feedback** has increasingly highlighted the need for **safe cooking areas** and **improved ventilation**. Refugees have expressed concerns about the **health risks** associated with **smoke** and **poor air quality** in overcrowded shelters, and many have requested **designated outdoor cooking spaces** to reduce fire hazards and improve **air circulation**. This feedback underscores the importance of **community-led solutions** in addressing shelter challenges, and it has become a critical driver of ongoing **shelter design innovations**.

These findings, combined with **community input**, underscore the need to improve the safety and ventilation of cooking areas within shelters. As shelter upgrades continue, these concerns will remain a central focus in ensuring that the **dignity, safety, and health** of refugee households are prioritized in the shelter response.

However, the shelter design remains a significant concern, particularly regarding **fire safety** and **ventilation** within **cooking areas**. The **Shelter Performance Standard Assessment Report 2024** revealed alarming statistics: Only **29%** of cooking areas are protected by walls. **26%** use **fire-resistant materials** in cooking areas. **14%** have **windows or open ventilation areas** to allow for proper airflow.

These findings highlight critical gaps that need addressing to prevent fire incidents and improve the indoor air quality of shelters. This report seeks to build on these lessons to improve future shelter designs, upgrade standards, use non-flammable materials, and standardise ventilation provision and cooking area safety to confirm dignified and resilient shelter programming

3. Key Challenges:

- 3.1. **Overcrowding (Congestion) and Limited Space:** High-density living conditions often result in cooking areas being placed inside shelters, increasing the risk of **fire** and **smoke accumulation**.
- 3.2. **Lack of Fire-Resistant Materials:** Many shelters lack **fire-resistant materials**, particularly around cooking areas, which exacerbates the risk of **fire hazards**.
- 3.3. **Inadequate Ventilation:** Many shelters lack proper **ventilation** systems, leading to poor indoor air quality, especially during cooking. This exposes residents to health risks.
- 3.4. **Limited alternative Energy options and cooking mechanisms:** use of friendly and settlement background of area limiting to upgrade alternative energy and mechanical support to the cooking technique.
- 3.5. **Cultural Practices:** Social and cultural norms around **privacy** and **cooking practices** sometimes conflict with the need for open windows and proper ventilation.

4. Lessons learned:

4.1. Raising Awareness is Crucial for Encouraging Beneficiaries to Adopt Fire Safety Measures in Cooking Areas

- **Challenge:** Many beneficiaries lack advanced awareness and continue practice of the **fire safety risks** associated with improper cooking area designs and practices.
- **Lesson:** Regular **awareness-raising activities** have proven to be an effective tool in encouraging refugees to adopt safer cooking practices. Through **community-based training**, **household visits**, and **information dissemination** via posters or community meetings, families are more likely to understand and implement fire safety measures.
 - **Example:** In Rohingya camps, training sessions conducted by shelter teams on **fire prevention** and the **use of non-flammable materials** in cooking areas led to a noticeable reduction in fire-related incidents.

4.2. Follow-up Visits and Ongoing Awareness-Raising Have a Positive Impact on Beneficiaries' Daily Practices

- **Challenge:** One-time interventions or awareness sessions are often insufficient to change long-term behaviours.
- **Lesson: Follow-up visits to beneficiary households**, coupled with continuous **awareness-raising efforts**, have proven effective in reinforcing safe practices. **Regular engagement** helps to ensure that beneficiaries not only adopt but **maintain** fire safety measures, particularly around cooking areas.
 - **Example:** After conducting initial safety training, field teams in the Rohingya camps conducted monthly **check-ins** to assess adherence to fire safety measures, offering additional guidance where necessary.

4.3. Shelter Site Planning is Key to Reducing Cooking Area Hazards

- **Challenge:** Poor site planning and overcrowded conditions can exacerbate fire risks and hinder adequate ventilation due to limited land and the SCCCM & RRRRC modified standard of 30m² per person allocated instead of 45m²/P.
- **Lesson: Shelter Site planning** plays a critical role in reducing risks associated with cooking areas. Proper allocation of space between shelters and cooking area walls can help mitigate fire hazards and improve airflow while ensuring adequate privacy and safety.
 - **Example:** In the Rohingya refugee camps, a strategic relocation settlement plan and re-arrangement of cooking spaces to **designated areas and rear space of the shelter** away from high-density shelters helped reduce fire incidents and ensured **better ventilation**. Also, In some areas of the Rohingya camps, cooking spaces were relocated to **designated outdoor areas**, improving **fire safety** and **ventilation**.

