Tracking Emissions in Humanitarian Action: Challenges and Pathways for NGOs

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Executive Summary

Humanitarian organizations face critical challenges in systematically tracking and mitigating their project-related carbon emissions, despite growing recognition of sustainability's importance. Utilizing tools such as the Humanitarian Carbon Calculator (HCC), this research identifies key barriers for NGOs, including inconsistent data quality, and the absence of standardized measurement methodologies.

Interviews and practical tracking exercises reveal that effective emission-tracking hinges on formalizing internal structures, clearly assigning responsibilities, and embedding carbon accounting within strategic policy frameworks. Establishing dedicated task forces or focal points significantly enhances tracking efficiency and institutional commitment. Furthermore, inadequate financial backing from donors remains a significant barrier, underscoring the need for donors to actively incentivize and financially support carbon tracking, including funding mechanisms that favor sustainable alternatives such as solar panels.

Capacity strengthening within NGOs emerges as a critical need. Building internal expertise through structured training, onboarding, and sector-wide capacity-building initiatives is essential. However, resource constraints, especially in smaller NGOs, necessitate broader, donor-funded support mechanisms — such as technical assistance hubs or centralized helpdesks — to provide practical guidance and troubleshooting support.

The study highlights the vital role of adapting the HCC to meet diverse operational realities, advocating continuous improvements through structured feedback loops with its user community. Additionally, integrating emission-tracking into existing organizational workflows through automation and simplified digital solutions significantly reduces manual efforts and enhances data accuracy.

The overarching recommendation for donors and NGOs is to collaboratively establish robust emission-tracking frameworks supported by dedicated funding, capacity-building initiatives, standardized methodologies, and centralized

support mechanisms. These measures are crucial to operational transparency, accountability, and effectiveness, ultimately ensuring humanitarian responses remain sustainable amidst escalating climate challenges.

Key Recommendations

In more detail, the key recommendations for German NGOs and donors to establish and improve CO2-Emission tracking include...

- **Formalizing Internal Responsibilities and Structures:** Humanitarian NGOs should embed carbon tracking responsibilities into formal policy frameworks and strategic plans. This institutionalization ensures continuity, accountability, and alignment with broader organizational priorities.

- **Appointing Dedicated Experts or Taskforces:** NGOs could establish internal task forces or designate focal points responsible for emission-tracking. Even a single person, if given adequate time and support, can effectively initiate and coordinate carbon tracking efforts across departments.

- **Securing Financial and Human Resources for Emission-Tracking:** NGOs need dedicated financial support to allocate sufficient staff time and expertise for emission-tracking. Donors should finance core positions or offer bridge funding for staff to initiate and scale tracking systems.

- **Incentivizing Environmental Reporting Through Donors:** Donors should not only require emission-tracking but also actively support it by providing flexible funding, clear guidelines, and incentives for sustainable practices. This could include extra scoring in proposals, budget lines for carbon tracking, or support for greener alternatives.

- **Implement Capacity Strenghtening Programs:** NGOs could develop in-house training, onboarding materials, and learning formats to build foundational knowledge. Donors can complement this by funding sector-wide capacity-building and supporting long-term professional development on climate accountability.

- **Establishing Sector-Wide Support Mechanisms:** A centralized, donor-funded support body or helpdesk should be created to offer hands-on assistance to NGOs. It can help interpret emission factors, troubleshoot tools, and guide methodology — especially useful for small or under-resourced organizations.

- **Promoting and Adapting the Humanitarian Carbon Calculator:** The HCC should be continuously improved based on user feedback. NGOs should engage in structured feedback loops, while donors and coordination platforms support interface upgrades, multilingual resources, and participatory design processes.

- **Automating and Simplifying Data Collection:** NGOs should aim to integrate carbon tracking into existing systems (travel, procurement, HR) to reduce manual data entry. Donors can support this by funding system upgrades, technical advice, and allowing flexible reporting structures to adapt workflows.

Content

1. Introduction

The imperative for humanitarian organizations to act sustainably has emerged from the intersection of the "Do-No-Harm" principle and the increasingly critical "Triple Planetary Crisis" (Hauer & Wahlström, 2023). The "Do-No-Harm" principle emphasizes minimizing the negative impacts humanitarian actions may have on affected populations and ecosystems (IFRC, 2016). Concurrently, the “Triple Planetary Crisis” encapsulates the interconnected global challenges of climate change, biodiversity loss, and pollution (UNFCCC, 2022). Human activities have been identified as primary drivers exacerbating these interrelated crises (Calvin et al., 2023), collectively marking a new geological epoch known as “the Anthropocene” (Waters et al., 2016). Given the irreversible nature of these changes, there is an urgent and collective responsibility, particularly within the humanitarian sector, to mitigate damage promptly and comprehensively, aligning directly with the "Do-No-Harm" principle.

The deteriorating environmental conditions significantly amplify humanitarian needs worldwide. Regions reliant on agriculture and fisheries are especially vulnerable to biodiversity loss and soil degradation, intensifying the fragility of affected communities. Additionally, climate-induced phenomena, such as sea-level rise and increasingly frequent natural disasters, exacerbate human suffering. Climate change has also emerged as a significant driver of armed conflicts, notably in areas like the Sahel and the Horn of Africa, with trends expected to worsen in the coming decades (de Guglielmo et al., 2023; Ko et al., 2024). According to the International Federation of Red Cross and Red Crescent Societies (IFRC, 2019), humanitarian needs resulting from climate-related disasters could rise dramatically, reaching between USD 500 million and USD 6 billion by 2030.

Precisely quantifying emissions within the humanitarian sector remains challenging, largely due to inadequate systematic emission-tracking. Importantly, humanitarian organizations themselves significantly contribute to global emissions, making the sector part of the very environmental problem it aims to alleviate. Studies indicate that around 75% of these emissions stem from procurement activities, including purchased goods, services, and cash and voucher assistance (CVA) (Climate Action Accelerator, 2024). Sector-wise, food procurement represents the largest share (50%) of emissions, followed by health services at 18%, with nutrition and protection accounting for only 8% each (Climate Action Accelerator, 2024).

A vital step toward addressing these challenges involves systematically reducing humanitarian organizations' carbon footprints across their headquarters, field operations, project implementations, and partnerships. Despite growing recognition of sustainability and mitigation strategies among donors and NGOs, numerous

organizations still encounter considerable difficulties in systematically tracking emissions. These challenges include a lack of standardized processes, limited technical capacities, and resource constraints. Establishing a precise baseline through effective emission-tracking is critical for implementing targeted mitigation strategies, thus ensuring adherence to the "Do-No-Harm" principle and bolstering the long-term sustainability of humanitarian interventions.

