Reducing the Environmental Footprint of Humanitarian Shelter Responses in Ethiopia

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Acronyms

CBO	Community-Based Organization
CCCM	Camp Coordination and Camp Management
CEB	Compressed Earth Blocks
DG ECHO	Directorate-General for European Civil Protection and Humanitarian Aid Operations
ECHO	European Civil Protection and Humanitarian Aid Operations
ES/NFI	Emergency Shelter and Non-Food Item
FAO	Food and Agriculture Organization
HPC	Humanitarian Program Cycle
IASC	Inter-Agency Standing Committee
IDP	Internally Displaced Person
ICRC	International Committee of the Red Cross
MRF	Materials Recovery Facility
NFI	Non-Food Item
NGO	Non-Governmental Organization
NEAT+	Nexus Environmental Assessment Tool
NRC	Norwegian Refugee Council
RCRC	Red Cross and Red Crescent
SNFI	Shelter and Non-food Items
UNHCR	United Nations High Commissioner for Refugees
WASH	Water, Sanitation, and Hygiene

1. Executive Summary

This report examines the environmental impact of Shelter and Non-Food Item (SNFI) interventions in Ethiopia's Internally Displaced Person (IDP) sites, drawing on observations from locations in the Northwestern Zone (Tigray Region) and the Somali Region. The outcome of this exploration underscores the growing need to strike a balance between humanitarian assistance and environmental sustainability in both emergency and protracted displacement contexts.

Findings from field visits and stakeholder interviews highlight several pressing challenges. Shelters are often constructed with substandard materials such as untreated timber, plastic sheeting, which contribute to deforestation, riverbank erosion, and plastic pollution. Waste is frequently unmanaged, often resulting in burning, burial, and reliance on overwhelmed municipal services, which in turn lead to environmental and public health concerns.

In Northwestern zone of Tigray, intense demands for timber and fuelwood, combined with illegal logging, is accelerating the degradation of fragile ecosystems. Shallow soils and dependence on seasonal rainfall further heighten vulnerability. In the Somali region, extended droughts, recurrent flash floods, and fragile agropastoralist are compounded by climate stressors and resource scarcity.

While humanitarian actors have taken steps to address these impacts, including the uses of tools like NEAT+ during proposal development and early procurement planning, implementation remains inconsistent. Mitigation measures are rarely implemented due to funding constraints, rapid deployment pressures, and limited coordination among stakeholders. Green procurement standards and small-scale waste-to-resource initiatives are emerging but not yet mained.

To address these gaps, this report offers several practical entry poins:

- **Expand the use of sustainable, local materials** (e.g., treated timber, adobe, compressed earth blocks, *senan, halawa*, and if available, bamboo) especially in return settings.
- **Ensure that environmental screening tools,** such as NEAT+, are followed up with action, not just completed at the proposal stage.
- **Integrate green procurement practices** and promote modular or reusable NFIs to reduce reliance on non-biodegradable materials.
- **Support pilot projects** that combine vernacular design with hazard-resilient improvements.
- **Establish community-led waste systems** to address plastic accumulation and promote recycling, utilizing tested models such as those in Kakuma **(see Annex 3).**
- **Align donor funding frameworks** to allow exibility for environmental mitigation and long-term resilience investments.
- In support of operationalization, the report includes **practical environmental checklists** for both implementing partners and donors **(see Annex 1)**, designed to improve planning, procurement, implementation, and monitoring in the SNFI sector. Ultimately, shifting from short-term emergency fixes to longer-term, climate-smart and community-led responses will require enhanced coordination between local authorities, humanitarian actors, and affected populations. Donor support for capacity-building, flexible funding, and environmental mainstreaming will be essential to reducing harm and promoting sustainable recovery in Ethiopia's displacement-affected areas.

2. Introduction

Humanitarian responses to displacement in Ethiopia have grown in complexity due to recurring and prolonged conflict, climate shocks, and limited resources. SNFI interventions play a critical role in supporting displaced populations, yet their environmental impact is often overlooked.

This report was developed to assess the environmental consequences of SNFI activities in selected displacement settings across Ethiopia. The objective is to understand how shelter responses interact with local ecosystems and to identify opportunities for more sustainable, locally appropriate approaches.

Using a combination of field visits, stakeholder consultations, and desk reviews, this report presents a detailed analysis of current practices, environmental challenges, and possible mitigation strategies. It is intended for use by humanitarian practitioners, donors, and policymakers engaged in the design and implementation of shelter responses in Ethiopia.

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3. Key Environmental Considerations in Response Planning

- Environmental integration in SNFI programming requires a shift in perspective, moving beyond the logistics of resource distribution and spatial allocation toward approaches that actively prevent environmental degradation. SNFI solutions must contribute to the protection of critical natural resources such as forests, land, and water systems, especially in ecologically sensitive and high-risk areas.
- Throughout displacement and prolonged crises, humanitarian interventions often place added pressure on local ecosystems, particularly through the use of imported, non-biodegradable materials, such as plastics. While emergency responses must prioritize life-saving needs, cluster partners can reduce long-term environmental impacts by integrating local, reusable materials into preparedness planning, applying environmental criteria in procurement, and coordinating early with other clusters on site layout and waste systems.
- The majority of displaced individuals, approximately 48% reside within host communities, while the remainder are dispersed across informal settlements, collective centers, and planned sites. Each of these settlement types presents different environmental pressures and service delivery challenges, all of which must be accounted for when designing contextually appropriate, inclusive, and sustainable response strategies.

In a context like Ethiopia, marked by acute humanitarian needs related to essential household items and shelter, environmental degradation, and recurrent natural and man-made disasters, adaptable, generalist approaches are critical. Humanitarian response efforts should prioritize practical, low-impact materials and designs, promote scalable innovations, including pilots that incorporate local materials, vernacular techniques, and community engagement, and be aligned with operational realities, particularly as needs grow and resources become increasingly constrained.

4. Methodology

This report explores the environmental impact of Emergency Shelter and Non-food Items (ES/NFI) Cluster interventions in Ethiopia through a triangulated approach, combining field observations, stakeholder consultations, and desk-based research. The report prioritizes ground-level insights from affected populations and humanitarian actors while aligning findings with environmental frameworks and global best practices.

The approach involves:

- Site visits to eight locations - four in Northwestern zone, Tigray region, and other four in Somali region - selected by environmental vulnerability, displacement dynamics, and accessibility.
- Quantitative data collection, implemented through environmental surveys (covering subjects including deforestation trends, groundwater indicators, plastic accumulation) and household-level resource use surveys.
- Qualitative input collection, gathered via interviews and focus group discussions with displaced populations, local authorities, and humanitarian agencies, e.g. NRC, ICRC and DG ECHO.

5. Findings

5.1 Northwestern Zone, Tigray Region

High-altitude plateau conditions, shallow soils, and high environmental fragility characterize the Shire woreda in the Tigray region. Displacement in this area has created long-term pressure on already strained ecosystems and public services. Below present initial observations acquired from Tabia-Woyane IDP Site, Hibret Primary School IDP Site, May Hanse Primary School IDP Site, and Mai Dimu Planned IDP camp. These observations reflect conditions in specific displacement sites, not the entire woreda or host communities.

Shelter Conditions

Shelter conditions vary across settlements, with many households relying on traditional huts reinforced with tarpaulins and other distributed materials. Zinc roofing is highly valued and often reused when accessible. While these shelter types reflect local adaptation, they often rely on materials such as wood and plastic that, when sourced or discarded unsustainable, can contribute to environmental degradation. In areas with high displacement, repeated shelter reconstruction places additional pressure on already fragile natural resources, highlighting the need for more durable and environmentally responsible shelter solutions.

Site Conditions and Environmental Observations

The four assessed IDP sites in Shire and Asgede Woredas, including three informal settlements in school compounds and the planned Mai Dimu site, show shelter conditions marked by material scarcity and exposure to harsh weather. Informal shelters are self-constructed from bark, shrubs, and worn plastic sheeting, offering minimal protection against rain, wind, and heat. In the planned site, partner-built shelters follow standard designs but are already deteriorating due to weather and lack of maintenance.

