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# CAI Maicao Reception Centre:
## Environmental Scoping Report and Recommendations


## Colombia, November 2019

*Prepared for the UN Refugee Agency by Amanda George and Margherita Fanchiotti, UNEP / OCHA Joint Environment Unit*

UN environment programme | OCHA Office for the Coordination of Humanitarian Affairs | USAID FROM THE AMERICAN PEOPLE | UNHCR The UN Refugee Agency | WWF | MSB Swedish Civil Contingencies Agency | IUCN | NRC NORWEGIAN REFUGEE COUNCIL

# Executive Summary

This report presents the results of an environmental scoping mission by the UN Environment Programme (UNEP) / Office for the Coordination of Humanitarian Affairs (OCHA) Joint Environment Unit (JEU) and the UN Refugee Agency (UNHCR) to the Integrated Assistance Centre (Centro de Atención Integral, or CAI) in Maicao, northeastern Colombia. The mission took place from 4 to 13 November 2019 and was financially supported by UNHCR, UNEP and OCHA.

The purpose of the mission was to highlight key areas of environmental risk in UNHCR's programming in the CAI and neighbouring Chichituy host community and to apply and promote the Nexus Environmental Assessment Tool (NEAT+). The activity modules were completed by UNHCR technical experts, with the exception of the food security and livelihoods (FSL) module which was filled in by Acción Contra el Hambre (ACH) as the lead partner for FSL with the host community. The Environmental Sensitivity module was completed by a group of UNHCR and partner technical staff in the CAI, including a government representative. This was the first time that the NEAT+ was used in a reception camp setting and on such a small scale, and the results proved accurate.

The findings and recommendations of this report are based on a combination of a field test of the NEAT+, four focus group discussions (FGD) including participatory mapping with CAI residents, host community and technical staff groups; and a secondary data review. Tailored recommendations are provided both for mitigating environmental risks at the CAI, and more broadly on a national and global level for promotion and expansion of the NEAT+. Key findings include:

- **Environmental issues are being well mainstreamed into the CAI activities and with a few adjustments can substantially increase the "green" qualities of the operation.**
- **Key areas to focus on in the CAI for the most impact:**
    - Switching to **green energy solutions** and away from 100 percent reliance on diesel, with large pollution impacts and carbon footprint
    - Establishing a **grey water reuse system** to combat the issue of acute water shortages.
    - Increasing **environmental education** to tackle all environmental issues outlined in this report, particularly on **waste management**, and to address the problem of **lack of social cohesion**
    - **Reducing disaster risk from flooding and soil erosion,** particularly critical as the CAI expands, through drainage systems as well as nature-based solutions, including vegetation cover to enhance infiltration capacity.
- **Key area to focus on with the host community:**
    - **Ensuring that food security and livelihoods programming with the Chichituy community includes a strong environmental and climate-smart component** in order to minimise impact on an already environmentally sensitive area facing **deforestation**, **water shortages** and **increased disaster risk.**

It is hoped that the results and environmental findings presented in this report will be used by UNHCR towards planning mitigation activities and/or environmentally sensitive project planning in both upcoming and existing interventions in the CAI in Maicao, and across Colombia and the Americas. Lessons learnt from the NEAT+ pilot will also be captured and used for its future application globally as well as for potential future updates of the tool.

# Map

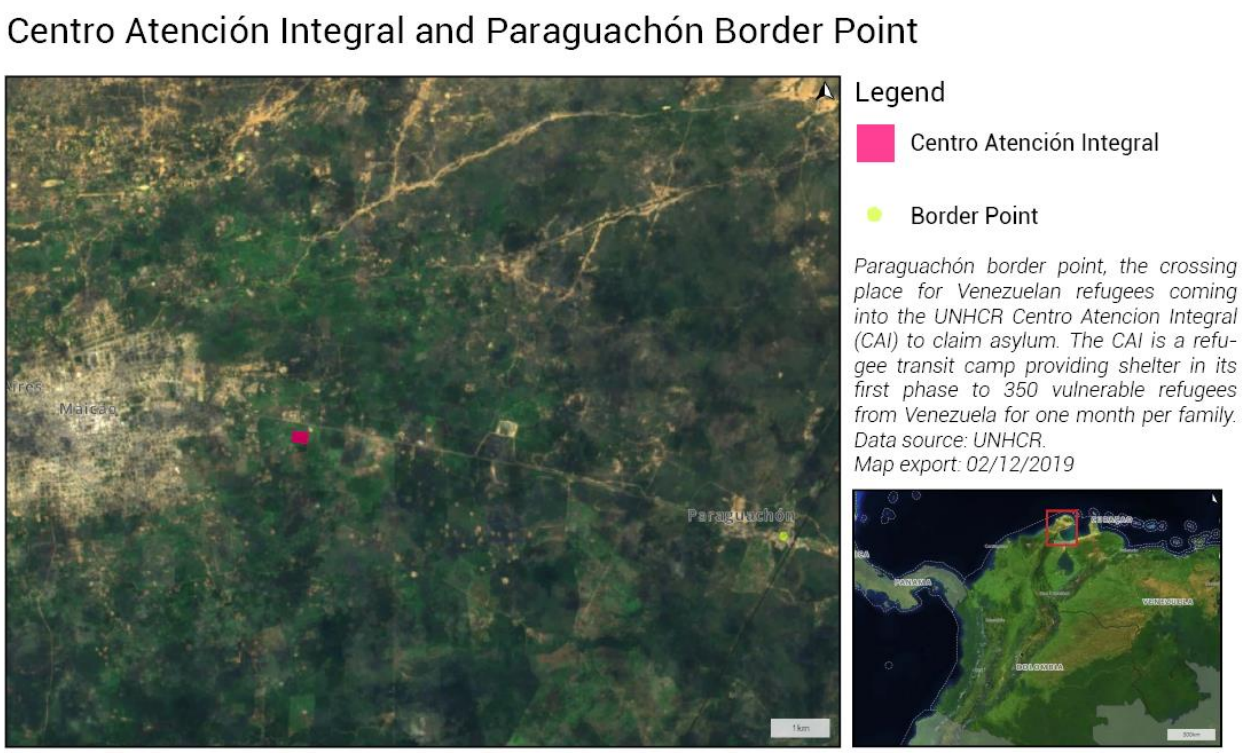



*Figure 1: Location of the CAI and its distance to the Venezuelan border (< 8 km).*

# Abbreviations

## Organizations

| | |
|---|---|
| ACH | Acción Contra el Hambre |
| JEU | Joint Environment Unit (of UNEP/OCHA) |
| UNEP (PNUMA) | United Nations Environment Programme (English/Spanish) |
| OCHA | United Nations Office for the Coordination of Humanitarian Affairs |
| UNHCR (ACNUR) | United Nations High Commission for Refugees/ La Agencia de la ONU para los Refugiados |

## Thematic

| | |
|---|---|
| CAI | Integrated Assistance Centre (Centro de Atención Integral: UNHCR Reception Centre) |
| DRR | Disaster Risk Reduction |
| EIA | Environmental Impact Assessment |
| FGD | Focus group discussion |
| GIS | Geographic Information System |
| LFS | Livelihoods and Food Security |
| NEAT+ | Nexus Environmental Assessment Tool |
| WASH | Water, Sanitation and Hygiene |

# Introduction

## Objectives

From 4 to 13 November 2019, Mandy George (Environmental Field Adviser, JEU) and Margherita Fanchiotti (Associate Expert, JEU) travelled to Colombia to conduct the fourth field pilot of the NEAT+ and to produce a series of recommendations for the UN Refugee Agency (UNHCR) to increase the environmental sustainability component of their programming. The mission was accompanied by Volker Sitta (Environmental Field Adviser, UNHCR Colombia).

The overarching objectives of the field pilot and scoping mission were to:

1. Highlight the key areas of environmental risk in the UNHCR Reception Centre, Integrated Assistance Centre ("Centro de atención integral", or CAI) in Maicao to inform project design.
2. Explore how the NEAT+ could fit into UNHCR systems and requirements in Colombia (and more broadly in other similar contexts in South America).
3. Share and promote the tool with other in-country humanitarian/environmental partners.
4. Develop the Spanish version of the NEAT+ tool, and test and document it from a user perspective, with a view to further improve it.

In this report, the results of the NEAT+ are analyzed in the context of the focus group discussions, secondary data review, and the UNHCR programme of work to provide tailored recommendations for mitigating environmental risks in the CAI, and more broadly on a national level. Recommendations are thus presented at three levels:

1. Programmatic: Project Implementation
2. Organizational Strategy: Mainstreaming the NEAT+ in UNHCR
3. External Advocacy and Capacity Building

## NEAT+ Background

The NEAT+ was developed by the Coordination of Assessments for Environment in Humanitarian Action "Joint Initiative",[1] in partnership with the Norwegian Refugee Council (NRC) and other partners (see below). The tool builds on a previous version ("NEAT") designed by NRC. It was updated and further developed by the Joint Initiative and overseen by a working group of over 25 organizations. For more information on the NEAT+, including the tool and guidance notes, visit: https://www.eecentre.org/resources/neat/.

The NEAT+ is an open source, simple and pragmatic project-level environmental assessment tool that assesses a snapshot of the current sensitivity of the local environment, highlighting any underlying vulnerabilities. The tool then overlays activity-specific information to identify potential exacerbating risks posed by a project. The tool is intended to enhance project quality

[1] https://www.eecentre.org/2017/01/01/the-joint-initiative/

and improve the accountability of humanitarian programming. The NEAT+ is a targeted response to an identified need for a tool that allows an effortless and rapid identification of key environmental issues by users with limited or no environmental expertise. It consists of various technical modules including environmental sensitivity, WASH, Shelter and Food Security and Livelihoods. Data is collected in Kobo Toolbox or in Excel.

The Joint Initiative ran from January 2017 to January 2019 and aimed to improve coordination between environment and humanitarian actors both before and after disasters, with a focus on updating and improving key humanitarian environmental assessment tools. It was a collaborative effort between USAID, UNHCR, WWF, JEU, NRC and the Swedish Civil Contingencies Agency (MSB). The project, through better dissemination of tools, resources and environmental data, supported efficient consideration of environment and climate knowledge in humanitarian assistance. The Joint Initiative produced various deliverables working towards the improved integration of environment in humanitarian action, including the NEAT+. The JEU is now the custodian of the NEAT+.

## Context: CAI and Maicao

The pilot took place in UNHCR Reception Centre "CAI" near the city of Maicao, La Guajira Department. The CAI is approximately eight kilometers from the Venezuelan border and is adjacent to the indigenous Chichituy (Wayuu) host community. The CAI was set up following a request from the Government of Colombia to UNHCR. There is a Memorandum of Understanding signed which divides roles and responsibilities between the State and the UN.

The border area of Maicao and La Guajira department more generally is a very underfunded region of Colombia, and even before the refugee crisis and large influx of Venezuelan refugees and migrants, there was a high level of poverty. The population of Maicao has increased from 160,000 to approximately 220,000, and about 27 per cent of the city's population is now Venezuelan. This decreases to 15 per cent in Riohacha, further from the border. In total, 320,250 Venezuelans entered Colombia through La Guajira from January 2018 to September 2019, and at least 155,000 stayed in La Guajira. Maicao is an important trading point with Venezuela and a duty-free zone, which has led to frequent border movements and a "floating population". Moreover, 60 percent of the economy is informal and trans-boundary contraband is rife, in particular contraband petrol. The Venezuelan community in Maicao consists of the most vulnerable refugees and migrants, who might be less able to continue their journey. Many live on the streets, with acute protection issues.

The CAI is a reception centre that, at the date of the pilot, was providing shelter and basic services to 350 vulnerable refugees and migrants from Venezuela for a duration of one month per family. It is the only one of its kind in the country, currently in the first phase, with phase two starting at the time of writing. Preparations for phases three and four are in order, with an aim to host a maximum of 1,400 refugees and migrants per month by March 2020. Notably, it is built on land provided by the Municipality of Maicao and is surrounded by indigenous lands and areas of cultural significance for the Wayuu community.

The objectives of the CAI are to:

- Guarantee humanitarian assistance and protection according to international standards to refugees, migrants, Colombian returnees and the Wayuu population under the following categories:
    - People with specific protection needs;
    - People living on the street;
    - People in transit.
- Guarantee access to basic services, fundamental human rights and support the identification of durable solutions for people with specific protection needs.

Temporary residents are provided with shelters (Refugee Housing Units - RHUs, see below), three meals prepared by WFP and brought in daily, water and sanitation facilities, health services and legal assistance. Fifteen agencies work in the CAI.

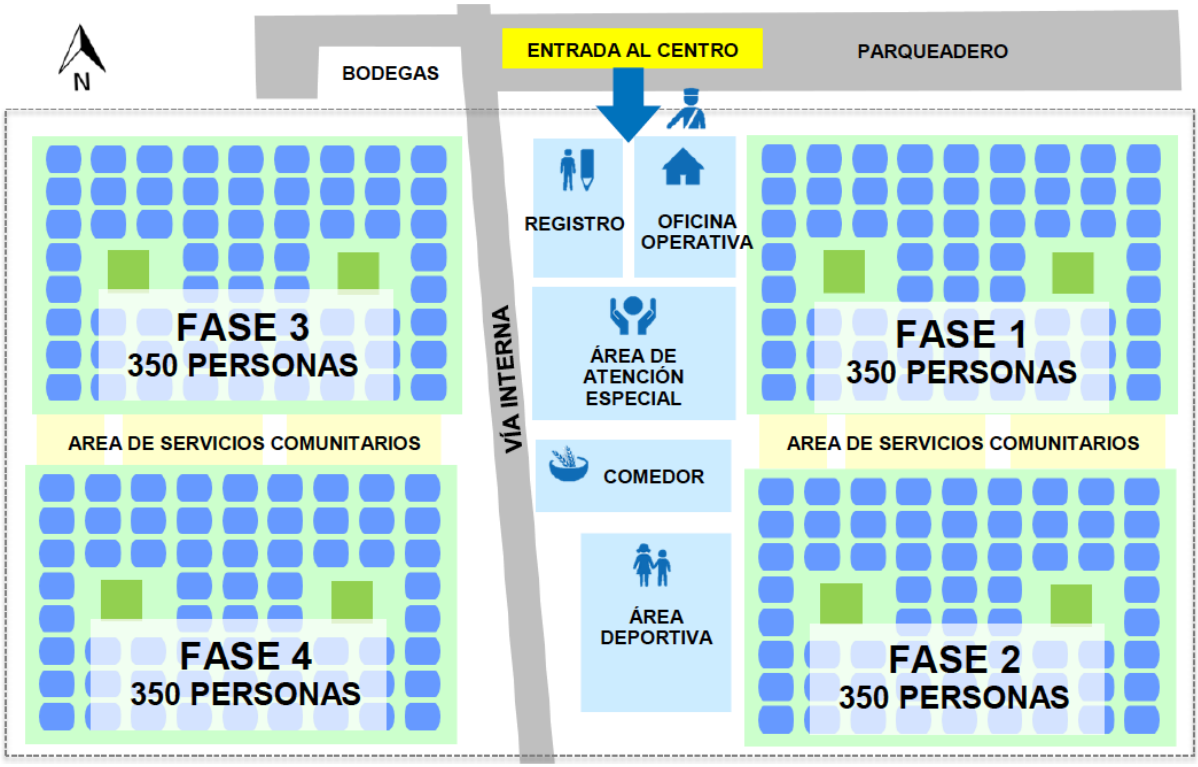



*Figure 2: Plans for the four phases of the CAI.*

The CAI is hosted by the Chichituy indigenous community (of the Wayuu people) with a population of approximately 90, who are living in harsh environmental conditions and suffering from lack of livelihood and food security options and activities. Great effort has been made to integrate the local community in the planning and implementation of the CAI, for example by providing employment as security guards, and ensuring that basic services are also being provided to the host community. As a result, the local community has improved water access and will receive FSL training. Overall, the Chichituy community notes being in a better position than before the construction of the CAI and there is a healthy inter-dependency between the CAI

and the local community. Only one issue of conflict over waste management was reported during this scoping study, which has since been resolved. This is a testament to the positive work of UNHCR to mitigate a potentially difficult situation with indigenous communities who hold deep value in the land and might not have otherwise been as receptive to sharing it.

Other organizations working in Maicao, including some church groups, provide additional services and emergency response support to the refugees and migrants (some supported by UNHCR), but this is limited. The CAI is an important respite from living on the streets for the most vulnerable families.

## Colombia Environmental Regulatory Context

The Government of Colombia has national Environmental Impact Assessment (EIA) requirements, including for all infrastructure projects. The latest EIA guidance was produced in July 2018 and the legal framework and methodological guide can be found here:

- http://portal.anla.gov.co/sites/default/files/comunicaciones/permisos/res_1402_de_2018.pdf
- http://portal.anla.gov.co/sites/default/files/comunicaciones/permisos/metodologia_estudios_ambientales_2018.pdf

UNGRD[2], the national DRR arm of the Government of Colombia, also has their own requirements for disaster risk screening, which to some extent consider environmental risks. However, there are no specific requirements for humanitarian projects unless they contain large infrastructural elements.