This paper examines the systemic barriers within the humanitarian sector that complicate effective emission-tracking, guided by the primary research question: **What barriers must humanitarian NGOs overcome to track their project-based CO_2 emissions using the Humanitarian Carbon Calculator or comparable tools?** This central question is further explored through specific sub-questions: Are NGOs adequately prepared for emission-tracking in terms of personnel, skills, and resources? What financial resources and support are needed? How demanding is the development and implementation of tracking processes? Which methodologies and standards are NGOs employing to measure emissions? And finally, how are the accuracy and validation of tracking results ensured? The analysis is based on findings from a research initiative commissioned by the German Federal Foreign Office (Auswärtiges Amt), implemented by the Institute of International Law of Peace and Armed Conflict (IFHV) at Ruhr-University Bochum and VENRO, the umbrella organization for development and humanitarian action in Germany. This research forms part of a broader initiative aimed at enhancing humanitarian capacities through targeted training programs, notably in "Greening Humanitarian Action," Localization, and Anticipatory Humanitarian Action. Beyond merely identifying challenges, this paper will provide practical recommendations and highlight best practices, directly contributing to improved operational sustainability and effectiveness for humanitarian NGOs. The paper draws on data that was collected between February 2023 and December 2024 through different methods, ranging from semi-structured interviews with key informants, a literature review and data gathered from own emission-tracking experiences. It furthermore gives key recommendations to NGOs and donors on how to overcome these challenges.

After a brief introduction outlining the study's context and relevance, the paper provides an introduction to the sector's main tool to track CO2-Emissions: the Humanitarian Carbon Calculator, highlighting its purpose, functionality, and applicability within humanitarian settings. Subsequently, the methodology section details the mixed-method approach, comprising expert interviews, literature and document analysis, and practical CO_2 emission-tracking experiences within a specific capacity-building project. The following literature review critically examines challenges faced by NGOs and corporations in carbon accounting, emphasizing data quality issues, resource constraints, measurement standardization problems, and validation concerns, alongside discussions of technological innovations, incentives, and capacity-building approaches. The core of the paper then presents empirical results and actionable recommendations addressing specific emission-tracking challenges identified for humanitarian NGOs derived from semi-structured expert interviews. This section covers the formalization

of internal structures, incentivization through donor mechanisms, internal capacity strengthening strategies, sector-wide support solutions, enhancement of the Humanitarian Carbon Calculator, and automation possibilities for simplifying data collection processes. Lastly, a comprehensive case study of experiences from tracking the CO2-Emissions of the overarching "Capacity Strengthening Project" validates the challenges discussed, offering detailed insights into implementation phases, practical results, encountered barriers, and policy implications.

2. Humanitarian Carbon Calculator

This study draws primarily on the use of the Humanitarian Carbon Calculator V1[1] as its analytical foundation. Developed in 2021 by the International Committee of the Red Cross (ICRC) in collaboration with environmental experts, the HCC is an open-source tool specifically designed to support humanitarian organizations in measuring and ultimately reducing their carbon emissions. Tailored to the distinct operational realities of humanitarian action, the calculator addresses sector-specific challenges such as emergency response logistics and field-based operations. Its Excel-based format ensures accessibility and usability across organizations with varying levels of technical capacity.

One of the primary advantages of the HCC is its comprehensive scope, covering various aspects of humanitarian operations. It enables organizations to assess emissions related to transportation (air travel, vehicle use), energy consumption in offices and field locations, procurement and supply chain emissions, and waste management. By providing a detailed breakdown of emissions, the tool allows organizations to identify areas for improvement and prioritize mitigation efforts effectively.

The benchmarking capabilities of the HCC allow organizations to compare their emissions against sector averages and track their progress over time. This fosters accountability and helps organizations set realistic and measurable reduction targets.
To ensure credibility and comparability, the methodology behind the HCC aligns with the International Greenhouse Gas Protocol (GHG), which has been described as the „gold standard for accounting“ (Bahtia & Ranganathan, 2011). This guarantees that results are reliable and widely accepted, making it easier for organizations to report on their sustainability efforts in a transparent manner.

Beyond being a technical tool, the HCC contributes to capacity building within humanitarian organizations. By fostering environmental awareness and literacy among

[1] In February 2024, an updated version of the tool (HCC+) was released as Version 2.0, right after the start of this study. A further update (HCC++) is expected to be published in later in 2025.

humanitarian staff, it encourages a culture of sustainability and integrates climate considerations into humanitarian work.

The methodology distinctly categorizes emissions into three scopes, reflecting their direct or indirect nature (Ecoact, 2022, p. 10). Scope 1 emissions represent direct emissions originating from organizationally owned or controlled sources (WRI, 2025). This category includes emissions from the combustion of fuels in stationary installations and mobile units, process-related emissions, and fugitive emissions, such as refrigerant leaks. Scope 2 encompasses indirect emissions from purchased electricity, steam, heating, and cooling systems utilized by the organization. Purchased electricity is those to be consumed that is either purchased or otherwise brought into the organizational boundary of the company (WRI, 2025). Lastly, Scope 3 covers all other indirect emissions associated with the organization's activities, although not directly under its control. Accounting for Scope 3 emissions presents significant challenges due to their extensive range, variability, and the complexity of tracking activities beyond direct organizational influence. Typically, these emissions arise from purchased goods and services, capital goods, waste management, business travel, commuting, logistics, and end-of-life product treatment, underscoring their substantial impact on an organization's overall carbon footprint (Ecoact, 2022, p. 12).

To delineate the emissions accurately, the HCC emphasizes the importance of setting clear organizational and operational boundaries. Organizational boundaries determine the parts of the entity, such as headquarters and specific country offices, included within the scope of accounting (Ecoact, 2022, p. 15). These boundaries detail the specific categories and sources of emissions considered within the organizational context (Ecoact, 2022, p. 16). Typically, humanitarian organizations initiate carbon accounting with pilot projects, often focusing initially on headquarters or a limited number of country offices, subsequently broadening the scope progressively.

Comprehensive and structured data collection is integral to this methodology. Organizations are advised to gather data systematically across various emission categories, including energy usage from both stationary and mobile combustion sources, electricity, and steam or cooling systems (Ecoact, 2022, p. 17). Furthermore, data related to fugitive emissions, financial records for goods and services procurement, transportation, business travel, and waste management is necessary. Organizations are recommended to prioritize their data collection efforts based on the relevance of specific emission sources and data availability.

The HCC provides three main approaches for calculating CO2-Emissions: Spend-Based, Average- and Supplier-Specific Data (Ecoact, 2022, p. 19). The Spend-Based Method relies on monetary expenditure data, excluding VAT, multiplied by relevant monetary

emission factors, making it suitable for initial stages due to typically easier data availability (see Figure 1). The Average-Data Method utilizes physical measures such as weight or volume, multiplied by industry-standard emission factors. Supplier-Specific Data is based directly on information given by each supplier. Over time, organizations are encouraged to move towards employing average-data or even supplier-specific data (actual data) methods to enhance accuracy.