Social Dynamics

IDPs demonstrate a strong sense of shelter ownership, having procured materials either independently or with support from humanitarian organizations. However, due to the poor quality of the materials, many of these shelters cannot be salvaged. Reluctance to relocate, particularly in the planned settlement site, stems from isolation, limited livelihood opportunities, and weak connections to host infrastructure.

Waste Management

There are no integrated waste management systems in any of the assessed sites. Waste is typically buried, burned, or left in open pits. Overflowing communal latrines and open defecation are common in more congested urban locations. Plastic waste often blocks drainage systems, contributing to stagnant water and flood risk. There are no recycling or material recovery efforts in place.

Environmental Pressures

Deforestation is widespread. Timber demand - for shelter and cooking fuel - has stripped nearby hills of vegetation despite formal restrictions on logging. The use of eucalyptus, a fast-growing but water-intensive species, exacerbates environmental degradation. The region's dependency on seasonal rainfall further weakens its resilience to such stress.

5.2 Somali Region

The field visit in the Somali Region was constrained by several factors. A reduction in funding limited engagement of ES/NFI partners in the area. Additionally, long travel distances between sites and the start of Ramadan signicantly reduced the time available on the ground. Despite these challenges, four settlements in Tog Wajaale (Fafan Zone), Kelafo (Shebelle Zone) and Aware (Jarar Zone) were visited.

The Somali region presents a starkly different ecological and social environment than Northwestern Tigray, marked by arid and semi-arid landscapes, deep sedimentary aquifers, and highly mobile populations. Drought and seasonal fooding were identified as the primary environmental hazards, with conflict being a contributing factor in some areas. The region has seen consecutive years of below-average rainfall, and most surface water sources (e.g., haffires, wadies) are dry during the time of visit, resulting from the dry season cycle. Only two major rivers retain minimal water, and most water access depends on boreholes, water trucking, or gravity-fed systems. Concerns over water scarcity and drought dominated discussions.

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Waste Management

Waste disposal is informal, with burning pits common across most visited sites. Due to the insufficency of latrines, open defecation persists in many areas. Municipal services are either overwhelmed or absent. Sites closer to towns show better sanitation conditions but still lack structured waste segregation or recycling.

Livelihood Patterns

Livelihoods differ by community. Pastoralist groups rely heavily on livestock, making them highly vulnerable to drought. In contrast, agropastoral groups near fertile valleys (e.g., Shabelle River surroundings) have more effective coping strategies, including flood adaptation and food production. However, both groups face shrinking resources due to climate volatility.

Environmental Impact

While deforestation is less pronounced due to lower population density, overgrazing and poor waste disposal contribute to land degradation and water contamination. Flash floods in low-lying areas, particularly in riverine settlements, are likely to cause recurring damage and pose a threat to long-term settlement planning.

5.3 Cross-location Trends

Both regions exhibit similar patterns in terms of shelter vulnerability, inadequate waste management systems, and increasing pressure on natural resources. However, the drivers differ as Northwestern Tigray faces intense pressure from deforestation and population density, while Somali grapples with chronic drought, displacement, and institutional weakness.

Shared Challenges

- High reliance on substandard plastic-based shelter materials.
- Informal, high-risk waste management (burning, dumping, burial).
- Lack of structured decommissioning or recycling protocols.
- Community-level material reuse is common but constrained by durability.
- Climate events (droughts, oods) are worsening and disrupting traditional coping systems.

Key Environmentally Negative Drivers

- In Northwestern Tigray: Fuelwood demand, illegal logging, poor drainage, and soil erosion.
- In Somali: Water scarcity, extreme heat, poor sanitation, and reliance on aid infrastructure.

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5.4 Stakeholder Perspectives

Consultations with different stakeholders during the assessment surfaced several systematic constraints, affecting the environmental sustainability of SNFI interventions. Discussed below, such constraints are operational, structural, and often shaped by the urgency and complexity of the humanitarian context in the country.

Environmental Planning and Tools

Environmental tools such as the Nexus Environmental Assessment Tool (NEAT+) are recognized for their value but inconsistently applied. While some actors include environmental assessments at the proposal stage, follow-through during implementation remains limited. Environmental considerations often take a backseat during emergencies, and monitoring frameworks for environmental indicators are either weak or non-existent.

Procurement & Logistics

Procurement practices differ across organizations. UN agencies such as IOM, and INGOs like CRS and NRC, typically procure shelter materials, including tarpaulins through international procurement. In contrast, national NGOs and some INGOs rely on local procurement, which can result in inconsistent quality, particularly for items like plastic sheeting and timber. This variability contributes to reduced material lifespan and greater environmental waste. Stakeholders stressed the need to harmonize procurement standards and promote greener practices, such as using biodegradable packaging, recyclable materials, and modular shelter components. Some partners also proposed introducing reverse logistics systems to support the recovery and reuse of NFIs, though such systems are not yet widely implemented.

Additional issues include:

-  Varying procurement systems and capacity across organizations have resulted in inconsistencies in material quality and environmental performance.
-  The short length of humanitarian project cycles and unpredictable funding prevent longer-term planning and sourcing of more sustainable options.
-  Limited packaging standards, plastic wrapping remains the norm, and recyclable alternatives are rarely used.

Camp Coordination and Camp Management (CCCM)

Decommissioning falls under CCCM actors in planned camps, but implementation is uneven and hindered by limited technical capacity. In informal settlements, IDPs frequently repurpose plastic sheeting and NFIs beyond their expected life cycle. Structured recycling or reuse planning is rarely in place. Stakeholders identied the need for:

- Training on sustainable construction and salvage practices.
- Promotion of local, renewable construction materials.
- Incorporating early-stage environmental mitigation, such as forestry management.

Waste Management Limitations

From discussions held it is perceived that waste management is often viewed as a hygiene or sanitation issue, rather than an environmental one. There is minimal focus on integrated Waste Management (IWM). Instead, waste is either transported to landfills, where functioning municipal systems exist, or dumped and burned near settlements when systems are overwhelmed. Structured approaches to sorting, reuse, or recycling are rarely implemented.

Training and Capacity Building

Limited training is available for shelter actors or IDPs on sustainable building practices, material reuse, or decommissioning. Local authorities often lack the mandate or funding to take on environmental responsibilities. While CCCM actors acknowledge the potential of promoting material re-usability and sustainable sourcing, the implementation of materialization is impeded due to operational constraints.

Operational Barriers

The nature of humanitarian crisis in visited locations - protracted, complex, and spread across highly diverse geographic and political settings makes unified planning difficult. Localized conditions and varying climates further challenge standardization. Additionally:

- Environmental measures are often deprioritized amid immediate life-saving needs.
- The lack of long-term, flexible funding contributes to the environmental burden likely to be generated from short-term, material-heavy interventions.

For a detailed summary of partner insights on logistics, programming, and CCCM practices, see Annex 4.