4.4. Window Design Influences Effective Use of Ventilation

- **Challenge:** Shelter windows are often designed with privacy in mind and cultural norms in mind, limiting their **ventilation capacity**.
- **Lesson: Window design** plays a crucial role in ensuring that **cooking areas** benefit from adequate ventilation. Shelters, where windows were designed for both privacy and airflow, were more likely to have beneficiaries who used them for **ventilation purposes**.
 - **Example:** Modifying window designs to include **larger, adjustable slats** or **removable mesh screens or louver** in the cooking areas has allowed for **increased airflow** while still maintaining **privacy** for the occupants.

4.5. Using the Best Available Cooking Accessories (e.g., Pressure Cookers) Reduced LPG Consumption and Fire Hazards

- **Challenge:** Overconsumption of **LPG** (liquefied petroleum gas) and the use of inefficient cooking methods can lead to **higher costs** and increased risks of fire hazards.

- **Lesson:** The use of the **best available cooking accessories**, such as **pressure cookers**, has proven to be an effective way to **reduce LPG consumption**, thereby lowering both fire risks and the environmental impact. By reducing cooking time and increasing energy efficiency, pressure cookers also contribute to **cost savings** and **greater sustainability**.
 - **Example:** Introducing pressure cookers in the Rohingya camps not only helped reduce the consumption of **LPG** but also significantly **reduced cooking time**, making it more feasible for families to cook in safer, better-ventilated environments. This effective consumption initiative was introduced by the **UNHCR** and analyzed the output

4.6. Stove Placement and Cooking Accessories Influence Safety and Energy Efficiency

- **Challenges:** Overcrowding in shelters limits safe stove placement, while the availability and affordability of pressure cookers and consistent cooking energy supply remain significant barriers to the widespread adoption of energy-efficient cooking practices.
- **Lesson:** Proper **stove placement** (at least **1.5 feet from walls**) and the use of **pressure cookers** can significantly reduce **LPG consumption** and **fire risks**.
 - **Example:** The introduction of **pressure cookers** in the Rohingya camps not only reduced **energy consumption** but also improved **cooking efficiency**, leading to safer cooking practices.

4.7. Self-settled and Bamboo-Made Shelters Often Lack Minimum Safe Spacing, Leading to High Fire Risks

- **Challenge:** Many self-settled shelters, especially those made of bamboo and tarpaulin, lack the required **2-meter spacing** between shelters. Cooking areas are often directly attached to bamboo walls, increasing **fire risk**.
- **Lesson:** The lack of **safe spacing** and the use of **highly flammable materials** in cooking areas contribute to heightened fire hazards.
 - **Example:** In Rohingya camps, bamboo shelters with cooking areas attached to tarpaulin walls have led to multiple fire incidents, highlighting the need for better **spacing** and **fire-resistant materials**.

4.8. Unsafe and Unplanned Cooking Areas Inside Shelters Increase Fire Risk, especially in the Presence of Children

- **Challenge:** Many shelters have **unsafe cooking areas** inside, often without proper ventilation. This increases **room temperature** and **fire risk**, particularly with **children** present.
- **Lesson:** **Lack of ventilation** traps smoke and heat, worsening **air quality** and creating health hazards.
 - **Example:** Overcrowded shelters without windows or ventilation have led to unsafe cooking practices and higher **fire risks**, especially with **bamboo stoves** or **wood fires** inside.

4.9. Use of Bamboo and Wood Stoves Inside Shelters is Dangerous and Increases Fire Hazards

- **Challenge: Bamboo and wood stoves** used inside shelters pose a major fire risk due to improper placement and lack of fire barriers.
- **Lesson:** These stoves, when placed in **enclosed spaces**, are unsafe without proper **fire barriers** or **ventilation**.
 - **Example:** there are still families that continue using **traditional bamboo stoves and wood stoves**, which have led to **fire incidents** in shelters due to inadequate safety measures.