	Spend-based (high-level)	Average-data based	Supplier-specific (actual data)
Basis for calculation	Per spend: Average emission per DKK spent within this category across all SKU's, suppliers, etc.	Per weight/ other metric: Average emission per weight/ other metric for this category of product	Per SKU/supplier: Actual emission per SKU based on supplier, country of origin, etc.
Advantages	• Quick calculation, if knowledge of materials or specific product type is unknown • Gives a broad overview of emissions CO_2e emissions • Enables completeness of activities even in early years	• Relatively precise CO_2e calculations • Possibility to work more strategically with CO_2e emissions	• Most precise CO_2e calculations • Good foundation to work strategically with CO_2e emissions
Dis-advantages	• Unprecise and difficult to use strategically in terms of reducing emissions	• Requires relatively high data quality • Can be time consuming	• Requires very high data quality • Likely rather time consuming
Applicability	• Can be used to identify which categories to prioritize collecting more detailed information on	• Can be used to identify which suppliers to engage with, to get more detailed information	• Accurate CO_2e baseline calculation for selected categories

Figure 1- Ecoact, 2022:20

Emission factors constitute a crucial element in the conversion of activity data into GHG emissions, sourced from reliable databases such as ADEME, IEA, DEFRA, and Ecoinvent, alongside supplier-specific information where available (Ecoact, 2022, p. 28). These emission factors, provided in carbon dioxide equivalents (CO_2e), must clearly document associated uncertainties. Organizations lacking precise emission factors should adopt the highest possible proxy emissions from similar geographical or operational contexts.

3. Methodology

To address the research question, "What challenges do humanitarian NGOs face when tracking their project's CO2-Emissions using tools like the Humanitarian Carbon Calculator?", a mixed-method approach was adopted. The methods included analysis of expert interviews, as well as relevant literature and documents, and of practical CO2-Emission tracking of within a specific project. Combining these methods provided comprehensive, detailed, and practical insights.

Expert Interviews

Expert interviews played a crucial role in deepening the understanding of findings from literature and practical experiences. Six experts from NGOs with varying levels of experience in emission-tracking were selected. The experts represented three groups: (1) NGOs with extensive experience, (2) NGOs with some experience, and (3) NGOs that were beginning or preparing to start emission-tracking. The selection was based on initial research and informal conversations, ensuring diverse perspectives.

These conversations, guided by a semi-structured interview approach (Kallio et al., 2016), allowed for the collection of detailed expert perspectives and personal experiences from stakeholders directly engaged in emission-tracking. The interview questions focused on specific challenges, resources required, data collection methods, and accuracy assurance processes. Interviews were recorded, transcribed, and systematically analyzed using MAXQDA software. A thematic analysis (Vaismoradi et al., 2013) identified patterns, best practices, and recommendations by continuously comparing findings with existing literature and ongoing debates. Observational notes taken during the interviews further clarified challenges and contributed to the development of practical solutions detailed in Chapter 5.

Literature and Document Analysis

The literature analysis involved reviewing sustainability reports, key documents from both humanitarian and corporate sectors, and selected academic texts focused on carbon accounting and environmental management. Given the limited research specifically addressing CO2-Emission tracking within humanitarian organizations, the analysis primarily relied on first-hand NGO reports rather than extensive academic literature.

Sustainability progress reports and carbon footprint reports from humanitarian organizations, including ADRA, INTERSOS, NRC, and MSF, were examined. Additionally, corporate sector reports from Deloitte and TCS/Microsoft were reviewed, highlighting crucial topics such as data collection methods, quality assurance, and resource management. The findings were categorized into key themes, clearly identifying challenges in maintaining data quality, resource allocation efficiency, and the need for standardized procedures.

Practical CO2-Emission Tracking Experience

In parallel with the literature review and expert interviews, practical emission-tracking was undertaken within the Capacity Development Project (VENRO and IFHV, 2023–2024),

utilizing the Humanitarian Carbon Calculator V1. This practical exercise provided direct insights into data management and process-related challenges.

Emission-tracking occurred in two phases. Initially, tracking procedures were established, personnel were trained, and data management systems were developed. Subsequently, data was consistently collected over twelve months, capturing emissions related to staff commuting, business travel, and both virtual and in-person training sessions. Throughout this period, processes were continually refined and improved. This practical experience highlighted significant challenges related to data accuracy, availability, management, and the substantial commitment of time and resources required.

4. Literature Review

Given the limited academic literature specifically addressing humanitarian NGOs and their approaches to emission-tracking, this review extends its scope to include reports and publications from the corporate sector, where the challenges and underlying reasons for (non-)implementation are more thoroughly analyzed. By examining corporate practices, the review aims to derive transferable insights and lessons learned that may inform the development of more effective emission-tracking strategies in the humanitarian context.

Humanitarian NGOs face considerable challenges in tracking their carbon emissions, particularly when compared to corporations that have increasingly implemented carbon accounting frameworks. However, even in the corporate sector, progress remains limited: in 2022, only 53 percent of over 5000 companies in the MSCI climate database reported Scope 3 emissions, and just 10 percent accurately measured them (Degot et al., 2023; Graf-Vlachy & Hettler, 2024). These figures highlight the scale of the problem even in resource-rich environments and set the context for understanding the more profound barriers NGOs encounter.

This literature review therefore identifies the key challenges NGOs face in emission-tracking and draws on corporate reporting practices to derive insights applicable to the humanitarian sector, where research remains limited.

Challenges in Carbon Accounting for NGOs and Corporations

Data Quality and Availability

A critical barrier to carbon accounting in both sectors is the poor quality and availability of emissions data.

In the corporate world, these challenges often stem from complex supply chains. Many firms rely on data from suppliers who may not consistently collect emissions data or may be unwilling to share it due to competitive concerns (Terrascope, 2023; Graf-Vlachy & Hettler, 2024). Some firms rely on internal employee surveys, which are prone to errors and low response rates (INTERSOS, 2022). Additionally, technological limitations exacerbate these issues, as many firms continue to manage emissions data using large Excel spreadsheets, which are ill-suited for handling complex datasets (Deloitte, 2024).

NGOs encounter similar challenges, albeit in more constrained settings. Many operate in fragile contexts where reliable data collection is difficult. Additionally, local implementing partners often lack the necessary capacity or tools to track emissions effectively (INTERSOS, 2022). Like corporations, NGOs often lack standardized protocols for emissions data collection, and manual tracking remains common (INTERSOS, 2022; NRC, 2024). Some corporations have introduced supplier contracts requiring emissions data reporting (Deloitte, 2024). NGOs could adopt similar agreements with local partners to ensure greater data consistency.

However, this approach necessitates parallel investments in capacity-building. Providing training on data collection, user-friendly tools, and technical assistance would be critical in enabling local partners to meet reporting requirements effectively.

Limited Resources: Personnel, Time, and Costs

Corporations cite a lack of qualified personnel, time, and funding as major barriers. High costs — especially for external consultants or specialized software — are a significant obstacle, with project-level carbon accounting in some firms costing between $70,000 and $700,000 according to *Loh* (Loh, 2022; Kaur et al., 2023).