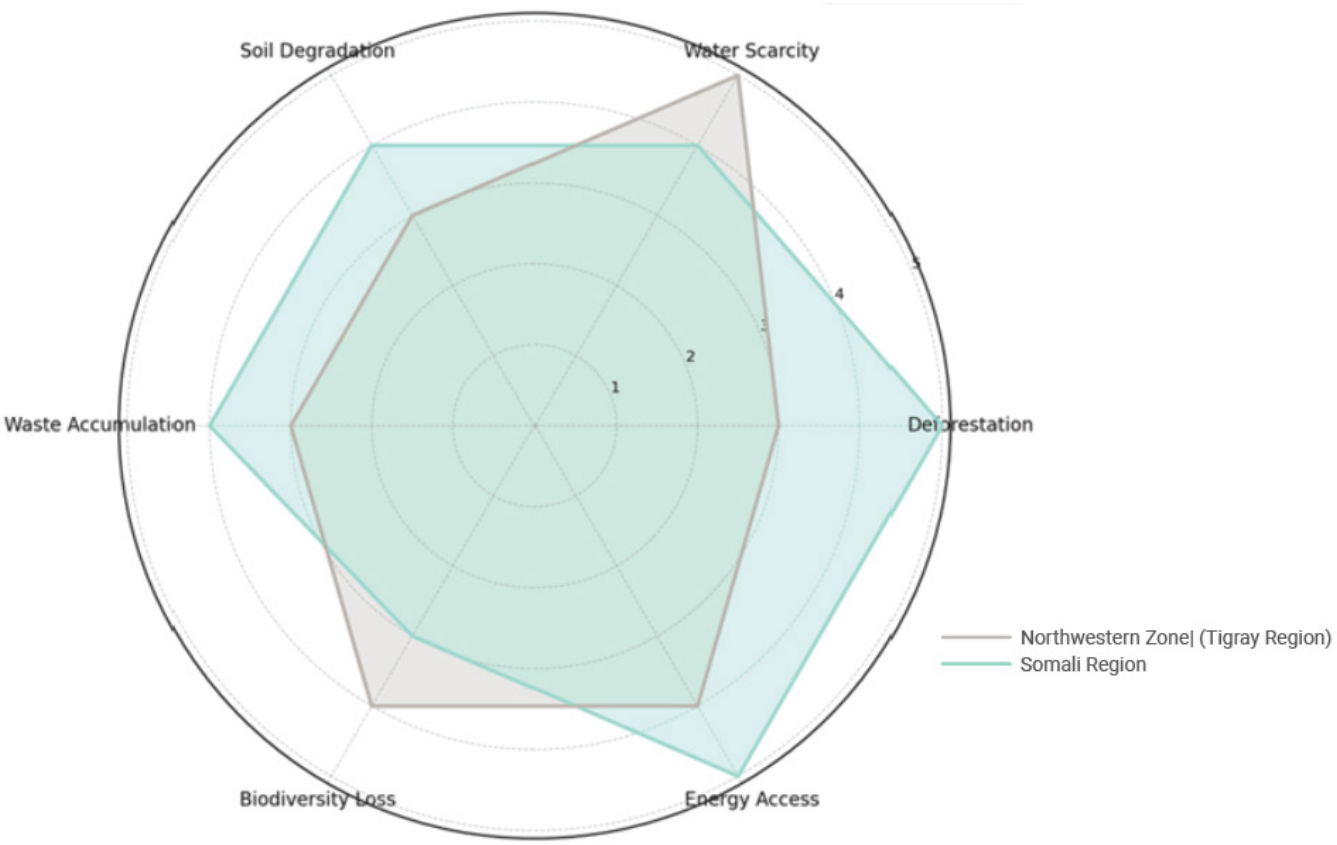
6. Environmental Impact

Environmental stress is both a cause and a consequence of displacement in Ethiopia. In locations like Northwestern zone, Tigray region and Somali region, climate change is intensifying vulnerabilities through prolonged droughts, erratic rainfall, flash flooding and rising temperatures. These pressures are disrupting traditional livelihoods, degrading ecosystems, and weakening the resilience of both displaced and host communities.

Environmental impact varies significantly geographically. While Northwestern Tigray faces high deforestation, soil erosion, and fuelwood dependency due to its highland ecology and population density, Somali region contends with chronic water scarcity, desertification, and fragile pastoralist systems. Humanitarian interventions, while essential, sometimes amplify these pressures by accelerating the extraction of natural resources and producing non-biodegradable waste especially in the absence of long-term planning or environmental safeguards.

The radar chart below provides a visual comparison of environmental stress across key categories in the Northwestern Zone of Tigray region and Somali region. It highlights region-specific drivers of vulnerability and underlines the need for tailored, context-sensitive mitigation strategies in shelter and NFI responses.

Environmental Stress Comparison



7. Environmental Stress Snapshot – Impact and Mitigation

From the arid lowlands of the Somali Region to the conflict-affected sites in Northwestern zone, Tigray Region, displacement-affected areas face recurring shocks that directly challenge shelter quality, material availability, and safe site conditions.

The following snapshot outlines major climate-related environmental impacts observed in displacement settings, the climate factors driving them, and recommended mitigation strategies.

🌲 Pressure on natural resources

- **Impact:** displaced families rely heavily on nearby vegetation for firewood and shelter construction, leading to deforestation and land degradation.
- **Example:** In both the Northwestern Tigray and the Somali region, the IDPs are observed collecting firewood, and the shelters are constructed using timbers and poles.
- **Response Entry Points:**
  - Promote energy-saving cookstoves and solar kits as part of NFI distributions.
  - Encourage low-impact, locally appropriate materials (e.g. bamboo, earth blocks).
  - Link with reforestation or natural resource partners where possible.

🗑️ Shelter and NFI Waste Accumulation

- **Impact:** Damaged tarpaulins, packaging, and broken household items pile up in and around IDP sites, especially in flood-prone or poorly drained areas.
- **Examples:** In Northwestern Tigray, plastic waste blocked drains, while in Somali, worn NFIs were openly discarded in dry riverbeds.
- **Response Entry Points:**
  - Integrate simple waste management strategies into shelter planning.
  - Explore local reuse initiatives (e.g. plastic bricks, upcycled bags).
  - Coordinate with WASH and CCCM actors for site-level waste mitigation.

🔥 Energy Poverty and Protection Risks

- **Impact:** The lack of clean, accessible energy sources increases reliance on biomass, exposes women and girls to protection risks, and contributes to environmental degradation.
- **Examples:** In Somali Region, extended dry seasons have increased firewood collection burdens.
- **Response Entry Points:**
  - Advocate for integrated energy solutions with protection and other actors.

🧱 Capacity and Coordination Gaps

- **Impact:** Environmental actions often fade after project closeout due to limited technical capacity, weak data systems, and lack of dedicated coordination platforms.
- **Examples:** In Northwestern Tigray, environmental degradation surpassed the capacity of local authorities to manage; in Somali, few partners tracked the environmental impact of shelter materials.
- **Response Entry Points:**
  - Institutionalize tools like NEAT+ for project planning.
  - Train local actors on green practices and monitoring.
  - Establish inter-cluster coordination on environment and climate resilience.

8. Comparative Framework Profiles – Environmental Integration

8.1 ECHO DG Humanitarian Greening Strategy

🔍 **Focus:** Shelter, WASH, waste, energy, and sustainable procurement.

✅ **Strengths**:

- Environmental screening is required (e.g., NEAT+).
- Flexible budgeting for green activities (up to 10%).
- Detailed operational guidance for waste, energy, and site closure.

⚠️ **Gaps:** Uptake in the field is uneven; environmental follow-up and learning systems are underdeveloped

🎯 **Relevance to ES/NFI:** Highly relevant as it offers direct guidance on materials, site planning, and energy use.

8.2 Sphere 2018 SNFI Sustainability Guidance

🔍 **Focus:** Comprehensive guidance on environmental practices across SNFI project phases

✅ **Strengths:**

- Clear targets for low-carbon materials and site restoration.
- Promotes cultural sensitivity and community participation.

⚠️ **Gaps**: Adoption varies widely and lacks enforcement mechanism.

🎯 **Relevance to ES/NFI:** Strong fit for ES/NFI strategy and design, especially in prolong displacements.

8.3 NRC Humanitarian Greening Strategy

🔍 **Focus:** Waste management, material selection, renewable energy, and climate-proof shelter.

✅ **Strengths:**

- Mandatory NEAT+ assessments.
- Pilots in vernacular architecture and local material use.
- Efforts to link greening to shelter durability and livelihoods.

⚠️ **Gaps:** Limited scale; faces operational challenges similar to those of other partners in Ethiopia.

🎯 **Relevance to ES/NFI:** Practical and innovative, ideal for local material exploration and pilot replication.

8.4 Inter-Agency Standing Committee (IASC) Environmental Responsibility Guidance

🔍 **Focus:** Sector-wide leadership, internal environmental policy, and system-wide accountability.

✅ **Strengths**:

- Emphasizes management commitment and environmental integration.
- Promotes Environmental Management Systems (EMS).
- Calls for training and inter-agency coordination.