4.10. Cultural and Religious Norms Affect the Adoption of Cross-Ventilation Features

- **Challenge: Cultural and religious norms** within the Rohingya community limit the adoption of **ventilation features**, such as windows and Louver.
- **Lesson:** Concerns about **privacy** and **security** prevent the integration of **ventilation systems**, which are essential for **reducing cooking-related risks**.
 - **Example:** Despite the benefits of **ventilation** in reducing smoke and improving air quality, many refugees resist installing windows or vents due to **privacy concerns**.

5. Best Practices:

5.1. Awareness and Self-Motivation Lead to Better Protective Cooking Areas Using Tin/CGI Sheets, Mud Plaster, and Cement Plaster

- **Best Practice:** Community awareness and self-motivation have driven many refugees to improve cooking area safety using locally available materials, such as **Tin/CGI sheets, mud plaster, Ferrocement panels** and **cement plaster**. These materials provide **fire-resistant barriers** and enhance the structural stability of shelters.
 - **Example:** In some camps, refugees have used **CGI sheets** to cover cooking areas, while others applied **mud** or **cement plaster** to improve **fire safety**. These affordable, community-driven solutions have reduced **fire risks** and improved overall shelter safety.

5.2. Include Fire Safety Messages in Beneficiary Training and IEC Booklets

- **Best Practice: Fire safety** information should be incorporated into **shelter upgrade training** and distributed via **IEC booklets** to ensure beneficiaries are fully informed of risks and preventive measures.
 - **Example: Fire safety guidelines** were included in shelter training sessions, providing clear instructions on **stove placement** and engaging **fire extinguisher use and camp-level fire extinguisher team with necessary mobile equipment**.

5.3. Regular Training on the Safe Use of LPG and Safety Protocols

- **Best Practice:** Conduct regular **training on LPG safety** to ensure that beneficiaries understand how to use stoves safely and follow **fire safety protocols**.
 - **Example: LPG distribution sessions** included training on **stove operation, LPG storage, and emergency procedures**. The **IOM** introduced this LPG alternative energy option initiative for Rohingya refugees, especially to protect the de-forestation of the environment.

5.4. Ensure Proper Stove Placement (1.5 Feet from Walls)

- **Best Practice:** Ensure that **stoves** are positioned at least **1.5 feet away from walls** to allow for adequate **ventilation** and prevent **fire hazards**.
 - **Example:** Refugees were trained on **correct stove placement** during **LPG and fire training sessions**.

5.5. Promote Safe Cooking Spaces Outside the Shelter

- **Best Practice:** Advocate for **outdoor cooking areas** to reduce the risk of fire and improve ventilation within shelters in the more overcrowded areas.
 - **Example:** In collaboration with the community, efforts were made to **designate outdoor cooking spaces** that were safer and better ventilated.

5.6. Continuous Engagement in Shelter Design and Ventilation

- **Best Practice:** Engage refugees and shelter implementation partners in **continuous dialogue and upgrading standards** regarding shelter design features, particularly around window placement, to ensure **privacy** and **ventilation** are balanced.
 - **Example:** Adjustable **windows** and incorporating the use of friendly **ventilation panels** to ensure adequate **design elements of accessories** with **mesh screens** were implemented after consultation with beneficiaries.

5.7. Pilot the Use of Non-Flammable for Enhanced Kitchen Safety, such as the use of Wire Mesh with Cement-Sand Mix as a Fire Barrier, Portable Mud Walls

- **Best Practice:** Pilot the use of **non-flammable portable mud walls, Wire Mesh with Cement-Sand Mix** in **kitchen areas** to improve **fire safety** while maintaining flexibility in shelter design.
 - **Example:** the **NGOF-NGO** piloted **Wire mesh** was combined with cement-sand mixtures to protect cooking areas from fire risks. The **Caritas-NGO** piloted Portable Mud Walls with different mixtures of mortar to focus on protecting against such hazards.