The GIFMM (Grupo Interagencial sobre Flujos Migratorios Mixtos) is an interagency group working on the migration situation in Colombia. It was set up in 2016 and coordinates the response to the needs of refugees, migrants and returnees, complementing the Government response. It is co-led by IOM and UNHCR. The national GIFMM has 61 participating members, with nine local chapters, including for the department of La Guajira. The GIFMM works in close coordination with the Humanitarian Country Team using a back-to-back system with the aim of providing a coherent response to the needs of the population and generating population needs analysis.

The NEAT+ workshop held in Bogotá was done in coordination with the GIFMM, who sent out the invitation to the workshop. Most participants were from participating GIFMM organizations.

GIFMM members: Action Against Hunger | ACTED | ADRA | American Red Cross | Aid for AIDS | Americares | Aldeas Infantiles | Alianza para la Solidaridad | Ayuda en Acción | BLUMONT | Bethany International | Caritas Germany | Caritas Switzerland | Colombian Red Cross | Diakonie | DRC | FAO | Global Communities | Halü | Humanity & Inclusion | ICRC | IFRC | ILO | iMMAP | IOM | IRC | JRS Colombia | JRS Latin America and the Caribbean | Lutheran World Federation |

[2] http://portal.gestiondelriesgo.gov.co/

Malteser International | Mercy Corps | Norwegian Red Cross | NRC | OACNUDH | OCHA | OCR | OXFAM | FUPAD | Pastoral Social | Plan International | Premiere Urgence | RET International | Save the Children | TdH Lausanne | UN Habitat | Un Techo Para Mi País | UN Women | UNDP | UNEP | UNFPA | UNHCR | UNICEF | UNODC | War Child | WFP | WHO/PAHO | World Vision

# Methodology

The methodology followed for the field application of the NEAT+ tool in the CAI and surrounding area involved: conducting a two-day field test of the NEAT+ with UNHCR field and office staff in the CAI and neighbouring communities; facilitating focus group discussions (FGDs) with local communities; and holding a half day multi-stakeholder workshop presenting preliminary results and discussing the NEAT+. These data collection methods are expanded on below.

## 1. Secondary Data Review Pre-field Test

Before arrival in Maicao, the JEU team completed a secondary data review of open spatial and non-spatial data available on a national level and for Colombia and La Guajira. In total, 79 spatial datasets were compiled in a MapX data catalogue for visualization and dissemination. MapX is a cloud-based mapping platform, managed by UNEP/GRID-Geneva, which supports the mapping and monitoring of natural resources.

The spatial datasets were aggregated into 8 broad categories: Biodiversity, Climate, Land Cover, National Level Data, NEAT+ (meaning uploaded specifically for the NEAT+ pilot), Risk, Satellite Imagery, and Socio-economic. Overall, the following views were identified as most useful in understanding the sensitivity of the surrounding environment:

a. Administrative boundaries and other national-level data
   - International borders
   - Indigenous territories
   - Areas most affected by armed conflict
   - Potential alteration to water quality
   - National municipal indices of climate risks
b. Socio-economic profile
   - Human footprint difference
   - Population density 2015
   - Accessibility to cities
   - Probabilities of urban expansion to 2030
   - Purchasing Power Parity
c. Landcover
   - Biomass Density of Vegetation
   - Crop dominance
   - Forest cover change (Loss/Extent/Gain) 2000-2018
   - Water occurrence change
d. Climate
   - Accumulated precipitation anomaly

        - Annual Mean Precipitation 1979 - 2013
        - Global Aridity Index 1970 - 2000
    e. Biodiversity
        - Ecoregions - By Biome
        - Biodiversity hotspots
        - Threatened species
    f. Risk profile
        - Multi-hazard mortality risk
        - Drought severity

The insights from the spatial data catalogue revealed that the study site is located very close to the international border (< 8 km) and far away from protected areas (> 10 km). The dominant vegetation cover is desert or xeric (dry) shrubland. Precipitation is low compared to other areas of Colombia, and the area is classed as "semi-arid" on the Global Aridity Index[3]. According to the average moistening conditions, the area around Maicao is at the transitional zone between insufficient moisture for basic cultivated crops and basic moisture conditions. Thus, agriculture is limited, with minor fractions of mixed crops (wheat, maize, rice, barley and/or soybeans). The semi-arid ecoregion borders a tropical and subtropical forest ecoregion within 30 km to the southeast and a coastal mangroves ecoregion along the coast to the east. The area is not densely populated (< 250 people/sq. km). Deforestation is an issue, with forest loss occurring in the 2000-2018 period.

## 2. NEAT+ Field Test

The tool was applied over two days with various users from UNHCR, including the UNHCR environmental adviser, field staff, technical experts and technicians involved in the maintenance of the CAI. The environmental sensitivity module was tested by two different groups of 4-5 people each. This included a representative from the local government DRR department, the UNHCR protection coordinator, DRC CCCM (Camp Coordination and Camp Management), and UNHCR shelter and WASH experts.

WASH and Shelter UNHCR technical experts completed the activity modules, finding that most submodules were relevant to the activities of the CAI. Acción Contra el Hambre (ACH) completed the Livelihoods and Food Security (LFS) module as they will be implementing livelihood activities with the neighbouring Chichituy community.

The UNHCR's NEAT+ Kobo account was used for the pilot, given that UNHCR are conducting a baseline of all operations globally using the NEAT+ and therefore it made sense to capture the data from the CAI using the same account. All tests were completed on Kobo in laptops due to a lack of access to the UNHCR tablets as another assessment was underway. UNHCR staff in Maicao and Riohacha are, however, familiar with Kobo and can use the NEAT+ on tablets/phones in the future.

[3] https://cgiarcsi.community/data/global-aridity-and-pet-database/

### 3. Focus Group Discussions and Participatory Mapping

Four FGDs were conducted with the Venezuelan refugees and migrants (including Colombian returnees) and the Chichituy host community. Of these, two were held with the refugees and migrants hosted at the CAI, divided by gender; an additional FGD was conducted with the Chichituy host community, in a gender-mixed group; and the fourth was held with CAI technical support staff. Each group included approximately 10-15 participants. All FGDs were conducted in Spanish; interpretation support was provided by UNHCR during the FGD with the Chichituy community to facilitate communication in the indigenous language as required.

FGDs were organized by UNHCR field staff, who also provided facilitation assistance. The questions followed a similar line of enquiry to the NEAT+ environmental sensitivity module, with some additional questions related to Shelter, WASH and FSL. A participatory mapping element was included with the host community so that participants could indicate the boundaries of their community, where they were collecting natural resources, disposing of waste, and collecting water. The results of the participatory mapping exercises are available on the MapX data project but are only viewable by approved members[4] of the project to protect participants' anonymity. However, they can be viewed through the story map presented at the workshop.

### 4. Bogotá Workshop

On 12 November 2019, a workshop was held by JEU and UNHCR in Bogotá to present the NEAT+ and preliminary findings from the field test, and to engage participants in broader discussions about different aspects of screening and assessing environmental risk in humanitarian settings. A total of 40 representatives – 30 in person and 10 online – from the government, civil society organizations and UN agencies attended the half-day workshop (see participant list in Annex C). The aim of the workshop was to promote the use of the NEAT+ and to have a broader discussion on screening for environmental risk and the use of environmental data in humanitarian action. These discussions have informed the recommendations for UNHCR.[5]

See Annex C for a full workshop report.

# NEAT+ Usability Learning

Key findings related to the usability and functionality of the NEAT+ arising from the pilot include:

- **As much about the process as the results:** The NEAT+ can act as a checklist of ideas and information that is a useful process to go through, not only for the results generated but to stimulate discussion (if answered in a group). The prompts and hints are particularly useful in this regard.

[4] To request access to the MapX "NEAT+Colombia" data project as a member, please contact theresa.dearden@un.org

[5] See "Recommendations" section

- **Easy to use:** The UNHCR team was already familiar with using Kobo for data collection, and they found the process of data collection straightforward. This was the same for field and technical staff.
- **Spanish translation is solid and would benefit from translation of the whole tool:** Overall the translation of the tool was clear, though notes were taken of a few instances where the questions can be clarified in the next iteration of the translation. The need to translate the entire tool into Spanish was identified and will be conducted in 2020. This will allow for the analysis in Spanish, not only the data collection.
- **New mitigation tips feature is a highly practical addition:** The latest revision of the NEAT+ added in mitigation tips for each area of environmental concern that was well received as one of the most practically useful aspects of the tool. This request originally came from UNHCR.
- **NEAT+ works for situations of temporary displacement and/or transit next to a local/host community:** This was the first time that NEAT+ was used in a reception camp setting and on such a small scale, and the results proved very accurate. It was important to clearly define the area being assessed at the reception centre and in the neighbouring Chichituy community in order to obtain accurate results.
- **Can be used both to modify existing activities (M&E) and plan new ones:** The NEAT+ test provided ideas for mitigation that could be incorporated into existing implementation plans to increase sustainability and inform future activities. This is the case for scaling up the reception centre (phases 2-4).
- **Agile first step without environmental expertise which frames technical concepts within humanitarian jargon and priorities:** Almost all the questions were answered easily without environmental expertise and the level of questioning worked well for all types of users.
- **Answering the environmental sensitivity module as a group exercise worked well and should be recommended as standard practice:** This allowed for a discussion on each question and increased the collective understanding of the issues.

# Environmental Concerns

## Findings from NEAT+

### Environmental Sensitivity Module

Results from the sensitivity module were confirmed by the FGDs as, overall, very accurate. Many “high” and “low” risks were identified. Most of the high risks relate to issues of disaster risk reduction, social cohesion and environmental education. Although water availability and access is one of the largest environmental issues in the area, water quality and access impediments came out as an issue of lower concern. This is because of the interventions already ongoing in the CAI, lowering the level of risk. This is a strong example of why issues of lower concern should still be considered in mitigation planning after the use of NEAT+.

A major theme coming out of the NEAT+ and corroborated by the FGDs is the cultural differences between the two communities, which has an impact on environmental concerns. Although on the surface there are many similarities, for example religious, both Colombians and Venezuelans noted that there are quite substantial cultural differences between refugees, migrants and

locals. One main cultural difference is the Venezuelan dependency on the state, as cited by both Venezuelans and Colombians, which has led to a culture of not preserving resources like water, which are so scarce in La Guajira but were plentiful at the refugee's place of origin.

## Environmental Sensitivity Analysis

NEAT +
Nexus Environmental Assessment Tool

| | |
|---|---|
| Assessment of: CAI-Grupo 3 | Date of Assessment: 07-Nov-19<br>Location: Centro de Atención |
| Assessment completed by: NEAT team | Integral, Maicao, La Guajira |
| Organisation completing assessment: UNHCR/JEU | Country: Colombia |

| Issues of High Concern | Issues of Medium Concern | Issues of Lower Concern |
|---|---|---|
| The displaced population may have a poor understanding of local ecosystems. This makes it difficult to manage the environment effectively. | The community may have low self-sufficiency. There may be a greater demand (and impact) on the local environment. | There is a high concentration and/or number of people. The potential environmental impact is greater. |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | The community may not be socially cohesive. This can prevent collective action and lead to social conflict. | There may be a weakened or poor governance system. There may be low capacity for environmental management. |
| There are areas of high cultural significance. This can threaten social cohesion. | The displaced population may be in a state of high uncertainty. There may be a lack of incentive to practice sustainable behavior. | The environment has high biodiversity value. Vulnerable and/or rare flora and fauna may be at risk. |
| The community is close to an international border. Transboundary resource management and/or pollution may be a concern. | This area may be at risk of soil erosion from water. | The community may be close to a protected/conservation area. There may be legal/social implications. |
| Rates of deforestation may exceed regeneration capabilities. Deforestation may be a risk. | Natural resource availability/accessibility may be affected by changing climatic conditions. | The community may have a high dependency on the natural environment. This can threaten livelihoods and social cohesion. |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significant. | | The water sources may be vulnerable to contamination. Water quality may be an issue. |
| Indoor air pollution, caused by poor ventilation and cooking/heating, may be an issue. | | There is low capacity to manage wastewater. Environmental sanitation and disease transmission may be an issue. |
| There is a risk of air pollution from nearby activities. | | Disaster waste may be an issue. Disaster waste can pose public health risks, and impede relief or recovery activities. |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | | This area may be at risk of soil erosion from wind. |
| This area may be at risk of flooding. | | The area may be affected by (previous) conflict related hazards or pollution. |
| This area may be at risk of industrial hazards and/or pollution. | | Natural resources may be scarce and in high demand. This can lead to social conflict. |
| The area may have heightened exposure to climate-related risks and extreme weather events. | | There may be high and/or unsustainable rates of extraction of resources from the local environment. |

*Figure 3: Environmental Sensitivity Analysis for the CAI*

## WASH Activity Module

Water is the natural resource of highest concern in and around the CAI, and therefore this is the activity module that highlights the greatest potential environmental risk. Water scarcity poses the greatest risk, while other WASH sensitivities such as water quality and sanitation remain in the “lower” bracket of issues of concern.

**Design of water abstraction/extraction systems**

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | High | Null | Medium |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Low | Low |
| **Other environmental concerns** | | | |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | High | High |
| The community is close to an international border. Transboundary resource management and/or pollution may be a concern. | High | Low | Medium |
| There is a risk of air pollution from nearby activities. | High | Null | Low |
| There is low capacity to manage wastewater. Environmental sanitation and disease transmission may be an issue. | Low | Null | Low |
| Natural resources may be scarce and in high demand. This can lead to social conflict. | Low | Null | Low |

**Migitation Tips**

- Natural water sources may be contaminated. Testing should cover organic, inorganic and microbial pollutants, as well as palatability and turbidity. Results should be referenced against national standards, or alternatively Sphere/WHO guidelines.
- Sources of potential water contamination (e.g. livestock, agriculture, latrines, wastewater, solid waste, industry, etc.) should be identified and appropriate mitigation measures put in place to minimize the risk of future water source contamination.
- Put measures in place to prevent over-abstraction of ground water. Over-abstraction of groundwater can lead to salt water intrusion, land subsidence and increased energy requirements for abstraction. Aquatic ecosystems and habitats can be irreversibly harmed and flow paths altered where surface waters are over-extracted.
- Short-term over-extraction may be unavoidable when providing emergency water supplies. Understanding potential environmental, social and economic implications of over-extraction of water resources allows evidence-based mitigative actions to be implemented. Sustainable medium- and long-term actions should be identified as a priority.
- Upstream or downstream users or uses can be threatened or can threaten the quality and quantity of the water resources. Downstream natural ecosystems may be adversely affected by water extraction. Potential shared users or ecosystems should be identified and considered during planning and operation.
- Water demand and availability can vary seasonally based on rainfall patterns as well as usage patterns (e.g. water for cooling or seasonal crop rotations). This should factor into the sizing to ensure sustainable year-round extraction/access to water.
- Extraction/well points should be placed at a higher elevation as they are less likely to be contaminated due to its up slope position. This also reduces energy consumption during operation as gravity can be leveraged for flow distribution.
- The environmental, social and economic impacts of electricity production should be considered, and appropriately mitigated. The use of generators can generate air and noise pollution. Energy efficient generators or renewable systems could be considered.
- Abandoned wells can provide direct pathways for contaminants to enter aquifers, particularly if these wells have not been maintained. Abandoned wells should be sealed (by a professional) to minimize risk of potential future contamination.

| Additional Resources | |
|---|---|
| **Green Recovery and Reconstruction Toolkit (GRRT) - Water and Sanitation (Module 7)** | Link |
| The GRRT is a toolkit that provides guidance and strategies for environmentally sustainable recovery efforts in a humanitarian context. It consists of numerous modules focused on different thematic areas of humanitarian programming. | |
| **Sustainable Sanitation and Water Management (SSWM) Platform** | Link |
| The SSWM Toolbox provides best practice guidance to humanitarian practioners in planning, implementing and sustaining water, sanitation and hygiene promotion interventions in different humanitarian settings. | |
| **Sector Environmental Guidelines: Water and Sanitation** | Link |
| USAID's Sector Environmental Guidelines aim to support environmentally sound design and management of humanitarian and development projects. These guidelines provide concise, plain-language information regarding potential environmental impacts, and prevention and mitigation strategies. | |

## Distribution of WASH and/or hygiene kits

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| There is low capacity to manage solid waste. Environmental sanitation and disease transmission may be an issue. | Null | Null | **Null** |
| **Migitation Tips** | | | |
| • Packaging waste can be disposed of inappropriately leading to solid waste management challenges and many countries have limited recycling capabilities. The procurement and preparation of items should be designed to reduce packaging, or to substitute with packaging that is more environmentally friendly or reusable.<br>• Procure locally in order to reduce environmental impacts associated with the supply chain while also supporting local livelihoods. Suppliers or manufacturers with sustainability or environmental certifications also have a lower environmental footprint. This can form part of the procurement assessment process.<br>• Strategic selection of items for distribution can reduce resource consumption and waste generation. Consider the need for the item post-crisis, and if multi-functional items are an option. | | | |
| **Additional Resources** | | | |
| **Green Recovery and Reconstruction Toolkit (GRRT) - Materials and the Supply Chain (Module 5)** | | | Link |
| The GRRT is a toolkit that provides guidance and strategies for environmentally sustainable recovery efforts in a humanitarian context. It consists of numerous modules focused on different thematic areas of humanitarian programming. | | | |
| **Green Logistics Guide** | | | Link |
| The informational page on the Logistic Cluster's website aims to introduce logisticians to green logistics and encourage them to think sustainably in activities related to procurement and transportation. | | | |
| **Additional Details/Comments** | | | |
| | | | |