⚠️ **Gaps:** Broad and strategic; less directly operational at the field level.

🎯 **Relevance to ES/NFI:** Foundational framework that complements technical tools and donor guidelines.

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9. The Burden of Humanitarian Assistance: The Case of Shelter and NFI

While essential in emergencies, standard SNFI interventions can impose long-term ecological and social burdens on host environments. Humanitarian responses are designed to save lives and restore dignity, but in displacement settings where ecosystems are already fragile they can unintentionally contribute to environmental degradation.

Material Footprint

Most emergency shelters in Ethiopia, and visited locations more specically, rely on timber, tarpaulins, plastic sheets, and synthetic ropes. These materials are often:

- Low-quality and short-lived, especially when procured rapidly during emergencies.
- Non-biodegradable and challenging to recycle locally.
- Contributing to illegal logging and Deforestation, particularly in areas like Northwestern Tigray.

Procurement systems often prioritize speed and cost over durability and sustainability, resulting in frequent replacement cycles and signicant waste accumulation.

Energy Demand

Displaced populations typically rely on firewood as their primary (and often only) energy source. This dependency:

- Accelerates Deforestation and loss of vegetation cover.
- Exposes individuals, particularly women and girls, to protection risks during firewood collection.
- It is rarely addressed in shelter programming beyond the distribution of basic cooking kits.

Waste Accumulation and Pollution

Shelter and NFI materials, especially plastic sheets, packaging, and non-reusable NFIs, tend to accumulate in settlements. Without waste management plans or recycling infrastructure, most items are:

- Burned in open pits, releasing toxic fumes.
- Buried or abandoned, leading to soil and water contamination.
- Left behind after site closures, creating long-term waste burdens for host communities.

Strain on Local Systems

SNFI interventions can unintentionally strain the host community infrastructure:

- Local timber and water supplies are depleted without replenishment plans.
- Municipal waste systems are overwhelmed by the increased volume of solid waste.
- Large-scale procurement and distribution distort host community's access to materials and markets.

Operational and Institutional Pressures

Despite policy-level commitments to greening humanitarian action, field-level implementation face real constraints:

- Emergency timelines and short project cycles leave little room for sustainability planning.
- Procurement procedures are not harmonized across partners, creating quality inconsistencies.
- Environmental guidance (e.g., NEAT+) is often applied only during proposal writing, not strictly followed up during implementation or monitoring.

10. Environmental Burdens Associated with SNFI Interventions

Although essential for saving lives and restoring dignity, SNFI interventions comes with a substantial carbon footprint and waste generation, often overlooked during operational planning. An estimation based on material composition and volume of kits distributed by the Ethiopian ES/NFI Cluster between 2022 and 2025 suggests that the total carbon emissions exceed 1.29 million tons of CO_2.

This figure includes the four main kit types - Emergency Shelter, ESNFI, NFI, and Repair Kits - and reflects only imported materials. It excludes locally sourced components, transportation emissions, or long-term waste handling. The analysis highlights that tarpaulins and blankets alone account for over 80% of estimated emissions, with plastic sheeting contributing the largest single share.

Category	Environmental Burden	Key Drivers
Material Use	Timber overharvesting, short-life plastics, debris accumulation	Rapid procurement, emergency timelines, weak standards
Energy	Deforestation due to firewood collection	Lack of alternative energy sources
Waste	Non-biodegradable waste, open burning, informal dumping	No recycling systems, inadequate decommissioning plans
Water and Soil	Overuse of resources in camps, drainage clogging, contamination	Unplanned settlements, poor sanitation
Local Systems	Disruption of host supply chains, overburdened municipal waste services	Uncoordinated aid, lack of local engagement
Institutional Practices	Environmental tools underused; no funding for greener alternatives	Short project durations, lack of technical support

10.1 Emergency Shelter and NFI Items Lifecycle Summary

This table provides simple lifecycle snapshots for high-emission ESNFI items, outlining how they are typically used and disposed of and how they could be reused or replaced. These profiles help inform waste management strategies and sustainable design choices.

Plastic Sheet/Tarpaulin

- Lifecycle Path: Procurement --> Use --> Wear & Tear --> Discard --> Burn/Dump
- Reuse Potential: Shelter lining, ground cover, waterproong
- Alternative Option: Biodegradable tarps, soil-stabilizing bricks
- CO_2 Impact: Very high – 150.4 kg CO_2 per kit

Cooking Pots

- Lifecycle Path: Procurement --> Use --> Long-Term Use --> Potential Loss/Discard
- Reuse Potential: Household use, communal kitchens
- Alternative Option: Return programs, shared assets
- CO_2 Impact: Moderate – 14 kg CO_2 per kit

Blankets

- Lifecycle Path: Procurement --> Use --> Wear --> Abandon/ Discard
- Reuse Potential: Warmth, padding, re-purposed textiles

  Alternative Option: Lower-volume issue; natural fibers
- CO_2 Impact: High – 96 kg CO_2 per kit

Jerrycan

- Lifecycle Path: Procurement --> Use --> Contamination --> Discard/Burn
- Reuse Potential: Water storage, tool bins

  Alternative Option: Palletization, modular refillable
- CO_2 Impact: Low – 2.5 kg CO_2 per kit

Soap

- Lifecycle Path: Procurement --> Use --> Consumed --> Packaging Discarded
- Reuse Potential: Soap is consumable; packaging reused
- Alternative Option: Bulk rell, compostable wrap
- CO_2 Impact: Very low – 0.84375 kg CO_2 per kit

Rope

- Lifecycle Path: Procurement --> Use --> Wear --> Discard or Reuse
- Reuse Potential: Tying, bundling, shelter support
- Alternative Option: Pellet reuse, biodegradable fiber ropes
- CO_2 Impact: Very high – 1.25 kg CO_2 per kit

Plates & Cups

- Lifecycle Path: Procurement --> Use --> Long-Term Use --> Loss or Re-purpose
- Reuse Potential: Household food use, communal kitchens
- Alternative Option: Standardized, pooled community sets
- CO_2 Impact: Moderate – 11.2 kg CO_2 per kit

Bed Mat

- Lifecycle Path: Procurement --> Use --> Wear -->Discard or Ground Use
- Reuse Potential: Flooring, insulation
- Alternative Option: Compressed fiber mats, woven straw
- CO_2 Impact: High – 8.6 kg CO_2 per kit

Washing Basin

- Lifecycle Path: Procurement --> Use --> Crack/Contamination --> Discard/Burn
- Reuse Potential: Washing, water storage
- Alternative Option: Pellet recycling, durable modular models
- CO_2 Impact: Low – 1.5 kg CO_2 per kit

Mosquito Net

- Lifecycle Path: Procurement --> Use --> Insecticide Decline --> Discard
- Reuse Potential: Netting, shade, ventilation covers
- Alternative Option: Untreated mesh, compostable materials
- CO_2 Impact: Low – 0.55 kg CO_2 per kit

Handwashing Set

- Lifecycle Path: Procurement --> Use --> Contamination --> Discard
- Reuse Potential: Household washing, cleaning tools
- Alternative Option: Pellet reuse, modular containers
- CO_2 Impact: Low - 1.875 kg CO_2 per kit

11. Local and Sustainable Shelter Solutions in Displacement and Return Contexts

In Ethiopia, the feasibility of using locally available materials for shelter responses varies considerably across regions and depends on the phase of displacement. While areas like Afar and Benishangul-Gumuz retain access to traditional resources, other regions, including Tigray, Amhara, and Somali, face serious limitations due to environmental degradation, the decline of traditional building knowledge, and the time constraints of rapid emergency response.

In emergency settings, the use of local materials is often restricted by challenges related to accessibility, cultural and climatic suitability, and market readiness. However, in return and recovery contexts, there is a greater opportunity to integrate sustainable, locally sourced materials particularly when combined with technical guidance and community engagement.

Across both contexts, local material use can take the form of hybrid solutions adapted to humanitarian standards or draw on elements of vernacular architecture that reect local identity and environmental fit. Whichever approach is applied, success depends not only on material availability but also on considerations such as durability, fire safety, cultural appropriateness, and alignment with shelter standards.