5.8. Improved Shelter Design Incorporates Adequate Ventilation Features

- **Best Practice:** Many agencies are developing shelter designs with a well-planned **ventilation system** that addresses both **fire safety** and **air quality**. This system promotes **cross-ventilation**, reducing indoor **temperatures** and **smoke** buildup during cooking. It also improves **natural airflow**, helping to regulate shelter temperatures and reduce health risks from poor ventilation.

- **Example:** The **BRAC-NGO Improved Shelter** provides a total **ventilation area of 55.42 sqft for a 150 sqft floor area**, using multiple openings to ensure proper airflow while maintaining **privacy** and **security**. This design exceeds the minimum standard ventilation requirement of **5%-10%** of the floor area, significantly improving **air quality** and **overall shelter conditions** and contributing to a safer, healthier living environment.

6. Recommendation and Solution based on the lessons learned:

6.1. Solutions for identifying gaps/issues based on lessons learned:

6.1.1. Physical Monitoring

- **Solution:** Conduct regular **follow-up visits** to monitor cooking practices and ensure the ongoing implementation of safety measures.
 - **Action:** Establish a system for **routine monitoring** of cooking practices, a tracking system to address gaps in advance and safety standards in shelters.

6.1.2. Fire Barrier Materials

- **Solution:** Provide **fire-resistant barriers** for all households using **LPG Stoves and traditional Stoves Inside Shelters** in their cooking areas.
 - **Action:** Ensure that **LPG and other traditional users** receive appropriate **fire-resistant materials** for shelter assistance and camp-level tracking mechanism to alert unsafe practices and advocate getting safe cooking equipment and mobilization to behaviour changes.

6.1.3. Advocacy for Safe Cooking Spaces

- **Solution:** Continue advocating for the construction of **outdoor cooking spaces** in the overcrowded camps (block by block or Pre-identified area) to reduce **fire risks** in shelters.
 - **Action:** Promote the establishment of **designated outdoor cooking areas** within camps to mitigate risks among the **stakeholders**

6.1.4. Fire Safety Training

- **Solution:** Continue **basic fire safety training** for all beneficiaries and ensure the availability of **fire extinguishers** in key areas.
 - **Action:** Implement regular **fire safety training sessions** and ensure **fire extinguishers** are accessible in cooking areas and shelters; pre-identify overgrounded and unsafe locations.

6.1.5. Increase Awareness on the Importance of Ventilation for Ensuring Safe Living Conditions

- **Solution:** Expand awareness campaigns on the importance of **ventilation** in reducing indoor air pollution and **fire risks**, especially in cooking areas.
 - **Action:** Implement **community workshops**, **informational materials**, and **training sessions** to encourage **ventilation** practices and installation of **windows** and **ventilation openings**.

6.1.6. A More Secure Locking Mechanism on Windows Could Increase Acceptance of Window Installations & to reinforce technical specifications for windows

- **Solution:** Many refugees resist installing **windows** due to concerns about **privacy** and **security**. Introducing more secure **window locks** and **fitting mechanisms** can **increase the** acceptance of **ventilation features**.
 - **Action:** Work with **shelter partners** and the **shelter task force** to improve technical specifications and installation of **safe, secure window locks, installation methods, and fitting accessories**, ensuring both **privacy** and **improved ventilation**.

6.1.7. Community Initiatives to Protect Cooking Areas Are Essential for Fire Safety

- **Solution:** Engage **community leaders** to drive **fire safety initiatives** within cooking areas, addressing local needs with **culturally relevant solutions**.
 - **Action:** Facilitate **community-led fire safety training** and encourage the adoption of **fire-resistant materials** in cooking areas through shelter partners and **shelter upgrade specifications** in line with **SCCCM sector** coordination.

6.1.8. Ensuring Supply and Application of Fire Safety Materials to Keep Cooking Areas Safe

- **Solution:** Ensure the **distribution** of **fire safety materials** like **fire-resistant sheets** or **metal sheeting** in cooking areas as part of **shelter upgrades** via a data matrix to measure improvement.
 - **Action:** Collaborate with **humanitarian partners** to incorporate these materials into **the implementation strategies** in line with **local market-based suppliers' capacity** to ensure their proper use in cooking areas and Data management