## Design of water distribution networks

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | High | Medium | **High** |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Low | **Low** |
| **Other environmental concerns** | | | |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | High | **High** |
| Rates of deforestation may exceed regeneration capabilities. Deforestation may be a risk. | High | Null | **Low** |
| Indoor air pollution, caused by poor ventilation and cooking/heating, may be an issue. | High | Null | **Low** |
| There is a risk of air pollution from nearby activities. | High | Null | **Low** |
| There is low capacity to manage wastewater. Environmental sanitation and disease transmission may be an issue. | Low | Low | **Low** |
| Natural resources may be scarce and in high demand. This can lead to social conflict. | Low | Null | **Low** |
| **Migitation Tips** | | | |
| • A pipe network analysis should be performed to ensure that all users and/or distribution points will have adequate and equitable water pressure and supply. This analysis should consider seasonal changes in upstream pressures and usage patterns. Unequal access to water can be a catalyst for social conflict.<br>• The social and environmental impacts of electricity production should be considered, and appropriately mitigated. The use of generators can generate air and noise pollution, and energy-efficient generators or renewable systems could be considered. Grid electricity consumption is outside the scope of this assessment. | | | |
| **Additional Resources** | | | |
| **Sustainable Sanitation and Water Management (SSWM) Platform** | | | Link |
| The SSWM Toolbox provides best practice guidance to humanitarian practioners in planning, implementing and sustaining water, sanitation and hygiene promotion interventions in different humanitarian settings. | | | |
| **Sector Environmental Guidelines: Water and Sanitation** | | | Link |
| USAID's Sector Environmental Guidelines aim to support environmentally sound design and management of humanitarian and development projects. These guidelines provide concise, plain-language information regarding potential environmental impacts, and prevention and mitigation strategies. | | | |

## Latrine design

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| There is low capacity to manage sewerage and fecal sludge. Environmental sanitation may be an issue. | Null | Null | **Null** |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Low | **Low** |
| **Other environmental concerns** | | | |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | High | High | **High** |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significant. | High | Low | **Medium** |
| **Migitation Tips** | | | |
| • On-site wastewater reuse should be utilized in order to reduce water consumption as well as the amount of wastewater generated. This also reduces risks of vector transmission through water stagnation. Household systems can be designed to collect water from showers and basins, and repurpose this for toilets or agricultural activities.<br>• Construction materials can consume non-renewable or low-regenerative capacity natural resources. Material lifecycle, from extraction to disposal, should be considered - the initial design should promote future recycling, reusing or repurposing. Materials selection could be diversified to minimize dependencies on a single source. | | | |
| **Additional Resources** | | | |
| **Sustainable Sanitation and Water Management (SSWM) Platform** | | | Link |
| The SSWM Toolbox provides best practice guidance to humanitarian practioners in planning, implementing and sustaining water, sanitation and hygiene promotion interventions in different humanitarian settings. | | | |
| **Faecal Sludge Management: Systems Approach for Implementation and Operation** | | | Link |
| This publication presents strategies and operational approaches for latrine design and faecal sludge management in low- and medium-income countries. These strategies are largely applicable to a humanitarian setting. | | | |
| **Additional Details/Comments** | | | |
| | | | |

## Shower design

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | High | High | **High** |
| **Other environmental concerns** | | | |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significant. | High | Medium | **High** |
| There is low capacity to manage wastewater. Environmental sanitation and disease transmission may be an issue. | Low | Medium | **Low** |
| **Migitation Tips** | | | |
| • On-site wastewater reuse can reduce water consumption as well as the amount of wastewater generated. This also reduces risks of vector transmission through water stagnation. Household systems can be designed to collect water from showers and basins, and repurpose this for toilets or agricultural activities.<br>• Construction materials can consume non-renewable or low-regenerative capacity natural resources. Material lifecycle, from extraction to disposal, should be considered - the initial design should promote future recycling, reusing or repurposing. Materials selection could be diversified to minimize dependencies on a single source. | | | |
| **Additional Resources** | | | |
| **Sustainable Sanitation and Water Management (SSWM) Platform** | | | Link |
| The SSWM Toolbox provides best practice guidance to humanitarian practioners in planning, implementing and sustaining water, sanitation and hygiene promotion interventions in different humanitarian settings. | | | |
| **Greywater Management in Low and Middle-Income Countries** | | | Link |
| This document provides design and implementation strategies for technologically appopriate solutions for greywater management in low- and middle-income countries. | | | |
| **Additional Details/Comments** | | | |
| | | | |

## Wastewater management and drainage network design

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | High | Low |
| There is low capacity to manage wastewater. Environmental sanitation and disease transmission may be an issue. | Low | Medium | Low |
| **Other environmental concerns** | | | |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | High | Null | Low |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | Medium | High |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significant. | High | Medium | High |

**Migitation Tips**

- Simple filtration systems, e.g. drainage screens or filters at the source, should be used to prevent solid matter (e.g. hair, lint, food particles) from entering wastewater. Solid matter can clog wastewater transport network and complicate subsequent treatment steps.
- Grey water can be reused for small- or medium-scale agriculture, reducing demand for water. Water quality testing and comparison to discharge standards can provide guidance on suitability. Open and stagnant water bodies should be avoided in the diversion and storage of grey water.

**Additional Resources**

| | |
|---|---|
| **Greywater Management in Low and Middle-Income Countries** | Link |
| This document provides design and implementation strategies for technologically appopriate solutions for greywater management in low- and middle-income countries. | |

**Additional Details/Comments**

## Operation and maintenance of water systems

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | High | Medium | High |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Medium | Low |
| **Other environmental concerns** | | | |
| There is low capacity to manage wastewater. Environmental sanitation and disease transmission may be an issue. | Low | High | Medium |
| Natural resources may be scarce and in high demand. This can lead to social conflict. | Low | Medium | Medium |

**Migitation Tips**

**Additional Resources**

| | |
|---|---|
| **Sustainable Sanitation and Water Management (SSWM) Platform** | Link |
| The SSWM Toolbox provides best practice guidance to humanitarian practioners in planning, implementing and sustaining water, sanitation and hygiene promotion interventions in different humanitarian settings. | |

## Construction and material sourcing (for all infrastructure projects)

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Other environmental concerns** | | | |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significant. | High | Null | Medium |
| There is a risk of air pollution from nearby activities. | High | Null | Low |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Null | Null |
| There is low capacity to manage solid waste. Environmental sanitation and disease transmission may be an issue. | Null | Null | Null |
| There is low capacity to manage wastewater. Environmental sanitation and disease transmission may be an issue. | Low | Null | Low |

**Migitation Tips**

- Excessive soil compaction impedes the ability of the soil to hold water, nutrients and air. This can increase surface runoff, leading to erosion, and soil and water losses. Minimize unnecessary soil compaction (e.g. traffic patterns or material storage), and only compact soils in areas where it is necessary for structural foundations.
- Soil excavation can cause soil erosion and sedimentation of nearby water sources. Excavation can also have adverse effects on hydrology, drainage and soil fertility. Minimize the amount of excavated soil. Avoid excavating in areas close to surface or shallow sub-surface water flows. Excavated trenches should be reburied quickly (~4 days) to avoid hosting vectors.
- The development of an environmental management plan should be a collaborative effort, and must be monitored by the implementing agency for compliance. Contractual terms can be used to enforce contractor and subcontractor compliance. For self-reconstruction, adequate ongoing education and supervision should be in place.

**Additional Resources**

| | |
|---|---|
| **Green Recovery and Reconstruction Toolkit (GRRT) - Construction (Module 6)** | Link |
| The GRRT is a toolkit that provides guidance and strategies for environmentally sustainable recovery efforts in a humanitarian context. It consists of numerous modules focused on different thematic areas of humanitarian programming. | |
| **Sector Environmental Guidelines: Construction** | Link |

USAID's Sector Environmental Guidelines aim to support environmentally sound design and management of humanitarian and development projects. These guidelines provide concise, plain-language information regarding potential environmental impacts, and prevention and mitigation strategies.

**Solid waste management**

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| There is low capacity to manage solid waste. Environmental sanitation and disease transmission may be an issue. | Null | Null | **Null** |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Null | **Null** |
| **Other environmental concerns** | | | |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | Null | **Null** |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significant. | High | Null | Low |
| **Migitation Tips** | | | |
| • The waste composition affects the viability of various downstream waste management processes as well as the type of contaminants that may ensue. Understand the different waste streams in order to identify opportunities for reduction, recycling or reuse of certain types of waste.<br>• Do not only consider waste collection as doing so may result in overlooking subsequent processes that are required to properly manage solid waste and minimize environmental impacts. Crises can overload existing solid waste management systems and processes. Municipal actors should be engaged and supported to ensure there is adequate capacity to manage waste post-collection.<br>• Strategies to minimize waste generation should be inherent to any solid waste management activities. Many waste streams are preventable through alternative practices or behaviors, or by simply re-using or re-purposing goods/materials. Behavioral change of beneficiaries can be achieved through awareness campaigns or other appropriate incentives.<br>• A large majority of household municipal waste is organic,. Organic waste decomposes anaerobically, generating greenhouse gases and leachate (concentrated pullulated wastewater). Promoting composting recovers valuable nutrients, improves soil fertility also decreases the amount of raw waste. | | | |
| **Additional Resources** | | | |
| **Sustainable Sanitation and Water Management (SSWM) Platform** | | | Link |
| The SSWM Toolbox provides best practice guidance to humanitarian practioners in planning, implementing and sustaining water, sanitation and hygiene promotion (including solid waste management) interventions in different humanitarian settings. | | | |
| **Healthcare Waste Management** | | | Link |
| This website, maintained by the World Health Organization, is a comprehensive collection of resources and strategies for healthcare waste management in low-income countries. It includes resources on healthcare waste management in a humanitarian context. | | | |
| **Additional Details/Comments** | | | |

## Shelter Activity Module

The direct environmental impact from shelter activities is limited because the CAI is using Refugee Housing Units (RHUs) that are imported and cooking is not allowed (as mentioned previously, meals are prepared by WFP and brought in daily). Therefore, activities are not directly depleting natural resources as part of the shelter approach. Moreover, although the potential environmental risk is high because of the environmental sensitivity of the area, shelter activity environmental impacts are low. The only potentially high activity risk comes from waste generated from the distribution of household items contributing to waste management problems (see below).

RHUs are 17.5 $m^2$ of covered living space, composed of lightweight galvanised high-strength steel frames, semi-hard and opaque plastic walls and roof panels, door and window vents, floor covering, solar energy system (lamp and telephone charger) and an anchoring system. They are designed to last for 36 months with basic maintenance. The main issue noted by CAI residents with the RHUs, currently replacing the tents that have been used until recently, is the heat. Additional ventilation and heat capturing materials in the lining of the roof are being planned to mitigate this. Despite the concern over the temperature, they are reported to be a great improvement on the tents that were becoming moldy and decomposing faster in the extreme heat and sun.

The Chichituy community build using wooden poles, mud (walls) and CGI or dry cactus for the roof. It is more common to purchase CGI, bricks and cement these days for those who can afford it. However, the majority of the 18 houses are still built by traditional means. The natural resources used are gathered from the local surrounding, not purchased.

## Shelter (Siting)

| Environmental Concern | Environmental Sensitivity | Potential Activity Impact | Potential Environmental Risk |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The environment has high biodiversity value. Vulnerable and/or rare flora and fauna may be at risk. | Low | Null | Low |
| **Other environmental concerns** | | | |
| Rates of deforestation may exceed regeneration capabilities. Deforestation may be a risk. | High | Null | High |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significant. | High | Low | Medium |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Medium | Low |
| **Migitation Tips** | | | |
| • Ensure that there is reliable access to a sustainable safe drinking water source. Ensure that human settlements do not have an adverse impacts on the quality and quantity of nearby water sources.<br>• Ensure that energy consumption does not deplete already scarce non-renewable resources and work to minimise the negative localized environmental concerns of energy consumption such as deforestation and indoor air pollution.<br>• Unmanaged wastewater or bodily waste can lead to long-term contamination of water sources or the ground near the site, and also act as host for vectors-borne diseases. Put relevant measures in place to address these risks.<br>• Incorporating green areas can provide natural protection against various natural hazards such as landslides, erosions and/or flooding. Green areas also improve inhabitant satisfaction and can provide a natural cooling effect. Native flora is preferable; the biodiversity impacts of foreign flora should be properly considered and assessed. A strategy for maintaining green areas should be in place post- implementation.<br>• Poorly planned and constructed access routes can lead to erosion, sedimentation and loss of biodiversity. Increased economic activity along access routes can also contribute to increased environmental degradation (e.g. deforestation). A strategy in relation to access routes should be put in place.<br>• Clearing and site preparation activities can lead to loss of biodiversity and land/soil degradation. Siting decisions can also influence future interactions with the nearby natural environment, typically through encroachment, leading to concerns such as land clearing for agriculture/livestock, deforestation or human/wildlife conflict. Where possible, minimize proximity to pristine natural areas. | | | |
| **Additional Resources** | | | |
| **Quantifying Sustainability in the Aftermath of Natural Disasters (QSAND) - Settlements Chapter** | | | Link |
| QSAND is a self-assessment tool to promote sustainable approaches to relief, recovery and reconstruction after a natural disaster. It consists of various checklists and benchmarks for achieving environmental sustainability. This resource covers many different types of humanitarian activities. | | | |

## Shelter (Materials)

| Environmental Concern | Environmental Sensitivity | Potential Activity Impact | Potential Environmental Risk |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | Null | **Null** |
| Rates of deforestation may exceed regeneration capabilities. Deforestation may be a risk. | High | Null | **Null** |
| **Other environmental concerns** | | | |
| Disaster waste may be an issue. Disaster waste can pose public health risks, and impede relief or recovery activities. | Low | Null | **Null** |
| There may be high and/or unsustainable rates of extraction of resources from the local environment. | Low | Null | **Null** |
| **Migitation Tips** | | | |
| • Construction materials can consume non-renewable or low-regenerative capacity natural resources. Material lifecycle, from extraction to disposal, should be considered - the initial design should promote future recycling, reusing or repurposing. Materials selection could be diversified to minimize dependencies on a single source.<br>• Consider using similar materials as host communities. This leverages existing extraction, production and supply chain processes which, if previously well regulated, can have lower environmental impacts. However, bear in mind that these chains can be overwhelmed in cases of sudden increased demand, potentially leading to unsustainable practices.<br>• Some materials can be hazardous or harmful for human or environmental health. In some countries, these substances may still be legal despite being prohibited in others. Wherever possible, pursue best practices and avoid the use of hazardous or harmful substances. | | | |
| **Additional Resources** | | | |
| **Quantifying Sustainability in the Aftermath of Natural Disasters (QSAND) - Materials and Waste Chapter** | | | Link |
| QSAND is a self-assessment tool to promote sustainable approaches to relief, recovery and reconstruction after a natural disaster. It consists of various checklists and benchmarks for achieving environmental sustainability. This resource covers many different types of humanitarian activities. | | | |
| **Green Recovery and Reconstruction Toolkit (GRRT) - Materials and the Supply Chain (Module 5)** | | | Link |
| The GRRT is a toolkit that provides guidance and strategies for environmentally sustainable recovery efforts in a humanitarian context. It consists of numerous modules focused on different thematic areas of humanitarian programming. | | | |
| **Additional Details/Comments** | | | |
| | | | |

## Household Items

| Environmental Concern | Environmental Sensitivity | Potential Activity Impact | Potential Environmental Risk |
|---|---|---|---|
| **Other environmental concerns** | | | |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | Null | Medium |
| There is low capacity to manage solid waste. Environmental sanitation and disease transmission may be an issue. | Null | High | Low |
| **Migitation Tips** | | | |
| • Strategic selection of items for distribution can reduce resource consumption and waste generation. Consider the need for the item post-crisis, and if multi-functional items are an option. | | | |
| **Additional Resources** | | | |
| **Green Recovery and Reconstruction Toolkit (GRRT) - Materials and the Supply Chain (Module 5)** | | | Link |
| The GRRT is a toolkit that provides guidance and strategies for environmentally sustainable recovery efforts in a humanitarian context. It consists of numerous modules focused on different thematic areas of humanitarian programming. | | | |
| **Green Logistics Guide** | | | Link |
| The informational page on the Logistic Cluster's website aims to introduce logisticians to green logistics and encourage them to think sustainably in activities related to procurement and transportation. | | | |
| **Additional Details/Comments** | | | |
| | | | |