11.1 Hybrid Shelter Solutions Using Local Materials

In regions where traditional shelter designs cannot be fully applied due to time, scale, or material constraints, hybrid shelter approaches offer a practical and context-sensitive alternative. These models combine locally available, renewable materials with simplified technical designs that align with humanitarian standards.

The ES/NFI Cluster developed such an approach in Afar, using materials like *halawa* poles and *senan* mats, which are adapted to the local climate and cultural practices. While not fully vernacular, these shelters reduce dependence on imported plastic sheeting, support local economies, and foster community participation.

In Tigray, a cluster partner is piloting the use of adobe in prolonged displacement contexts, illustrating how local materials can be reintroduced and upgraded to suit evolving shelter needs.

These hybrid solutions represent a middle ground offering more sustainable and culturally grounded options without the full complexity or time requirements of traditional construction. When implemented with proper technical support and risk awareness, they can:

- Lower environmental and logistical burdens,
- Improve cultural appropriateness,
- Strengthen local markets and skills,
- Enhance resilience in protracted displacement.

11.2 Vernacular Architecture: Opportunities and Limits

Vernacular architecture in Ethiopia shaped by centuries of adaptation to local climates, cultures, and available resources offers important insights for sustainable, low-carbon shelter solutions. Traditional structures such as *tukuls*, mud-and-thatch dwellings, and stone-earth houses are often built with renewable materials and feature passive climate-adaptive designs suited to their environments.

In return and recovery contexts, where time, skills, and materials may be more accessible, these approaches can offer more durable, culturally appropriate, and environmentally responsible alternatives. However, their applicability in rapid emergency settings remains limited due to material scarcity, the erosion of traditional knowledge, and the need for standardized responses.:

Key Considerations for Sustainable Shelter Using Vernacular Approaches:

- **Build on Local Knowledge Where Feasible:** Utilize traditional construction practices and cultural norms when materials, skills, and timeframes allow, particularly in recovery or return contexts.
- **Incorporate Hazard-Resilient Features:** Apply adaptable local design elements such as elevated bases, circular layouts, or exible thatch where they enhance structural resilience.
- **Prioritize Renewable, Low-Impact Materials:** Where available, use sustainable materials such as bamboo, treated timber, senan mats, adobe, or Compressed Earth Blocks (CEBs), ensuring that harvesting does not degrade local ecosystems.
- **Engage Local Skills:** Involve community members and local artisans in shelter upgrading or reconstruction phases to support ownership, skills transfer, and economic recovery.
- **Adapt to Regional Realities:** Tailor shelter solutions to local climate, hazard profiles, and material availability, recognizing that vernacular designs may not be appropriate for rapid emergency response in all regions.

Practical Integration of Vernacular Approaches

Vernacular approaches can contribute to more sustainable and locally appropriate shelter solutions, particularly in recovery and return contexts where time and materials are available. However, their integration requires technical adaptation, community participation, and realistic planning based on local conditions.

The table below summarizes key considerations for applying vernacular elements in SNFI responses.

Category	Description
Cultural Identity	Reflect social values, status, and tradition through distinctive forms.
Climate Adaptation	Adapt structures like the *tukul*, optimized for heat regulation and runoff.
Sustainability	Use local, renewable materials and avoids synthetic waste.
Economic Feasibility	Low-cost due to reliance on local labor and resources.
Community Development	Build on local skills with new techniques to improve durability.
Cost-Effectiveness	Free funds for other needs by cutting transport and import costs.
Environmental Harmony	Cause less ecological damage in fragile zones.
Capacity Challenges	Need technical adaptation for safety (fire, flood, seismic zones).
Cultural Sensitivity	Require participatory planning to avoid misalignment with traditions.
Local Capacity Building	Support skills transfer and livelihood potential in reconstruction efforts.

11.3 Local Materials – Impacts, Benefits, and Better Practices

Material	Impacts	Benefit	Description
Timber	Deforestation, landslides, illegal logging	Renewable if managed, economic value	Use modular/reused timber; avoid toxic treatments
Bamboo	Overharvesting, crop fragility	Fast-growing, slope stabilizing	Community management; reuse post-use products
Thatch	Fire risk, short lifespan	Biodegradable, locally available	Annual upkeep; promote safe use in cultural styles
Halawa poles	Localized overuse if not managed	Readily available in Afar; exible and strong	Use in rotational harvesting systems; avoid overcutting
Senan mats	Low impact if locally woven	Biodegradable; culturally appropriate in hot climates	Use for cladding or partitions; combine with waterproong
Soil	Erosion in ood zones	Non-toxic, regulates humidity	Use termite-mound soil; reinforce plinths
Stone	Quarrying may disturb local terrain	Durable; thermally efficient; highland-appropriated	Use selectively; prioritize areas where stone is traditionally sourced

12. Conclusion

12.1 Environmental Burden of the shelter and NFI responses

Environmental sustainability in SNFI responses is no longer optional, but it is essential. This report has shown that while lifesaving SNFI support remain a priority, the environmental costs of emergency interventions are high, particularly where short-term materials and rapid deployment models dominate.

Yet the findings also demonstrate a clear opportunity by integrating environmental thinking into preparedness, procurement, and program design, the ES/NFI Cluster and its partners can reduce harm, enhance resilience, and support more dignfied living conditions for displaced and returning communities.

Progress depends on realistic, phased, and regionally adapted strategies. Sustainability must be mainstreamed not only in policy but in how shelter is built, distributed, and managed through better tools, partner capacity, local knowledge, and flexible donor support.

12.2 Implementation Gaps and Missed Opportunities

Field observations show that sustainable practices are rarely institutionalized. In most sites:

- Durable or recyclable materials are not prioritized.
- Environmental screening tools like NEAT+ are inconsistently applied.
- Green efforts fade once projects end or shift to local partners.
- Donor environmental requirements are rarely backed with funding or robust monitoring.

For instance, in Northwestern zone, Tigray Region, environmental degradation is so advanced that recovery appears beyond the current capacity of local authorities. In Somali Region, the longer duration of displacement has redened IDP needs, demanding a more stable, integrated, and environmentally aware response model.

12.3 Structural and Systemic Barriers

- **Low awareness** of sustainability principles among field staff and communities.
- **Limited technical capacity**, especially among local NGOs and CBOs.
- **Fragmented planning** between ES/NFI and other clusters (e.g., WASH, CCCM).
- **No dedicated environmental working group** at the inter-cluster level.
- **Lack of data tracking,** particularly on CO2 impacts, plastic use, or recyclable waste.

12.4 Local Innovations

While the overall picture is challenging, several community-led practices show promises. For examples:

- Re-purposing of distributed ESNFI materials to make bags, ropes, and household tools.
- Construction with local materials in areas with strong vernacular traditions.
- The most signicant sustainability gains will come from:
  - Promoting the use of vernacular materials and techniques where culturally appropriate, technically feasible, and environmentally sustainable.
  - Coordinating across clusters and with authorities to manage waste and reduce carbon.
  - Funding long-term strategies such as reforestation, agroforestry, and local procurement systems.

12.5 Strategic Recomendations

- Make **NEAT+ mandatory** with support for local adaptation.
- Promote **community-based waste systems** modelled on cases like Kakuma.
- Scale **biodegradable and modular materials**, especially for tarpaulins and NFIs.
- Support **pilot initiatives in vernacular design, local production,** and reverse logistics.
- Form an **inter-cluster Environmental Working Group** to drive alignment.

13. Recommendations

13.1 Recommendations for Implementing Partners

Sustainable Material Procurement

- Prioritize locally sourced, durable materials (e.g., bamboo, treated timber).
- Replace single-use plastics with biodegradable or reusable alternatives.
- Use modular designs that allow reuse or easy upgrading.
- Introduce reverse procurement or "take-back" systems for used NFIs.

Integrated Waste Management

- Establish community-led recycling systems (e.g., plastic-to-brick initiatives).
- Partner with local businesses to support circular economies.
- Train communities in waste segregation, composting, and reduction.