6.1.9. Inspire and Educate Communities to Prevent the Use of Bamboo and Wood Stoves for Cooking Inside Shelters

- **Solution:** Bamboo and **wood stoves** are high-risk options. Awareness should focus on their dangers and promote the use of safer alternatives like **improved cookstoves (ICS)**, **Electric/micro level renewable energy cookstoves** or **pressure cookers etc.**
 - **Action:** Partner with local organizations to promote **safer cooking technologies** and provide **Cash-based Interventions (CBI)**, **NFIs**, or **agency driven** for households transitioning away from bamboo and wood stoves and establish **low-cost revenue-based equipment maintenance** structures and **market for spare parts** within the camps

6.2. Recommendation:

6.2.1. Sector lead to Coordinate with Concerned Donors to Include Non-Flammable Materials for Cooking Areas as Shelter Materials

- **Recommendation:** To ensure fire safety and adherence to **international standards**, the shelter sector should collaborate with donors and partners to include **non-flammable materials** in shelter kits, specifically for cooking areas.
 - **Action:** Work with donors and shelter partners to integrate **fire-resistant materials**—such as **cement boards (Ferro-Cement)**, **metal sheets**, or **non-combustible insulation**—into shelter designs, preventing the use of **flammable materials** like **bamboo** or **tarpaulin** in cooking areas.

6.2.2. Sector Should Work on Selecting Acceptable and Applicable Non-Flammable Materials for Cooking Areas

- **Recommendation:** The sector should lead the selection of **safe, effective, and culturally appropriate non-flammable materials** packages for cooking areas in collaboration with local authorities, communities and experts to overcome current limitations.
 - **Action:** Initiate consistent intervention and consultations with **technical experts, local market-based suppliers, and refugee communities** to select **cost-effective, fire-resistant** materials like **metal sheeting, Ferro-Cement, or concrete blocks**. Ensure **non-flammable barriers are at least 3 feet above the stove cooking area**. It has to reinforce the technical design standards. These materials should also be **environmentally sustainable** and locally available.

6.2.3. The Sector Should Focus on the Approval of Fire and Weather-Resistant Pilot Shelter Models, Including Safe Cooking Areas and Secure Locking Mechanisms for Doors & Windows

- **Recommendation:** Pilot new **shelter designs** that incorporate **fire-resistant and weather-resistant materials**, with **safe cooking areas/within the shelter** and **secure locking mechanisms** for doors and windows. These designs should be tested and evaluated for **effectiveness** before scaling.
 - **Action:** Coordinate via shelter task force with **shelter partner design teams** to confirm all those elements are always included in the design and **as-built stage** in terms of **safety features** with a focus on **fire safety** and **ventilation** and prioritize to **scale up** fire & weather resistant (**FAWR**) shelter program

6.2.4. Communal Kitchens Can Be Implemented Where Possible

- **Recommendation:** **Communal kitchens** should be introduced where feasible to reduce the number of cooking areas inside shelters, especially **overcrowded camps or blocks**, thereby

reducing the overall **fire risk**. These shared spaces would be equipped with **improved cookstoves (ICS)** and **ventilation systems**.

- **Action:** Assess the feasibility of **communal kitchen models** in overcrowded camps, and begin small-scale **pilot projects** with community involvement to determine the most suitable locations and designs.

6.2.5. Increase Awareness to Overcome Sentiments and Restrictions on Outside Movement, Leading to Cooking Indoors in line with community consultation

- **Recommendation:** Increase **awareness** to address **cultural barriers** and **sentiments** that prevent refugees from cooking outside shelters. Many refugees, particularly women, are restricted from cooking outdoors due to concerns about **security, privacy, and cultural norms**.
 - **Action:** Work with **community leaders** and **local partners** to foster an understanding of the **benefits of outdoor cooking** for **health and safety** and address any concerns through **community-led discussions**.

6.2.6. The Cooking Sidewall Can Be Constructed Using Alternative Materials Instead of Bamboo

- **Recommendation:** The sidewalls of cooking areas should be constructed using **non-flammable materials**, such as **cement, stone, Ferro-cement panels** or **concrete blocks**, rather than **bamboo** or **wood**, which are highly combustible.
 - **Action:** Provide **alternative materials** for cooking area sidewalls and ensure **awareness training** on the importance of using **non-flammable construction** for safety. There are still gaps to fill as per the **Shelter Performance Standard Assessment Report-2024**.