## Roads and Access

| Environmental Concern | Environmental Sensitivity | Potential Activity Impact | Potential Environmental Risk |
|---|---|---|---|
| **Other environmental concerns** | | | |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | Null | Low |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Low | Low |
| The area may have high soil erodibility. Soil erosion may be a risk. | Medium | Null | Low |
| **Migitation Tips** | | | |
| • Higher rates of usage lead to increased rates of wear and tear, air and noise pollution, traffic congestion, environmental degradation, among other concerns. Roads should be appropriately planned and designed for the expected usage patterns. Future trends in usage should also be considered.<br>• These surfaces have lower water permeability. This can lead to increased rates of runoff contamination, erosion and water stagnation. This can have adverse effects on groundwater recharge, water quality and hydrology. Slope design and route planning should consider hydrological implications, with appropriate drainage infrastructure in place.<br>• Access routes can lead to the increased exposure of residents to noise, air and dust pollution. Near-road pollution can have adverse health impacts. Consider alternative routings, or provide increased clearance for residents from medium-heavy traffic routes as feasible. Mitigation measures, such as vegetation barriers could also be considered.<br>• Access routes can alter surface or sub-surface hydrology, affecting downstream ecosystems. Poorly planned routes can be at risk of flooding, high rates of water erosion and the creation of vector-harboring stagnant water bodies. Runoff can also pollute water bodies. Avoid routings through these areas if feasible, and incorporate infrastructure to minimize the alteration of flow paths.<br>• Routes that cross hilly or steep terrain without following contours or minimizing grades are susceptible to erosion due their sloping profile. This can lead to increased wear-and-tear as well as increased vulnerability to runoff pollution. Follow land contours in route planning, minimizing slope grades, where possible. | | | |
| **Additional Resources** | | | |
| **Road Design and Construction in Sensitive Watersheds** | | | Link |
| This handbook serves as a guide for reducing the environmental impacts of roads and is intended to be used by site planners and construction managers. Its purpose is to identify potential threats to water quality from the construction and maintenance of roads, and recommend procedures, practices, or methods suitable for preventing, | | | |
| **Sector Environmental Guidelines: Rural Roads** | | | Link |
| USAID's Sector Environmental Guidelines aim to support environmentally sound design and management of humanitarian and development projects. These guidelines provide concise, plain-language information regarding potential environmental impacts, and prevention and mitigation strategies. | | | |

## Shelter (Design)

| Environmental Concern | Environmental Sensitivity | Potential Activity Impact | Potential Environmental Risk |
|---|---|---|---|
| **Other environmental concerns** | | | |
| Rates of deforestation may exceed regeneration capabilities. Deforestation may be a risk. | High | Null | Medium |
| Indoor air pollution, caused by poor ventilation and cooking/heating, may be an issue. | High | Null | Null |
| There is a risk of air pollution from nearby activities. | High | Null | Low |
| There is low capacity to manage solid waste. Environmental sanitation and disease transmission may be an issue. | Null | Low | Low |
| **Migitation Tips** | | | |
| • The exhaust of stoves or heaters should not be in an enclosed shelter as this exacerbates indoor air pollution. Shelters should include a dedicated area with open ventilation or chimney structure to expel exhaust gases. | | | |
| **Additional Resources** | | | |
| **Quantifying Sustainability in the Aftermath of Natural Disasters (QSAND) - Shelter and Community Chapter** | | | Link |
| QSAND is a self-assessment tool to promote sustainable approaches to relief, recovery and reconstruction after a natural disaster. It consists of various checklists and benchmarks for achieving environmental sustainability. This resource covers many different types of humanitarian activities. | | | |
| **Additional Details/Comments** | | | |
| | | | |

## FSL Activity Module

The FSL module was completed by ACH for planned activities with the Chichituy community living adjacent to the CAI.

**Agriculture**

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | Medium | **High** |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significar | High | Null | **Low** |
| **Other environmental concerns** | | | |
| The environment has high biodiversity value. Vulnerable and/or rare flora and fauna may be at risk. | Low | Medium | **Low** |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | High | Null | **Null** |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Medium | **Low** |
| Natural resources may be scarce and in high demand. This can lead to social conflict. | Low | Null | **Null** |
| **Migitation Tips** | | | |
| ● Local communities should be engaged from the project's conception to ensure that interventions are culturally appropriate, meet beneficiaries' needs and leverage traditional knowledge of the local environment. Engaging with local communities also reduces the likelihood of potential future conflict; this is particularly important in a humanitarian emergency as social fabrics can be significantly strained.<br>● Soil erosion, which is particularly prone in areas with high slopes, leads to the loss of fertile topsoil. Erosion also reduces the ability of the ground to absorb water. Planting (of shallow rooted crops) should be avoided in areas where slopes are high (>35%). Agricultural land should be leveled prior to use, and terraces can be used where slopes are high (>10%).<br>● Consider agroforestry as it can be advantageous over conventional agricultural methods - increasing land productivity and soil fertility, and reducing soil erosion and water loss. Agroforestry also strengthens resilience to climate change. Significant benefits can be realized by simply incorporating/preserving a minimal tree/shrub layer.<br>● Look for synergies in different uses of land. For example, livestock activities can enhance and restore grazing and agricultural land through rotational land use activities.<br>● Water runoff can cause soil erosion and also transport contaminants into water bodies. An absence of drainage infrastructure can also lead to salt accumulations or waterlogged soils. Drainage systems improve agricultural productivity and minimize environmental risks. Systems should be designed | | | |

Results from the Agriculture Sub-module indicate that overall potential activity impact is not very high. However, due to the high environmental sensitivities, in particular the fragile ecosystem with low regenerative capacity given the arid conditions of La Guajira, the potential environmental impact on the ecosystem is high and efforts should be taken to mitigate these impacts.

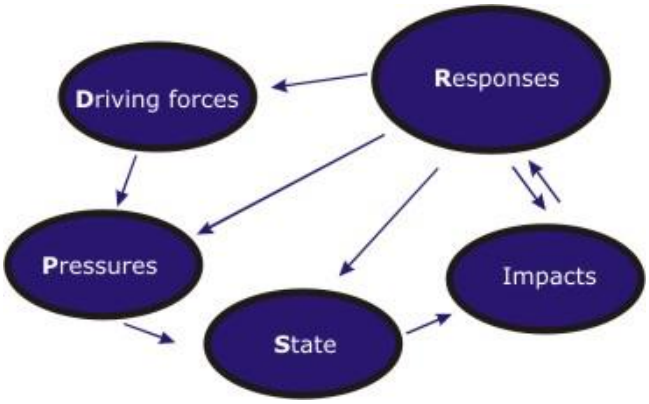
This is similar to the potential environmental risk of planned livestock activities - in general low, but given the scarcity of water, particular care should be taken to promote livestock solutions and species that are not water intensive. This is elaborated further in the section on Water and Wastewater management (see page 31).

**Livestock**

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental Risk |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | Low | Medium |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significant. | High | Null | Low |
| **Other environmental concerns** | | | |
| The environment has high biodiversity value. Vulnerable and/or rare flora and fauna may be at risk. | Low | Medium | Low |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | High | Null | Low |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | Null | Null |
| Natural resources may be scarce and in high demand. This can lead to social conflict. | Low | Null | Null |
| **Migitation Tips** | | | |
| • Local communities should be engaged from the project's conception to ensure that interventions are culturally appropriate, meet communities' needs and leverage traditional knowledge of the local environment. Engaging with local communities also reduces the likelihood of potential future conflict; this is particularly important in a humanitarian emergency as social fabrics can be significantly strained.<br>• Local wildlife can prey on livestock or compete for food. This may encourage livestock managers to kill wildlife to prevent wildlife-livestock contact or to reduce food competition. Wildlife-livestock contact can also lead to the spread of diseases. Herding and livestock management strategies should be developed to minimize potential conflict with wildlife.<br>• Look for synergies in different uses of land. For example, livestock activities can enhance and restore grazing and agricultural land through rotational land use activities.<br>• Shared-used water points can contaminate water sources and can also increase risk of human-animal disease transmission. Downstream aquatic ecosystems can also be negatively impacted. Identify sensitive receptors, and site watering points away and downstream from these receptors. Protect water sources from contamination by livestock manure.<br>• Slaughter sites should be collaboratively identified with community members. Slaughter should be carried out away or downstream from water courses to minimize contamination risk, as well as away from residential areas due to strong odors. Ensure that livestock managers have an appropriate strategy for the disposal or usage of livestock carcass remnants. | | | |
| **Additional Resources** | | | |
| **Sector Environmental Guidelines: Livestock** | | | Link |
| USAID's Sector Environmental Guidelines aim to support environmentally sound design and management of humanitarian and development projects. These guidelines provide concise, plain-language information regarding potential environmental impacts, and prevention and mitigation strategies. | | | |
| **Sector Environmental Guidelines: Integrated Pest Management** | | | Link |
| USAID's Sector Environmental Guidelines aim to support environmentally sound design and management of humanitarian and development projects. These guidelines provide concise, plain-language information regarding potential environmental impacts, and prevention and mitigation strategies. | | | |

# Summary of Key Environmental Concerns

Key environmental concerns have been identified by the NEAT+, FGDs and the secondary data review. Identifying the potential concerns, opportunities and pressures that may negatively influence the functioning of key ecosystem services is important throughout the programming process. To understand what the key environmental concerns in the CAI are, the Pressure-State-Response (PSR) framework[6] can be applied to analyze the cause of environmental change and potential responses. Ultimately, the NEAT+ automatically generated analyses are based on a Pressure-State-Response framework, however mitigation tips are written at a general and global level. For the purpose of this report, the PSR framework is given a more critical and locally defined lens to create customized mitigation tips for activities in and around the CAI. *Note: An application of the PSR framework is not a required process to complete the NEAT+. This is used for the purpose of this report, to provide a more detailed analysis for UNHCR.*




The PSR is useful in this context to structure and classify information, and to assist in the identification of recommendations that are tailored to environmental concerns and local

[6] For more about the PSR framework see the OECD-developed model, pg. 21: http://www.oecd.org/environment/indicators-modelling-outlooks/24993546.pdf

contexts. By developing a framework of interrelations between the biophysical environment and humanitarian concerns, programming and monitoring needs can be mapped accordingly.

Although the PSR framework is generally applied in exclusively environmental "states", here it is slightly modified to consider both environmental and humanitarian concerns.

- ➔ The *State* component refers to the present condition of the concern, according to the results obtained by the NEAT+, discussion with field staff, secondary data review or FGDs.
- ➔ The *Pressure* component identifies and tracks threats to the concern which are currently influencing or could influence its state. Many of these pressures can be directly derived from the NEAT+ reports.
- ➔ The *Response* component identifies and tracks potential actions which can alleviate pressures. Where possible, current activities implemented by UNHCR are taken into consideration as a medium for mitigation in the recommendations section below. Many of the suggested responses come directly or are modified from the "mitigation tips" that appear in the NEAT+ activity summaries.

Broadly, the key environmental concerns related to humanitarian activities are linked to:

1. Water scarcity (for refugee and host community);
2. Waste management (for refugee and host community);
3. Disaster risk from flooding, erosion and proximity to industrial facility (refugee and host community);
4. Climate change and climate variability (host community);
5. Pollution (for refugee and host community);
6. Food security and livelihoods.

These concerns are summarized in the table below and expanded upon in the following section.

*Table 1. State-Pressure-Response of key environmental concerns*

| | State | Pressure | Response |
|---|---|---|---|
| **Waste Management** | Limited waste management and recycling facilities<br><br>Lack of environmental education and motivation to manage waste | • Improper waste disposal<br>• Lack of recycling / disposal options<br>• Lack of education on waste management<br>• Cultural practices<br>• State of transit and uncertainty<br>• Lack of motivation to practice sustainable behaviour | • Investigate recycling as a livelihood activity<br>• Increased waste management points<br>• Environmental sanitation education campaigns<br>• Clean up campaigns<br>• Revamp hygiene promotion approach (education / hygiene committee) |

| | | | |
|---|---|---|---|
| **Disaster Risk** | Elevated levels of disaster risk | • Flooding<br>• Soil erosion from water/wind<br>• Deforestation<br>• Proximity to industrial facility | • Contingency planning for CAI evacuation<br>• Communication of contingency plans to local residents<br>• Fuel efficient stoves & education for local community<br>• Eco-disaster risk reduction solutions (e.g., strengthened vegetation cover and drainage systems) |
| **Water and wastewater management** | Water shortages | • Water scarcity<br>• Lack of circular wastewater management<br>• Low regenerative capacity<br>• Lack of water-saving knowledge & practices leading to unnecessary waste. | • Education programmes on ways to save and reuse water<br>• Reuse of greywater<br>• Reuse of residual water from water treatment system |
| **Pollution** | Reliance on diesel generators for energy (CAI) and biomass for cooking, leading to deforestation (host community) | • CAI is currently 100% diesel reliant<br>• Lack of renewable alternatives for energy or cooking | • Transition away from diesel as main energy source to solar/wind power<br>• Energy saving stoves<br>• Education on energy saving techniques |
| **Climate change and variability** | Higher temperatures, more erratic rainfall patterns, longer dry seasons. | • Changing climate patterns<br>• Lack of adaptation knowledge of local community<br>• Increased disaster risk | • Mainstream climate change adaptation (CCA) into activities, in particular FSL<br>• Education on CCA and training on climate-smart agricultural/farming solutions for host community |
| **Food Security and Livelihood Activities** | Fragile ecosystems, loss of biodiversity, low regenerative capacity | • Soil erosion<br>• Arid conditions<br>• Water scarcity | • Promote livestock solutions/species that are not water intensive<br>• Agroforestry |

## Waste Management

A waste management system is in place in the CAI and overall waste generated in the CAI is low. Trash is collected once per week from Maicao. There are two types of bins used - green for recyclables and black for everything else. Some of the cardboard is taken by residents to sell in Maicao, which has on occasion led to conflict between residents. Despite this management system, FGD respondents including the refugee and migrant community and staff working at the reception centre cited issues in waste management. This largely stems from lack of education and hygiene promotion rather than inadequate facilities, although refugee and migrant women requested more waste disposal sites in the CAI during the FGD (there is just one at the time of writing). Waste is often not disposed of in the correct place, or separated properly, and the bathrooms were particularly cited as a problem area by CAI residents and staff. There is an identified need by both the CAI residents and staff for more environmental education. This can be achieved through a) standalone events showcasing educational films, talks etc. to promote environmental sanitation and broader environmental protection and b) mainstreamed into hygiene promotion. There is a "hygiene committee" in the CAI made up of residents who are trained as hygiene promoters and look after the toilets and the trash cans and are tasked with reporting any negative waste management behaviour, so that messages can be adapted accordingly. In practice however residents do not want to report on others and therefore the hygiene promotion system is not currently working optimally. It is difficult to incentivize residents because the CAI is so transitory, and refugees and migrants are more focused on their personal concerns. This finding was echoed in the NEAT+ as one of the medium level issues of concern. As of March 2020, the WASH unit has already increased the frequency of hygiene sessions, which are welcome developments.

| Lack of incentive to practice sustainable behaviors | |
|---|---|
| **Additional Information** | **Migitation Tips** |
| A state of locational uncertainty can foster environmentally detrimental behavior due to short time horizons and a lack of attachment to the local area. This can be further exacerbated by an absence of strong social governance systems. Livelihood opportunities and a strong protective environment can strengthen sense of place. Highlighting the benefits of appropriate environmental behaviors for their livelihoods might increase incentive to cooperate. | • Set up community grievance/feedback mechanisms<br>• Organize sensitization campaigns to raise awareness on the benefits of adopting sustainable behavior and ensure that host community and people of concern are involved in the planning process |

*Figure 4: Results from the NEAT+ environmental sensitivity analysis on lack of incentive to practice sustainable behaviours.*

The issue of improper waste management by CAI residents can be addressed through increasing environmental education. Residents have time, knowledge that can be capitalized on, and a need for entertainment. This can be maximized by conducting more social and educational activities, such as talks and films to both occupy time and educate. This could be organized by the residents, since during the FGDs it became apparent that there are often people with substantial environmental knowledge coming through the reception centre. Having talks on topics such as "la cultura de reciclar" (the culture of recycling) was something requested by the Venezuelan women FGD. This would also help as a psychosocial support activity to keep people occupied and combat boredom and preoccupations about the future. The male FGD suggested having workshops for children on the topic of environmental sanitation. They also requested personal bins for rubbish, to keep the CAI cleaner.

As of March 2020, and following recommendations delivered during the November 2019, a monthly environmental awareness session on water and solid waste management has been introduced at the CAI.

*Figure 5: Improper waste management.*

Additionally, there are waste management issues in the host community. The local community dispose of waste by burning it, including plastics and using plastics to light cooking fires. There is a lack of knowledge about the negative consequences of improper waste management on human health. Uncontrolled burning of waste creates emissions containing fine particulates and complex organic compounds which are highly damaging locally and globally. The impact of low temperature burning of plastics can cause health problems such as headaches, nausea, and rashes in the short term. Over time, it can increase the risk of developing heart disease or other respiratory illnesses. The release of dioxins and furans (commonly found in PVC and plastic products) into the atmosphere has also been linked to serious health problems such as impairment of the immune and reproductive system, liver problems, certain types of cancer, and effects on the developing nervous system.[7] Heavy rains or winds can cause leaching of these toxins into the surrounding environment and settling on crops. Moreover, the practice of dumping garbage and plastics pollutes the environment and can become hazardous to human health. Uncontrolled waste disposal can encourage vectors to breed, leading to increases in infectious diseases including malaria, Zika and dengue fever. The Chichituy community usually recycles most plastic that is not used for lighting fires. They cited 500 pesos as the price for one kilo of plastic.

These issues are not unique to this community or to the CAI. Rapid economic growth and urbanization in Colombia has led to significant challenges in waste management which are evident when driving around La Guajira. Many communities are littered with plastic and other waste. Although waste management in Colombia has positively evolved over the last 20 years, there are many challenges which include providing higher quality solutions for smaller municipalities, promoting management organizations that recognize informal recyclers work, increasing the sanitary landfills' technical specifications and improving technical operation, advancing on climate change adaptation measures for avoiding problems caused during the rainy and dry periods, and increasing the solid waste recycling.[8] In the next year, Colombia aims to professionalize its solid waste management, including by introducing an integral and more

[7] Lali Z (2018) Release of Dioxins from Solid Waste Burning and its Impacts on Urban Human Population- A Review. J Pollut Eff Cont 6: 215. doi: 10.4172/2375-4397.1000215

[8] https://www.d-waste.com/new-infographics/item/download/5_a50f76fca802a3fb1ffa1fa18d7ec593.html

sustainable approach to decrease landfilling and increasing recycling, in what is commonly referred to as the 'Basura Cero' (Zero Waste) approach.

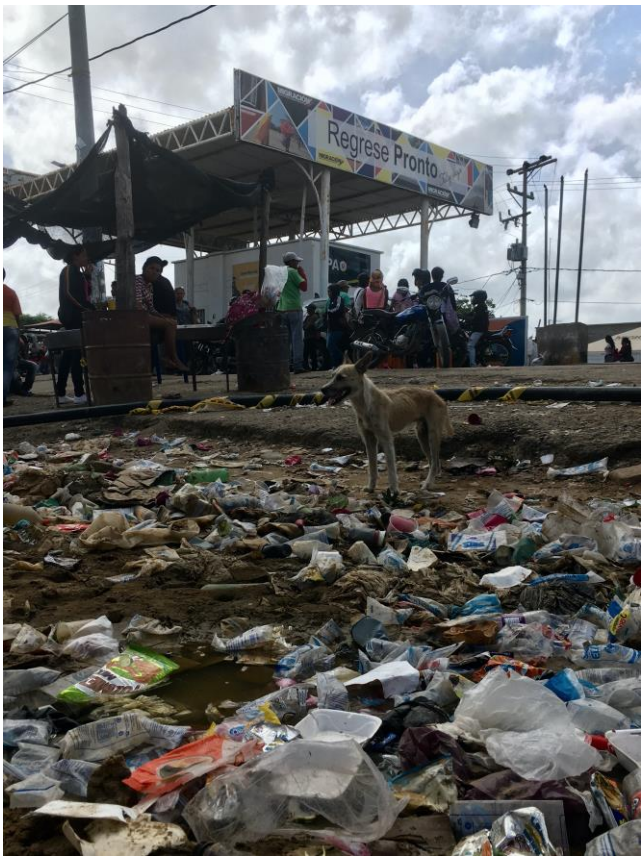



*Figure 6: Lack of waste management at the border crossing.*

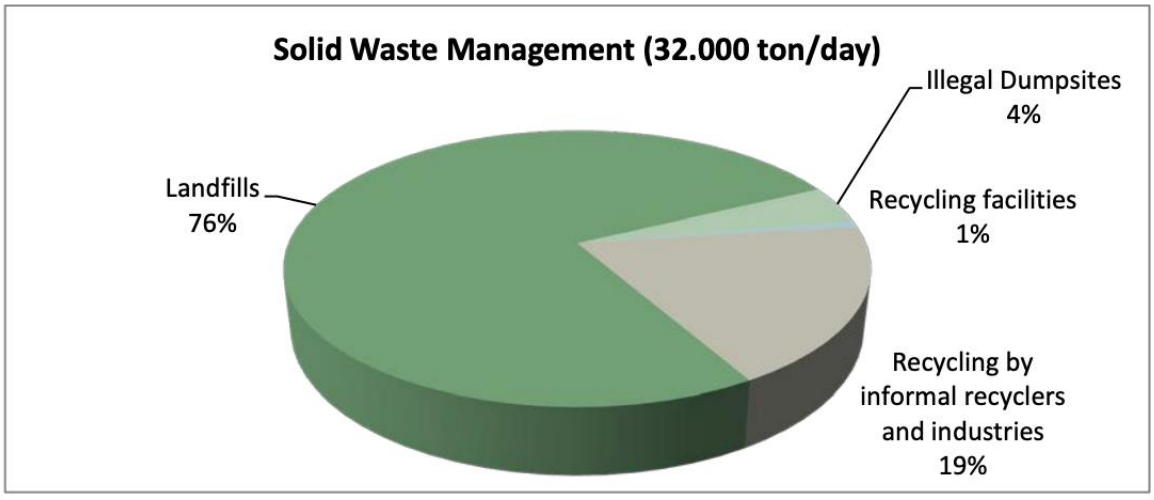



*Figure 7: Country-wide solid waste management.*[9]

Since 1991, the state has adopted a regulator role and allowed private participation in the utility sector, including in solid waste management. Private companies currently provide more than 60

[9] https://www.d-waste.com/new-infographics/item/download/5_a50f76fca802a3fb1ffa1fa18d7ec593.html

percent of the population with waste management services. The law allows different schemes to provide the service, such as free competition and contracts with municipalities with or without exclusivity; the service can be provided directly by each municipality or by public, private or mixed capital companies (Law 142). The Supreme Court also recently recognized informal recyclers' rights in the solid waste management and ordered to implement affirmative actions for their protection and the government is studying the mechanisms to put this order into operation. Over the past 10 years, solid waste management policies have focused on eliminating illegal dumpsites, by promoting the use of regional landfills and enforcing the formalization of small suppliers.

While improving capacities of local governments to manage waste collection and disposal could be one method of waste mitigation, this avenue may be out of the scope of UNHCR and partners working in Maicao – yet it should still be encouraged. Improving the impact of waste management in the area surrounding the CAI level could be promoted through a reduction of waste streams through recycling programs, and/or improved incineration for waste management. Beforehand, a study should be conducted in order to better understand the different waste streams and quantities, and identify opportunities for reduction, recycling or reuse of certain types of waste. The waste composition affects the viability of various downstream waste management processes as well as the type of contaminants that may ensue. This study can be used to inform the best-available programming decision.

Clean up campaigns are already beginning by UNHCR in Maicao with Venezuelans near the beach area, and the border crossing area near the CAI would also benefit from clean up campaigns (see Figure 5 on the border crossing). In this context, environment can play a role towards improving social cohesion between the Colombian and Venezuelan communities, tackling a topic that is negatively affecting everyone and helping to portray refugees and migrants in a more favourable light. In addition, FGD participants noted that there is no culture of recycling in Venezuela, and so this initiative, in addition to talks in the CAI, could work towards changing attitudes and perceptions.

Recycling programs can create livelihood activities for communities, providing alternative income streams for CAI residents as well as the local community. Traditional livelihood activities involving recycling plastics and other materials usually include bringing recyclables to an institutional facility for cash. This process could be made more efficient by enhancing the communication channels between collectors and households. One example which works to increase collection opportunities is a local Riohacha-based entrepreneur, Oscar Hernandez, who is recycling plastic bags to make hose pipes and local company GyG in Riohacha preparing to make recycled plastic building materials. UNHCR is already exploring collaboration with these individuals.

Finding innovative methods of utilizing recycled materials from waste also represents a key opportunity for resource recovery and reducing the depletion of raw materials and costs in production. There are many examples of recycling livelihood activities which recycle plastics to create fabrics used to make purses, bags, and household goods, supporting local families. A programme like this could assist in livelihood diversification and imparting skills that the short-

term reception centre residents can take with them on departure from the CAI. To this end, engagement with private sector and/or the support to the formal organization of waste recyclers into collectives or groups, with subsequent business development, could be considered a development activity (to be discussed with relevant actors for example UNDP or others engaged in livelihoods and market creation).

Plastics and old tents should be prioritized for recycling, given their potential for impact on human health and the lack of existing local recycling schemes. It is usually preferable to set up local recycling schemes that do not rely on national/global markets or need large quantities of materials to be viable. Although many of the old tents have been badly damaged by the elements, the plastic part from the bottom half of the old tents could be used. All new tents could be repurposed.

For waste that cannot be recycled or repurposed, incinerators provide a safer alternative to low temperature garbage burning. Medical clinics in the area may already have incinerators on-site, or access to medical incinerators for their hazardous goods. Partnering with these medical facilities – for example, via the Colombian Red Cross whom already have a presence in the CAI – to provide safe methods of waste disposal for nearby residents could greatly reduce health risks associated with household burning. The Red Cross have an agreement with a local company to dispose of medical waste. Community-level incinerators and/or a safely managed dumpsite can also help lower the amount of waste burning occurring at the household level in the neighbouring local communities.

| | **Waste Management** |
|---|---|
| **Relevant UNHCR Activities** | Clean up campaigns in Maicao<br>Waste management system in the CAI |
| **Mitigation tips** | *UNHCR operational areas of la Guajira (CAI included)*<br>● Encourage consideration of the government's 'Basura Cero' (Zero Waste) approach into organizational programmes and strategies<br>● Conduct study on waste streams and quantities, including identification of local waste management solutions.<br>● Engage with private sector and/or the support to the formal organisation of waste recyclers into collectives or groups, with subsequent business development.<br>● Coordinate with groups like CORPOGUAJIRA to design and spread environmental sanitation messages to the general population, not only in the CAI.<br>● Work with the Venezuelan population to improve social cohesion, for example creating a "Somos panas verdes").<br>● Collaborate with INTERASEO to separate waste at the source, to facilitate the recycling work of INTERASEO. |

*CAI specific*

- Review UNHCR procurement strategies to minimize waste generated by UNHCR at the CAI (e.g. plastic water bottles).
- Install more waste receptacles at the CAI, including for separating recyclables.
- Partner with an organization like FUPAD (Pan American Development Foundation) to create livelihoods opportunities from reuse/recycling initiatives in and around the CAI (and to reduce health risks)
- Consider the establishment of a community incinerator and/or safely managed dump site with management capabilities to avoid burning waste on household plots in proximity to homes, posing a health risk.
- Share information on best waste management practices and raise awareness of negative/dangerous practices (e.g. burning plastic).
- Conduct more social and educational activities/talks/films to both occupy and educate, for example on waste management and water saving (in line with the monthly environmental awareness sessions on water and solid waste that began shortly after the mission).
- Provide any organic waste from the canteen to the Chichituy community to compost (e.g. as part of ACH livelihoods activities).

## Water and Wastewater Management

Many of the largest environmental issues in the area are water related: water is scarce. Water supply and care are a daily problem in this region and one of the main obstacles to its development, not only for the vulnerable refugee and migrant population but also the established indigenous communities.[10] The water network of La Guajira is straightforward - the most important watercourse is the Ranchería River, which is born in the Sierra Nevada de Santa Marta and flows into the Caribbean Sea.

Overall there is a lack of water and low regenerative capacity of the aquifer. The CAI is currently using a neighbouring owner's well but planning to produce their own. UNHCR have a study on the aquifer planned and are looking into alternative water sources for the local community. This will be a first major step towards being able to put in place a more sustainable WASH strategy, increasingly important as the CAI expands to provide water to over 1,400 people.

[10] Study conducted: Determinación de las condiciones geoeléctricas para exploración de agua subterránea en el área donde se encuentra ubicada la comunidad indígena de Chichituy municipio de maicao – La Guajira.

| Scarcity of water resources | |
|---|---|
| **Additional Information** | **Migitation Tips** |
| Dry climates have low levels of average rainfall and are particularly vulnerable to irregular rainfall patterns that can see long periods without rain. Extreme weather events and changing rainfall patterns due to climate change can exacerbate these issues increasing demand on water resources. Water scarcity leads to competition for water resources and social conflict, and can have adverse livelihood implications for livestock and agricultural activities. Longer distances for water collection also means a higher risk of gender-based violence for women and children, and disproportionately affects those with limited mobility such as the elderly or disabled. | • Complete WASH activity module of the NEAT+<br>• Consult with WASH sector<br>• Provide training/technological solutions for efficient water improvement, especially in crop cultivation/ and livestock keeping<br>• Map use and protection measures of water resources from a water shed perspective<br>• Establish a community-based water management project<br>• Consult and raise awareness with all stakeholders, including the most vulnerable persons of concern<br>• Maximize water use efficiency (e.g. self-closing water points, high levels of pipe maintenance)<br>• Establish greywater capture and enhanced filtration<br>• Establish rainwater harvesting system<br>• Develop sensitization messages on efficient water use and water scarcity<br>• Set up a monitoring system of regeneration levels of water resources and link to sensitization messages<br>• Identify ways to support regeneration of water resources<br>• Conduct climate vulnerability assessment<br>• Consult national climate change adaptation plans |

*Figure 8: Results from the NEAT+ environmental sensitivity analysis on scarcity of water resources.*

*Figure 9: Water treatment plant.*

Currently the CAI uses a water treatment plant with water coming from neighbouring deep wells that provide water to the reception centre and to the Chichituy community. However, the system loses 40%- 60% of the water in the process due to high salination rates. It is recommended to investigate alternative treatment plant types that can absorb the salinated water, as well as ways that the wastewater can be reused.

The issue of water shortages is compounded by a lack of sustainable water practices, such as using too much water when showering or children playing with and wasting water, by CAI residents, who in general are not accustomed to having to save water previously in Venezuela. This was reported by CAI female residents, who are very aware of the issue, and who also noted that there is not always enough water, compared to Venezuela where they never had water shortages. More educational campaigns on water saving are needed, which can be delivered in conjunction with waste management education (as previously mentioned, a monthly session has already commenced). Ways could be explored to involve the local community in delivering these messages, for instance by sharing their water saving practices. For example, Chichituy women consulted via FGD cited using approximately 12 litres per person per shower and only washing their hair once per week in order to save water.

Since the arrival of the CAI, the Chichituy community is being provided with water from a closer source (~ 200 m), which has dramatically improved their livelihoods. They have traditionally had two sources of water (see Figure 9): a windmill pump (~ 1 km), and rainwater catchments (~ 500

m) that last up to six months. However, this was not always granted or even sufficient, and residents had to travel back and forth to collect water.


*Figure 10: Sources of water for the Chichituy community prior to the establishment of the CAI.*

Local beliefs should be considered when finding WASH solutions for local indigenous communities; ACH cited an example of water purification. According to Waiyu cultural beliefs, water is life and so if they use chlorine as a water treatment method, they consider it to be killing life. Clay filtration systems were however found to be suitable as clay also comes from the earth.

Wastewater management can be improved both in the CAI and in the Chichituy community. Household grey water which is used for washing and bathing is rarely re-used by the Chichituy community. Residents usually throw grey water into the bush or onto the nearest plant by their kitchen. Re-using household grey water could represent a critical water input for crops during summer droughts. Introducing grey water capture systems along with educational programs about ways in which to reuse grey water can help encourage water-efficient behaviours. They also do not have latrines and practice open defecation – an obvious area for WASH support in the future. Open defecation combined with flooding can lead to contamination of crops, eutrophication of nearby water sources and contamination of wells.

| Low capacity to manage wastewater | |
|---|---|
| **Additional Information** | **Migitation Tips** |
| A lack of drainage infrastructure leads to unmanaged wastewater. Wastewater is a carrier of contamination which can be harmful to human health and also to livelihood activities such as farming and livestock. Pools of wastewater are breeding grounds for mosquitos. Contaminated water can also drain into streams and other surface water, which is used for washing, cleaning and bathing increasing risk of further contamination among women and children. | • Complete WASH activity module of the NEAT+<br>• Develop sensitization messages on links between environmental sanitation and disease transmission<br>• Undertake sensitization sessions with the community<br>• Ensure waterpoints have infiltration built in<br>• Introduce greywater capture<br>• Promote ground cover vegetation to enhance infiltration and reduce surface runoff<br>• Conduct WASH assessments<br>• Consult health authorities<br>• Identify improvements to waste water management (e.g. suitable technology for treating and managing waste water, possible re-use of waste water) |

*Figure 11: Results from the NEAT+ environmental sensitivity analysis on low capacity to manage wastewater.*

In the CAI, there are six containers for WASH facilities: four for showers and two for toilets, one with disabled access. The toilets feed into a septic tank which is desludged. Nothing is currently done with the grey water, but this is planned for the future. It is recommended to study greywater reuse in more depth as there are various possibilities for this to be useful, for example for toilets or for agriculture if not contaminated. Rainwater catchments could also be installed on the containers and other facilities; although it does not rain often, when it rains it occurs in large quantities and not harvesting this rainwater becomes a missed opportunity. This would require some adjustments to the design of buildings and an increased cost for filters, pipes, tanks, and etc. Nevertheless, the recovered water would be of great benefit as agricultural activities start and as the CAI expands. With over 1,300 people showering every day, there will be ample use for this recovered water.