Environmental Assessments

- Mandate NEAT+ screening tools for environmental impact analysis.
- Allocate a dedicated budget (even if small) for green measures.
- Integrate environmental concerns across sectors (e.g., WASH, Logistics).
- Use the Environmental Checklist (Annex 1) during the planning phase to ensure that shelter and NFI activities align with sustainability goals and contextual realities.
- Refer to external resources such as the VEHA Tool for activity-specific environmental and humanitarian guidance to support decision-making.

Climate-Resilient Designs

- Use hazard-resistant features like raised platforms or slope protection.
- Pilot renewable material shelters (e.g., CEBs, bamboo).

Community Engagement

- Involve IDPs and host communities in building and waste reuse activities.
- Train communities in agroforestry and rainwater harvesting techniques.
- Promote income-generating initiatives (e.g., crafts from ES/NFI remnants).

Decommissioning Protocols

- Develop standard protocols for salvaging and recycling shelter materials.
- Work with municipalities to repurpose discarded items (e.g., re-purpose plastic sheeting into road base construction).

Monitoring and Reporting

- Track environmental indicators such as plastic waste reduction, material reuse, and vegetation restoration.
- Document lessons learned, successful adaptations and local innovations to share across regions.
- Collaborate with local authorities, universities, or environmental agencies to strengthen validation and learning.
- Train field staff and local partners on practical tools for environmental data collection and reporting.

13.2 Recommendations for Donors

For Humanitarian Donors

🗒️ **Mandate Environmental Screening:** Require comprehensive NEAT+ assessments and Environmental Impact Assessments (EIAs) as integral components of project planning and implementation to identify potential environmental risks early.

🖩 **Fund Environmental Data Systems:** Allocate resources for the development and maintenance of environmental indicators, monitoring frameworks, and data collection systems to track ecological impacts over time and inform adaptive strategies.

🌿 **Prioritize Green Components:** Embed funding provisions specically for environmental friendly materials and practices within short-term projects, such as biodegradable or locally sourced construction materials, renewable energy solutions, and waste reduction initiatives.

🚀 **Support Innovative Pilot Initiatives:** Invest in rapid-scale pilot projects that demonstrate scalable, low-impact solutions, such as biogas systems, recycled plastic bricks, and solar-powered infrastructure, to promote environmentally sustainable shelter responses.

♻️ **Ensure Long-term Sustainability:** Improve mechanisms for post-project environmental follow-up and capacity-building, ensuring that sustainability considerations are embedded in ongoing operations and that environmental gains are maintained beyond the project lifespan.

🤝 **Enhance Coordination and Capacity:** Facilitate cross-sectoral coordination among agencies to harmonize environmental standards and share best practices, leveraging global frameworks such as the Climate and Environment Charter.

🕛 **Monitoring, Accountability, and Learning:** Donors should ensure that environmental goals are tracked through clear indicators, regular reporting, and learning reviews. Funding for long-term impact monitoring and adaptive feedback can help partners improve practices and scale what works.

For Development Donors

📏 **Invest in Local and Regional Supply Chains:** Support the development of sustainable, locally sourced supply chains for materials such as bamboo, earth blocks, treated timber, and other eco-friendly resources to reduce reliance on imported or non-renewable inputs.

🔄 **Fund Community-led Recycling and Circular Economy Initiatives:** Provide targeted funding to grassroots recycling programs and circular economy projects that empower communities to manage waste sustainably, create local employment, and reduce environmental degradation.

🌱 **Scale Reforestation and Land Restoration:** Prioritize funding for reforestation, agroforestry, and land restoration programs that enhance ecosystem resilience, sequester carbon, and promote climate adaptation in displacement-affected regions.

🔀 **Integrate Environmental Sustainability into Broader Programs:** Embed sustainability principles into Disaster Risk Reduction (DRR), climate resilience, and livelihood programs, ensuring that environmental considerations are mainstreamed across all sectors.

🎯 **Align Funding with International Climate Commitments:** Ensure that all investments are aligned with the Climate and Environment Charter, European Green Deal, and other relevant global commitments, fostering coherence and accountability.

👨‍🏫 **Support Capacity Building and Policy Development:** Invest in strengthening local institutional capacities, policy frameworks, and community awareness to sustain environmental initiatives and promote innovative, context-specific solutions.

13.3 Recommended Actions

Support pilot projects that adapt vernacular architecture to emergency shelter contexts, especially in protracted displacement areas, while integrating the following considerations:

- **Incorporate local material assessments** (e.g., soil, bamboo, timber availability) into shelter design and procurement planning.
- **Include vernacular options** in cluster-level shelter guidance and decision-making frameworks.
- **Facilitate training for implementing partners** on traditional construction techniques that can be upgraded for safety and durability.
- **Encourage participatory design** with IDPs and host communities to integrate cultural preferences and climate-responsive features.
- **Document and share local knowledge** on sustainable building techniques to promote replication across regions and clusters.

Promote hybrid designs that combine traditional forms with modern hazard-resilient improvements (e.g., stone plinths, rainproof roofing).

Align donor funding frameworks to support the use of local materials and promote climate-smart, culturally aligned shelters.

13.4 The Path Forward

Ethiopia's complex environment, ranging from highland erosion to lowland drought, makes generalist recommendations necessary. However, this complexity must not excuse inaction. Even small shifts, guided by clear principles, can reduce environmental harm and build community resilience.

Environmental mainstreaming should no longer be optional in humanitarian action. It must be driven by:

- **Donor leadership** in enforcing standards and funding innovation
- **Implementing partner capacity**, especially among national actors
- **Community engagement,** recognizing that sustainable change must be co-owned

14. Summary Matrix: Key Risks, Options & Recommendations by Category

To support this transition, practical checklists for both implementing partners and donors have been included (Annex 1). These tools translate the report's findings into actionable steps across planning, procurement, implementation, and monitoring. Their use can strengthen accountability, promote environmentally responsible decision-making, and help align humanitarian responses with broader climate and sustainability commitments.

Category	Key Risks	Options	Recommendations
Environmental Impact	- Deforestation - Plastic pollution - CO_2 emissions	- Mandatory NEAT+	- Prioritize recyclable materials - Promote local sourcing
Waste Management	- No IWMS - High plastic load	- Community-based systems	- Implement models like Kakuma - Introduce waste-to-product ideas
Climate Adaptation	- Floods - Droughts - Climate risks	- Climate-smart shelter - Reforestation	- Promote hazard-resistant, low-carbon shelters
Capacity & Partnerships	- Limited capacity at local level	- Training and technical support	- Strengthen local partnerships and coordination
Strategy & Policy	- Poor coordination - Lack of data	- Environmental procurement standards	- Integrate environmental indicators - Improve tracking

15. Annexes

Annexes contain background Environmental Review Checklist, materials, environmental tools, and case studies, including examples from Kakuma, Kenya and FAO's sustainability practices, which could provide additional insights and information, albeit not the main focus of this report.

Annex 1. Environmental Compliance Checklist for Shelter and NFI Interventions in IDP and Returnee Settings

Purpose

The Environmental Review Checklist is intended to provide a practical tool for identifying key environmental issues across the planning, implementation, and closure of activities in IDP and returnee settings. It aims to support partners in integrating environmental considerations throughout shelter and NFI programming. This checklist is not a substitute for formal environmental assessments that may be required by donors or the Government of Ethiopia.

This checklist is a supplement to the UNHCR Site Assessment Form used in Ethiopia. While the Site Assessment Form collects broader site-level information, this tool focuses specifically on actionable environmental considerations related to IDP and returnee settings.

The UNHCR site form informs several actions outlined here, the VEHA tool (https://veha-tool-lt5w.glide.page), observations from eld visits, stak eholder interviews, and ndings from the July 2025 assessment, "Reducing the Environmental Footprint of Humanitarian Shelter Responses in Ethiopia."

Together, these resources form a comprehensive foundation for identifying and mitigating environmental risks during planning, implementation, and decommissioning phases. Users are encouraged to reference all tools in parallel for well-informed, context-sensitive decision-making.