While large firms may be better positioned to absorb these costs, small and medium-sized enterprises struggle to allocate resources for emission-tracking. Similar results can be seen in the NGO sector (see Chapter 5.3.1.). The process itself is time-consuming, with tracking across complex, multi-country supply chains often taking six to nine months, making it difficult for resource-constrained organizations to initiate systematic reporting (Loh, 2022; MSF, 2024).

Lack of Standardized Measurement Methods

While the corporate sector benefits from established frameworks such as the Greenhouse Gas (GHG) Protocol and ISO 14064, flexibility within these standards allows for inconsistencies. The GHG Protocol provides a comprehensive system for tracking emissions from operations, value chains, products, cities, and policies. It supports organizations in identifying emission sources, setting reduction targets, and monitoring progress (European Climate Pact, 2022). According to the information provided by the GHG-Protocol, 97% of disclosing S&P 500 companies reported under the GHG-Protocol in 2023. ISO 14064 is an internationally recognized standard developed by the International Organization for Standardization (ISO) to assist organizations in measuring, managing, and reporting GHG emissions. ISO 14064 focuses on the organizational level. It also provides principles for quantifying and reporting GHG emissions for companies and organizations (Carbon Action, 2024). Organizations can select which emissions factors to use or which categories to report, complicating cross-firm comparisons and enabling selective reporting (Deloitte, 2024). There is no overarching framework in the corporate sector that would force corporations to use specific standards or protocols. This uncertainty is exacerbated by the absence of industry-specific guidance for implementing global Scope 3 calculation standards, leaving certain sector-specific circumstances insufficiently addressed (Graf-Vlachy & Hettler, 2024).

In humanitarian settings, there is no universally applied methodology. Although many NGOs have endorsed the GHG Protocol through the Climate Charter — a voluntary initiative launched in 2021 to guide humanitarian organizations in reducing their environmental impact —, there is no enforcement mechanism or consistent scope definition for tracking. The lack of a standardized framework complicates both internal benchmarking and inter-organizational comparisons.

Validation and Accuracy of Results

Ensuring the accuracy of emissions data remains a challenge. In the corporate sector, some firms rely on internal audits or external verification services to validate data (e.g., Carbon Chain, DNV, Sustain Life, DEKRA, Carbon Trust or Intertek). According to the Carbon Disclosure Project (CDP), approximately 30% of worldwide corporations use third party validation to verify their emissions (TodayESG, 2023). Engaging independent auditors often leads to the discovery that actual emissions are 13.5% higher than initially reported; however, this increased transparency is frequently followed by a 7.5% reduction in emissions, suggesting that third-party validation enhances both data quality and emission reduction efforts (Baskin, 2024). Furthermore, such external verification enables companies to bolster the credibility of their climate disclosures and proactively counter allegations of greenwashing (MITSloanCommunication, 2024). Yet, the financial

burden of these services often places them beyond the reach of most NGOs.

Humanitarian organizations face additional obstacles due to their decentralized structures and reliance on self-reported data from field offices, which heightens the risk of inaccuracies. Nonetheless, awareness of the importance of data verification is growing, and several NGOs are beginning to explore more affordable, internal verification alternatives (ADRA, 2021).

Technological solutions play a crucial role in addressing these challenges. In the corporate sector, digital innovations such as AI-driven platforms, big data analytics, and blockchain technologies have facilitated more efficient emission-tracking and improved data integrity (Morrison, 2023; Terrascope, 2023; Deloitte, 2024). Cloud-based IT systems have also enabled companies to store and process large volumes of emissions-related data efficiently (TCS/Microsoft, 2023).

While such sophisticated systems may be out of reach for NGOs, there is growing potential in simpler, cost-effective alternatives. Open-source tools like the Humanitarian Carbon Calculator (HCC) or mobile-based data collection apps offer scalable, context-appropriate options. Some NGOs have already begun piloting these technologies, yielding encouraging initial results, though further empirical assessment is required.

Ultimately, emission-tracking should not be seen merely as a regulatory obligation. Corporations that succeed in reducing their emissions often report reputational gains, enhanced investor confidence, and measurable cost savings (Degot et al., 2023).

Despite these clear advantages, many firms continue to delay comprehensive Scope 3 tracking, citing the lack of binding reporting requirements as a disincentive (Graf-Vlachy & Hettler, 2024). In the absence of regulatory pressure or targeted sectoral guidance, emission-tracking remains largely voluntary and inconsistently applied.

Conclusion

Emission-tracking in the humanitarian sector faces significant structural challenges, including inconsistent data collection, limited resources, and the absence of clear sector-specific standards. Unlike corporations, which often have dedicated sustainability departments and established carbon accounting frameworks, NGOs operate in environments with unpredictable funding and varying levels of technical capacity. Given the lack of research on emission-tracking in humanitarian organizations, insights from corporate best practices can help inform more efficient and scalable solutions. Implementing tailored technological tools, investing in capacity-building initiatives, and advocating for clearer sectoral guidance are critical steps toward improving the accuracy

and feasibility of carbon accounting in the humanitarian space.

5. Results and Recommendations: Challenges for Emission-Tracking in Humanitarian NGOs

Tracking project-related carbon emissions has become an increasingly relevant issue for humanitarian NGOs, both in light of growing environmental responsibilities and the need for institutional transparency. This study, based on qualitative analysis of semi-structured interviews with representatives from six NGOs (Key Informants – KI-), sought to address the central research question: **What barriers must humanitarian NGOs overcome to track their project-based CO_2 emissions using the Humanitarian Carbon Calculator or comparable tools?**

Rather than structuring the findings by challenge categories alone, this synthesis integrates recurring difficulties with concrete solution pathways derived from the interviews. The result is a set of practical recommendations that simultaneously reflect the lived challenges of practitioners and the adaptive strategies already being tested or envisioned within the sector.

Formalizing Internal Responsibilities and Structures

One of the most pressing issues raised in multiple interviews is the lack of a clearly assigned vision for carbon tracking within humanitarian organizations. In the absence of institutional anchoring, tracking activities are often ad hoc or dependent on the motivation of individual staff members (KI-2). Participants reported that responsibilities for carbon accounting are sometimes unclear or fragmented, resulting in competing priorities and reduced follow-through (KI-2, KI-5). When no one is specifically tasked with overseeing and coordinating data collection and reporting, the issue tends to remain marginal.

Some interviews showed that this challenge could be addressed by embedding tracking responsibilities within organizational strategy documents and administrative routines (KI-6, KI-4, KI-1). Notably, organizations that already track their emissions effectively tend to have established sustainability policies with clear goals and a concrete roadmap for implementation. These internal frameworks help translate ambition into operational practice by aligning roles, timelines, and verification processes from the outset. This has also been understood by those NGOs that are just about to start their CO2-Tracking (KI-3). Those policies or roadmaps can include naming clear focal points, integrating emission metrics into program design, and establishing procedures that ensure continuity across staff transitions. Some organizations have started experimenting with internal task

forces (KI-4) or integrating emission monitoring into broader accountability frameworks (KI-2).