**Wastewater management and drainage network design**

| Environmental Environmental Concerns | Environmental Sensitivity | Potential Activity Impact | Potential Environmental |
|---|---|---|---|
| **Key environmental concerns** | | | |
| The water sources may be vulnerable to contamination. Water quality may be an issue. | Low | High | Low |
| There is low capacity to manage wastewater. Environmental sanitation and disease transmission may be an issue. | Low | Medium | Low |
| **Other environmental concerns** | | | |
| The water resources may have a low regenerative capacity. Water scarcity may be an issue. | High | Null | Low |
| The environment has fragile ecosystems. Loss of biodiversity may be an issue. | High | Medium | High |
| The environment has a low regenerative capacity. The effects of land and soil degradation are more significant. | High | Medium | High |

| Migitation Tips |
|---|
| • Simple filtration systems, e.g. drainage screens or filters at the source, should be used to prevent solid matter (e.g. hair, lint, food particles) from entering wastewater. Solid matter can clog wastewater transport network and complicate subsequent treatment steps.<br>• Grey water can be reused for small- or medium-scale agriculture, reducing demand for water. Water quality testing and comparison to discharge standards can provide guidance on suitability. Open and stagnant water bodies should be avoided in the diversion and storage of grey water. |
| **Additional Resources** |
| **Greywater Management in Low and Middle-Income Countries** — Link |
| This document provides design and implementation strategies for technologically appopriate solutions for greywater management in low- and middle-income countries. |
| **Additional Details/Comments** |
| |

The idea of dry latrines was not well received by the CAI FDG resident participants, but if grey water cannot be reused for the toilet, these should be considered given the extreme water shortages faced by the area and the further pressure that the expansion of the CAI will undoubtedly have. It is recommended to explore the possibility of using hose pipes made of recycled plastic bags for the upscaled water distribution system (see Waste management section) if they meet quality standards.

ACH have agriculture and livestock activities planned with the Chichituy community in 2020 which should put in place measures to mitigate over-extraction of water and water source contamination, both environmental sensitivities highlighted by the NEAT+.

| Vulnerability of water sources to contamination | |
|---|---|
| **Additional Information** | **Migitation Tips** |
| Surface and shallow water sources are particularly vulnerable to contamination. Poor sanitation practices or infrastructure can cause microbial contamination of drinking water sources, causing diarrheal diseases. Children are disproportionately affected. Water-borne diseases can be particularly dangerous for women who are pregnant or lactating. Farming and livestock activities can also lead to contamination of water sources. Extreme weather events (especially flooding and storms) can result in decreased water quality or contamination, while sea level rise can contribute to increased salinity of groundwater resources. An assessment of the local water quality situation could identify and prevent possible sources of contamination. | • Complete WASH activity module of the NEAT+<br>• Assess water quality<br>• Consult with health authorities for monitoring and early action<br>• Identify and address source of pollution<br>• Put in place contamination prevention measures; provide efficient sanitation facilities with proper waste-water treatment<br>• Create a buffer zone around surface water<br>• Restrict access to surface water<br>• Conduct awareness raising with local and host populations to prevent water contamination and over-exploitation<br>• Ensure safe access for women and other vulnerable groups<br>• Develop WASH programs focusing on sanitation facilities<br>• Develop sensitization messages on transmission of waterborne diseases and mitigation measures that can be done on a household level<br>• Set up monitoring system to control water quality |

*Figure 12: Results from the NEAT+ environmental sensitivity analysis on vulnerability of water sources to contamination.*

Given that water scarcity is an issue, livestock activities should prioritize species that are adaptable to low-water conditions. Stock numbers should be kept at a sustainable level. Community drinking water requirements should be safeguarded and drinking water sources protected against contamination from manure. For livestock activities, the fact that shared-used water points can contaminate water sources and can also increase the risk of human-animal disease transmission should be considered. Downstream aquatic ecosystems can also be negatively impacted. The project should identify sensitive receptors, and site watering points away and downstream from these receptors.

Slaughter sites should be collaboratively identified with community members. Slaughter should be carried out away or downstream from water courses to minimize contamination risk, as well as away from residential areas due to strong odors. Ensure that livestock managers have an appropriate strategy for the disposal or usage of livestock carcass remnants.

Water runoff from agriculture can cause soil erosion and also transport contaminants into water bodies. An absence of drainage infrastructure can also lead to salt accumulations or waterlogged soils. Drainage systems improve agricultural productivity and minimize environmental risks. Systems should be designed considering local topography, soil and water conditions, and climate.

| | **Water and Wastewater Management** |
|---|---|
| **Relevant UNHCR Activities** | Provision of full WASH services in the CAI.<br>Water provision to the Chichituy community. |
| **Mitigation tips** | CAI<br>• Design all new WASH designed activities to minimize water loss by applying water recycling and minimizing measures<br>• Rethink existing WASH activities to maximize grey water reuse |

- Introduce grey water capture and reuse systems (e.g. for toilets, or for agriculture for the Chichituy community if not contaminated by chemicals)
- Introduce a rainwater catchment system
- Explore alternative water treatment plant techniques with less waste
- Provide education on water saving techniques
- Consider dry latrines

Chichituy

- Protect wells and water sources from contamination, particularly as FSL agricultural and livestock activities begin in 2020.
- Encourage the replacement of open defecation with improved pit latrines
- Provide education about reusing household grey water
- Prioritize livestock that are adaptable to low-water conditions

## Food security and livelihoods

While the NEAT+ activity module on FSL identified the impact of these activities as being smaller than others, it is worth outlining some mitigation measures in order to reduce the potential environmental impact, which is high. The recommendations apply primarily to the local communities, as there is limited cooking in the CAI due to the supply of most meals. As a result, local communities should be engaged from the project's conception to ensure that interventions are culturally appropriate, meet beneficiaries' needs and leverage traditional knowledge of the local environment. There is also the issue of lack of documentation regarding livelihoods, which inhibits the full participation of the refugees and migrants in those activities.

In terms of agriculture, soil erosion, which is particularly prone in areas with high slopes, leads to the loss of fertile topsoil. Erosion also reduces the ability of the ground to absorb water. Planting of shallow rooted crops should be avoided in areas where slopes are high. Moreover, agroforestry should be considered as it can be advantageous over conventional agricultural methods – increasing land productivity and soil fertility and reducing soil erosion and water loss. Significant benefits can be realized by simply incorporating or preserving a minimal tree/shrub layer.

For livestock activities, it is essential to look for synergies in different uses of land. For instance, livestock activities can enhance and restore grazing and agricultural land through rotational land-use activities. Moreover, shared-used water points can contaminate water sources and can also increase the risk of human-animal disease transmission. Downstream aquatic ecosystems can also be negatively impacted.

| | Food security and livelihoods |
|---|---|
| **Relevant UNHCR / ACH Activities** | ACH has already planned to work with the Chichituy community on further developing FSL activities. |
| **Mitigation tips** | • Agroforestry to increase land productivity and soil fertility<br>• Livestock solutions that are not water-intensive in order to prevent soil erosion<br>• Implement nature-based solutions to reduce disaster risk at the CAI, in particular as it relates to flooding and soil erosion. These include increased vegetation cover and strengthened drainage systems, among others<br>• Promote risk-informed food security and livelihoods options for the host community<br>• From other - Climate change and vulnerability section, suggestions for activities to be implemented<br>• Support and provide training on sustainable farming and/or climate smart/climate resilient agricultural practices<br>• Provide faster growing seed varieties/more hardy seeds as part of livelihoods programming |

# Pollution

Issues of pollution arising from the CAI and the Chichituy community are twofold: 1) The total reliance on diesel for running the CAI is a large polluter and exponentially increases the carbon footprint of the reception centre, which is otherwise fairly low and 2) pollution arising from indoor cooking with biomass and associated health and deforestation impacts were identified as an issue of high concern.

| Increased rates of outdoor air pollution | |
|---|---|
| **Additional Information** | **Migitation Tips** |
| Activities such as electricity generation with generators, transportation or industry cause air pollution and the emission of greenhouse gases. Exposure and proximity to areas of high pollution (e.g. right next to a generator, highway or factory) should be minimized. | • Monitor air pollution<br>• Map at-risk locations and do not settle people near sources of air pollution<br>• Consider moving the population away from the source of pollution if it cannot be eliminated<br>• Monitor/prevent/provide alternatives to high-polluting activities such as burning plastics<br>• Explore renewable options<br>• Move generator location, if applicable<br>• Collaborate with health actors and request for them to report increases in respiratory illnesses when monitoring<br>• Establish a "tree-belt" around the camp or settlement<br>• Raise awareness about the issue and the health risks among the population |

*Figure 13: Results from the NEAT+ environmental sensitivity analysis on increased rates of outdoor health pollution.*

Energy provision in the CAI was 100 percent diesel reliant at the time of the mission, though as of March 2020 UNHCR is already slowly implementing solar alternatives, such as the solarization

of a newly constructed borehole. Approximately 300 gallons per week are used in generators, which will increase with the ampliation of the reception centre during the next phases. It is strongly recommended that green energy solutions be found to minimize this reliance on diesel. Efforts are already underway to investigate the use of solar and wind power, and these should be prioritized. Even if there is a possibility in the future to connect the CAI to the electricity mains supply, the instability and high cost of the electricity supply, combined with the huge amount of powerful sunshine, make solar power an obvious choice for providing as much of the energy of the CAI as possible. This includes providing for water pumping and lighting, with panels installed on the roofs of the containers or in a designated solar harvesting area if space allows. Cleaning the panels could be a responsibility of the hygiene promotion/maintenance committee.

Other options for a more energy efficient operation include exploring how the shipping containers could be either joined up or stacked, to minimize the total surface area explore to the heat, therefore requiring less cooling. Alternative materials to the metal containers could also be explored for future communal spaces.

There is also an excessive amount of wind in La Guajira even if not constant, which is traditionally used for pumping water from a well. Wind energy could be used, particularly in the windiest season from January through March. At the time of this scoping study, not the windiest season, there was still a considerable amount of wind daily.

Diesel generators will still be required as a backup and for those items that require a consistent energy supply, such as medical refrigerators. The proper storage of this fuel is essential. Improper storage of fuels can render the fuel unusable, waste resources, and lead to decreased combustion efficiency and increased generation of air pollutants. Leaking fuels (e.g. inappropriate containers) can also cause health and environmental hazards. The source of the fuel should also be scrutinized, particularly in an area such as La Guajira where contraband fuel is rife. Inappropriately sourced fuels can externalize environmental impacts to other areas. Efforts should be made to scrutinize the supplier and supply chain to ensure that procured fuels are responsibly extracted, regulated and/or certified.

The other main potential pollutant being used in the CAI is a pesticide to fumigate the RHUs because of centipedes biting people. It also combats the concern about bats nesting in the RHU roofs. Pesticides and similar chemicals pose a human and environmental health risk. The risk of pests can be reduced through good sanitation practices and integrated pest management to minimize pesticide use. Governments often have strict requirements pertaining to pesticide usage and these must be followed. Pesticides are a controlled substance and should be properly stored for security and safety reasons. A more detailed environmental risk assessment should be considered for pesticide usage. When FSL agricultural activities start with the Chichituy community, care should be taken that the usage of agrochemicals and pesticides does not contaminate excess irrigation water and runoff. These contaminants are harmful to aquatic ecosystems and pose a health risk. It is recommended to use natural fertilizers, for example from food waste from the CAI, instead of agrochemicals and pesticides. If pesticides are used, ensure proper drainage and treatment of runoff and excess irrigation water.

Vulnerability air pollution was an issue highlighted as an area of high risk for the local community. Cooking in the CAI is not allowed by residents, and all food is brought in by WFP in reusable plastic containers and no cooking is done on site. It is therefore the Chichituy community that is seeing the impact of air pollution from cooking and associated environmental risks.

| Vulnerability to indoor air pollution | |
|---|---|
| **Additional Information** | **Migitation Tips** |
| The burning of poor quality fuels, such as fuel or charcoal, for heating or cooking can have detrimental respiratory health consequences. Women and children bear a disproportionate burden, given traditional gendered household roles. Biomass fuels can also cause low birth weight in children of expectant women. Air quality concerns (indoor and outdoor) may be exacerbated by high temperatures/heat waves. Alternative energy sources or improved cookstove technology can mitigate these effects. | • Conduct a fuel/stoves assessment<br>• Promote the use of improved cookstoves/clean fuel options<br>• Set up alternative cookstove programs<br>• Improve ventilation of shelters (e.g. windows on opposite sides to allow air circulation)<br>• Promote outdoor cooking |

*Figure 14: Results from the NEAT+ environmental sensitivity analysis on vulnerability to air pollution.*

The Chichituy community relies entirely on biomass for cooking. This has, over time, resulted in deforestation of an already environmentally sensitive area (see section on disaster risk) and indoor air pollution and health concerns.

Kitchens are attached to houses and therefore not in the same space; however, they are covered, and women and children particularly spend time in close proximity to the fires. Health impacts are exacerbated by the use of plastic bottles to ignite fires, causing toxic fumes. The impact of low temperature burning of plastics can cause health problems such as headaches, nausea, and rashes in the short term and over time can increase the risk of developing heart disease or other respiratory illnesses. Other plastic is in general not burnt but sold for recycling (see waste management section). Improved kitchen design with smoke exhaust pipe and additional ventilation and education around the health implications of burning plastic should be integrated into livelihoods activities with the Chichituy community in 2020.

Another clear area of intervention is the provision of energy-efficient stoves. Energy usage practices for cooking and heating can have significant impacts on the local environment, particularly if unimproved burners are being used. As wood and charcoal are the only fuel source, deforestation of an already sensitive area is a significant concern, degrading the ecosystem and increasing community vulnerability to environmental hazards. The Chichituy community has relied on biomass for firewood for a long time, taking care to use only dead wood where possible. However, before the arrival of the CAI, they were forced to sell firewood as a source of income which impacted on the previous fine balance between the community and the local ecosystem. The low regenerative capacity of the natural environment has meant that the area has not recovered from this additional pressure, with consequences on water contamination, retention and regeneration, and flooding (see section on disaster risk). Although some of the pressure has been removed as members of the Chichituy community have been given employment opportunities in the CAI, measures to reduce the amount of fuelwood used for cooking and preventing the burning of fresh wood that produces more smoke should be prioritized as part of food security and livelihoods interventions.

Simple home-made burners currently used are crudely built and have very low combustion efficiencies, wasting fuel and generating harmful air pollutants. Therefore, improved burners should be used where possible in

*Figure 15: Lorena stove being built in Uganda.*

future interventions. Lorena stoves have proved effective in other locations to reduce the amount of firewood needed for cooking. They are constructed out of natural, locally available materials and can be built by the community. This will reduce the speed of deforestation, hopefully allowing the shrubland to regenerate and have positive impacts on health from reduced fumes. This could be complemented by re-vegetation schemes (see section on disaster risk).

The area around the CAI has been identified during the NEAT+ as being vulnerable to industrial hazards and pollution, due to the proximity to the industrial plant across the road, even if it is not operating at full capacity at the moment. Care should be taken to assess the safety and security of the site from residue contamination or hazards. Contingency planning should be in place (see disaster risk section).

| Industrial hazards and/or pollution | |
|---|---|
| **Additional Information** | **Migitation Tips** |
| Harmful chemicals or substances are often located in industrial facilities. Improper storage and processing can contaminate the environment, but also pose a threat to human well-being. Disasters can often disrupt the safeguards or management procedures in place to minimize industrial risks, or even damage industrial infrastructure leading to the release of potentially harmful substances. | • Conduct awareness and preparedness at local level (APELL) activities http://apell.eecentre.org<br>• Contact local authorities<br>• Consult the Guidelines on Business and Key Biodiversity Areas (https://portals.iucn.org/library/sites/library/files/documents/2018-005-En.pdf)<br>• Create action plans in consultation with all stakeholders (stakeholder mapping)<br>• Consult bio-safety regulations and plan accordingly<br>• Contact industrial/infrastructure facility managers, requesting to see emergency plans<br>• Map industrial hazards<br>• Share awareness (e.g. evacuation hazards information) with communities<br>• Map out sources of industrial pollution<br>• Consult an expert on industrial hazards/conflict waste |

*Figure 16: Results from the NEAT+ environmental sensitivity analysis on risks from industrial hazards and/or pollution.*

Education is a critical part of addressing pollution and contamination challenges. This should be a complementary activity to all FSL programming with the Chichituy community. Efficiency gains are possible through changing user practices, e.g. minimizing wastage or using residual cooking heat for indoor heating. Community members should also be educated about potential health risks, as well as the consequences on the environment and how local environmental degradation directly impacts them.

| | Indoor and outdoor pollution & contamination |
|---|---|
| **Relevant UNHCR / ACH Activities** | 100% diesel fuel energy provision to the CAI.<br>Upcoming ACH FSL programming with host community |
| **Mitigation tips** | CAI<br>● Further assess and implement green energy solutions (solar and wind) and design green energy strategy for the CAI, following UNHCR's Global Strategy for Sustainable Energy[11] where possible.<br>● Assess safety of fuel storage and make improvements where needed<br>● Assess source of fuel to ensure it is not obtained from illegal sources<br>● Improve energy efficiency of communal and office spaces<br>● Practice integrated pest management to minimise the need for fumigation and pesticides<br><br>Chichituy<br>● Share information on best waste management practices and raise awareness of negative/dangerous practices (e.g. burning plastic)<br>● Organize sensitization campaigns to raise awareness on the benefits of adopting sustainable behaviour - for example on building/using Lorena stoves and alternative energy sources - and ensure that community members are involved in the process<br>● Introduce alternatives to timber/wood with economic incentives (i.e briquette production)<br>● Explore and educate residents on using alternative sources of biomass such as vegetal waste, bushes and shrubs<br>● Establish/promote ecological restoration programs (such as through the promotion of livelihood activities involving nursery/replantation/ FMNR or tree-stump regeneration activities)<br>● In agricultural activities, favour natural pesticides over chemicals, using natural compost from food waste, livestock manure and other ecological sources<br>● Promote improved kitchen design with additional ventilation |

## Disaster Risk

Results from the NEAT+ environmental sensitivity module (Figure 16) show that issues of high concern around disaster risk include flooding and industrial risks. Risk of soil erosion from water is also a moderate environmental risk, while soil erosion from wind, disaster waste and (previous) conflict-related hazards are of low concern.

[11] https://www.unhcr.org/uk/5db16a4a4

| Risk of soil erosion (wind) | |
|---|---|
| **Additional Information** | **Migitation Tips** |
| Fine-grained soils are prone to wind erosion. A lack of vegetation reduces resistance to erosion. Erosion leads to a loss of fertile topsoil, making the area difficult to revegetate. Impermeable subsoils are often exposed, increasing the risk of hydrological hazards. Promote the protection and/or planting of deep root light trees, grass and bushes to stabilize soil and slopes. | • Plant grass, shrubs, trees for stabilization<br>• Consult/develop hazard maps<br>• Enhance and protect all ground cover including grass |
| **Risk of soil erosion (water)** | |
| **Additional Information** | **Migitation Tips** |
| Soils such as clay are vulnerable to water erosion. Water movement, for example through rainfall or river flow, can carry soils particles leading to a loss of soil. Removing vegetation increases erosion leading to a loss of fertile topsoil, making the area difficult to revegetate. Arable land is also destroyed as gullies form or river banks collapse. Promote the protection and/or planting of deep root light trees, grass and bushes to stabilize soil and slopes. | • Promote vegetation<br>• Set up drainage/canals<br>• Establish soakaway pit, ideally with vegetation |
| **Risk of flooding** | |
| **Additional Information** | **Migitation Tips** |
| A close proximity to water bodies increases risk of flooding from severe weather events. A lack of drainage infrastructure and vegetation increases the rate of surface runoff, causing more severe flooding events. Disaster risk reduction measures can reduce the severity of these events on the population. | • Consult national/local hazard maps<br>• Establish a simple early warning mechanism<br>• Map area of interest depicting main risks and root causes to flood risks<br>• Clear drainage/canals<br>• Set up natural filtration systems<br>• Implement nature-based solutions for water-related risk mitigation<br>• Analyze the environmental status of wetlands and consider watershed management (e.g. management, restoration, reforestation)<br>• Improve the infiltration capacity of the soil with vegetation coverage |

*Figure 17: Results from the NEAT+ environmental sensitivity analysis on disaster risk.*

Some of these risks are intertwined with climate change and variability (see dedicated section on page 45): the area is experiencing higher temperatures, more erratic rainfall, longer dry seasons and more frequent extreme weather events.

These changes in precipitation patterns have led to an increased risk of flooding. At the same time, the area is prone to soil erosion from both water and wind. UNHCR has recently reported an incident of heavy rain and wind at the CAI, which led to the evacuation of seven families. The tents where the families were hosted did not prove to be resistant enough. The gradual replacement of tents with RHUs will help mitigate this issue; however, proper contingency plans should be in place to account for disaster risk using an all-hazard approach.

While the CAI has an evacuation plan (with the stadium/market as pre-identified receiving areas), there is a need to strengthen awareness of evacuation plans and procedures, including escape routes, among residents. These plans should be informed by national/local hazard maps and linked to national/local emergency plans (cf. Corpo Guajira[12]). The Venezuelan men FGD highlighted that there was no knowledge of how to evacuate the CAI in an emergency among those interviewed. Given the transitory nature of the centre, awareness activities should be conducted frequently (on a monthly basis) to ensure every new resident is informed and prepared.

In addition, the planned expansion of the CAI should consider how to most effectively mitigate risk of flooding through drainage systems as well as nature-based solutions, including

[12] http://corpoguajira.gov.co/wp/?lang=en

vegetation cover to enhance infiltration capacity. These measures will further contribute to protecting ground cover from erosion.

*Figure 18: Ongoing expansion works at the CAI - water utilities system.*

While UNHCR is not currently implementing food security and livelihood activities at the CAI, ACH is planning to extend work in these domains to the Chichituy community. These should consider that the area is vulnerable to erosion, which in turn causes the loss of fertile soil, leading to land degradation and altered hydrology. Livestock activities can exacerbate the effects of land degradation through overgrazing, use of marginal lands or land clearing. Herd sizes should be maintained at sustainable levels and landscape-sensitive grazing patterns should be communicated. Flock diversity can minimize overconsumption of certain vegetation and proper herd number management and grazing techniques can minimize the risk of erosion.

Disaster risks are exacerbated by deforestation. The area around the CAI and host community has experienced forest loss over the 2000-2018 period (in red in Figure 18). Deforestation is a major issue for the Chichituy community, who have described the area where they live as previously being much more wooded. Deforestation has led to less water and desertification of an already arid landscape. The Chichituy community relies on fuel wood for cooking: Figure 19 shows the extent of the area where they source the wood as mapped during FGDs. Constrained by limited livelihoods opportunities, the community has in the past recurred to selling fuelwood from the forest. While they now only collect fallen or dead branches to use for fuel, the community is still entirely reliant on biomass for cooking. Deforestation is one of the main factors known to accelerate disaster risk, notably through increased erosion and risk of flooding. Alternative cooking fuel options and improved cook stoves can help mitigate this risk.

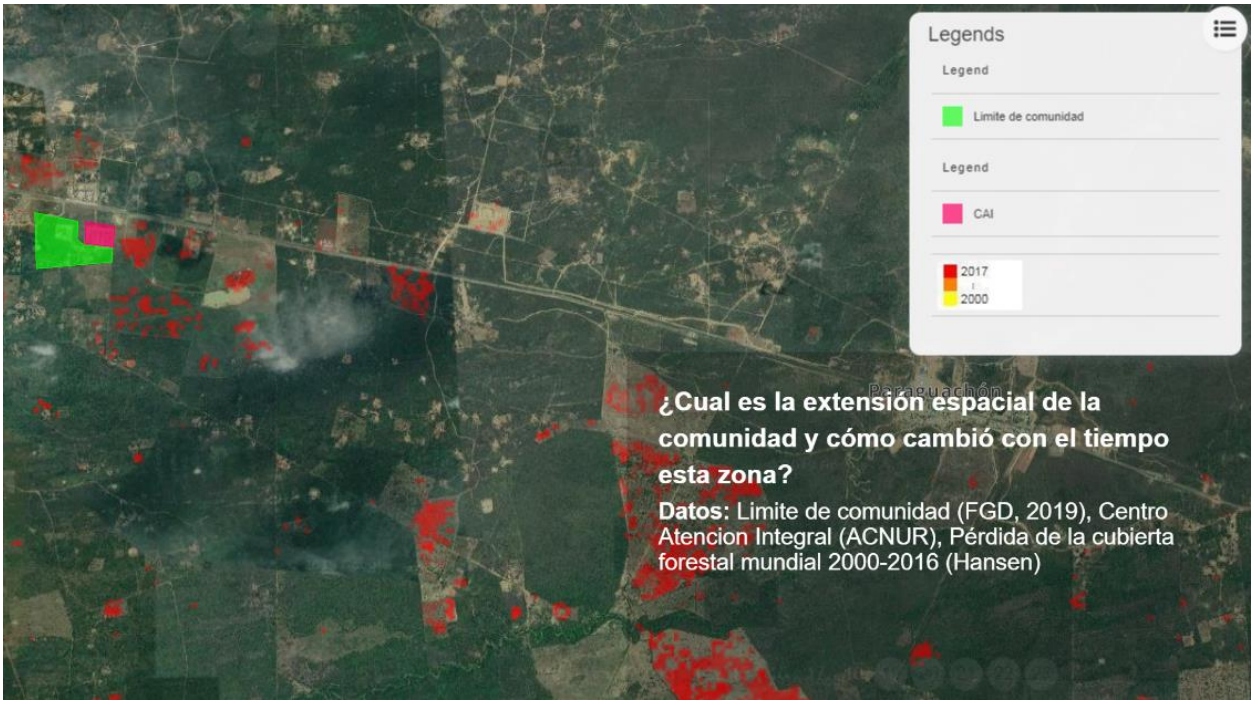



*Figure 19: Forest loss around the target site (in red).*


*Figure 20: Extent of area where fuel wood is sourced (in yellow).*

Even though the suggested solution only provides incremental short-term solutions, it is recommended that, with the aid of an expert technical assessment and the participation of CAI residents (for instance, for a Cash for Work project), there be an implementation of a reforestation programme near CAI and its surroundings with native species. In particular, species should be chosen in order to help the community, such as repellent types and medicinal plants, that can also easily survive and spread in this particular environment. In the long run, this could give rise to small businesses that can both thrive entrepreneurially as well as benefit the environmental situation of the region.

UNHCR received a donation from CORPOGUAJIRA that consisted of figs, fruit trees and neem, which due to their benefits can be used for reforestation. However, it is recommended that the possible adverse effects be assessed by a specialist. For instance, potential risks include attracting mosquitoes that feed on fruit plants and may spread diseases, as well as those plants not entirely adapting to the climatic conditions of the region.

In order to reduce the demand for Woodstock used for cooking, the introduction of enhanced and energy-efficient fuel techniques be introduced. In turn, they significantly reduce the level of smoke emanated from cooking which reduces the negative health impacts. Apparently, there have already been positive experiences and acceptance from the Wayuu community regarding this particular aspect, as advised by the UNHCR's Wayuu consultant.

Any activity related to the environment within the Wayuu community should be accompanied by a reforestation programme. Applying the same standards and bringing in CAI residents into the conversation would be of utmost importance in deciding which species to be planted amid these efforts.

In terms of industrial hazards, the CAI is located in front of a petrol plant. While the plant was reportedly only running at 15 percent of its capacity at the time of the pilot, contingency planning in liaison with local authorities and the operator is still required and considerations should be incorporated into the overall evacuation plan for the CAI as well as any planned awareness activities.

| | Disaster Risk |
|---|---|
| **Relevant UNHCR / ACH Activities** | Evacuation plan for the CAI exists, but residents do not seem to be aware of it. The planned expansion of the CAI offers an opportunity for early mitigation of flooding and soil erosion risks. Any food security and livelihoods activities implemented with the host community should be risk-informed. |
| **Mitigation tips** | ● Consult/develop hazard maps<br>● Develop a comprehensive contingency plan for the evacuation of the CAI using an all-hazard approach and linking to existing local/national plans<br>● Communicate plan to every new resident and make sure everyone is informed<br>● Educate host community on disaster risk reduction and contingency planning<br>● Implement nature-based solutions to reduce disaster risk at the CAI, in particular as it relates to flooding and soil erosion. These include increased vegetation cover and strengthened drainage systems, among others<br>● Promote risk-informed food security and livelihoods options for the host community |

## Climate Change/Climate Variability

The CAI is located in a desert and xeric (dry) shrubland ecoregion. Precipitation is low compared to other areas of Colombia, and the area is classed as "semi-arid" on the Global Aridity Index. The semi-arid ecoregion borders a tropical and subtropical forest ecoregion within 30 km to the southeast and a coastal mangroves ecoregion along the coast to the east (Figure 20).

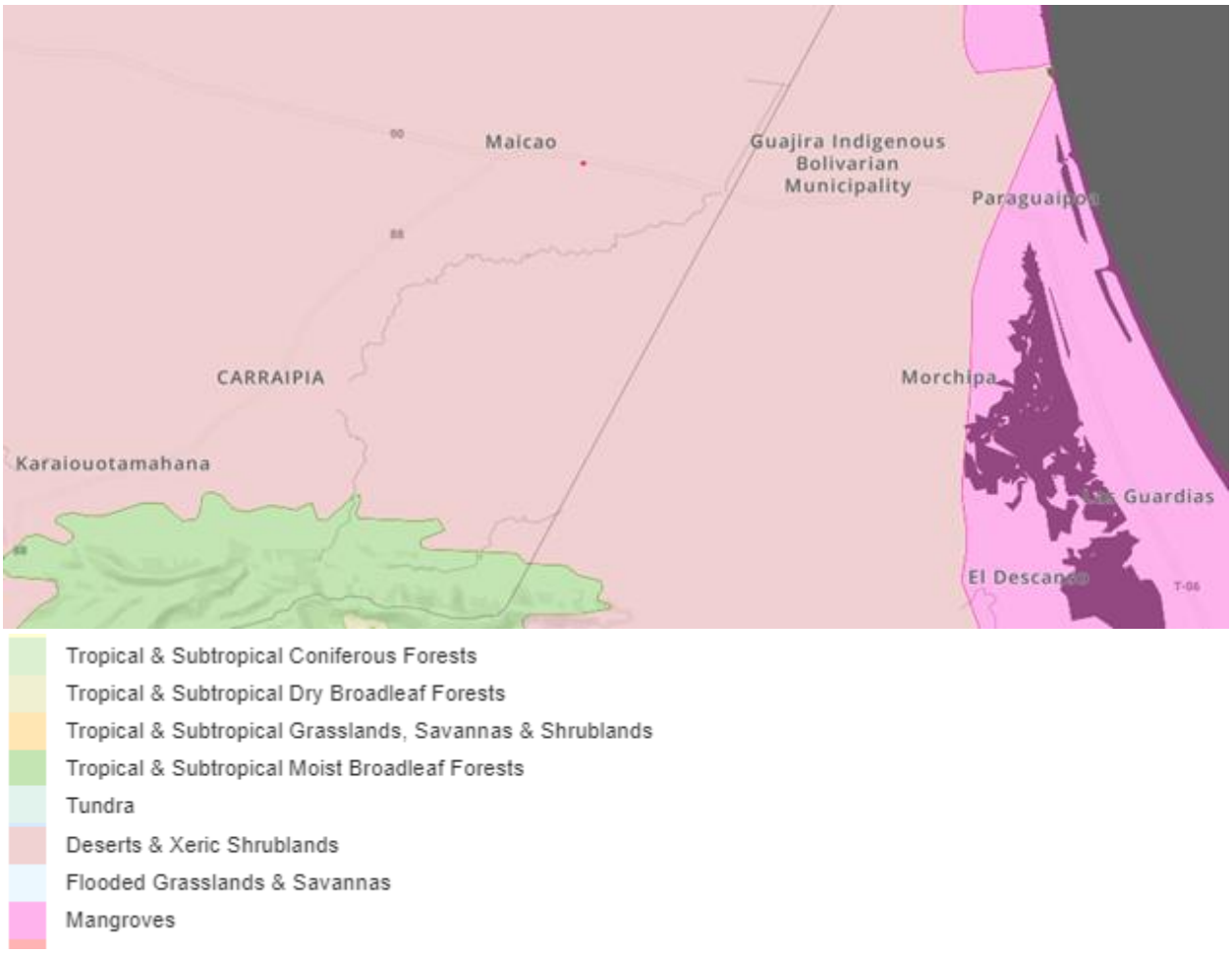



*Figure 21: Ecoregion by biome, 2017 (Olsen et al., 2001).*

The area around the CAI has experienced a significant decrease in average precipitation rates over recent years. Figure 21 shows precipitation deficit anomalies for 2018 as estimated by the United States Geological Survey (USGC): in purple, the CAI and surrounding host community are located in the zone with the greatest reduction in rainfall.


*Figure 22: 2018 precipitation anomalies showing a significant rainfall deficit in the area around the CAI (USGS).*

This has been confirmed by the Chichituy host community, who reported this has significant impacts on access to water and livelihoods (cf. agricultural production). During FGDs, the community informed they are experiencing more erratic rainfall patterns and seasonal variability, with delays in the rainy season onset. Overall, it rains less and later in the year. Significant changes in climate and seasonal patterns were noted by the elderly in particular. Results from FGDs also show that precipitation was extremely scarce during the 2014-2017 period, resulting in loss of livestock. Higher temperatures, less precipitation and longer dry seasons have made it more difficult for the community to predict rain and this has resulted in the community abandoning agriculture and livestock as their primary livelihood activity.

Colombia is also exposed to El Niño–Southern Oscillation (ENSO), with La Guajira being among the most most vulnerable areas. The phenomenon is associated with temperature anomalies, which translate to drastically low levels of rainfall, and risk of droughts and forest fires in this area.

Results from the NEAT+ environmental sensitivity module (Figure 22) show heightened exposure to climate-related risks and extreme weather events as an issue of high concern. As also clearly flagged during FGDs, this can exacerbate existing pressures and stresses such as water scarcity and food insecurity. While UNHCR is not currently implementing food security or livelihood activities at the CAI, ACH is planning to extend work in these domains to the Chichituy community. Findings from this pilot can, thus, inform any future activities in this regard.

Mitigation actions that should be considered include conducting climate vulnerability assessments linking to national adaptation plans, working with climate adaptation specialists to identify adaptation solutions (including ecosystem-based ones) that can be integrated in programme planning, promote climate-smart agricultural practices and provide training to the local community. Capacity-building programs on adapting crops to climate stressors, including increasing shade, saving water, and planting climate-resistant crops, should be mainstreamed into LFS activities that ACH/Partners are planning to implement with the Chichituy community.

| Increased risk to climatic hazards | |
|---|---|
| **Additional Information** | **Migitation Tips** |
| Climate-related events - such as changes in precipitation patters or increase temperature variability - can exacerbate existing socio-economic stresses such as poverty, food insecurity, land degradation, water shortages, sanitation challenges, etc. This can undermine outcomes of response activities. The severity and frequency of natural hazards such as extreme precipitation events or droughts are also heightened by climate change. | • Seek assistance from a climate change adaptation expert<br>• Conduct climate vulnerability and climate vulnerability capacity assessments<br>• Consult regional, national or local climate change adaptation plans<br>• Consult communities on changes in climate patterns over time<br>• Undertake adaptation measures (e.g. the Climate Resilience Evaluation for Adaptation Through Empowerment (CREATE) https://cmsdata.iucn.org/downloads/create_factsheet_final.pdf)<br>• Mitigate/adapt (e.g. switching to more climate-resistant crops, creating increased shade, and water saving)<br>• Promote sustainable and climate-smart livelihoods activities and agriculture (for example agroforestry)<br>• Support initiatives such as community water use groups and tree nurseries |

*Figure 23: Results from the NEAT+ environmental sensitivity analysis on increased risk to climatic hazards.*

| | Climate Change/Climate Variability |
|---|---|
| **Relevant UNHCR / ACH Activities** | No current food security and livelihoods activities directly implemented by UNHCR, but ACH are planning to work with the Chichituy community in the near future. |
| **Mitigation tips** | • Balance traditional with innovative practices to take the best sustainable ideas of both<br>• Integrate further adaptation measures into new programme planning to increase community resilience<br>• Conduct climate vulnerability assessment and seek assistance from a climate change adaptation expert<br>• Consult national climate change adaptation plans<br>• Support and provide training on sustainable farming and/or climate smart/climate resilient agricultural practices<br>• Provide faster growing seed varieties/more hardy seeds as part of livelihoods programming<br>• Undertake adaptation measures (e.g. the Climate Resilience Evaluation for Adaptation Through Empowerment (CREATE) https://cmsdata.iucn.org/downloads/create_factsheet_final.pdf)<br>• Promote the use and mainstreaming of nature-based solutions such as ecosystem-based approaches for climate adaptation (e.g. the use of alternatives and crop diversification to tackle climate change and natural resources scarcity) |

# Recommendations

Recommendations are divided into three sections: Programmatic, Organizational, and External advocacy.

## 1. Programmatic: Project Implementation

It is critical that a plan to mitigate the aforementioned environmental and human impacts is designed and put into place in order to prevent further irreversible damage. Too often, humanitarian practitioners overlook necessary environmental objectives due to the uncertainty of length of stay and maintain a short-term outlook due to programme and funding cycles. As a result, remedial action will come at a much greater cost, with less satisfactory results. There are clear future consequences if current trends in non-renewable energy, water and waste management and lack of DRR continue. UNHCR and partners have overall made an excellent start to the design and implementation of the CAI which should be built on and tweaked to substantially increase the "green" qualities of the operation.

Programmatic recommendations specific to the major environmental issues outlined above can be found across the previous section of the report. In addition, the following are recommended:

- **Increase and prioritize environmental education:** Environmental education can tackle many of the environmental issues in the CAI and host community and should be an integral part of tackling the environmental issues outlined in this scoping report, targeting all CAI residents and the host community where relevant. Education is particularly important to address waste and water management. Based on the NEAT+ results, FGDs and secondary data analysis, one of the most prevalent issues is a lack of awareness of and motivation for sustainable practices. Education activities can fall under the hygiene promotion activities within the CAI, especially given the post-mission reported increase in the frequency of environmental awareness sessions, and the future livelihoods programming in the host community. Given the transient nature of the centre and the high turnover, educational activities will have to be conducted and repeated frequently. The active involvement of residents, who can then educate newcomers using a training of trainers' model, can help maximize efficiency and effectiveness.

- **Increased focus on enhancing the current community engagement and accountability mechanisms in place to promote social cohesion**: Linked to the topic of environmental education, many of the environmental issues noted can be avoided by better community engagement and accountability. Some accountability mechanisms are in place, but these could be more strongly and actively promoted. Environment-focused activities can offer an opportunity to strengthen cohesion among residents and further promote a sense of community through joint action, using existing respected fora such as "Somos Panas".

- **Look at environmental issues across sectors and not in isolation** to understand their full impacts. There is a strong integrated programming approach at the CAI and this should continue to look at topics like energy and waste management, that fall across multiple sectors (e.g. WASH, Shelter and FSL).

- **Environmental quick impact projects like clean-up campaigns are critical:** these can not only help the massive waste management issue in the area, but also help to address the

xenophobia against Venezuelan refugees and migrants if campaigns are conducted by the refugees and migrants in areas that also benefit local residents. PAOs can be used as recruitment points. This work has already begun but is recommended to be expanded on and to continue throughout the duration of the work of UNHCR on the migration crisis.

## 2. Organizational strategy: NEAT+ in UNHCR

UNHCR at the global level is rolling out the NEAT+ Environmental Sensitivity Module across all operations, in order to establish a global environmental baseline to analyse country, regional and global level trends and use as an advocacy tool for funding to address the main risks identified or for additional technical support. The Energy & Environment team at HQ is coordinating this and will be rolling it out in 2020. This will then be linked to UNHCR's Environment Community of Practice and the results available in a dashboard built in PowerBI presenting the results, by mid-2020. Given the limited number of environmental indicators in the UNHCR Results Framework (RBM)[13], it is unlikely possible to link the NEAT+ to the RBM. The NEAT+ will remain as a technical tool to capture a much wider range of environmental issues in programme than the RBM allows for.

Colombia and the region can play a leading role in providing environmental sensitivity baseline data from UNHCR operations in the region, capitalizing on the presence of the environmental adviser to support this process. The UNHCR global NEAT+ account should be used to ensure that the data is captured in the same Kobo account and can eventually feed into the dashboard when built in 2020. The NEAT+ should ideally be conducted with partners, in a one-hour meeting where the questions can be answered collectively, repeating the methodology used in the CAI. Brisas del Norte in Riohacha or informal settlements in Maicao (in particular those that are in a process of legalization) were cited as the next possible locations for using the NEAT+. This will not only solidify the NEAT+ methodology and concepts with the field staff but also allow for a stronger comparison of environmental situations between areas.

Internally, it is recommended that UNHCR exchange experiences between other countries or operations who have used the NEAT+ to understand how they are applying the results, and what impact this is having on the planning process, in order to document examples of good practice and ways of working organizationally with the NEAT+ that could be shared with other countries/operations.

There was a request from the WASH expert who conducted the WASH activity module for the CAI to share the NEAT+ WASH module with all WASH personnel around the globe, as is done with other planning tools. The Site Planning expert suggested exploring how NEAT+ links to other UNHCR assessment tools, including the Site Assessment Form, FRAME and the NARE.[14]

13 https://cms.emergency.unhcr.org/documents/11982/52631/UNHCR%E2%80%99s+Results+Framework++%28English%29/eaa92b3f-84a0-4f68-a081-43148ebba3bb

14 https://emergency.unhcr.org/entry/50208/needs-assessment-for-refugee-emergencies-nare

**Recommendations**

*Colombia:*

1. Continue with the roll out of NEAT+ environmental sensitivity module across all UNHCR's Colombia operations in 2020, to feed the data into the global baseline.
2. Provide the Energy & Environment team with priority indicators to see reflected in the dashboard that will visualize all the global environmental sensitivity results.
3. Integrate into future proposals and monitor donor interest (funding success rate) of project proposals for evidence of environmental screening as a value-add proposition.
4. Actively seek to implement proposed mitigation measures in NEAT+ assessed sites to reduce identified environmental risks of concern and document best practices.
5. Share this report with the region, and globally.
6. Coordinate the translation of the entire NEAT+ tool into Spanish.

*Regional:*

1. Expand to other countries affected by the Venezuelan migration crisis to promote an environmentally sustainable, regional approach to the response.

*Global E&E team:*

1. Exchange experiences with other countries or operations who have used the NEAT+ to understand how it is being applied globally.
2. Share the NEAT+ activity modules via WASH & Shelter teams globally, as part of planning tools package, whenever appropriate.
3. Explore how NEAT+ links to other UNHCR assessment tools, including the Site Assessment Form, FRAME and the NARE.[15]

## 3. External advocacy - GIFMM

The GIFMM has already been engaged as a forum for sharing information on the NEAT+ in the workshop held in Bogota in November 2019. This forum will continue to provide a national platform for continuing a coordinated discussion on environmental risk in humanitarian programming, allowing for organizations using the NEAT+ to discuss results, common challenges and mitigation measures collectively, particularly once the tool is translated into Spanish in Q1 of 2020.

**Recommendations**

1. Disseminate the translated version of the NEAT+ tool in Spanish to the GIFMM.
2. Present on the NEAT+ at local and national meetings.
3. Actively promote the NEAT+ uptake by relevant agencies that are part of the GIFMM.
4. Continue to discuss possibilities of how OCHA, UNEP and UNHCR in Colombia can promote a joint strategy for the NEAT+ and promote with Government, linking to national risk management work.

[15] https://emergency.unhcr.org/entry/50208/needs-assessment-for-refugee-emergencies-nare

# Annexes

## Annex A: NEAT+ Presentation

NEAT+ introductory presentation, given at the workshop in Bogota:
https://docs.google.com/presentation/d/1lcnNZ6bm7vO10ruvtvvEQm5I060kh-GkR-ZGD-SHhK8/edit#slide=id.g603da812eb_0_7

## Annex B: MapX Story Map

Story map performed on the MapX story map engine to showcase key spatial findings:
https://app.mapx.org/?project=MX-UYB-4H6-WUB-RI3-M9Y&views=MX-AJ1JF-MTKM1-KUS8S&storyAutoStart=true

## Annex C: NEAT+ Workshop Summary and attendance list

**Summary**

On 12 November 2019, a workshop was held by the UN Environment / OCHA Joint Unit (JEU) and the UN Refugee Agency (UNHCR) in Bogota to present the NEAT+ environmental screening tool and preliminary findings from a field test[16], and to engage participants in broader discussions about different aspects of screening and assessing environmental risk in humanitarian settings. 28 in person and 16 online representing 25 humanitarian and environmental organizations from the civil society, UN agencies and Government attended the half-day workshop. The workshop was held in the UNHCR Country Office in Bogotá.

**Part 1: The NEAT+**

After receiving an overview of the NEAT+ tool and preliminary results from the CAI field test (see presentation link in Annex A), participants engaged in a discussion about potential applications of the NEAT+ in their own operations and donor and national requirements. In particular, the key questions posed to participants were:

- Are there local/national EIA requirements and are these applied to humanitarian contexts?
- Do donors or your organization ask you to screen/assess for environmental risk?
- Do you have tools or systems to screen for environmental risk in humanitarian activities?

[16] At the UNHCR Reception Centre, Integrated Assistance Centre ("Centro de atención integral", or CAI) in Maicao.

➔ How do these fit into your environmental management systems or broader assessment and planning processes?

Discussion centred on these questions and the themes summarised below.

➔ *Functionality of the NEAT+*

Questions were raised on the use of the NEAT+ to incorporate environmental considerations in the health sector, as well as in urban contexts. While the NEAT+ does not cover health as one of the activity modules, resources are available on the Health Cluster page on EHA Connect (ehaconnect.org). The NEAT+ is primarily designed for rural or peri-urban contexts since it does not consider some of the issues that would be typically found in urban contexts (e.g., connection with formal municipal services).

➔ *National EIA requirements*

EIAs are required for all infrastructure projects. In addition, UNGRD also has its own requirements for disaster risk screening, which to some extent consider environmental risks. However, there are no specific requirements for humanitarian projects.

➔ *Tools for environmental screening*

UNGRD has its own tools for disaster risk screening. For the future, the Ministry of Environment is planning to develop an environmental screening tool to understand the environmental impacts of disasters. Among international agencies, WFP conducts environmental and social risk screening for food for assets projects (linked to resilience and climate change).

➔ *Mainstreaming environment into humanitarian systems/processes*

This is not done systematically. It has never been done before and it is only in recent times that there has been a push for humanitarian agencies to look at climate and environmental risks. The momentum is there, but funding for implementation of mitigation measures poses a challenge. It is useful, however, to know available tools such as the NEAT+ to raise advocacy and start incorporating environmental considerations in planning.

There is also a need to make sure that any tools and initiatives fit in with the local environmental strategies. An example was given of a reforestation project that didn't get off the ground because it didn't fit with the local environmental strategy.

➔ *Donors and environment*

Donors are increasingly demanding that environmental risks be taken into consideration; however, there is no dedicated funding for following up to mitigate any risks that may have been

identified. This poses a challenge from a financial viewpoint. As a consequence, this ends up being often neglected.

➔ *Coordination between environmental and humanitarian actors*

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There is not too much exchange of information between the two communities. The workshop offered an opportunity to bring together humanitarians and environmentalists within the GIFMM to discuss how to strengthen this collaboration beyond the workshop itself.

Some collaborations exist, for example, WWF has been working with Oxfam on issues of natural resource management and has had a great experience of partnership. WWF and WFP have also been collaborating in some parts of Colombia where there is geographical overlap of their activities. This collaboration has focused on food security and climate change, and where WFP lack in environmental data and technical expertise, WWF and the MoE has helped to fill the gap.

The WWF representative suggested that it would be beneficial to create a national directory of locations where all organizations are working, in order to encourage more partnerships across the humanitarian, development and conservation communities.

**Part 2: Environmental data in humanitarian contexts**

The second part of the workshop focused on environmental data use in humanitarian contexts, including a discussion on data sharing and geospatial data. The discussion followed a presentation of MapX and some results from participatory mapping exercises held with the Chichituy indigenous community (see presentation in Annex B). The questions posed to participants included:

➔ What are the types of environmental data your organization uses for operations?

➔ Which are the main sources of these data? Are these data accessible?

➔ Do you use remote sensing data from platforms such as MapX to overcome data limitations?

Participants were interested in learning more about MapX and connections of spatial data to the NEAT+. To summarize the discussions specifically about MapX and NEAT+:

➔ *Types of environmental data*

Type of environmental data used by some of the organizations attending the workshop include data on climate, WASH, protected areas, etc. This includes both biophysical data and their overlay with socio-economic data.

➔ *Uses of environmental data*

Participants recognized a growing need for the use of environmental data. Currently, they are using spatial data for some things, like forest cover, flood zones etc. A representative from an NGO highlighted that they look at the environment from a gender angle and there they are seeing links between gender, environment and protection and need to improve how we conceptualise and address these together.

➔ *Sources of environmental data and accessibility*

The following main sources of data were mentioned, in addition to official datasets shared by relevant line Ministries and government agencies:

- SIAM by IDEAM. Digital map collection of support for environmental management and planning of Colombia's coast and oceans. Integrates by theme and includes a visualer where you can download data, visualise maps, etc. http://www.siac.gov.co/siam
- GeoNode: http://geonode.org/
- Copernicus: https://www.copernicus.eu/en/access-data
- World Clim for global climate data: https://www.worldclim.org/
- World Pop to map communities where there is limited access: https://www.worldpop.org/
- DRR maps from the Ministry of Environment on the UNEP website, by hazard: http://portal.gestiondelriesgo.gov.co/Paginas/Noticias/2018/Colombia-ya-cuenta-con-su-Atlas-de-Riesgo.aspx
- National Water Study/Estudio Nacional del Agua, published last year: http://www.andi.com.co/Uploads/ENA_2018-comprimido.pdf

Data from official sources are easy to access through official channels.

➔ *Remote sensing data*

Copernicus data are used to make up for limitations on data availability, building on increased frequency of data collection and near real-time access to information.

➔ *Challenges highlighted*

A major challenge highlighted by various participants with available data is that much of the national level data is useful for national analysis but cannot be very well used at the local level as it is too generalised. This is particularly true of environmental data. The Government is trying to make social economic data more available at local level.

Funding constraints: donors are becoming more interested in the environment, but still often think that integration of cross cutting issues can be done at no/low cost. However, funds are needed for mitigation activities. It is necessary to insist with donors that environmental issues are important - it is a joint responsibility. It is important to highlight the needs and the resources we need - can use the NEAT+ for asking for funds.

**Further contact and support**

For support using the NEAT+ please contact the JEU: ochaunep@un.org. To download the NEAT+ please go to: www.eecentre.org/neat where there is a full guidance package for using the tool.