Key Environmental Considerations	Comments	Check if action taken
A. Assessment		
1. Has a NEAT+ environmental screening been conducted for the site prior to selection and planning?	• NEAT+ helps identify environmental risks early and informs mitigation strategies at the planning stage. • The NEAT+ Sensitivity module can be used where a specific site is known. • The Rapid Environmental Impact Assessment (REA) can be used where specific locations within a disaster-affected location are not known.	
2. Is the Regional/zonal/national government being consulted to identify any applicable environmental regulations?	• A single consultation for a whole disaster response is sufficient. • Refer to the Ethiopia Environmental Profile for additional background.	
3. Has a local materials assessment been conducted to identify sustainable, low-impact construction inputs?	• Supports responsible sourcing and promotes traditional or renewable options.	
4. Have cultural practices and traditional building techniques been considered in the design and implementation?	• Encourage vernacular approaches that are climate-adapted and accepted locally.	

5. Has the potential impact of shelter and NFI distribution on local markets and ecosystems been assessed?	• Prevents overexploitation of local resources and market distortion.	
6. Assess whether any natural hazards could impact the disaster-affected area over the next 24 months.	• Refer to the Ethiopia Environmental Profile for Woreda- level information on natural hazards. Consult with national experts on site or communal center risks.	
7. Is the intervention located away from environmentally sensitive areas (forests, riverbanks, wetlands, etc.)?	• Prevents ecological degradation and preserves natural buffers	
8. Review the overall location, and specific shelter or communal center sites to determine if fighting has occurred in the past and whether unexploded munitions may be present.	• Locations where fighting has taken place or where unexploded munitions may be present require additional site-level reviews and special restrictions on the use of environmental resources, e.g., limiting access to forests or fields.	
9. Have disaster-affected populations and neighboring communities been consulted on potential environmental concerns related to the intervention?	• Completing the NEAT+ Sensitivity module or using the REA Community Assessment questionnaire can be used for this assessment.	
10. Are the environmental considerations documented and integrated into the project proposal or BoQs?	• Ensures accountability and application of findings in implementation.	
B. Planning		
1. Have key environmental issues been identified through tools such as NEAT+, and are mitigation measures integrated into the project design	• The NEAT+ tool can be used to identity issues and solutions.	
2. Has the projected water demand over a 24-month period been technically assessed to ensure it won't lead to environmental degradation?	• This assessment can use Sphere Standards indicators and specialist guidance on expected consumption and supply assessments.	
3. Has the projected energy demand over a 24-month period been assessed for its impact on local natural resources?	• This assessment can use Sphere Standards indicators and specialist guidance on expected consumption and supply assessments.	
4. Have the potential environmental impacts of proposed livelihood activities (e.g., charcoal production, brick making) been technically assessed?	• This assessment can use Sphere Standards indicators and specialist guidance on expected consumption and supply assessments.	
5. Have the environmental implications of using local resources for shelter or infrastructure (e.g., timber, stone, soil) been technically evaluated?	• Use the NEAT+ Shelter module, market assessments (e.g., see https://policy-practice.oxfam.org/resources/emergency- market-mapping-and-analysis-toolkit-115385/) and the Shelter Methodology for the Assessment of Carbon (SMAC) (for CO_2 generation) to assess impacts.	
6. Has a 24-month assessment of solid and liquid waste generation been conducted, and is there a management plan in place?	• These assessments can incorporate Sphere Standards indicators and specialist guidance on expected consumption and supply assessments. See the WREC Project for additional guidance.	
7. If communal shelters are used, has the environmental impact of building modications and associated resource use been assessed?	• Use the NEAT+ Shelter module, market assessments (e.g., see https://policy-practice.oxfam.org/resources/emergency-market-mapping-and-analysis-toolkit-115385/) and the Shelter Methodology for the Assessment of Carbon (SMAC) (for CO2 generation) to assess impacts.	

8. Are environmental risks associated with climate hazards (e.g., droughts, oods, soil erosion) integrated into the shelter and NFI design and planning process?	• Adapt shelter strategies to local hazard profiles and climate resilience requirements.	
9. Are procurement practices aligned with environmental standards, including sourcing sustainable, durable, and recyclable materials?	• Refer to NEAT+, SMAC, and organizational policies promoting biodegradable or modular shelter components.	
10. Is there coordination with other clusters (e.g., WASH, Health, Livelihoods) to ensure integrated environmental planning and shared mitigation efforts?	• Joint planning reduces duplication and reinforces eco-responsible response strategies.	
11. Have local communities and neighboring populations been consulted on potential environmental risks or concerns?	• Completing the NEAT+ Sensitivity module or using the REA Community Assessment questionnaire can be used for these consultations.	
12. Develop a plan for closing sites or communal centers that includes reusing, repurposing, or recycling materials and any waste expected to remain	• Consult Camp Closure Guidelines for guidance. • Consult the R3 Working Document for guidance on reuse, re-purposing, recycling and disposal.	
13. Has an Environmental Management and Monitoring Plan (EMMP) been developed based on NEAT+, REA, SMAC, or similar assessments?	• The EMMP identifies specific expected environmental impacts and how these impacts can be reduced through project-based interventions.	
14. Is there a plan to track and report on key environmental indicators throughout the project lifecycle?	• Environmental monitoring (e.g., waste generation, reuse rates, vegetation changes) strengthens accountability.	
C. Implementation of Shelter and NFI Activities		
1. Have shelter and NFI materials been selected based on their durability, reusability, and low environmental footprint?	• Prioritize items with longer lifespans, recyclable components, or local production to reduce waste and emissions.	
2. Is guidance provided to beneciaries on proper use, maintenance, and eventual reuse/disposal of distributed items?	• Instructional materials and demonstrations reduce misuse and promote safer and more sustainable practices.	
3. Are local materials used appropriately to supplement distributed items, without contributing to environmental degradation?	• For example, use of bamboo or treated timber must avoid illegal logging and consider resource regeneration.	
4. Have waste reduction measures (e.g., packaging take-back, reusable bags) been implemented during distribution?	• Work with suppliers to minimize plastic and adopt biodegradable or recyclable alternatives.	
5. Are staff and volunteers trained on how to implement environmentally responsible shelter and NFI activities?	• Reduces open dumping and allows materials to be re-purposed or recycled when feasible.	
6. Has a 24-month assessment of solid and liquid waste generation been conducted, and is there a management plan in place?	• Includes awareness of risks like deforestation, drainage blocking, or unsafe disposal of materials.	
7. Are distribution points and storage areas managed in a way that prevents environmental damage (e.g., erosion, contamination)?	• Ensure the temporary infrastructure does not lead to land degradation or pollution.	

D. Site/Center Closure/Decommissioning		
1. Has the initial site or center closure plan been reviewed and updated based on current needs and environmental conditions?	• Consult Camp Closure Guidelines for guidance. • Consult the R3 Working Document for guidance on reuse, re-purposing, recycling and disposal.	
2. Have disaster-affected and neighboring populations been consulted on closure plans and rehabilitation options?	• Consultations with affected and neighboring populations may indicate measures which can improve the local and overall environmental conditions when the site/center had previously operated. This can include turning the site into a park, replanting trees and vegetation, improving landscapes to reduce further hazard impacts, etc.	
3. Has the Environmental Monitoring and Management Plan (EMMP) been revised to reflect updated closure plans and any new environmental issues identified?	• A site or center should be rehabilitated and repairs made to a level which is at least as good as before use. • Where possible, environmental issues which existed before the establishment of the site/center should be addressed and the potential for future disasters reduced.	

Annex 2: Quick Environmental Impact Assessment and Action Checklist (Based on rev.3 Sheltercluster)

Section	Purpose	Key Considerations	Actions/Requirements
Site Selection	Assess environmental risks and community needs during site selection.	- Community consultation - Distance from protected areas - Avoid flood/landslide zones - Access to water/resources	- Involve local communities - Use maps/NGO input - Ensure legal agreements for land use - Avoid industrial sites
Construction	Ensure sustainable construction practices and compliance with Sphere Standards.	- Use renewable materials - Minimize vegetation removal - Fire safety - Rainwater harvesting - Wastewater management	- Follow Sphere Standards - Use durable, reusable materials - Implement drainage/sewage plans
Management	Maintain environmental and health standards during site operation.	- Waste collection - Fuel-efficient stoves - Safety of public facilities - Livelihood space - Environmental monitoring	- Establish community committees - Regular waste disposal - Monitor water/sanitation
Decommissioning	Restore the site post-closure and mitigate long-term impacts.	- Remove infrastructure - Replant vegetation - Assist residents in relocating materials - Erosion control	- Develop closure plan - Restore site to pre-disaster conditions - Recycle materials
Policy	Outline environmental guidelines for shelter activities.	- Use local/recycled materials - Assess transport carbon footprint - Avoid toxic materials - Coordinate with other sectors	- Conduct environmental reviews - Prioritize sustainable resources - Offset carbon emissions

1. Kelly, C. Emergency Shelter Policy with Regards to Environmental Issues (Revision 1). ProAct and CARE International, 2008.

Annex 3. Study case: Kakuma Integrated Waste Management System

The example of Kakuma Refugee Camp in Kenya provides a valuable model for IWM in humanitarian settings, particularly in refugee camps where waste disposal and environmental sustainability are signicant challenges.

The Kakuma model demonstrates that with proper planning, community involvement, and innovative solutions, it is possible to manage solid waste effectively in humanitarian settings. By building on this approach, other settlements can potentially address the dual challenges of waste management and environmental sustainability, while also providing economic opportunities for residents. The key lies in building local capacity, creating sustainable markets for recycled materials, and fostering partnerships between communities, NGOs, and governments. Here there is a matrix on how integrated Waste Management should work in a camp setting.

Category	Strategy	Actions
Community-Based Waste Management	Engage Local Communities	- Organize community-based organizations (CBOs) for waste collection.
		- Involve refugees and local residents in waste management.
		- Foster ownership and responsibility.
	Provide Necessary Tools and Training	- Equip community members with uniforms, safety gear, and tools (e.g., handcarts, wheelbarrows, motorized vehicles).
		- Train on waste sorting, recycling, and composting.
Waste Collection & Sorting	Set Up Collection Points	- Distribute portable garbage bins and fixed metal receptacles throughout the camp.
		- Ensure systematic waste collection to prevent accumulation in open areas.
	Create Waste Transfer Stations	- Build stations for sorting recyclables (plastics, metals, glass) and organic waste.
		- Prepare materials for recycling or composting.
Recycling & Composting	Recycle Plastics and Metals	- Sort and sell plastics and metals to recycling companies.
		- Explore local recycling facilities to process plastics into pellets or other usable materials.
		- Reduce long-distance transportation needs.
	Compost Organic Waste	- Compost food waste for use as fertilizer in home gardens.
		- Improve food security and reduce organic waste.
Overcoming Transportation	Local Processing Facilities	- Invest in local materials recovery facilities (MRFs) to process plastics into pellets or other forms.
		- Make transportation of recyclables more cost-effective.
	Explore Local Uses for Recycled Materials	- Use recycled plastic pellets to produce construction materials.
		- Address high demand for building materials in deforested areas.
Creating a Market for Recyclables	Develop Local Markets	- Create a functioning market for recycled materials within the local area.
		- Ensure fair payment for recyclables collected by CBOs.
		- Provide steady income for workers.
	Sell Compost and Scrap Metals	- Sell compost and scrap metals to generate income.
		- Turn organic waste and metals into profitable products.

Education & Awareness	Promote Recycling and Waste Reduction	- Implement educational programs on recycling, waste reduction, and proper waste disposal.
		- Improve sanitation and hygiene through awareness campaigns.
	Encourage Community Participation	- Conduct regular workshops and awareness campaigns.
		- Encourage refugees and locals to participate in waste management efforts.
Partnerships & Funding	Collaborate with NGOs and Governments	- Seek partnerships with international organizations, governments, and NGOs for funding and technical support.
		- Secure resources for waste management projects.
	Leverage Local Businesses	- Facilitate negotiations between CBOs and local businesses for garbage collection fees.
		- Establish sustainable funding models through partnerships with local businesses.
Innovative Solutions	Explore Alternative Uses for Non-Recyclable Plastics	- Investigate ways to use non-recyclable plastics (e.g., tarpaulins) in construction materials.
		- Incorporate shredded plastics into concrete or other building materials.

Annex 4. Study case: Reduction of Footprint in Humanitarian Intervention - the FAO Strategy

The FAO project highlights the importance of integrating sustainable forest management, clean energy access, and livelihood resilience into humanitarian responses. By adopting these best practices, humanitarian organizations can reduce environmental degradation, improve the quality of life for displaced and host communities, and promote long-term sustainability. The key lies in community engagement, innovative approaches, and strong partnerships with local and national stakeholders. Here the best recommended practices should be adapted to SNFI cluster capacities and circumstances.

Category	Best Practices	Actions
Sustainable Forest Management	Promote sustainable forest management and ecosystem restoration	- Develop forest management plans for resilient and sustainable harvesting of fuelwood and other forest products.
		- Implement yield regulation and forest protection measures.
	Enhance capacity of communities and local authorities	- Train displaced and host communities in sustainable forest management.
		- Strengthen national capacity for natural resource management and restoration.
Energy Access	Promote clean and efficient energy systems	- Enhance access to clean and efficient cooking energy.
		- Support the adoption of efficient energy technologies (e.g., improved kilns, briquettes).
	Reduce reliance on unsustainable fuelwood	- Promote alternative energy sources to reduce Deforestation.
		- Encourage the use of renewable energy solutions.
Livelihood Resilience	Develop sustainable forest-based value chains	- Create livelihood opportunities through sustainable forest product value chains.

		- Improve market access for forest products.
	Strengthen livelihood risk management	- Enhance skills in sustainable forest-related production systems.
		- Promote social protection measures for displaced and host communities.
Environmental Impact Assessment	Conduct baseline assessments and build an evidence base	- Perform biophysical and socioeconomic baseline assessments.
		- Analyze drivers of environmental degradation and develop response scenarios.
	Develop indicators and early warning systems	- Create indicators for managing forest resources in displacement settings.
		- Establish early warning systems for environmental risks.
Stakeholder Engagement	Engage displaced and host communities in participatory approaches	- Involve communities in planning and implementing forest management activities.
		- Ensure inclusive participation of women, men, and vulnerable groups.
	Collaborate with local authorities and stakeholders	- Work with national and local authorities to implement sustainable forest management.
		- Partner with NGOs, UN agencies, and other stakeholders for coordinated efforts.
Innovative Approaches	Pilot innovative approaches for a greener humanitarian response	- Test new technologies and methods for sustainable forest management and energy access.
		- Promote the use of renewable energy and efficient cooking technologies.
	Promote global good practices and standards	- Adopt minimum environmental requirements and recommendations (e.g., DG ECHO guidelines).
		- Share best practices and lessons learned across regions.
Policy and Strategy Development	Develop regional and national strategies for natural resource management	- Support the creation of regional and national strategies for improved natural resource management.
		- Develop response plans for energy access and livelihood risk management.
	Strengthen coordination and data availability	- Enhance data collection and analysis for better decision-making.
		- Improve coordination among stakeholders for effective implementation of forest management and energy access initiatives.

Annex 5. NEAT+, Environmental Assessment/Screening tools

- Easy to use and generates a Lots of results
- Even if this results contains lots of information and mitigation measures still require expertise to apply during Project design and implementation.
  - NEAT+ sensitivity module is good for Project design.
  - The Sensitivity plus activity modules can be used to:
    - Identify what should be incorporated into a Project at design stage, including elements of a monitoring plan
    - Check on Project implementation if any new issues have arisen.

Photo Annex

Self-Made and Weathered Deteriorating Shelters


IOM · OIM
@Ethiopia ES/NFI Cluster


USAID
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