Tracking should not happen in isolation but be embedded within a broader organizational learning process. Anchoring policy tasks in official documents and staff mandates signals that climate accountability is not an optional add-on, but rather a core institutional priority. Over time, this can help shift organizational culture, encouraging teams to view emission-tracking not as a burden but as an integral part of program quality and strategic coherence.

Incentivizing Environmental Reporting Through Donors

Donor behavior was highlighted as a pivotal factor in driving — or deterring — investment in carbon tracking systems. Some interviewees noted that environmental reporting only gains traction when explicitly requested or financially incentivized by donors (KI-4). However, the findings underscore that it is not sufficient for donors to impose requirements — they must also provide enabling support (KI-2, KI-3, KI-6) . This includes not only financial resources but also structural and advisory backing, particularly when sustainable alternatives come with higher initial costs (KI-2, KI-6).

A structural paradox emerged from the interviews: while sustainability is often encouraged in donor rhetoric, it is not always supported through practical funding mechanisms. Organizations reported that proposals involving renewable energy solutions, such as solar panels, are sometimes being declined in favor of conventional, carbon-intensive options like diesel generators (KI-6). This creates a misalignment between climate goals and operational realities. Participants emphasized the need for donors to recognize and co-finance more sustainable options rather than relying on NGOs to absorb those costs (KI-2, KI-6).

In contexts where sustainable alternatives may require greater upfront investments — though leading to long-term savings — donor participation is especially critical. Active facilitation might include funding greener infrastructure, offering incentives for low-emission procurement, or being open to alternative scoring models in proposals to benefit *greener* solutions. Moving beyond a compliance mindset, donors are called upon to co-create an enabling environment in which NGOs can realistically implement and scale climate-conscious practices.

The absence of expectations results in emission-tracking being perceived as optional (KI-4). Participants argued that if emissions accounting were a condition for funding — or tied to financial bonuses — organizations would be far more likely to prioritize it. However, this also means that donors must be aware of the need to sometimes fund more expensive, yet sustainable solutions.

A strategic recommendation is for humanitarian donors to integrate emission-tracking into grant criteria and reporting templates. This could include offering dedicated budget lines, awarding bonus points in proposal evaluations, or linking tracking performance to longer-term funding eligibility. However, if donors expect NGOs to implement robust carbon tracking systems and shift toward more sustainable procurement and energy solutions, they must also actively support these efforts. This support should not only take the form of flexible funding structures but also encompass advisory assistance, capacity-building (see below) and clear guidance (KI-2). For NGOs, proactively engaging with donors on these issues — and making the case for the operational feasibility and added value of carbon tracking — can help foster a shared responsibility for environmental accountability in humanitarian action.

Lack of Financial and Human Resource Support

A significant challenge for many NGOs is the lack of financial resources and qualified expertise in their teams to properly initiate and sustain carbon tracking. Across the interviews, participants consistently described a situation in which emission-tracking was seen as desirable, but rarely prioritized due to structural constraints (KI-2, KI-3, KI-5). These included tight staffing levels, limited technical expertise, and insufficient funding. Especially in smaller organizations, staff are already stretched thin, with environmental tracking often being added on top of existing workloads without adequate compensation or time allocation (KI-1, KI-2).

This situation can only be improved if donors not only require emission-tracking, but also actively invest in the human and financial resources needed to enable this. Without this support, even the most motivated teams struggle to establish sustainable tracking systems. While a few organizations have managed to outsource parts of the task (KI-2, K-1), the general consensus was that external support — be it financial, advisory, or staffing-related — is essential to enable equitable and scalable adoption of emission-tracking practices across the sector.

Creation of Dedicated Task Forces

The interviews made it clear that a key prerequisite for effective emission-tracking is the establishment of a dedicated unit that focuses solely on collecting and coordinating emissions data (KI-2, KI-1, KI-5, KI-4, KI-6). Such a unit plays a crucial role in ensuring data quality, conducting internal trainings (KI-4, KI-6), and embedding sustainability practices into existing operational routines. Organizations that already have such units in place perceive their emission-tracking processes as more coherent, strategic, and reliable. Without a dedicated focal person or team, emission-tracking stays fragmented, inefficient and dependent on the motivation of single individuals (KI-5).

Concentrating expertise within a single team or role helps streamline knowledge transfer, improves coordination with other departments such as logistics or procurement, and provides a clear mandate for the implementation of sustainability goals. This centralized approach not only facilitates consistent methodology and oversight, but also enhances the visibility and relevance of emission-tracking within broader institutional agendas.

A centralized team model helps overcome knowledge silos, enhances accountability, and improves coordination with other departments like logistics, procurement, or M&E. While resource-intensive, the establishment of such a unit signals organizational commitment and allows for cumulative learning and methodological consistency. Where staffing full teams is not feasible, a structured task force with cross-departmental participation can serve a similar function. In some cases, even assigning a single person to the role — provided they are given adequate time and institutional support (e.g., 3–6 months to soley design and implement processes) — can be a viable and effective starting point (KI- 4). Insights from the interviews suggest that financing a single dedicated position for one year could be sufficient to initiate and implement the core components of an emission-tracking system, potentially at the scale of an entire organization rather than a single project. In fact, limiting tracking efforts to a single project would likely be inefficient, as establishing a robust foundational system can be more effectively implemented on a broader level (e.g. one region) and adapted to other contexts later on. Organizations could start by piloting the system in one region or department, and then scale it up based on that experience. The initial implementation phase would ideally include four to six months of dedicated work to establish tools and processes, followed by three to four months of training for other staff, and an additional two months for refining workflows and correcting common process errors. This staged method allows for learning and adaptation while building internal confidence and capacity. In this context, donors can play a catalytic role by supporting not only one-off funding for positions, but also providing flexible timelines and the structural resources necessary for iterative process development.

Capacity Strengthening

Closely linked to the institutional embedding of carbon tracking is the question of internal capacity. The lack of in-house expertise on carbon accounting methodology, data collection, and reporting standards was repeatedly described as a central obstacle. Even when staff are motivated, they often lack the tools or training necessary to effectively carry out tracking (KI-2, KI-1, KI-3, KI-5).

Participants described a need for basic literacy around carbon accounting principles as well as advanced support for implementing tracking systems.

To overcome these challenges, organizations could establish structured capacity-building programs. These may include onboarding materials for new staff, internal training modules, or cross-departmental workshops. Creating communities of practice or assigning sustainability focal points are further strategies that several participants viewed as effective.

In this regard, donors also play an important role. If carbon tracking is to be implemented meaningfully, donors must not only request its inclusion in reporting frameworks but also actively contribute to building the required capacity. These measures would reduce the pressure on individual NGOs and contribute to a more level playing field across the sector. Ultimately, building capacity is not just a technical investment but a cultural one: it signals that environmental performance is a valued part of humanitarian professionalism.

This could include direct financing for staffing and training, but also the provision of external support services or technical assistance (see below).

Establishing Sector-Wide Support Mechanisms

In addition to general sector-wide learning platforms, several interviewees emphasized the need for a concrete, accessible support institution that NGOs could turn to with practical questions about emission-tracking (KI-2, KI-3, KI-1). This entity would ideally consist of a small team of experts who are available on short notice to answer technical or methodological queries — particularly during the early stages of implementation or when new staff take on carbon tracking roles. The rationale behind this idea is the recognition that internal staff often do not have time or access to in-depth training and would benefit from being able to consult experienced practitioners in real time. This institution could complement the capacity strengthening approaches.

Such a support body could help clarify emission factor usage, troubleshoot data input issues, and give feedback on methodological choices or reporting formats. It could even validate the results to some degree. Something, that some interviewees described as a learning process that only comes over years (KI-6). The role of this institution would not be to audit or control, but to advise and enable. Ideally, it would also maintain up-to-date FAQ materials and support documentation based on common questions.
Donors could play a key role in financing such a mechanism — either as a stand-alone service or integrated into capacity-building funds — and thereby directly contribute to strengthening sector-wide implementation of emission-tracking.

For many NGOs — particularly smaller or locally-based ones — internal capacity-building will not be sufficient. Not every NGO will have the funding for dedicated personnel or

even teams. There is also a strong case for sector-wide support mechanisms that can help standardize practices and reduce duplication. The desire for third-party validation (KI-1, KI-6), shared platforms (KI-2, KI-5), and helpdesk (KI-2, KI-3, KI-5) was widely echoed. A centralized support system would also help coordinate learning across organizations and generate a community of practice.

Support mechanisms do not need to be fully institutionalized from the start. Pilot initiatives, regional working groups, or digital platforms for shared troubleshooting could already yield significant benefits. Over time, these networks could evolve into more formal service hubs, potentially supported by donors or NGO consortia. Technical advice would then not only be limited to bigger NGOs that already have the funds to get support, but also smaller NGOs that due to their budget and personnel limitations already struggle with CO2-Tracking.

Promoting and Adapting the Humanitarian Carbon Calculator

The HCC featured prominently in many interviews as the go-to tool for emission-tracking (KI-2, KI-4, KI-6). Its open-source design and humanitarian orientation make it an attractive option for organizations that lack access to proprietary systems. However, as KI-6 noted, the tool was relatively "overwhelming" with all the possibilities and "complex", especially for teams with limited background in carbon accounting (KI-5 similar).

Some participants expressed frustration about usability issues (KI-4), data input challenges (KI-2), and limitations in tailoring the tool to diverse operational realities (KI-6). Most organizations reported adapting the tool to better fit their internal workflows and preferences (KI-1, KI-4, KI-6). These difficulties underline the importance of not only promoting broader dissemination of the HCC, but also offering tailored implementation support. In practice, this could include producing step-by-step onboarding materials, providing interfaces in multiple languages, and offering case-based tutorials that reflect the conditions of different field contexts. Beyond that, there is a need for interactive support formats such as live demonstrations, responsive user forums, or regional workshops to help staff navigate initial implementation hurdles. These resources could help demystify the tool's technical aspects and encourage more consistent, confident use across the sector.

To maximize the potential of the HCC, the tool should be regularly updated in collaboration with its user community. An effective feedback loop between NGOs and the institutions responsible for developing and maintaining the HCC — such as the ICRC — is essential. This exchange would ensure that field-level users can communicate their needs and experiences in a structured way, allowing for the continuous refinement of features, emission factors, and sector-specific modules. Field-based input could help

identify gaps or usability issues early on, making the tool more adaptable to diverse operational realities. Donors and coordination platforms could support this evolution by funding user-centered design workshops, establishing liaison mechanisms, or facilitating direct communication channels to promote cross-organizational dialogue and timely responsiveness.

Automating and Simplifying Data Collection

Beyond the question of tools lies the more fundamental issue of data flow. Several participants highlighted the inefficiencies and risks of relying on manual data collection (KI-4, KI-6, KI-2). Data had to be retroactively estimated, entries were inconsistent, and staff often felt overburdened. These constraints not only reduce accuracy but also limit the perceived legitimacy of the results.

Some organizations have started to explore automation strategies (KI-4, KI-6). These include integrating carbon tracking into travel booking software, procurement databases, or HR timesheets; or even coding their own assessment apps. The idea is not to create a parallel system but to embed tracking into existing workflows. This approach reduces the marginal effort required and allows for real-time monitoring.

Automation was particularly appealing for organizations operating at scale. However, even smaller NGOs could benefit from using digital forms or simplified dashboards. In both cases, success depends on early investment in system design and regular feedback from users.

Moreover, automation and better process integration could significantly improve the quality and reliability of emissions data. Many organizations currently rely on Excel-based tools that, while accessible, are often difficult to fill out correctly and can be prone to error. A more integrated digital setup can reduce these risks and provide more precise, consistent data across time and projects (KI-2). The data procurement must be as user-friendly and accessible as possible.

To achieve this, however, work processes themselves often need to be rethought. In some cases, the required data might not be readily available in the existing format — for example, detailed travel logs or procurement breakdowns. Organizations need time to adjust data collection routines or find alternative indicators that can serve as proxies. These adaptations are not immediate and require investment in internal learning, system testing, and feedback loops. For these reasons, donor support for system integration and data architecture development — including technical advice and financial backing — is critical to enable automation beyond the most well-resourced organizations.

6. Case Study: Tracking of “Capacity Strengthening Project”

Following insights gained from structured expert interviews with NGO specialists in CO2-tracking, this case study evaluates CO2-Emission tracking within the capacity strengthening project conducted by the Institute for International Law of Peace and Armed Conflict (IFHV) and VENRO. The primary objective of this analysis is to empirically validate and illustrate the practical challenges identified in the interviews, such as inconsistent data quality, unclear internal responsibilities, the lack of standardized measurement approaches, and the limited institutional support for carbon tracking practices within humanitarian NGOs by drawing upon first-hand experiences. A dedicated staff member was tasked with learning the HCC, developing appropriate data procurement processes, and refining these processes in collaboration with other team members throughout the pilot period. That staff member also had other tasks within the project, so they were not soley focusing on the tracking process.

Project Overview

The *Capacity Strengthening Project*, implemented by VENRO and IFHV, centers on providing hybrid, in-person, and online training for humanitarian staff to improve overall humanitarian aid effectiveness. In this context, the HCC Version 1 was utilized to document emissions meticulously, assess tracking methodologies critically, and highlight opportunities for improvement. However, it is noteworthy that the analytical scope of the project was limited, covering only 35 emission factors. These included emissions from various transportation methods (e.g. flights, trains, private cars), electricity consumption from different national grids, and basic hardware use during virtual trainings. However, a wide range of other factors that the HCC can accommodate — such as waste management, accommodation emissions, local procurement, or construction activities — were not included in this pilot. In contrast, the HCC V1 tool supports tracking up to 715 unique emission sources, reflecting that typical humanitarian operations entail significantly broader and more complex emission profiles.

The emission-tracking initiative was strategically structured into two distinct phases to ensure effective implementation and continuous process improvement:

Phase 1: Preparation and Initial Implementation (January – May 2023)

The initial phase was crucial for building fundamental capacities and establishing rigorous methodological practices. Activities included designing structured emission data collection protocols and comprehensive staff training. In Phase 1, questionnaires were created using Excel for employees (commuting), trainers (travel to and from in-person trainings), and course participants (travel to and from in-person events, as well as device usage for online trainings to estimate power consumption). Additionally, efforts were undertaken to accurately record commuting distances using tools like BRouter and flight distances through distance.to. Manuals for these tools were created for staff members and participants. Various backend Excel tables were also developed during Phase 1 to anonymize and consolidate collected data, preparing it for entry into the HCC.

Phase 2: Continuous Monitoring and Process Refinement (June 2023 – July 2024)

Phase 2 featured 20 training sessions (5 in-person, 2 hybrid, and 13 online) and focused on the consistent collection, meticulous analysis, and iterative improvement of established tracking procedures. Monitored emission categories included employee commuting (11 staff members from IFHV and VENRO), business and research travels (limited to arrival and departure legs), and CO2-Emissions from virtual and physical training events. In Phase 2, employee commuting data was systematically gathered through monthly questionnaires distributed by the project manager. Participant data for training sessions was seamlessly integrated into existing course evaluation questionnaires, streamlining the data collection process. Trainers received a dedicated questionnaire after each training session alongside the standard evaluation documents, ensuring consistency and completeness. Business trips were tracked through the commuting questionnaires as needed, with specific details communicated separately when required.

Results and Analysis

The detailed emission-tracking provided a comprehensive understanding of the project's carbon footprint. Staff commuting generated approximately 1.38 tonnes of CO2, while business and research travels contributed significantly higher emissions, totaling 13.2 tonnes of CO2. Online training activities resulted in notably lower emissions of just 50 kg of CO2, largely due to the minimal physical travel involved. In contrast, in-person training sessions accounted for 3.52 tonnes of CO2. It is important to note that the emissions from business and research travel and in-person training sessions were aggregated under the category "Business Travel/Volunteer Travel," reflecting specific methodological constraints within the HCC. The project uncovered three main clusters of challenges that impacted tracking accuracy and efficiency:

Data Quality, Availability, and Management

Substantial variability in data quality, often due to participant errors such as improbable usage reports during training sessions, was identified. Participant anonymity compounded verification challenges, and discrepancies between default HCC emission factors and real-world conditions required frequent adjustments. Incomplete survey responses further complicated data availability, necessitating complex extrapolation efforts, thereby increasing resource demands was a recurring issue. For example, in participant surveys, improbable usage entries such as 30 hours of laptop use for a two-day training session were not uncommon. These anomalies were flagged during data review but could not be corrected due to the anonymous nature of the responses. In such cases, the data was either excluded from analysis or, when possible, replaced with average usage values derived from other participants to preserve overall consistency. In several cases, respondents left essential questions unanswered — for instance, omitting their country of login, which is necessary to calculate electricity-related emissions. Since surveys were anonymous, follow-up clarification was not possible. Moreover, employee surveys were sometimes submitted irregularly or not at all, leading to gaps that had to be filled through extrapolation based on previous months. Staff changes further complicated matters, as new team members occasionally did not submit any data in the early stages. Since the submission of commuting data was voluntary, there was no systematic way to ensure that all employees had participated in the monthly tracking. Additionally, the route estimation tool used (BRouter) introduced its own inaccuracies; for instance, overly optimistic or circuitousroute suggestions distorted the estimated commuting distances. On the side of training participants, no verification mechanism was in place to ensure the plausibility of submitted data, meaning incorrect or exaggerated entries could not be corrected. Finally, discrepancies emerged between some of the default emission factors embedded in the HCC and real-world values — for example, Emissions by Fast Trains (ICEs) were outdated or mismatched — requiring the team to manually adapt or correct emission values to increase accuracy.

Human Resource and Operational Commitment

Tracking emissions was labor-intensive, consuming 54 total working hours primarily in data management, oversight, and data entry. Each employee also devoted approximately 30 minutes monthly to fill out the surveys for tracking, illustrating the detailed level of participant engagement required. This project only covered 35 out of over 750 potential emission factors, which significantly limits the representativeness and comparability of the findings. While the restricted scope allowed for a manageable pilot implementation, it does not capture the full complexity of typical humanitarian operations. As such, the conclusions drawn from this case study must be interpreted with caution, particularly when considering broader applications or sector-wide extrapolations. These included, for example, 25 different electricity emission factors based on the countries from which

participants joined the trainings (e.g., Germany, Kenya, Ethiopia, Bangladesh), and ten different transportation methods such as petrol, diesel, and electric cars, economy and business class flights (short- and long-haul), as well as regional trains, high-speed trains, and subways. The deliberate restriction to these factors ensured manageability but also demonstrates that even a limited scope already demanded substantial effort. Experiences from humanitarian practice show that comprehensive tracking exercises often approach the full range of approximately 750 emission factors, or even exceed it. Consequently, no reliable conclusions regarding time expenditure can be drawn from the hours reported in this pilot. Scaling up to encompass more emission categories — such as emissions from accommodation, catering, waste, or construction — would proportionally increase time and resource commitments, especially for involved staff. Although cost efficiency was achieved by utilizing Excel and open-source tools, expanding tracking processes would likely entail significant additional resource allocations.

Measurement Standards and Policy Implications

Measurement standards were predominantly defined internally, providing necessary flexibility but substantially limiting comparability across projects. Despite creating effective solutions for specific data procurement challenges, such as handling non-responsive participants through monthly average estimations, the lack of overarching organizational policies significantly diminished cross-project comparability. This aligns with expert interviews suggesting standardized measurement practices could enhance comparability and resource efficiency, especially benefiting smaller NGOs to ensure the process remains feasible. For instance, for business travel, only outbound and return trips were tracked, while activities on-site (e.g., local transport, accommodation or food delivery) were excluded. Similarly, in online trainings, only laptop (Desktop PC or Laptop as alternatives) usage was considered — disregarding other potential emissions like routers or heating. While this approach ensured manageability, it significantly limited comparability with other NGOs. The absence of a broader organizational policy meant that emission-tracking could not be anchored in institutional practice, a challenge echoed in many expert interviews. Creating flexible yet clearly defined standard approaches — even for reduced-scope projects — would enhance both credibility and comparability of tracking efforts across the sector.

Comparison with Interview Findings

The challenges identified in this case study closely mirror those highlighted in the expert interviews conducted for this research. Both sources emphasized the critical need for clearly defined responsibilities and institutional anchoring of emission-tracking within humanitarian organizations. The interviews confirmed that many organizations currently rely on ad hoc approaches or the motivation of individual staff (KI-2), which reflects the lack of systematic responsibility observed in the case study. This absence of institutionalized responsibility contributes to the marginalization of climate-related topics in daily operations and makes sustained efforts vulnerable to staff turnover.

Similarly, the issue of inconsistent data quality — evident in the case study through unrealistic entries, missing data, and unverifiable participant responses — was echoed throughout the interviews. Interviewees described sector-wide difficulties in ensuring reliable and validated input (KI-1, KI-6), with many organizations lacking the tools or verification procedures needed to correct inaccurate submissions.

Furthermore, both the case study and interviews stressed the importance of shared standards for measurement and tracking. While the project relied on self-defined methodologies to remain operationally feasible, interviewees highlighted that this practice undermines comparability and mutual learning across organizations. They emphasized that many NGOs are left to interpret core emission categories on their own, leading to divergent assumptions (e.g., how to account for layovers or shared transport) and highly variable scopes of reporting.

In sum, the case study serves as a microcosm of the broader sectoral challenges identified through the interview process. It reinforces the urgent need for structural, procedural, and donor-driven support to standardize and strengthen emission-tracking in the humanitarian field, while also highlighting the creativity and adaptability already present among practitioners attempting to bridge these systemic gaps.

7. Conclusion

This study systematically examined the multifaceted barriers humanitarian NGOs encounter in effectively tracking project-related CO2-Emissions through tools such as the HCC. Employing a mixed-method approach, including expert interviews, literature analysis, and practical emission-tracking experiences within an ongoing capacity development project, the research identifies critical structural and operational challenges NGOs face in their emission-tracking efforts. Principal issues include inadequate internal organizational structures, unclear assignment of responsibilities, insufficient allocation of financial and human resources, persistent inconsistencies in data quality and availability, and a notable absence of standardized methodologies for emission accounting.

The findings underscore the urgent necessity of formalizing environmental accountability within NGO operations by embedding clearly defined responsibilities, roles, and processes within organizational frameworks. Creating dedicated task forces or assigning specialized personnel explicitly focused on emission-tracking would significantly enhance clarity and operational efficiency. This allows experts to fully concentrate on establishing robust and efficient processes, thereby integrating emission-tracking seamlessly into daily operations rather than treating it as an additional burden. The research further highlights the indispensable role donors play in incentivizing and financially supporting emission-tracking initiatives. Donor engagement is crucial not only in establishing stringent reporting requirements but also in providing adequate resources to support implementation. Without consistent and proactive donor involvement, systematic tracking of emissions is likely to remain fragmented, inefficient, and unreliable.

Practically, the adoption and continual improvement of accessible, adaptable, and user-friendly tools, particularly the HCC, is essential. Complementing these technological solutions with comprehensive investments in staff training, capacity building, and simplified, standardized data collection processes is critical to achieve sustainable implementation. To accomplish effective and lasting emission-tracking practices, humanitarian NGOs require substantial financial backing and targeted capacity-building support from donors. This donor-driven support should specifically aim to enhance the efficiency and clarity of data procurement processes, making them streamlined, intuitive, and manageable for NGO personnel. The study demonstrates that dedicating resources to a specialized team, or even a single expert, for approximately one year can establish a robust foundation for NGO's emission-tracking processes. Although initially demanding in terms of time and resources, this upfront investment significantly reduces effort in

subsequent years. Future tasks would primarily involve refining data collection efficiency and expanding emission-tracking to additional regions or broader operational scopes. This can go hand-in-hand with further automation and refining. Moreover, it is vital to expand personnel dedicated explicitly to implementing, monitoring, and overseeing emission-tracking activities. A well-resourced team focused on environmental accountability will significantly contribute to more reliable, consistent, and credible tracking across diverse operational contexts.

Establishing sector-wide support mechanisms further emerges as a central recommendation from this research. Initiatives such as technical assistance hubs, shared learning platforms, peer networks, and dedicated independent help desks could markedly enhance the consistency, comparability, and accuracy of emission-tracking within the humanitarian sector. These institutions could be especially helpful for smaller NGOs that have no resources to build expertise on their own. Such mechanisms can foster a community of practice, facilitating the exchange of best practices, shared troubleshooting, and collective problem-solving. They could further help to validate data and to minimize pressure on NGOs to not make mistakes from the beginning. As technical assistance hubs or institutions are costly options that would need to be financed by the whole sector and/or donors, a bigger focus on exchange forums or community of practices might be more cost efficient but not as effective.

Ultimately, strengthening emission-tracking capacities within humanitarian NGOs is not merely a technical endeavor but a strategic commitment to operational transparency, accountability, and efficiency. Such strengthening closely aligns with broader humanitarian sector commitments to environmental sustainability, climate resilience, and ethical responsibility. Integrating rigorous environmental stewardship into humanitarian practice is essential for ensuring that humanitarian interventions remain viable and effective amidst the escalating challenges posed by climate change.

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9. Annex

List of Acronyms

ADRA	Adventist Development and Relief Agency
CVA	Cash and Voucher Assistance
DEFRA	Department for Environment, Food & Rural Affairs (UK)
GHG	Greenhouse Gas
HCC	Humanitarian Carbon Calculator
HR	Human Resources
ICRC	International Committee of the Red Cross
IFHV	Institute for International Law of Peace and Armed Conflict (Ruhr-University Bochum)
IFRC	International Federation of Red Cross and Red Crescent Societies
IEA	International Energy Agency
ISO	International Organization for Standardization
KI	Key Informant
MSCI	Morgan Stanley Capital International
MSF	Médecins Sans Frontières
NGO	Non-Governmental Organization
NRC	Norwegian Refugee Council
TCS	Tata Consultancy Services
UNFCCC	United Nations Framework Convention on Climate Change
VENRO	Verband Entwicklungspolitik und Humanitäre Hilfe deutscher Nichtregierungsorganisationen

WRI	World Resources Institute

List of Key Informant Interviews

KI-01	Mara Flavia, Technical Advisor Climate Action and Environment at World Vision	21 November 2024
KI-02	Dominika Schneider, Consultant for Environment, Agriculture and Ecological Sustainability for Help	14 November 2024
KI-03	Anonymous	20 November 2024
KI-04	Clovis Guerreiro – Technical Advisor for Climante Neutrality at ADRA Germany	15 November 2024
KI-05	Anonymous	07 November 2024
KI-06	Julia Wünsche, Sustainability Manager at Welthungerhilfe	29 November 2024

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