6.2.7. Establishing Alternative Energy Options for Cooking Mechanisms Can Significantly Reduce Fire Risks

- **Recommendation:** The sector should focus on establishing **alternative energy options** for cooking mechanisms, such as **solar-powered stoves, LPG, or biogas**, to reduce the dependency on **wood and bamboo stoves** and while LPG already initiated by the **IOM**.
 - **Action:** Pilot other potential **alternative cooking technologies, such as micro solar-powered home systems, communal solar-powered electric energy, micro-backup powered energy, and biogas, in the camps** and in terms of accessories **Solar Cookers, Electric Stoves (battery or Grid powered connection), Boigas Cookers, Improved Cookstoves (Rocket Stoves, Smokeless Stoves), Wind-powered cooking systems, Pellet stoves** which ideal for contexts that can be considered to assess their effectiveness in reducing **fire risks** while considering **environmental and economic sustainability**.

6.2.8. Continued Messaging: Ongoing Community Outreach to Reinforce Fire Safety Messages

- **Recommendation:** Continue to provide **fire safety** messaging to raise awareness within refugee communities, ensuring that **fire safety** practices are consistently reinforced.
 - **Action:** Use **community meetings, SMS alerts, and posters** to promote key **fire safety tips**, ensuring that **fire prevention** measures are integrated into daily practices.

6.2.9. Investigate Fire Incidents: Establish Systems for Tracking Fire Incidents and Identifying Trends

- **Recommendation:** The sector should establish a comprehensive **incident reporting system** to track **fire incidents** and **analyze patterns**, helping to **identify root causes** and **inform future interventions**.
 - **Action:** Implement a **data collection system** to document fire incidents, analyze trends, and **develop strategies for preventing future occurrences**.

6.2.10. Data Collection: Specific Data Collection from Partners on the Number of Shelters with Fire-Resistant Materials Installed

- **Recommendation:** The sector should collect **specific data** from partners on the number of shelters with **fire-resistant materials** installed to assess progress and identify gaps in coverage.
 - **Action:** Develop a standardized **survey tool** for partners to report on the installation of **fire-resistant materials** in shelters and compile data regularly to monitor progress.

7. Conclusion:

Addressing **safe cooking areas** and **improved ventilation** is crucial for ensuring the health and safety of refugees in emergency settings. By incorporating lessons learned and best practices, the shelter-CCCM sector can create safer, more resilient shelters that meet the needs of displaced populations. Continued **community engagement, innovative shelter designs, and integrated sector collaboration** will be key to achieving these goals in the coming years via strategic integration into the DRR approach and advocacy of the shelter design and specification upgrades.

Additional Insights:

- **Gender Considerations:** In many cases, **women and children** are the primary users of cooking areas and are therefore at heightened risk from both fire hazards and poor air quality. Involving **women in decision-making** around the design and implementation of cooking areas and safety measures has led to more **effective** and **sustainable solutions**. It has developed a **cooperative strategic**

framework with the protection sector to confirm the inclusion of shelter activities for fire safety designs as an integrated approach.

- **Monitoring and Feedback:** Ongoing **monitoring** of cooking area practices and the effectiveness of ventilation systems is crucial to adapting programming and addressing emerging challenges. **Feedback loops** involving beneficiaries ensure that interventions remain relevant and responsive.

Next Steps for Improving Safe Cooking Areas and Ventilation:

The lessons learned above highlight the importance of community engagement, shelter site planning, and appropriate technology to improve the safety and health of refugee households. Moving forward, these insights should inform **ongoing efforts** to:

1. **Scale up the use of fire-resistant materials and pilot shelter design** in cooking areas.
2. **Integrate safe cooking accessories and alternative energy solutions**, such as pressure cookers, micro solar-powered stoves, micro backup-powered stoves, and biogas, communal solar-powered electric energy for cooking, and biogas into shelter programming.
3. **Enhance shelter site planning for communal places** to ensure safer and more functional cooking spaces.
4. **Promote community-driven awareness** of the importance of safe cooking practices and ventilation.

Collaboration in gathering information, contributing data, and participating in the development of this document:

