Navigating Ethical Waters – A Case Study Exploring the Ethical Landscape of Using Voluntary Carbon Credits to Fund Solarized Water Systems in Humanitarian Contexts

Shannon Brown (3142671)

Supervisors:
Dr. Imad Ibrahim
Dr. Gül Özerol

Master Environmental & Energy Management
Academic Year 2023/2024

Abstract

In Lebanon, there has been a shift to using emergency diesel generators to power public water systems. This transition has introduced operational challenges due to the high costs and persistent shortages in fuel supply. To improve the reliability, the Netherlands Red Cross (NLRC) and Lebanese Red Cross (LRC) have converted six public drinking water systems from diesel to solar power. Although successful, expanding the projects throughout Lebanon is costly and innovative funding in the form of Voluntary Carbon Credits (VCCs) has been identified as an opportunity. Although potentially providing a promising long-term funding solution to scale the projects, the ethics of leveraging VCCs has been questioned since their inception. This master's thesis explores the ethical landscape for the NLRC and LRC to generate and sell VCCs to fund the solarization of public water systems in Lebanon. A focus group and fifteen interviews were undertaken to further explore the moral concerns of relevant stakeholders.

Thirteen ethical risks were acknowledged based on literature and empirical data, with endorsing a "flawed" emission reduction mechanism being identified as most significant by the NLRC. This is one of the largest critiques of the Voluntary Carbon Market (VCM), particularly the argument that the mechanism does not effectively contribute to reducing GHG emissions, it can give misleading perceptions of offsets, and can fail to have social benefits. This being identified as the most concerning risk therefore reflects broader concerns in navigating the complexities and controversies of the mechanism, while upholding the organization's mission. The study than explores how the identified critical risk affects stakeholders involved. While the VCCs offers potential benefits including reduced emissions and increased water security there are also potential negative impacts. For the NLRC and LRC, this includes possible misalignment with its mission and principles, reputation damage and perpetuating climate change through supporting a flawed system. The thesis also examines how benefits and impacts are distributed, right infringements and power imbalances. Based upon this, a range of risk treatment strategies were proposed including buyer due diligence, quality assurance measures and transparent communication protocols.

Despite ethical concerns, the VCM is one of the main tools used in mitigating climate change and the market is undergoing a transformation to improve the transparency and integrity of VCCs. However, it is unclear at this stage if such transformations are effectively addressing imperfections in the market. It is clear from this analysis that the decision whether to adopt VCCs should be based on the NLRC's and LRC's ability to navigate the complexities of the market while ensuring their humanitarian goals are not compromised. A cautious approach that fosters high integrity credits and high-quality projects is needed as VCCs are only a viable solution to climate change and for the Red Cross if they offer social co-benefits and represent clear representations of GHG emission reductions. Participation in the market should include appropriate risk treatment strategies and a commitment to advocate for a more regulated VCM to address the imperfections that currently exist.

Keywords: *Voluntary Carbon Credits, ethical risks, humanitarian organizations, risk management, ethical risk analysis*

Table of Contents

Figures

Tables

Appendix

1. Introduction

1.1 Background

Many countries are struggling to provide access to clean water, sanitation, and hygiene (WASH). The importance of addressing this is acknowledged globally by Sustainable Development Goal (SDG) 6[1] (United Nations, 2022b). In Lebanon, this challenge is exacerbated by political instabilities as well as an ongoing multifaceted economic and financial crisis. This economic contraction is further compounded by the influx of refugees and the enduring impacts of COVID-19 (The World Bank, 2023). Once more, there are escalating tensions between Israel and Lebanon, and the World Bank has indicated that this conflict will result in further economic contraction (The World Bank, 2023). This multi-layered crisis has exacerbated the pre-existing challenges related to the affordability and availability of basic services and further compromised the institutional capacity to provide infrastructure, governance, and public services. Lebanon's water system is characterized by water shortages and in 2022 it was reported that 48% of the population had access to safe and sufficient quantities of water (United Nations, 2022c, 2023).

In Lebanon, the water supply systems including the pump and chlorination processes have historically relied on grid electricity. There has been a shift to using emergency diesel generators due to grid reliability issues (NLRC, personal communication, February 2024). This transition has introduced other operational challenges because of the inflated costs and persistent shortages in fuel supply (United Nations, 2022b). Consequently, water systems are operating intermittently, and increased climate-related events, cholera and hepatitis b outbreaks pose an additional threat to the sector. These factors drive the population further towards private water supply services which monopolize the vulnerabilities of the population (United Nations, 2023). As a result of the systemic problems faced by the Lebanese water sector, converting public drinking water systems from diesel to solar power supply systems is seen as a solution to alleviate the challenges faced (United Nations & Government of Lebanon, 2023). Solarization of the water systems reduces reliance on grid electricity and fuel and contributes to more affordable, sustainable, and secure systems (United Nations, 2022b).

Humanitarian organizations play a significant role in addressing these challenges (European Union, 2022). Their role and mission are to provide neutral, objective, and independent aid provision to those in immediate and protracted crises (International Committee of the Red Cross, 2008). Such organizations rely on external donor funding and support to achieve their mission (Ahmed, 2021). The Netherlands Red Cross (NLRC) and Lebanon Red Cross (LRC) are two organizations that support the Lebanese and refugee communities in accessing safe WASH services. Whereby, the NLRC acts as an advisor and donor role to the LRC (NLRC, personal communication, March 2024). The Red Cross organizations are founded on seven fundamental interconnected principles that represent the organization's vision, shape operational decisions and guide humanitarian work. Humanity and impartiality are the overarching principles that are supported by neutrality, independence, voluntary service, unity, and universality (International Committee of the Red Cross, 2008). These principles are further described in Appendix A.

Within this humanitarian context, the NLRC and LRC in partnership have successfully installed six[2] municipal solarized water systems that have assisted with the provision of a reliable water supply to the local populations (NLRC, personal communication, March 2024). Although successfully implemented, these systems are costly, and scaling the projects is challenging

[1] SDG 6: Ensure availability and sustainable management of water and sanitation for all.
[2] As of July 2024.

considering Lebanon's increasing public water supply needs. Consequently, the NLRC has identified that innovative funding in the form of Voluntary Carbon Credits (VCCs) could be a promising alternative for long-term funding (NLRC, personal communication, February 2024).

VCCs were developed to increase climate finance and assist organizations, individuals, and governments in offsetting hard to abate emissions (Battocletti et al., 2023). Credits represent one ton of CO_2 that has been avoided, reduced, or removed through offset projects and can be traded and sold to investors aiming to reduce their carbon footprint (Spilker & Nugent, 2022). The solarization projects may be eligible to generate VCCs due to abated emissions through the transition from diesel to solar power water systems (NLRC, personal communication, February 2024). Thus, providing a self-sustaining funding source for the ongoing expansion of these projects throughout Lebanon.

Although these benefits make VCCs a potentially attractive solution, their use and efficacy has been questioned from an ethical perspective since their inception (Miltenberger, Jospe, et al., 2021). Given this, there is a need to understand how the adoption of VCCs by the NLRC and LRC may ethically implicate the organizations and understand how these impacts can be treated. This is particularly important for organizations that have principles of impartiality and humanitarian service (ICRC, 2015).

1.2 Problem Statement

While Non-Governmental Organizations (NGOs) and more specifically humanitarian organizations have participated in offsetting projects, there are debates regarding the underlying ethics and legitimacy of VCC trading in mitigating climate change (Howard et al., 2015). Some believe that VCCs are an important mechanism for climate action due to additional investment and support. While others reject carbon credits and argue that they undermine direct emission reduction efforts. They also are concerned that offset projects do not achieve real, quality, or additional emission reductions (Franki, 2022; Trouwloon et al., 2023; Xu et al., 2023). To the researcher's knowledge no studies have been published that directly examine the ethical risks and impacts to organizations that generate and sell VCCs. This is important to understand for humanitarian organizations as they have a responsibility to fund projects in a way that does not conflict with their mission and principles (Hota et al., 2023). Damage to moral capital can impact their reputation, legitimacy and affect donor and public support. Ultimately, impacting their role in promoting humanitarian efforts (Hielscher et al., 2017). Additionally, for many organizations, the gap between humanitarian aid and funding is considered one of the largest challenges they are confronted with, and this gap is widening (Ahmed, 2021). This applies to Lebanon due to the scale of financial support needed to solarize public water systems (NLRC, personal communication, March 2024). Exploring the use of VCCs as an innovative funding source is therefore particularly pertinent.

1.3 Research Objective and Research Questions

The objective of this research is to explore the ethical risks and implications for the NLRC and LRC when using VCCs to fund the solarization of public water systems in Lebanon. By exploring this ethical landscape, treatment strategies can be identified to manage the use of VCCs. This will assist the NLRC and LRC in maintaining alignment with their missions and social agenda. Although specific to the Lebanese context, this research can potentially be leveraged to assist the wider Red Cross movement and other humanitarian organizations in ethical risk identification and management of future VCC projects. In this context, the main research question is as follows:

How can the NLRC and LRC address the most significant ethical risk in using VCCs to finance the solarization of public water systems in Lebanon?

To address the main research question, the following sub-questions will be answered:

RQ1) What is the perceived most significant ethical risk for the NLRC and LRC in financing the solarization of public water systems in Lebanon through VCCs?

RQ2) How does the perceived most significant ethical risk affect the stakeholders involved and actions of the NLRC and LRC in leveraging VCCs?

RQ3) What risk treatment options can be used by NLRC and LRC to address the most significant ethical risk in using VCCs for solar water system financing in Lebanon and carbon credit projects more broadly?

Through answering the sub-questions, it will provide understanding of the ethical concerns, the impacts and potential strategies associated with using VCCs to finance the solarization of water systems in Lebanon. Therefore, providing a well-rounded answer and insights into navigating the ethical landscape of VCCs.

1.4 Outline of Thesis

The thesis is outlined as follows: Section 1 describes the background, problem statement, research questions and objectives. Section 2 provides empirical information on the research topic and includes a literature review on VCCs, and potential ethical risks posed to NLRC and LRC by VCCs. Section 3 describes the theoretical framework used to answer the research questions. Section 4 outlines the methodology used to conduct the research. Section 5 presents and interprets the findings from data collection and analysis to address the research questions in the context of the theoretical framework. Section0 6 provides a reflection of the findings of the research, limitations, and recommendations for future research.

2. Empirical Background

This chapter provides empirical background. Section 2.1 discusses VCCs as an innovative funding mechanism, introduces the VCM, and explores the procedure, governance, and funding arrangements for use of VCCs. Section 2.2 presents an overview of ethical challenges that humanitarian organizations experience. Finally, Section 2.3 focuses on the ethical risks in leveraging VCCs as an innovative funding mechanism.

2.1 VCCs

2.1.1 VCCs as Innovative Funding

The demand for humanitarian assistance is increasingly growing. The people in need of aid grew by one third in 2022 to an estimate of over 406 million people (Development Initiatives, 2023). With more people requiring humanitarian assistance, the gap between funding and aid is also widening and traditional donor funding sources cannot meet these demands. In 2022, approximately $52 billion (USD) in aid was requested and the unmet requirements was approximately $22 billion (USD) (Development Initiatives, 2023). To address such challenges, new innovative funding mechanisms are increasingly being explored that offer sustainable solutions that expand funding pools, reduce reliance on donor funding, and address increasing humanitarian needs (Ahmed, 2021).

Innovative funding can be defined as exploring and using diverse, non-traditional resources to deliver sustainable financial solutions in humanitarian contexts (Ahmed, 2021). In this context, VCCs emerge as a type of innovative funding mechanism as they are a market-based instrument, where projects can generate credits by offsetting emissions. These credits can be traded and sold for profit to public and private entities (Howard et al., 2015).

2.1.2 Voluntary Carbon Market

The voluntary carbon market (VCM) is a decentralized, self-regulated market, allowing entities to voluntarily offset their emissions through trading VCCs. The VCM was established under the framework of the United Nations Clean Development Mechanism (CDM) (Howard et al., 2015). The CDM is a compliance market, defined in Article 12 of the Kyoto Protocol (1997) as a mechanism that supports countries in reaching their Nationally Determined Contributions (NDCs) to reduce GHG emissions. The CDM operates by allowing countries to generate, sell, and buy carbon credits, which can contribute towards meeting their NDCs (Spilker & Nugent, 2022). The VCM was developed by private entities and NGOs in response to criticisms of the CDM (Howard et al., 2015). This market is driven by increasing interest (both genuine and greenwashing instances) in offsetting emissions, investing in developing countries, and meeting global climate targets (Battocletti et al., 2023; Howard et al., 2015).

The Paris Agreement (2016) altered the VCM landscape with the introduction of Article 6. Article 6 aimed to guide countries in voluntarily cooperating to achieve climate commitments. This included the creation of the Sustainable Development Mechanism (SDM) (Article 6.4) which was intended to replace the CDM. The SDM was developed to establish a new international carbon credit mechanism to increase the efficacy of the markets. However, Article 6.4 is not yet fully operational as negotiations on how to implement the mechanism has not been completely decided (Michaelowa et al., 2022).

Within the VCM, VCCs can be verified and non-verified credits. Verified credits are the most legitimate and common approach (Howard et al., 2015) and will be examined further in this research. Verified VCCs are issued by self-regulated, standard setting organizations (SSOs)

(Spilker & Nugent, 2022). Each SSO has distinct eligibility standards and methodology for offset projects to attain VCCs (Spilker & Nugent, 2022). The number of credits produced by projects are calculated by quantifying the difference between the emissions produced in the business-as-usual scenario versus emission reductions because of the offset project. The SSOs rely on third party auditors to audit projects and ensure the criteria and methodologies of the organization are met (Battocletti et al., 2023). The third parties are selected by the project developer and are accredited by the SSO (Battocletti et al., 2023). Once projects are certified, the credits can be exchanged. Buyers can then use these credits to neutralize or mitigate their carbon budget (Spilker & Nugent, 2022). An overview of the interactions between VCM stakeholders is displayed in Figure 1 below.

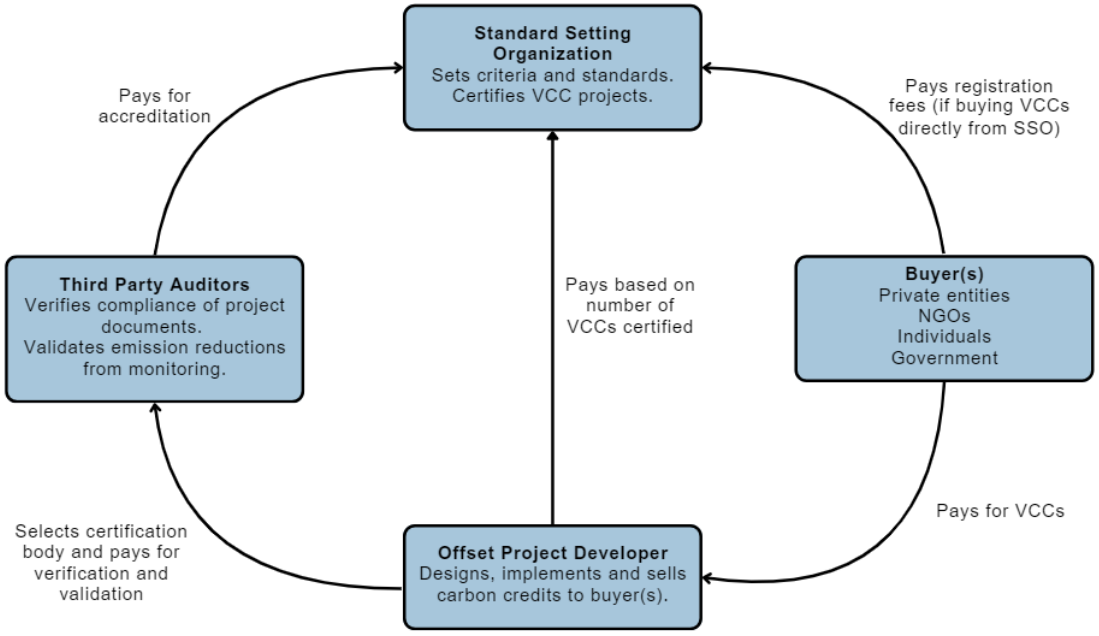

Figure 1 VCM stakeholder interactions (adapted from Battocletti et al., 2023)

2.1.3 VCC Framework for the Project

This section describes the VCC framework required to fund the conversion of diesel to solar water systems in Lebanon. It outlines the standards, emission offset methodology, procedure, and governance framework for the NLRC and LRC to generate and sell VCCs.

2.1.3.1 Standards and Methodologies

There are several standards developed by SSOs that are available for projects seeking to attain VCCs. The most widely used are the Verified Carbon Standard (VCS), Gold Standard, Climate Action Reserve and American Carbon Registry (Spilker & Nugent, 2022).

Under these standards, there are methodologies that describe how to calculate emission reductions for different projects. VCC methodologies can be either specific to the standard chosen or an approved methodology under the CDM[3]. From a review of the most widely used standards methodologies and approved methodologies under the CDM, the following are applicable:

[3] It is noted that the CDM methodologies are intended to be updated when the SDM is fully operationalized (Michaelowa et al., 2022).

- AMS-I.B: Mechanical energy for the user with or without electrical energy (United Nations, 2022a).
- AM0020: Baseline methodology for water pumping efficiency improvements (United Nations, 2022a).
- Gold Standard Safe Drinking Water Supply (Gold Standard SDWS): Methodology for Emission Reduction for Emission Reductions from Safe Drinking Water Supply (Gold Standard, 2021).

AMS-I.B which is most applicable, focuses on emission reductions achieved through switching from a fossil fuel system, diesel to a renewable energy power supply, solar. AM0020 relates to energy efficiency improvements by replacing or improving a water pumping system to be more efficient (United Nations, 2022a). Therefore, AM0020 only aligns with the solarization projects that include pump efficiency improvements. The Gold Standard SDWS methodology includes switching from fossil fuel water systems and reducing wood fuel burning to obtain safe drinking water (Gold Standard, 2021). This is not relevant for Lebanon as biomass is not a major source of fuel (International Energy Agency, 2021).

The emission reduction calculations can also include suppressed demand considerations. Suppressed demand allows for additional emission offsets to be claimed based on a theoretical future demand for energy intensive water treatment methods (e.g., boiling water for water treatment) if the population had the financial means to use such methods (Millennium Water Alliance, 2024). This has not been considered for the solarization projects as it is considered that a small number of households would boil water for purification. Therefore, considering suppressed demand in the solarization project calculations may overstate emission reductions being achieved (Millennium Water Alliance, 2024).

As AMS-I.B is a CDM certified methodology it can be accepted by a range of SSOs. A review of similar projects shows that the VCS has more projects certified using the AMS-I.B. methodology in comparison to other standards. It is also the most widely used voluntary standard and therefore considered most suitable for the solarization projects and will be the assumed certification standard adopted (Spilker & Nugent, 2022).

2.1.3.2 Governance and Funding Framework

Figure 2 shows the governance and funding framework assumed for the NLRC and LRC to generate and sell VCCs. This was used to assist in identifying relevant ethical risks associated with the project's development.

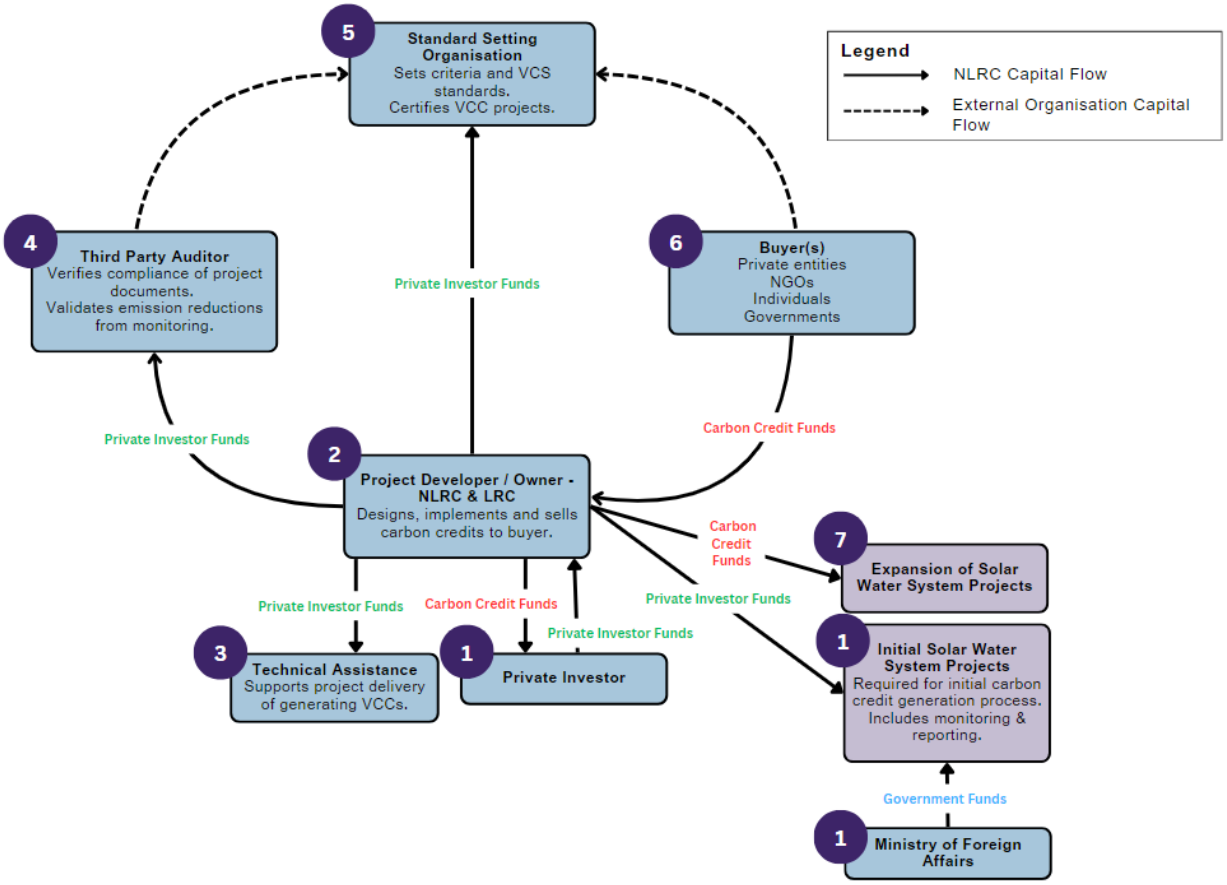

Figure 2 Governance and funding framework (developed with Canva, 2024)

The framework assumed in Figure 2 is described below, with descriptions corresponding to the numbered elements in the figure.

1. The Netherlands **Ministry of Foreign Affairs** and a **private investor** will co-fund the **initial solar water system projects**. These initial projects are required to begin verifying the emission offsets and generating VCCs. The private investor funds will also finance the entirety of the VCC generation process.
2. The **project developer and owner** will be the NLRC and LRC. NLRC will manage the VCC process and own the credits, while LRC will design, implement, monitor, and undertake reporting for the solarization systems.
3. **Technical assistance** will be used to support the NLRC and LRC for VCC project delivery.
4. The NLRC and LRC will hire a **third-party auditor** to verify compliance of project documents and validate emission reductions from monitoring.
5. The NLRC and LRC will use the SSO that has set the **VCS standards** required to be followed to certify the projects (as described in Section 2.1.3.1).
6. The NLRC and LRC will directly sell the carbon credits to a **buyer** or multiple buyers including individuals, public and private entities, or the private investor (who will function as a broker and sell them to clients).
7. The revenue generated from credit sales will be reinvested into **expanding solar water system projects** across Lebanon.

2.1.3.3 Pathway to Generate and Sell VCCs

The procedure to obtain VCCs using the VCS pathway is described in detail in Appendix B and shown in Figure 3. There are five main stages. The credits can be generated for a period of 21 years (Wessel & Boer, 2023).

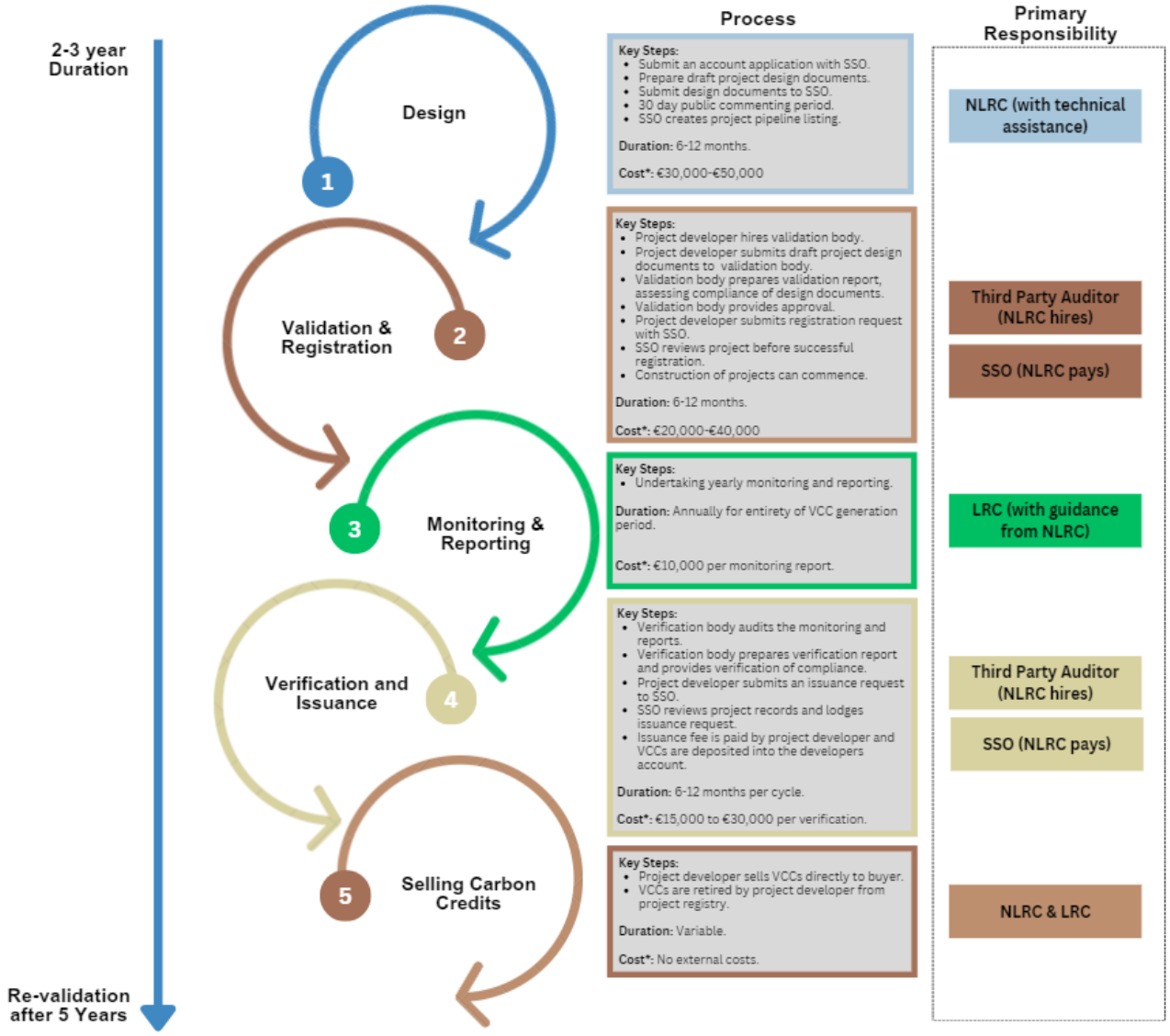

Figure 3 VCC lifecycle
(adapted from Millenium Water Alliance, 2024)

2.2 Ethical Risks in Humanitarian Organizations

Organization ethics refers to the moral principles that guide an institution's understanding of what is right and wrong (Fisher, as cited in, Hota et al., 2023). Humanitarian organizations frequently experience ethical risks as they operate in complex and high-stake environments which can compromise the social objectives and ethical principles of the organization (Clarinval & Biller-Andorno, 2014). Ethical risks arise when actions or decisions potentially conflict with the

organization's core principles. These risks can lead to ethical dilemmas, where organizations need to decide on the best course of action (Bell & Carens, 2004).

There is a range of ethical challenges faced by humanitarian organizations generally and within different contexts including health, medicine, disaster, emergency, and conflict situations (Pierre Côté & Drolet, 2021). Pierre Côté & Drolet (2021) identified that despite the wide body of literature available, there is a broad range of terminology used to describe ethical issues and a limited number of defined typologies to categorize these considerations. However, Bell & Carens (2004) typology was identified which classifies four groups of common ethical dilemmas that humanitarian organizations face, namely:

1. Conflict between cultural norms and human rights: This explores how there can be differences between human rights norms of humanitarian organizations and local cultural norms where aid is provided.
2. Fulfilling organizations objectives and broadening response: Humanitarian organizations face dilemmas between expanding their mandate to address underlying issues and restricting their mandate to more manageable tasks.
3. Collaboration with governments: Humanitarian organizations can face dilemmas about whether to collaborate with governments that may be considered repressive or publicly criticize these governments which may jeopardize humanitarian aid.
4. Generating funds: There can be dilemmas determining how funds are generated without making concessions and/or impeding the organization's mission and principles.

The fourth category directly applies to the challenges of innovative funding, where humanitarian organizations can be faced with ethical risks by both the source and means employed to raise funds (Bell & Carens, 2004). For the NLRC and LRC, overlooking these risks could lead to reputation damage and can affect internal and external stakeholder relationships (Weiss, 2021). Such damage to their moral capital can undermine their legitimacy, affect donors and public support, and impact their role in promoting humanitarian efforts (Hielscher et al., 2017). Ethical reasoning is therefore needed to consider ethical dilemmas and identify and effectively manage risks (Clarinval & Biller-Andorno, 2014).

2.3 Ethical Risks Leveraging VCCs

Existing academic literature on the ethics of VCCs focuses on the underlying concerns of the carbon credit trading mechanism in mitigating climate change (Hyams & Fawcett, 2013; Lamberton, 2011; Miltenberger, Josphe, et al., 2021). To the best of the researcher's knowledge, there is a lack of research directly examining the ethical risks for organizations involved in the process of generating and selling VCCs. Therefore, there is a gap in understanding of the risks, impacts, and management strategies for organizations looking to join the market. Specifically, those that are not private corporations and driven by environmental and social agendas. Consequently, to understand the risks that the NLRC and LRC may encounter using VCCs as an innovative funding mechanism, literature considering general ethical concerns of the VCM and risks specific to the VCC process have been reviewed. These risks have been identified based upon the ethical risk definition described in Section 2.2 and in consideration of the process, assumptions and methodology defined in Section 2.1.3.

2.3.1 Endorsing a "Flawed" Mechanism

One of the largest criticisms of the VCM is that it is an imperfect mechanism that does not effectively contribute to reducing GHG emissions (Miltenberger, Josphe, et al., 2021; Pearse & Böhm, 2015). The initial aim of the market was for entities to directly reduce emissions within their operations and offset hard to abate emissions by buying VCCs (Pearse & Böhm, 2015). However, the current system is viewed by some as flawed as it can enable entities (typically in the Global North) to avoid their responsibility for direct emission reduction by purchasing carbon credits

(Pearse & Böhm, 2015). Particularly, as the price of VCCs for WASH projects can range between €5 to €10 per ton of CO_2 removed. This can be more affordable than internal emission reduction efforts (Millennium Water Alliance, 2024). Thus, giving misleading perceptions of offsets (Pearse & Böhm, 2015). Once more, from the outset of the mechanisms development there have been concerns regarding the ethics of commodifying the atmosphere of the Global South for the benefit of the Global North (Franki, 2022). This is instead of focusing emission reductions internally within high-emitting countries (Caney & Hepburn, 2011).

There are also critiques that the VCM has insufficient regulation and oversight, allowing projects to fail to produce genuine offsets and benefit the communities in which they operate (Battocletti et al., 2023; Dawes, 2024; Pearse & Böhm, 2015). This critique is focused on the imperfection of the VCM design and structure itself. Recently, there have been several studies questioning the integrity of VCC projects. For example, Gill-Wiehl et al. (2024) evaluated the methods used to calculate emission reductions from clean burning cookstoves and claimed that emission reductions were overestimated by a factor of ten. While another study claimed that only 6% of forest conservation projects resulted in additional carbon reductions (West et al., 2023). WASH projects have also been scrutinized with Pickering et al. (2017) investigating carbon financed water filters in Kenya and raised concerns about the reliability of monitoring data. Ultimately, the VCM is criticized for failing to incentivize changes in practices leading to greenwashing and climate injustice (Pearse & Böhm, 2015).

Endorsing a "flawed mechanism" is considered an ethical risk as it can perpetuate the current status quo and contribute to climate change.

2.3.2 Failing to Deliver Target Offsets

Beyond the more systemic critiques of the mechanism, there are individual offset project risks including the risk that the solarization projects may not deliver real or quality offsets. This risk is focusing specifically on failing to deliver target offsets at a project level rather. The methodologies used to calculate emission offsets have been questioned and it can be difficult to correctly quantify how much GHG emissions are being reduced due to lack of and/or inaccurate baseline data (Miltenberger, Josphe, et al., 2021). Moreover, for a project to represent a true emission offset, the project needs to be permanent (Miltenberger, Josphe, et al., 2021; Wessel & Boer, 2023). For example, the solarization projects may not achieve the targeted emission reductions due to miscalculations, system failure and extended maintenance that are not reported. Furthermore, double counting could reduce the effectiveness of the project (Disch et al., 2010; Juvonen et al., 2023; Miltenberger, Josphe, et al., 2021). Double counting means emission offsets are counted more than once and can occur due to (Juvonen et al., 2023):

- Double selling: Issuing VCCs more than once.
- Double use: VCC are used to meet more than one emission reduction commitment.
- Double purpose: Emission reductions are used to meet reduction goals and fulfill other commitments i.e., financial goals.
- Double claiming: Emission reductions are counted in both the country where the offset project is occurring and the buyer of the credits.

Double claiming is the most relevant to the solarization projects as the reduction in emissions may be counted multiple times by the host country, the generator of the credit (being NLRC and LRC), the private donor and/or the buyer of the credits. This can lead to an overestimation of the carbon offset (Juvonen et al., 2023).

Failure to deliver target offsets is considered an ethical risk as the projects may fail to deliver the intended GHG emission offset and conflict with the organizations' core principles.

2.3.3 Engaging with “Unethical” Buyers

Another risk identified is that the VCCs can be sold to public or private entities that do not align with the Red Cross movement values (Bedenham & Ronad, 2023). For example, this could include the tobacco industry or high emitting industries. It may also perpetuate greenwashing, where organizations appear to make a greater contribution to sustainability than in actuality. This is generally done for marketing benefits rather than genuine environmental impacts (Makhoul et al., 2023; Miltenberger, Josphe, et al., 2021; Spilker & Nugent, 2022; Wessel & Boer, 2023). Additionally, there has been evidence to suggest that larger buyers can manipulate the market. For example, by stocking VCCs when the prices are low to use for future offsets when prices are higher (Wessel & Boer, 2023). This behavior can undermine the effectiveness of the mechanism. When NGOs and humanitarian organizations engage with organizations that do not align with the missions or principles of the organization they may serve as an “unintentional proxy” by providing these entities credibility or undue influence (Makhoul et al., 2023).

Engaging with “unethical” buyers is considered an ethical risk because it directly conflicts with the organizations’ mission, principles and thus image.

2.3.4 Inefficient Humanitarian Resource Allocation

The generation and sale of VCCs can be complex, time consuming and require a high number of knowledgeable resources according to Millennium Water Alliance (2024). This creates a risk of extended project timelines and potential higher use of humanitarian resources. Humanitarian services are in high demand for countries experiencing crises (Clarinval & Biller-Andorno, 2014; Development Initiatives, 2023). Therefore, allocating significant resources towards generating VCCs (e.g., monitoring, administration activities, etc.) may pose ethical concerns by diverting resources from direct humanitarian aid, particularly, when the benefits of selling VCCs cannot be ensured.

This risk of inefficient humanitarian resource allocation is considered an ethical risk. The NLRC and LRC could invest a large amount of time and resources to fulfil the requirements of VCC activities with uncertain project outcomes. This raises concerns regarding the prioritization of the offset projects over the core humanitarian mandate.

2.3.5 Inappropriate or Risky Allocation of Humanitarian Funds

The process of generating and selling VCCs involves substantial costs (>€150,000) (Millennium Water Alliance, 2024). Additionally, the complexity of generating carbon credits and market volatility associated with the price of VCCs can further escalate these risks and potential for project failure (Battocletti et al., 2023). Although the market is expected to grow, in 2023 VCC prices reduced. This resulted in an oversupply of credits in the market (Wessel & Boer, 2023). This is attributed to concerns of greenwashing from studies and claims that buyers are stockpiling credits when prices are low to offset emissions in the future when prices are expected to be higher (Dawes, 2024; Wessel & Boer, 2023). Furthermore, Pande (2024) suggests that the wide price variations of VCC sales indicate market inefficiencies as an effective market should reflect supply and demand dynamics. Currently, credit prices are influenced by the project, developer, carbon standard, and market setting (Wessel & Boer, 2023). This instability creates additional financial risks for the NLRC and LRC if the profit generated is less than the initial investment cost leading to a funding shortfall that needs to be covered.

Inappropriate or risky allocation of humanitarian funds, leading to investment shortfalls and compromised aid effectiveness is considered an ethical risk.

2.3.6 Investor Misalignment

There may be a private investor who will cover the initial upfront costs of generating the VCCs (NLRC, personal communications, March 2024). As identified by Bell & Carens (2004), the source of funds may impede the organization's principles if not appropriately reviewed. In this case, there could be shifting goals between the investor and NLRC or LRC. For example, the private investor may want involvement in the use of the funds or certain profits. Alternatively, investment could come from companies based in a tax efficient area (Bedenham & Ronad, 2023).

Investor misalignment is identified as an ethical risk as it could conflict with the missions and principles of the NLRC and LRC.

2.3.7 Corruption

There are corruption risks due to the various participants involved and their different interests and incentives. These groups include the project developer, government, communities, SSOs and third-party auditors (Wessel & Boer, 2023).

All stakeholders in the VCC lifecycle are incentivized to create as many credits as possible which may impede their quality (Battocletti et al., 2023). The first conflict of interest occurs between the project developer and the SSO as both stakeholder's profit per credit issued or sold (Battocletti et al., 2023). Secondly, the project developer hires and pays third parties to validate and verify carbon credits. Therefore, the third parties may be incentivized to perform a less thorough assessment to have a higher chance of being rehired by the project developer (Battocletti et al., 2023). Thirdly, the project developer monitors the project directly and therefore they may be more inclined to overstate emission offsets. Finally, the project investor may also buy the carbon credits generated and may push to produce more VCCs (Battocletti et al., 2023). It is noted that in the current market there are no safeguards to manage these conflicts of interest (Wessel & Boer, 2023).

Corruption is considered an ethical risk potentially arising due to conflicting interests which could undermine the project integrity and principles of the NLRC and LRC.

2.3.8 Inequitable Distribution of Benefits

There has been criticism of the VCM that there is a lack of information on how local communities are profiting and the level of involvement (Healy et al., 2023). These concerns are as a result of a lack of understanding of how much of the money used to generate and sell VCCs contributes to the offset project rather than administrative costs and profits for private stakeholders involved (Battocletti et al., 2023; Healy et al., 2023; Miltenberger, Josphe, et al., 2021). The market is complex, with many market participants which can affect the ability to track the amount of funds directly invested into the emission reduction projects (Healy et al., 2023).

The profits generated from the VCCs are to be reinvested into the expansion of the solar water systems throughout Lebanon which means benefits are intended to directly reach communities (NLRC, personal communications, 2024). However, if benefit sharing arrangements are not clear and revenue flows are not transparent, there is a risk that benefits are not shared equally or not allocated appropriately (Battocletti et al., 2023) amongst the various communities in Lebanon.

Inequitable distribution of benefits is considered an ethical risk as it could negatively affect the community and undermine the principles of the organizations.

2.3.9 Lack of Community Consent & Inclusion

There are risks associated with balancing promised outcomes and project delivery as there can be misinterpretation of project goals and timelines leading to accusations and opposition by the community (Miltenberger, Josphe, et al., 2021). This opposition can arise from various sources such as financial distributions. For example, the profits may not be directly reinvested into the same community where the solarization project is being undertaken. Additionally, opposition could arise through challenging cultural norms (Bell & Carens, 2004). Furthermore, there can be project ownership disagreements (Miltenberger, Josphe, et al., 2021). In the project design documents, a title transfer will need to be signed to confirm that the ownership rights of the VCCs generated lie with the project developer (i.e., the NLRC and LRC) (Verra, 2023).

Lack of community engagement and consent resulting in potential resistance or opposition is considered an ethical risk as has the potential to sideline the community's role in the projects and affect NLRC's and LRC's mandate.

2.3.10 Government Conflict

Collaboration with the government is important for humanitarian organizations as they have obligations to comply with national laws, coordinate with government authorities, and comply with international humanitarian principles (Slim, 2015). Failure to appropriately collaborate with the government risks sidelining the mandate and obligations that these organizations have committed to (Slim, 2015). In this context, government collaboration is important for the solarization projects. Although the water systems are owned by the Lebanese government, the NLRC and LRC will have ownership of the VCCs generated. This means these organizations control the sale and benefits received from the credits (NLRC, personal communications, 2024). Without effective collaboration, conflict may arise particularly because the emission offsets cannot contribute to the Lebanese government's NDCs. Whereas traditional donor funding for solarization could contribute to Lebanon's NDCs.

Collaboration throughout the lifecycle of the generation and sale process may become increasingly important. Although the VCM is structured as a decentralized market (Howard et al., 2015), the involvement of governments in moderating, designing, and regulating carbon credit projects is increasing (Dawes, 2024). This is in response to criticisms of the VCM and the need for countries to comply with their NDCs (Dawes, 2024). Moreover, governments in the Global South are looking to generate financial benefits from offset projects developed within their country. For example, in 2023, the Zimbabwean government announced that they would take 50% of all profits generated from offset projects within the country. While Honduras and Papa New Guinea banned carbon credit trading for private interests (Inter-American Dialogue, 2023).

Government conflict is considered an ethical risk due to the potential of sidelining the mandate and obligations that the NLRC and LRC has committed to.

2.3.11 Further Examination of Risks

To further understand the risks described and examine further ethical risks that may not have been initially identified in the literature review, a systematic research approach has been undertaken and is described in the chapters below. While the risks identified in Section 2.3 represent the main ethical risks potentially encountered by the NLRC and LRC in the VCC projects, additional risks are intended to be identified through stakeholder discussions with the NLRC. These stakeholders have a more thorough understanding of the moral landscape and ethical risks the NLRC and LRC may encounter in using VCCs as an innovative funding mechanism.

3. Theoretical Framework

This chapter describes the framework that will be applied for this thesis. Section 3.1 describes the risk management approach and its relevance. Section 3.2 introduces the Ethical Risk Analysis (ERA) and its applicability in analyzing ethical risks. Finally, Section 3.3 illustrates how these concepts are integrated into the research design.

3.1 Risk Management

The ethical landscape surrounding VCCs has been previously explored using moral theories (Lamberton, 2011). However, moral theories operate under the assumption that there are clear outcomes with sufficient knowledge of the topic to undertake a normative analysis (Rogers et al., 2019). It is difficult to apply such theories to hypothetical risks that are challenging to predict. Such as those associated with the NLRC's and LRC's use of VCCs. Therefore, a risk management approach can be considered more suitable to understand, evaluate, and manage risks. The NLRC and LRC must have a complete understanding of the ethical risks associated with VCCs to ensure alignment with their missions and not disrupt the operations of the organizations (Fonseca, 2022).

There is a wide range of frameworks used in literature for risk management. Although there are different terminologies and methods, the fundamental risk management assessment process is viewed as (Hopkin, 2017; ISO, 2018):

- Risk identification: Identification of risks that may affect the organization in achieving its objectives.
- Risk analysis: Examining the nature and level of the risk by ranking them based upon the perceived occurrence likelihood and severity of impact. The results are influenced by perceptions of risks, opinions, quality of information and biases. Prioritization of the most severe ethical risks is then undertaken which allows decision makers to focus on the issues that are perceived to have the largest impact to the organization if they were to occur. This stage also involves evaluating the current controls in the organization to manage the identified risks.
- Risk evaluation: Risks are then evaluated to decide if further action is required. Evaluation can lead to the organization considering risk treatment options, maintaining current controls in place, re-evaluating objectives of the activities, taking no action or improving understanding of the risk through further evaluation.
- Risk treatment: Based on the findings of the risk evaluation stage, treatment measures are considered for the identified severe risks. Four treatment responses can be taken:
    - Tolerate (Retain/accept): The risk and impact may be considered tolerable, or the severity of the risk may not be able to be reduced. Therefore, the risk is accepted due to the benefits outweighing the potential negative effects or due to regulatory or legal requirements.
    - Treat (Reduce/control): The risk is taken on by the organization but controlled to reduce the severity of impact or exposure to a more acceptable level.
    - Transfer (Contract/insurance): Some risks can be transferred to another party to remove the risk from the organization.
    - Terminate (Eliminate/avoid): Some risks may only be treatable by the organization not undertaking the activity.

  These response measures consider the stakeholders involved and the organization's risk appetite.

3.2 Ethical Risk Analysis

Although the fundamental risk management process is a valuable approach in making informed decisions, Hansson (2018), acknowledges that it does not consider the interpersonal relationships

and principal agent problems that are needed for the examination of ethical risks. Therefore, he presents an ERA that can be used to analyze these risks. The ERA attempts to address the challenges acknowledged by various papers in the use of normative moral theories to justify why and when it is immoral to impose risks, given that they are uncertain and not inevitable (Hansson (2018) ; Rogers et al., 2019). The analysis aims to assess risks objectively considering all stakeholders affected. The ERA approach has a three-stage methodology. The first stage requires the identification of stakeholders. The second stage involves categorizing the stakeholder's ethically relevant roles, interdependencies, and conflicting role combinations. The final stage evaluates the risks based on the ethical considerations identified (Hansson, 2018). This process is described below.

3.2.1 Stakeholder Identification & Role Categorization

In the context of using VCCs to fund the solarization of public water systems in Lebanon, the types of risks, decision making, and management of risks are related to the stakeholders involved. Stakeholder theory is a widely used model for business ethics (Mahajan et al., 2023) and has been applied in various contexts including assisting in ethical decision-making (Hansson, 2018). This is because it provides a framework to consider all stakeholders affected by decisions made (Mahajan et al., 2023).

Although widely applied, Hansson (2018) argues that stakeholder theory prioritizes organizational needs rather than the most ethical approach. Thus, he adapted the framework for ethical assessments. In this adapted framework, there are three categories of stakeholders, being the risk exposed, the beneficiary and the decision makers. Risk exposed actors are impacted by the decision made and these actors can differ in the degree of exposure, awareness of the risk, resources that they can leverage to communicate the risk and capacity to impact the decision (Hansson, 2018). The beneficiaries are those perceived to profit from the risk directly or indirectly. The decision makers contribute to the exposure to the risk (Hansson, 2018).

Hansson (2018) identifies seven stakeholder risk role holders as shown in Figure 4, which has been adapted based on the original stakeholder theory. The seven roles are: 1) beneficiary, 2) beneficiary and decision maker, 3) decision maker, 4) risk exposed and beneficiary, 5) risk exposed, beneficiary and decision maker, 6) risk exposed and decision maker; and 7) risk exposed. Subsidiary risk roles are also identified, namely, representatives of the stakeholders and independent information stakeholders. Representatives of stakeholders are those who advocate for the interests of the actors involved, for example, consultants or lawyers. Independent information actors are experts on the risks involved such as topic experts and the media (Hansson, 2018).

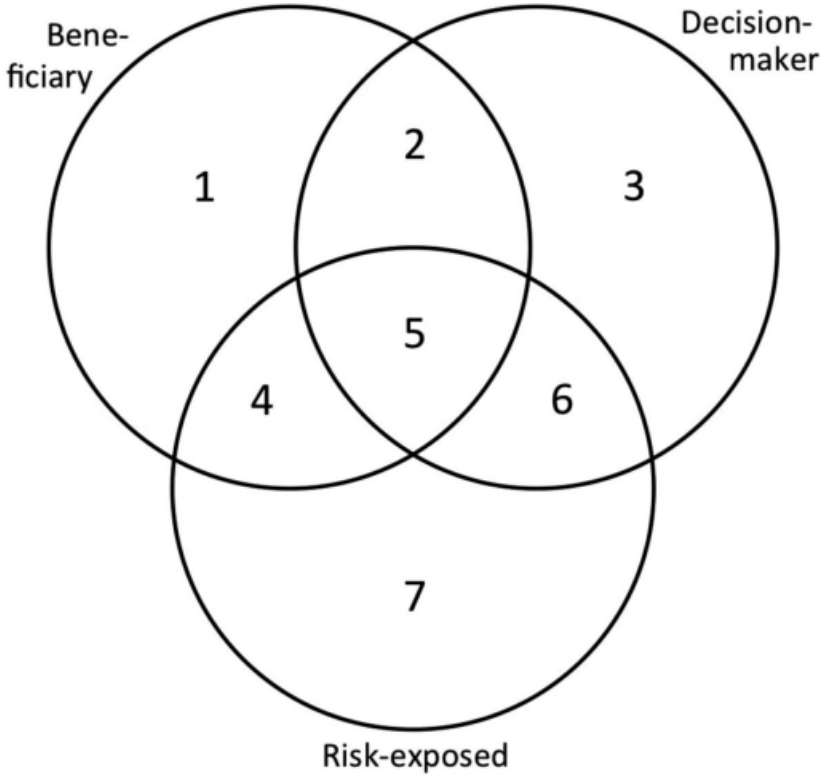

Figure 4 Venn diagram: Stakeholder risk roles (adapted by Hannson, 2018)

The identification of stakeholders is important to consider the range of ethical perspectives relevant to the NLRC and LRC. Stakeholders significant to the research project are categorized in Table 1. Figure 5 visualizes the stakeholder's risk roles relevant to the solarization projects.

Table 1 Stakeholders' ethically relevant roles

Category	**Stakeholder**
Risk-exposed, beneficiary and decision maker	
NLRC & LRC	The NLRC and LRC are at risk if ethical issues arise that involve or affect the functioning of the organizations. The organizations will benefit by fulfilling their mission and objectives and establishing an innovative funding process that can potentially be applied within other areas of the organization. The NLRC and LRC will make an informed decision if they leverage VCCs.
Risk-exposed and beneficiary	
Red Cross movement	The Red Cross movement is split into three-member societies. The International Committee of the Red Cross (ICRC) focuses on protecting victims of armed conflict and aiding situations of violence. The International Federation of Red Cross and Red Cresent Societies (IFRC) supports its member societies in fulfilling their missions and goals (International Committee of the Red Cross, 2008). Finally, the 192 National Red Cross and Red Crescent Societies (the National Societies)

Category	Stakeholder
	working in collaboration with the IFRC to respond to humanitarian needs globally (International Committee of the Red Cross, 2008). Given this, the IFRC, ICRC, and other National Societies may be indirectly exposed to risk if the projects negatively impact other Red Cross organizations. These organizations will benefit if a process for attaining VCCs is established and can be replicated.
Government and communities in Lebanon	The government and communities are directly impacted by the water system solarization projects. They are at risk if problems arise during the VCC acquisition process, construction, or operation of the solarization projects. The government and communities will benefit through access to reliable and affordable water supply systems.
General population affected by climate change	These stakeholders are indirectly affected by the projects. They are at risk if the projects remain reliant on non-renewable energy sources as it increases climate change related risks. They are also considered the beneficiaries as they can benefit from the NLRC and LRC implementing offset projects that reduce GHG emissions.
Private investor/donor	The investor/donor will benefit from funding the process to attain VCCs as they contribute to the humanitarian projects. The VCC investor/donor will contribute to the funding and potential sale of the VCCs. They are risk exposed as negative impacts from the project can indirectly affect the organization.
End buyer organization	The end buyer is contributing to offsetting their organization's emissions and contributing towards their CSR. They are risk exposed as negative impacts of the project can indirectly affect the organization.
Beneficiary	
Private companies involved in generation & sale process: SSO, project consultants, third-party auditors.	These organizations benefit from profiting from the certification, accreditation, sale and/or verification process required to attain VCCs.
Independent information providers	
Media	These are considered independent stakeholders that may report or investigate the NLRC's and LRC's use of VCCs in the solarization projects.
NGOs engaged in VCC projects	These are considered independent stakeholders that have had experience in generating and potentially funding projects through VCCs.
Topic experts	These stakeholders can inform the NLRC and LRC about the ethical landscape in participating in the VCM.

Note: 'Representative of stakeholders' have not been included as they act in a more advisory role to specific stakeholders and therefore do not directly shape the ethical landscape being explored. Additionally, they advocate for specific stakeholders' interests making their input less objective.

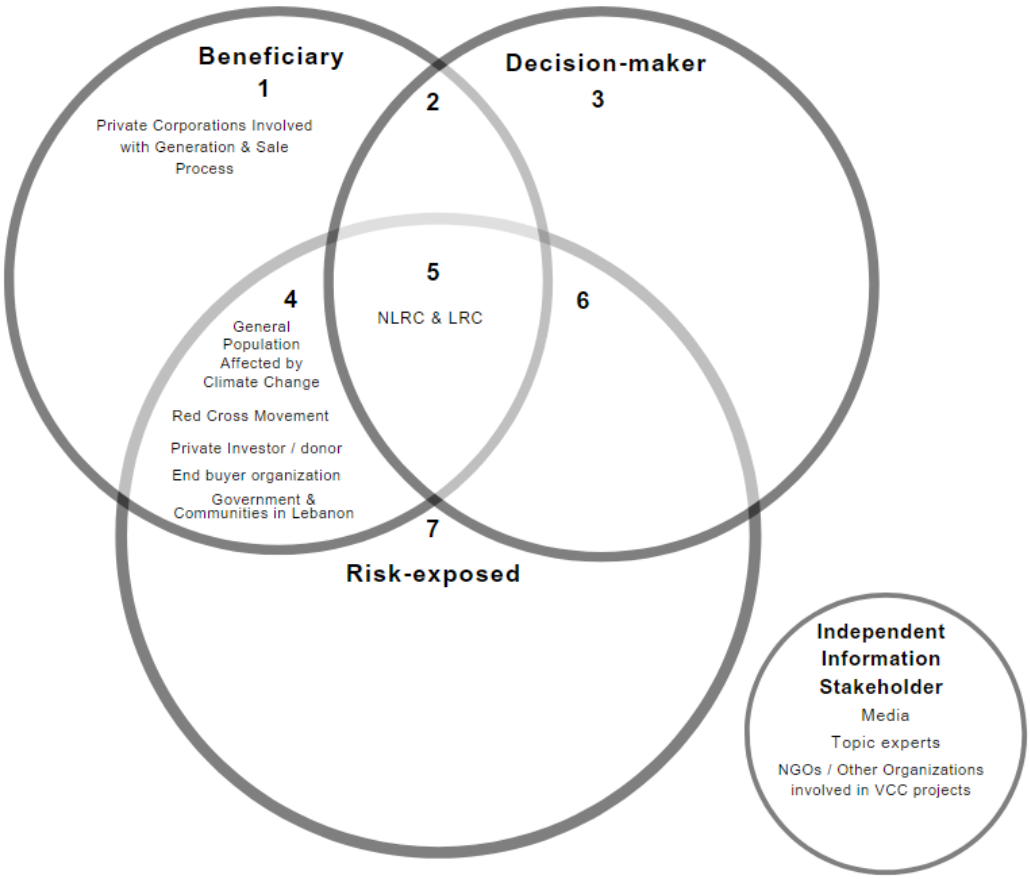

Figure 5 Venn diagram: Identification of stakeholder's risk roles (adapted from Hannson, 2018)

3.2.2 Ethical Deliberation

The final stage of Hansson's (2018) framework is the ethical deliberation phase, where the moral concerns of ethical risks are evaluated through stakeholder discourses. The ethical deliberation stage includes:

- **Individual risk-benefit weighting:** This will include evaluating the benefits and risks to stakeholders identified in risk roles 4 and 5 to understand trade-offs associated with the project. This analysis does not compare how the risks and benefits impact different stakeholders involved.
- **Distributional analysis:** This stage looks at how the risks and benefits are distributed across stakeholder groups and if the decisions made perpetuate inequalities or result in an unfair distribution of risks and benefits. This analysis is focused on role holders in categories 1, 2, 6 and 7. It may also involve risk role holders in 4 and 5 if a skewed distribution of risks and benefits are recognized in the individual weighting analysis. Hansson suggests a quantitative assessment. However, due to the subjective nature of stakeholder perspectives on ethical considerations and uncertainty regarding the project, a qualitative analysis is more appropriate.
- **Analysis of rights:** This stage looks at if the ethical risks infringe on stakeholders' rights (Hansson, 2018):
    1) Stakeholders have a right to not have risks imposed on them.
    2) The right should be defensible.

3) The right should not be overruled solely because there are other stakeholders that receive advantages that are larger than the negative effects of the risk exposure.

Risk imposition can be justified if there are "risk exchanges" that have positive outcomes for all involved. This analysis is focused on risk role holders in categories 6 and 7 and involves risk role holders in 4 and 5 if a skewed distribution of risks and benefits is recognized in the individual weighting analysis.

- **Power analysis:** This will include an examination of power dynamics between stakeholders and whether there are imbalances that may result in unethical implications. This analysis focuses on risk role holders 4 and 7.
- **Subsidiary risk roles:** This will involve looking at how independent information providers may impact the discourse surrounding the ethical risk landscape. As well as examine how such stakeholders may distort how risks and benefits are perceived.

3.3 Framework for Analysis

To ensure a structured approach in addressing the research questions the fundamental risk management process for identifying and managing risks will be used in combination with Hansson (2018) ERA. The approach is illustrated in Figure 6 and described as follows:

- Risk identification (**RQ1**): Ethical risks will be identified through both a literature review and stakeholder engagement to examine the ethical risk landscape which potentially conflicts with the NLRC and LRC's core principles.
- Risk analysis (**RQ1**): The risks will be evaluated by the NLRC based on the perceived occurrence likelihood and severity of their impact. The likelihood is assessed by considering how likely the risk will affect the NLRC's ability to achieve its objectives. The impact is assessed based on the perceived impact on the organization's objectives. Current controls that could be used to mitigate the identified risks will be considered by the NLRC when prioritizing the most significant ethical risk. This will assist in identifying the risk with the least current mitigation in place but has the highest potential negative impact to the organization.
- Risk evaluation (**RQ2**): The perceived most significant ethical risk will be evaluated using the ERA framework. This is to address RQ2 and understand how the moral concerns related to the most significant ethical risk impact the NLRC, LRC and other stakeholders affected by the decision.
- Risk treatment (**RQ3**): Based upon the findings of the risk evaluation stage, treatment measures (transfer, treat, terminate, or tolerate) will be identified to assist with the management of the perceived most significant ethical risk. Recommendations will then be made to the NLRC and LRC regarding the ethical use of VCCs to finance the solarization of public water systems in Lebanon.

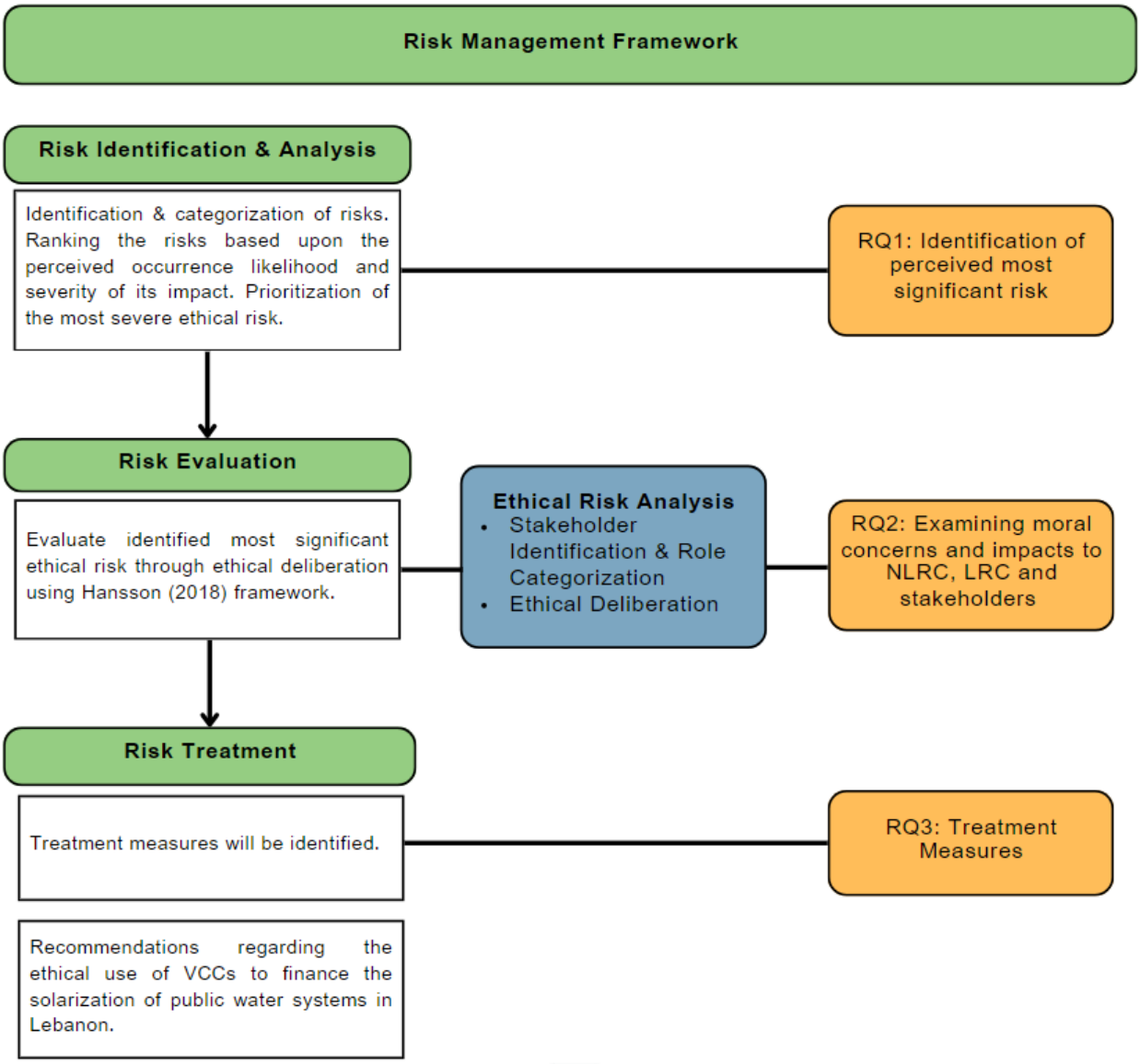

Figure 6 Framework for analysis (developed with Canva, 2024)

4. Methodology

This chapter outlines the methodology used to conduct the research. Section 4.1 justifies the case selection. Data collection and analysis methods are described in Section 4.2 and Section 4.3 0 respectively. Finally, the ethical factors considered in the methodology are provided in Section 4.4.

4.1 Case Selection

The municipal water system solarization projects were selected as a case due to the large scale of financial support needed to solarize public water systems in Lebanon (NLRC, personal communication, March 2024). For two years, the NLRC has functioned as a donor and as an advisor to support the LRC in converting municipal diesel water systems to solar power. These projects are successful in increasing the water supply systems' reliability (NLRC, personal communication, February 2024). Additionally, the Lebanon government's institutional capacity to provide infrastructure, governance and public services is compromised (United Nations, 2022b). This continues to perpetuate inadequate availability of safe and sufficient quantities of water to the Lebanese population (United Nations, 2022b). Therefore, the exploration of VCCs as an innovative funding mechanism for the Lebanese solar water system projects is considered suitable. The case selection aligns with Seawright & Gerring (2008) extreme case selection method. It represents an unusual instance where there is a funding opportunity and need for reliable water systems due to the ongoing challenges that the Lebanese water sector faces.

4.2 Data Collection

A mix of primary and secondary data collection methods were used to address the research questions. This was to analyze the current available information, address literature gaps and gain an insight of the perspectives of relevant stakeholders. Table 2 provides an overview of the data collection strategy for this research.

A range of data collection methodologies were used including a content analysis, a focus group and semi-structured interviews. Combining data collection methodologies can allow for a more complete understanding of the topic and is required to examine complex problems (Sharma et al., 2023). For instance, by combining a content analysis (literature review) with qualitative data from the focus group and interviews a comprehensive understanding of ethical risks can be identified which incorporate real world perspectives from stakeholders that have direct understanding of the ethical landscape. However, Sharma et al. (2023) highlights the difficulties in synthesizing diverse perspectives into a coherent narrative, raising issues of generalizability, bias and replicability. For example, the inherent subjectivity in interpreting multi-method data may affect the generalizability of the findings to other contexts. The replicability of this research may also be limited, as other researchers may interpret the data differently or face challenges in replicating the specific combination of methods used. However, to limit such challenges triangulation was used where possible by comparing findings from different data sources to identify areas of convergence and divergence.

Table 2 Data collection

RQ	Information Required	Data source	Data collection method
Risk identification & analysis			
RQ1	Description of VCCs and the VCM. Identification of the governance model, funding framework and procedure for the NLRC and LRC to attain VCCs.	Scientific and grey literature.	Content analysis (Section 4.2.1).

RQ	Information Required	Data source	Data collection method
	Knowledge of what constitutes an ethical risk in humanitarian organizations. As well as understanding the ethical risks relevant to the NLRC and LRC using VCCs.	Scientific and grey literature. NLRC.	Content analysis (Section 4.2.1). Focus group (Section 4.2.2).
	Evaluation of the identified ethical risks to determine the perceived most significant ethical risk.	NLRC.	Focus group (Section 4.2.2).
Risk evaluation			
RQ2	Evaluation and analysis of how the perceived most significant ethical risk affects the NLRC, LRC, and other stakeholders involved.	Scientific and grey literature.	Content analysis (Section 4.2.1).
		Stakeholders in Table 1.	Semi-structured interviews (Section 4.2.3).
Risk treatment			
RQ3	Identification of risk treatment strategies that could be used by the NLRC and LRC.	Scientific and grey literature.	Content analysis (Section 4.2.1).
		Stakeholders in Table 1.	Semi-structured interviews (Section 4.2.3).

4.2.1 Content Analysis

The content analysis covered a three-month period (March to May 2024) and began with scoping review of the Web of Science database and Google Scholar (for grey literature). Relevant scientific journal articles and grey literature related to understanding VCCs, the VCM, and how they function was reviewed. Following this review, a second rapid literature review was undertaken to explore the discourse surrounding ethical issues in humanitarian organizations and ethical risks related to VCCs. Variations of the following general search string were used: “humanitarian ethics,” “ethical dilemmas,” “ethical risks,” “ethics,” “carbon credits”, “carbon offsets”, “ethical issues” and “carbon credit risks”. A snowball method was used as well to source relevant papers. This involved examining the references cited in the review literature to assist with reviewing relevant articles.

4.2.2 Focus Group

A 90-minute focus group was undertaken on the 14th of May 2024 to address RQ1. The focus group provided qualitative and quantitative data and was used to stimulate conversations on the ethical risks identified from the literature review. As well as to understand stakeholders’ views on what they perceive as the most significant ethical risk and suggest potential risk treatment measures that could be used. There were thirteen participants who provided input into the focus group from the NLRC (see Table 3). Participants were chosen based on their roles and responsibilities to allow for a deeper understanding of how diverse groups and decision-making levels perceive the ethical risks.

Table 3 Focus group participants

Stakeholder Position	Abbreviation in Text
NLRC Business Developer (Princess Margaret Funds)	NLRC Business Developer
NLRC Press Officer	No Abbreviation (NA)

Stakeholder Position	Abbreviation in Text
NLRC Corporate Partnership Manager	NA
NLRC Advisor Public Affairs	NA
NLRC Senior WASH Advisor	NLRC WASH Advisor
NLRC Planning and Coordinator Manager	NLRC Planning & Coordinator Manager
NLRC Senior Spokesperson	NLRC Spokesperson
NLRC Director International Department	NA
NLRC Manager Water, Advice, and Innovation*	NLRC Water Manager
NLRC Green Response & Logistics Officer**	NLRC Logistics Officer
NLRC Director (Princess Margaret Funds)**	NLRC Director of PMF
NLRC Legal Counsel**	NLRC Legal Counsel
NLRC Research Intern	NLRC Intern

Note: *The Manager of Water, Advice and Innovation did not participate in the focus group, however, provided results following the focus group.
** Indicates online participant.

To achieve the objectives of the focus group, stakeholders were briefed on the project, the VCM and the VCC framework for the project (see Section 2.1.3). This allowed participants to have a shared understanding of the project and have an informed discussion of the ethical risks identified (see Section 2.3). Stakeholders were then asked to prioritize the three risks they perceived as most critical based on the perceived likelihood of occurring and the severity of their impact. To interpret these results, further analysis was undertaken as explained in Section 4.3.2 to select the most significant risk. In addition to this, participants were also asked to provide potential risk treatment strategies that could be used to reduce the likelihood and severity of the perceived risk. The focus group involved both in person and online participants. The discussions were audio recorded and transcribed.

4.2.3 Semi-Structured Interviews

Semi-structured interviews were undertaken with fifteen stakeholder representatives to gather perspectives on the NLRC's and LRC's use of VCCs. Risk role holders from groups 1, 2, 4, 5 and independent information providers were interviewed. The interviews aimed to collect data for the ERA and identify potential risk treatment strategies. Questions were open-ended to encourage the interviewee to provide in-depth answers. The interviews were conducted over Microsoft Teams and lasted between 30 to 60 minutes. Interviews were recorded, transcribed, and securely stored on OneDrive. Interviews were undertaken from April to June 2024 to provide qualitative data to inform RQ2 and RQ3. Table 4 provides the list of stakeholders interviewed, their stakeholder category according to the ERA approach.

Table 4 Stakeholders interviewed

Stakeholder Group	Stakeholder Position	Abbreviation in Text	Date
Risk-exposed, beneficiary and decision maker (Risk Role 5)			
NLRC	Senior WASH Advisor	WASH Advisor	08/06/24
NLRC	Business Developer (Princess Margaret Funds)	Business Developer	28/05/24
NLRC	Lebanon Country Representative	Lebanon Country Representative	30/05/24

Stakeholder Group	Stakeholder Position	Abbreviation in Text	Date
Risk-exposed and beneficiary (Risk Role 4)			
IFRC	Global Head of Private Sector Unit	IFRC Representative 1	15/04/24
IFRC	Senior Officer Innovative Finance and Private Sector*	IFRC Representative 2	15/04/24
ICRC	Innovative Finance Advisor	Innovative Finance Advisor	21/06/24
General population affected by climate change	Stakeholder #1 affected by climate change	Stakeholder #1 general population	28/05/24
General population affected by climate change	Stakeholder #2 affected by climate change	Stakeholder #2 General Population	8/06/24
General population affected by climate change	Stakeholder #3 affected by climate change	Stakeholder #3 General Population	12/06/24
NLRC & LRC investor: Private investor**	Donor representative	NLRC private investor	24/06/24
Beneficiary (Risk Role 1)			
Third-party auditor**	Previous involvement as third-party auditor	Third-party auditor	21/06/24
Independent information providers			
Carbon Market Watch	Policy expert on carbon market	VCM Policy Expert	30/05/24
NGO using VCCs	Development and Partnership Manager - Nubian Vault Association	NGO Representative 1	15/04/24
NGO using VCCs	Project Manager – Nature Based Climate Solutions	NGO Representative 2	18/04/24
NGO rejecting VCCs	Policy and Research	NGO representative 3	19/04/24

Note: *This interviewee stated that their opinions are personal opinions and do not necessarily reflect the IFRC's views.
** Full interviews were not conducted with these participants.

4.3 Data Analysis

This section outlines the methods used to analyze the primary data collected from interviews and the focus group. Particularly, to understand the ethical risks, perceived most significant risk, the moral concerns of stakeholders and suggested treatment strategies.

4.3.1 Coding

Primary data collected through interviews was qualitatively analyzed through transcription, followed by descriptive coding. Descriptive coding aided in categorizing the data into key concepts, being 'benefits/positives of VCCs,' 'challenges/risks of VCCs,' 'treatment strategies' and 'public/media perception.' The coding was undertaken deductively and inductively, as new codes

were developed based upon the outcomes of primary data collection. By using descriptive coding, patterns and perceptions could be more readily discerned. After the development of the descriptive codebook, thematic coding was undertaken to categorize the information based on the themes of the ethical deliberation phase of the theoretical framework.

For focus group data, descriptive coding was undertaken using the ten ethical risks identified through literature review as codes to categorize respondent discussions. Other key concepts used to categorize respondent discussions were ‘additional ethical risks’ and ‘risk treatment strategies’.

4.3.2 Most Significant Ethical Risk Evaluation

To evaluate the responses of focus group participants regarding the three ethical risks perceived as most critical to the NLRC, a weighted analysis was undertaken. The weighted analysis adds a deeper understanding of rankings by participants as it accounts for both frequency and assigned ranking. This is supported by Dany et al. (2014) who states that such analysis provides a more comprehensive understanding of the meaning of the representations being studied. This was completed by assigning points to the ethical risks based on their frequency of identification and ranking by focus group participants:

- Highest Concern (Most significant risk): 3 points.
- Second highest concern (Second most significant risk): 2 points.
- Third highest concern (Third most significant risk): 1 point.

The points were combined for each ethical risk to determine an overall weighted score.

4.3.3 Treatment Strategy Categorization

Risk treatment strategies recommended through interviews and focus group participants were categorized based on the four risk treatment options (transfer, treat, terminate, or tolerate) and definitions provided in Section 3.1. These strategies were elaborated on and/or adapted based on findings from the risk evaluation stage in Section 5.2.

4.4 Research Ethics

This research project was undertaken following the University of Twente Research Ethics Policy. Informed consent was obtained before each interview and during the focus group regarding the use of data and recording of the interviews. All participants signed a consent form before the start of primary data collection. Stakeholders of the focus groups and interviews were sufficiently informed of the reasoning behind the research and how the data was intended to be used. Respondents’ personal information was deidentified and sanitized where necessary to ensure anonymity and confidentiality of the respondents. Also, respondents were given the right to withdraw consent throughout this research.

Focus group information and interview data were stored securely using the University of Twente OneDrive and only used for this research. The data will be deleted one year after finalizing this research.

5. Results and Discussion

This chapter presents and interprets the findings from data collection and analysis in the context of the theoretical framework. The structure of this chapter follows the fundamental process of the risk management approach: identification, analysis, evaluation and treatment.

5.1 Risk Identification & Analysis

5.1.1 Ethical Risk Landscape

Focus group discussions acknowledged that the ten ethical risks identified in the literature review were relevant to the NLRC and identified five additional risks associated with using VCCs to fund solarization projects in Lebanon.

Mandate drift emerged as a new concern. The NLRC Legal Counsel questioned *"whether VCC activities fall within* our [the NLRC] *mandate and strategy."* This is backed up by literature, where Bell & Carens (2004) identified that the increased demand for financial support to address humanitarian crises can create additional pressure to expand the capacity of organizations and diversify to address such concerns. Although VCC projects are considered sustainable funding sources due to their ability to generate funds over an extended period (Summers et al., 2015), innovative funding mechanisms can lead organizations to expand activities beyond their core mission (Ahmed, 2021).

Additionality was also acknowledged as a key risk. The NLRC Director of PMF stated that *"additionality is one major risk"* and "*the most prominent reason why carbon projects fail."* A key requirement for VCC projects is the concept of financial and regulatory additionality (Battocletti et al., 2023). If a project would occur despite the financial return of credits, the VCCs do not represent a net decrease in overall emissions (Miltenberger, Josphe, et al., 2021). This was not initially considered a risk as the solarization project's widespread expansion is dependent on carbon credit funding. However, participants recognized that additionality is a nuanced issue. This is particularly relevant for renewable energy projects (Cames et al., 2016). Cames et al. (2016) undertook a study reviewing renewable energy projects approved under CDM methodologies and most projects were found to be unlikely to be additional. Furthermore, the Lebanese government has committed to achieving water security and supporting the use of renewable energy for providing drinking water under their NDCs (Lebanon Government, 2020). This may call into question the regulatory additionality of the project. Thomas et al. (2024) identified regulatory additionality as an issue in low-income countries. The paper highlights that these countries may lack the capability to achieve commitments resulting in situations where essential services are not provided. If the projects are not deemed additional it could affect the project's contribution to GHG emission reductions. This concern aligns with the ethical risk of failing to deliver target offsets (see Section 2.3.2), highlighting the interconnected nature of ethical risks.

Prioritizing VCC projects over other humanitarian initiatives was another concern of participants. For example, the NLRC Advisor of Public Affairs noted that due to the long-term funding that VCC projects can provide there is a *"risk for misplaced incentives to focus on carbon credit"* projects, rather than prioritizing humanitarian benefits and potential impact. Ahmed (2021) acknowledged this in the context of innovative funding and how more funds may be allocated to projects that support long term funding resilience. This is an issue as humanitarian projects should prioritize sustainable development rather than programs that ensure sustainable funding (Ahmed, 2021). This risk aligns with inappropriate or risky allocation of funds (see Section 2.3.5), potentially compromising the NLRC's and LRC's principle of neutrality.

Failing to meet donor obligations was also recognized. Concerns arose about the impacts if public donors were used. The NLRC Press Officer noted potential misunderstandings by the general public and donors about how the carbon credit mechanism functions. This misalignment could erode trust and affect the NLRC's and LRC's commitment to transparency and accountability (IFRC, 2022). The NLRC WASH Advisor acknowledged that initially a higher proportion of funds would be directed towards administrative costs to generating VCCs, rather than direct humanitarian aid. Given that the NLRC and LRC have committed to using donor funds efficiently, there may be expectations that a higher proportion of contributions will directly address humanitarian needs. Misunderstanding this process could damage donor relationships and pose an ethical risk to the NLRC and LRC in fulfilling their obligations.

Fraud was recognized due to the potential for insufficient procedures in place to safeguard the integrity of the projects. The NLRC Legal Counsel acknowledged that the process for generating carbon credits "*seems fragile and sensitive to fraud and corruption*". Fraud could arise from conflicts of interest that result in an increased risk of manipulation. Examples include money laundering, intentionally double counting, or intentionally overstating emissions (Chen et al., 2021). This risk, like corruption identified in Section 2.3.7 could undermine the project's integrity.

Lack of collaboration with the LRC was also identified as an ethical risk by an NRLC participant. The National Societies are required to operate within their own country and operating in another country of another National Society requires permission. However, upon evaluation of what constitutes an ethical risk (see Section 2.3), this risk is not considered an ethical concern for the NLRC but an operational risk. This is because this is a procedural and operational protocol required before such a collaboration can occur. Therefore, this risk has not been considered further. The misclassification of this project related risk further suggests the interconnected nature of risks.

The identified ethical risks both from the literature review and focus group (displayed in Figure 7) show the complex ethical landscape surrounding the NLRC's and LRC's potential involvement in the VCM. The differing perspectives from focus group participants highlight the need for clear planning to guide NLRC's and LRC's involvement in the market. The number and types of risks acknowledged may reflect the decentralized and fragmented nature of the VCM (Battocletti et al., 2023; Miltenberger, Josphe, et al., 2021). This is supported by Franki (2022) who acknowledges that the lack of a centralized regulatory system can increase risks for market participants.

While the ethical risks identified are relevant to the potential use of VCCs, some ethical risks identified are challenges that humanitarian organizations must manage in all projects using different funding methods (e.g., traditional donor funding). For example, fraud, corruption, and investor misalignment (Makhoul et al., 2023).

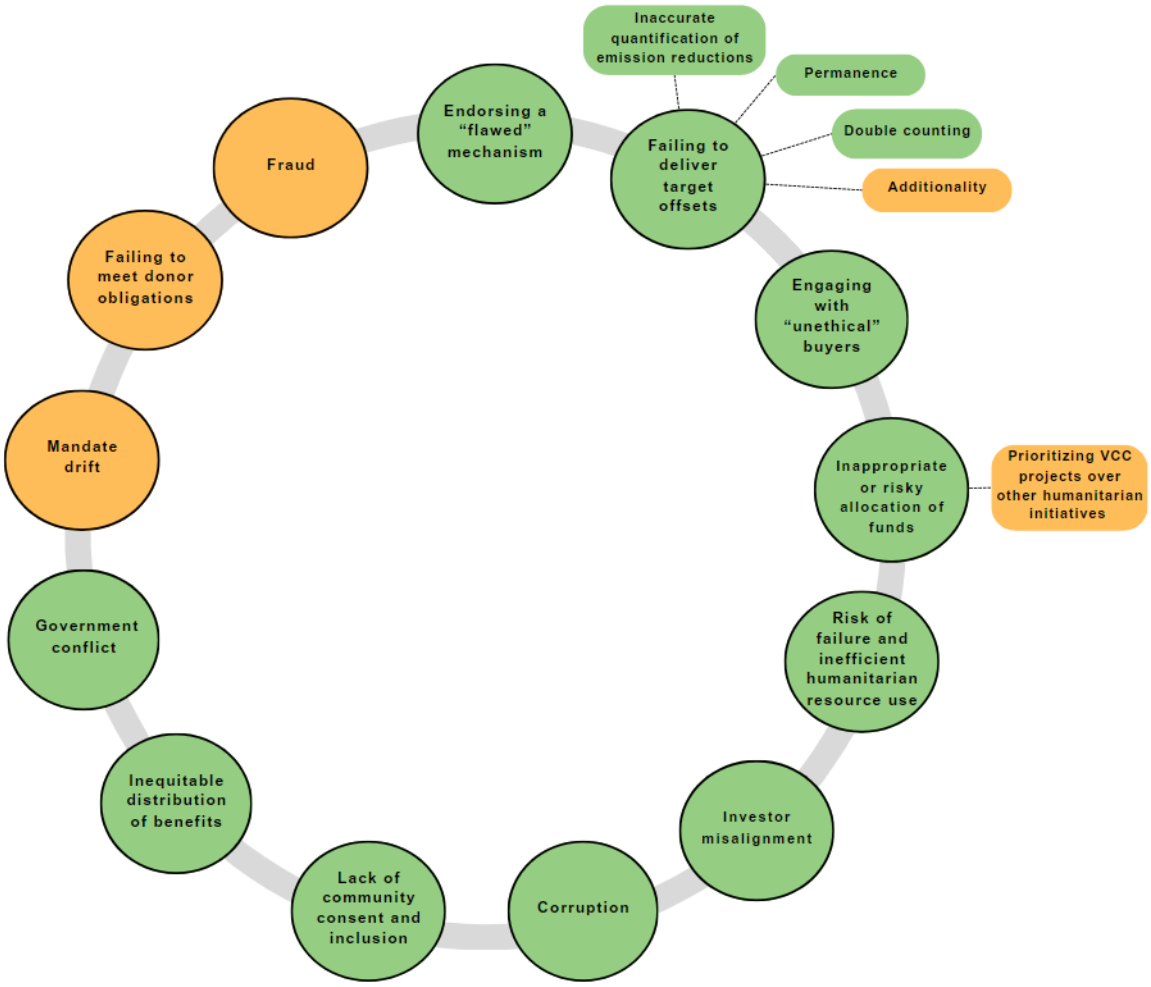

Figure 7 Ethical risk landscape (developed with Canva, 2024)

5.1.2 Most Significant Ethical Risk

Table 5 displays the top three ethical risks selected by focus group participants as being the most significant to the NLRC. Ten ethical risks were identified, with nine of the risks from the literature review (see Section 2.3) being ranked as the highest three ethical concerns by one or more respondents. Endorsing a "flawed" emission reduction mechanism was identified as the most significant risk by eight out of the thirteen respondents. In the second highest concern category, inappropriate or risky allocation of humanitarian funds received the most responses. No risk was recognized more frequently in the third highest concern category.

Table 5 Respondents prioritization of ethical risks

Ethical Risks	**Number of Responses**		
	Highest Concern	**Second Highest Concern**	**Third Highest Concern**
Endorsing a "flawed" emission reduction mechanism	8	1	0
Failing to deliver target offsets	1	2	1

Ethical Risks	Number of Responses		
	Highest Concern	Second Highest Concern	Third Highest Concern
Engaging with unethical buyers	1	1	2
Risk of failure and inefficient humanitarian resource use	3	0	2
Inappropriate or risky allocation of humanitarian funds	0	4	2
Investor misalignment	0	0	0
Corruption	0	3	1
Inequitable distribution of benefits	0	1	1
Lack of community consent and inclusion	0	0	2
Government conflict	1	0	1
Fraud and bad control*	0	0	1
Sum of responses	**14****	**13**	**13**

Note: *This was a new ethical risk identified by one focus group respondent and was not identified within the initial literature review in Section 2.3.
**One stakeholder ranked two risks as being most critical, therefore the sum of responses equals 14 rather than 13 participants.

To evaluate the responses further, a weighted analysis was undertaken as shown in Table 6 to assess both the frequency of the ethical risks and their assigned ranking (highest concern, second highest concern, third highest concern).

Table 6 Weighted analysis of ethical risk prioritization

Ethical Risks	Weighted Analysis
Supporting a "flawed" emission reduction mechanism	26
Failing to deliver target offsets	8
Engaging with unethical buyers	7
Risk of failure and inefficient humanitarian resource use	13
Inappropriate or risky allocation of humanitarian funds	10
Investor misalignment	0
Corruption risks	7
Inequitable distribution of benefits	3
Lack of community consent and inclusion	2
Government conflict	4
Fraud and bad control	1

Endorsing a “flawed” emission reduction mechanism received the highest overall score which reflects participant's concerns about the VCM’s fragmentation and lack of regulation. The NLRC Legal Counsel highlighted the VCM’s unregulated nature as an “*important red-flag and risk”* particularly from a legal perspective. According to the NLRC Director of PMF, the lack of regulation leads to *“the available credits lacking integrity*.” Focus group participants also questioned the effectiveness of offsetting in combating climate change with the NLRC Corporate Partnership

Manager questioning whether "*offsetting is the best humanitarian solution?"* and the NLRC Planning & Coordinator Manager emphasizing that the NLRC and LRC "*need to be careful not to get biased by the amount the market is worth."* This uncertainty in the market's efficacy is reflected in broader literature (Korthuis et al., 2023).

The risk of failure and inefficient humanitarian resource use was identified as the second largest concern. NLRC's Planning & Coordinator Manager highlighted a potential competence risk of NLRC and LRC. While the NLRC Advisor Public Affairs emphasized the need for bureaucracy and skills to make VCC projects beneficial. Due to the increasing demand for humanitarian services (Clarinval & Biller-Andorno, 2014) prioritizing and allocating resources to carbon projects could be perceived as ethically questionable. Additionally, the market's volatility and evolving state could increase this risk. For instance, the implementation of Article 6 of the Paris Agreement is expected to enhance the credibility and effectiveness of the VCM (Michaelowa et al., 2022). However, such changes could introduce new requirements leading to delays, increased costs, or project failures. Ultimately, jeopardizing the NLRC's and LRC's ability to fulfill its humanitarian mission.

The third most significant ethical risk was inappropriate or risky allocation of humanitarian funds. The NLRC Planning & Coordinator Manager voiced concerns about NLRC's and LRC's ability to respond to high need situations, "*when there is a disaster, we want to spend money on....we don't have it because it's been invested in this project."* The potential lack of readily available funds could hinder the organization's ability to respond to high need situations. Potentially contradicting the organization's core mission. Furthermore, the NLRC Advisor of Public Affairs stated that there is a risk that the NLRC and LRC will only look at programs that have VCC potential rather than humanitarian benefits. These factors could lead to a misalignment between the NLRC's and LRC's core principles, particularly impartiality.

The three most critical risks identified are interconnected and highlight the uncertainties by the NLRC surrounding the VCM structure and efficacy. The perception that endorsing a "flawed" emission reduction mechanism is the most critical risk may reflect broader concerns in navigating the complexities and controversies of the mechanism while upholding the organization's mission. Focus group participants questioned offsetting as a principle, which means that although the other risks are important, some stakeholders were not confident in the mechanism. This is supported by Trouwloon et al. (2023) describes the ideological divide between proponents who believe in carbon markets in accelerating decarbonization and those who believe that offsets delay decarbonization. Furthermore, this ethical risk concerns the integrity of the entire carbon mechanism, while many of the other ethical risks are relevant in selected phases of the offset project. The potential impacts of the perceived most significant risk would therefore extend beyond the solarization projects.

These risks emphasize the need for the NLRC and LRC to cautiously navigate the VCM. As well as ensure engagement in the market enhances rather than negatively impacts humanitarian needs. To further understand the impacts of the most significant risk (endorsing a "flawed" emission reduction mechanism), the moral concerns of stakeholders were evaluated in Section 5.2 using the ERA.

5.2 Risk Evaluation (ERA)

5.2.1 Individual Risk-Benefit Weighting

This section includes an evaluation of the benefits and risks to stakeholders categorized as beneficiaries and risk exposed to understand trade-offs associated with the solarization projects.

5.2.1.1 NLRC & LRC

The financial gap in the humanitarian sector is growing and this has spurred a greater interest in finding innovative financing solutions (Ahmed, 2021). The NLRC and the broader Red Cross movement see VCCs as a potential solution to address the issue of donor funding instability, with the added benefit of building internal capacity through project implementation. As IFRC Representative 2 notes, carbon credits *"offer a potential solution to the significant funding shortfalls in the humanitarian and development sectors".* NGO Representative 1 further emphasizes that carbon credits can "*offer a more sustainable and long-term funding source compared to traditional grant cycles".* This is because VCC projects can be self-sustaining, generating revenue for over 20 years (Verra, 2023).

VCCs also present an opportunity for the NLRC and LRC to leverage a growing market, forecasted to grow 100-fold by 2050 (Battocletti et al., 2023). This has been driven by private companies that have ambitiously committed to net neutral or net zero targets (Kreibich & Hermwille, 2021). The VCM represents an untapped market for the NLRC and LRC, particularly as private companies allocate separate budgets for philanthropic initiatives and carbon credit purchases (according to NGO Representative 2).

Furthermore, by funding the expansion of the solarization projects, VCCs contribute to the NLRC and LRC's core mission. The NLRC Business Developer refers to this by stating that carbon credits enable the LRC to achieve its mandate "*to provide communities in need better and sustainable water access where it wasn't possible to do at such a scale before."* The NLRC Lebanon Country Representative affirms this by stating that the project *"aligns with our* [Red Cross movement] *climate change and environmental programs….so this fits within our broader goals".* The *"LRC would benefit economically by accessing additional funds and the NLRC benefits by addressing global needs in a world where traditional donors are reducing funding."* If VCCs are effectively leveraged it not only assists the organizations financially in achieving their core mission, "to prevent and alleviate human suffering" (IFRC, 2022), but the organizations are increasingly focusing on how to promote and address climate action (IFRC Climate Centre, 2023).

The IFRC acknowledges that climate change is contributing to humanitarian crises and by scaling up climate actions within National Societies (i.e., LRC and NLRC) it supports their mission (IFRC Climate Centre, 2023). The NLRC Director of PMF stated, "*VCC direct private financing to climate-action projects that would not otherwise get off the ground and scaled-up VCM would facilitate the mobilization of capital to the Global South."* This statement, also supported by the NLRC Business Coordinator of PMF shows how VCC projects could align with the organization's broader goals and climate, social and environmental agenda. Lastly, the NLRC and LRC collaboration can facilitate stronger partnerships through access to long-term funds and expansion of their reach. This demonstrates that VCCs can strengthen the interconnected network of humanitarian support being provided.

Although clear benefits were identified, all stakeholders interviewed acknowledged the caveats to the NLRC's and LRC's potential endorsement of the VCM. The most frequently cited impact was the potential damage to both organizations' reputation. Both the NLRC and IFRC emphasized the intangible value of the Red Cross movement's image as a trusted organization. IFRC Representative 2 referenced the American Red Cross fundraising issues in Haiti and how the reputational damages continue to impact that national society 20 years on.

The potential for reputational impact is heightened by the current criticisms of the VCM which is perceived by some as *"not fit for purpose and open to abuse"* (NGO Representative 3). By

associating with the VCM, the NLRC and LRC are at risk as *“seen as supporting environmental polluting activities”* as referred to by the NLRC Planning & Coordinator Manager. This was also referred to by the NLRC Senior Spokespersons, "*you can't really see how companies will use it* [the VCC] *because are they going to use it in their impact report to showcase that they're doing such a good job".* Both buyers and organizations assisting with the VCC process could exploit the Red Cross association through virtue signaling or greenwashing. This could damage the organization's reputation as a credible organization and potentially affect funding and external support. Makhoul et al. (2023) found that private organizations providing financial support to humanitarian organizations are often focused on marketing. This aligns with the concerns that stakeholders raised regarding greenwashing and reputation damage.

There were also concerns that endorsing the VCM may not align with the NLRC’s and LRC’s core mission and principles. The NLRC Planning & Coordinator Manager stated that the National Societies "*need to be careful not to be biased by the amount the market is worth"* and projects should be based on humanitarian need alone. NLRC Lebanon Country Representative also emphasized that *“if engaging in carbon credits benefits the communities we serve and aligns with our principles, it can be good. But it should not be commercially driven.”*

The NLRC Legal Counsel raised concerns about the quality, transparency, and accountability of VCCs. These concerns are reflected in the market as there is a dialogue that many credits are ineffective in reducing GHG emissions effectively (Summers et al., 2015). It has been argued that it can allow companies to offset their emissions without making real efforts to reduce them internally, which was mentioned also by IFRC Representatives 1 and 2. The methodologies for calculating emission reductions have also been heavily criticized (Summers et al., 2015). Additionally, there is a potential to contribute to social injustice because of the regulation and structure of the VCC. NGO Representative 3 suggested that *“the VCC market may disproportionately benefit wealthier actors while placing the burden of offsetting emissions on marginalized communities*.

The effectiveness of the VCM is heavily debated and therefore investing in VCCs could be seen as taking a clear stance in the climate change discourse. This could compromise the Red Cross’s principles of neutrality and impartiality. If the VCM is not transparent or accountable it could lead to the Red Cross inadvertently supporting projects that effects climate injustice and social inequalities. The NLRC WASH Advisor stated that an important impact to consider is “*actively supporting a system that adds to climate change*” and in turn perpetuating the status quo and contributing to climate change. Supporting a system that perpetuates the status quo of GHG emissions would contradict the organization's efforts to address the humanitarian consequences of climate change.

Once more, in 2023 there was a clear downturn in the market as a direct result of the decreased confidence in the VCM’s’ effectiveness and mistrust. This shows the instability and financial risk associated with the NLRC and LRC trusting a mechanism that may be considered imperfect and an unstable financial instrument (Pande, 2024).

5.2.1.2 The Red Cross Movement

Despite the NLRC and LRC being the instigators of the solarization projects the Red Cross movement is interconnected (International Committee of the Red Cross, 2008). Thus, there are also benefits and potential negative impacts in their association.

A successful VCC project can act as a pilot for other Red Cross organizations and assist in guiding and scaling up similar initiatives. In turn, reducing reliance on donor funding and creating an ongoing financing mechanism. The projects can also serve as a model for integrating climate action into humanitarian work. The NLRC Director of PMF referred to the fact that VCCs can direct private financing to climate-action projects that would not otherwise get off the ground and scaling up initiatives would facilitate the mobilization of capital to the Global South.

Additionally, these projects would contribute to building internal capabilities. The NLRC Business Developer noted that "*organizational learnings about this new business model, where they* [the Red Cross] *can use it elsewhere,* [leads to] *more flexibility towards resource mobilization,* [and the ability to] *allocate fundings to other areas where business models are not possible."* Further expanding on this by referring to the fact that the NLRC could support the IFRC in setting up their own carbon credit mechanism to roll out in many countries. This could provide a financial benefit and improve their position by helping National Societies access new financing methods.

Moreover, if effectively implemented these initiatives would support the movement's mission and address humanitarian and climate needs. Stakeholder #1 General Population also suggested that such success could enhance the Red Cross reputation by *"garnering support from the public and the market for future projects"* and therefore attracting additional support and funding.

Conversely, like the impacts specified in Section 5.1.2, supporting an imperfect mechanism could result in misalignment with the movement's mission and principles. Particularly by perpetuating the climate change status quo and in turn contributing to climate and social injustice. There could also be financial repercussions. Given the interconnected nature of the Red Cross movement, reputation is the primary impact. The NLRC Legal Counsel stated that reputation damage is an "*important risk, linked to all, which not only harms NLRC* [and LRC] *but may also harm other National Societies and the movement as a whole."* Although the risk is primarily with the NLRC and LRC, the credibility of the movement may be questioned and lead to compounding effects (e.g., withdrawal of funders) as suggested by the NLRC WASH Advisor.

5.2.1.3 Communities & Government in Lebanon

The communities in Lebanon are the direct beneficiaries of the expansion of the solarization projects throughout Lebanon, leading to improved access to clean water. As well as increasing the reliability of public water supply and creating less reliance on private water providers (Stakeholder #3 General Population). This is also emphasized by the NLRC Business Developer who states that *"carbon credits could provide long-term funding to increase water access, directly benefiting communities lacking safe water, as shown by* [recent] *Cholera and Hepatitis A outbreaks."*

VCCs offer a long-term funding source, supporting infrastructure development and maintenance. It is also a requirement for VCC projects to support sustainable development that goes beyond emission offsets. The carbon credit mechanism as stated by NGO Representative 1 can *"generate additional benefits, such as educational and employment opportunities. These can empower communities to lead and thrive."* If successful, it is also considered a sustainable revenue stream, with NGO Representative 1 discussing that during the COVID-19 pandemic *"despite challenges, people continued buying carbon credits, allowing us to maintain operations and avoid layoffs".*

The government also benefits as they are responsible for providing water services and the projects provide a more cost-effective and reliable water system solution, "*allowing government funding to be channeled into other avenues"* (Stakeholder #2 General Population). This may alleviate government pressure as there is currently a lack of institutional capacity to provide clean water

services in Lebanon (United Nations, 2022c, 2023). The NLRC Business Developer affirms this by stating that the *"external support provided to Lebanese authorities….helps fulfill the role of government to provide basic services to the people."*

The communities and government in Lebanon are not necessarily directly impacted by the Red Cross endorsing a "flawed" mechanism. As Stakeholder #1 General Population stated, *"at their level* [community and government]*, carbon credits are not even relevant ….any sort of funding to boost their access to clean water will help and therefore this is the main benefit that the VCCs offer".* However, the community and government may be impacted if they do not receive what is communicated and promised from the project. Stakeholder #1 General Population states that the *"communities in Lebanon are the most vulnerable as they rely on the successful implementation of these projects for essential services. I believe it is way worse to promise the communities access to water infrastructure and then not deliver. Hence, if the projects fail, they suffer the direct consequences."*

5.2.1.4 General Population Affected by Climate Change

Although not directly impacted by the solarization projects, the VCM is intended to be a key market mechanism for climate change mitigation (Howard et al., 2015). The clearest benefit for the general population was the reduction in GHG emissions from converting diesel to solar water systems, contributing to global mitigation efforts. Additionally, the Red Cross, being a trustworthy movement could drive a more transparent market and therefore the potential *"recognition of carbon credits as a viable funding mechanism for green projects" (*Stakeholder #3 General Population).

The Red Cross movement's endorsement of the VCM also poses an indirect risk to the general population by giving legitimacy and supporting a system that may not be effective. NGO Representative 3 refers to the fact that the VCM is fundamentally flawed because it can allow companies to avoid direct emissions reductions and perpetuates the false idea that emissions can be offset indefinitely. Moreover, Stakeholder #1 General Population warns that if VCC projects are ineffective in reducing emissions it can "*hinder global climate goals, exacerbating the impacts of climate change, especially on vulnerable populations which this initiative aims to help in the first place"*. The focus on offsetting emissions through VCCs could distract from the urgent need for systemic change and substantial reductions in GHG emissions to reduce climate change (Pearse & Böhm, 2015).

Additionally, Stakeholder #2 General Population raises concerns that it *"increases the separation between those who have the power to implement change, like the big corporations, and those who will be affected by climate change more dramatically."* VCCs could exacerbate climate injustice by allowing wealthy actors in the Global North to continue polluting while burdening communities in the Global South with the responsibility of offsetting emissions (Caney & Hepburn, 2011). This highlights the risk of perpetuating a system that allows high emitting industries to continue to pollute. However, as stated previously, the Red Cross's involvement could create a more just system.

5.2.1.5 Private Investor/Donor & End Buyer

The buyers of the VCCs produced by the NLRC and LRC are positively affected as "*it allows companies ……who are major polluters and contributors to global warming to pay for adaptations in the South, where the impacts are harsher due to existing climatic conditions and poverty*" (NGO Representative 2). Additionally, the buyers can benefit through their affiliation with the Red Cross. The investor private investor/donor benefits by *"helping with water services, donations, and carbon credit facilitation*" (NLRC WASH Advisor). This assists the organization in promoting climate

positive actions. As well as financially benefiting from the investment if investor/donor relationship exists to cover overhead costs and fund the organization (as referenced by the NLRC private investor).

There are potential negative impacts to both the buyer and investor/donor, particularly reputation damage due to the current market's operation. For example, there are reputational risks associated with buying non-compliant credits that do not reflect real emission offsets or do not produce social outcomes (Kreibich & Hermwille, 2021). As well as supporting a project that may not be of high-quality. This reputation damage and risk was acknowledged by IFRC Representative 2 who stated that *"the VCM shows a decrease of 50% from 2020 to 2022. This indicates a potential crisis of confidence in this model."* This decreasing trust increases the risk of being associated with a potentially ineffective system. There are also financial risks for the investor/donor if the credibility of the VCM continues to erode which was referred to by the NLRC private investor. Trouwloon et al. (2023) asserts that due to the uncertainty in the integrity of offsets, buyers and investors/donors lack sufficient information to understand the integrity of projects. This could result in the market failing to grow or an unraveling market.

5.2.2 Distributional Analysis

The individual risk-benefit analysis showed the landscape of potential benefits and impacts. However, it does not explore how they are distributed among stakeholders. This section focuses on whether there is an uneven distribution of risks and benefits for stakeholders identified as only beneficiaries and those considered in the individual risk-benefit analysis.

There is only one stakeholder group considered not to be exposed to risk, namely the private corporations required when generating VCCs (i.e., third-party auditors, SSOs, project consultants). IFRC Representative 1 acknowledged that the VCM has historically been dominated by private actors and *"when the market is dominated by private companies, it can change what the focus of the projects are"* (NGO Representative 1). These private corporations' benefit from the NLRC's and LRC's entry into the VCM. A large humanitarian organization with high moral capital, paints a clear message of support for carbon credits. This could increase the perceived credibility and assist with market growth and stability. In the context of NLRC and LRC, this does not necessarily reflect an uneven distribution of risks and benefits because VCCs present clear benefits for the organization, communities, and governments they serve in Lebanon. Given that the Red Cross stakeholders have acknowledged the nuances associated with supporting VCCs during the focus group and interviews, they also have an opportunity to advocate for more transparency and accountability in the market. This was acknowledged by IFRC Representative 1 and NGO Representative 1. However, in general, the concentration of benefits to the private sector and the limited risks or ramifications they face, allude to power imbalances in the market.

Considering the stakeholders identified in the individual risk-benefit analysis, it is evident that while the NLRC, LRC, Red Cross movement, government, and communities in Lebanon benefit from funding the solarization projects through VCCs they also face risks. While the goal of these projects is to provide clean water, benefiting the government and communities directly, the NLRC Lebanon Country Representative noted that the communities are unlikely to be concerned about how the Red Cross provides funding. They will be focused on access to clean, affordable, and reliable water systems.

While VCC private investors/donors and buyers benefit financially from successful projects and potentially enhance their reputation they also face financial risks if the project underperforms or the VCM's reputation suffers. The broader general population may indirectly benefit from emission reductions achieved; however, the distribution of benefits may be considered unequal as the public

bears the greatest risk if the VCM proves ineffective. This is because they will continue to face the escalating impacts of climate change. While market participants are likely to have greater resources to adapt to the changes.

Ultimately, the distribution of benefits and risks is determined on how the project is executed and what risk treatment options are in place to manage the projects. IFRC Representative 2 stated ***"****if I look at our organization* [the Red Cross movement]*, we are about human dignity. So, if every project…..that will generate a carbon credit is done putting at the center the community that we serve, the interest, and the preferences of the community that we serve, I'm okay".* This community centric approach assists in ensuring that private corporations and other beneficiaries do not control the dynamics of the VCM and dictate climate actions.

5.2.3 Analysis of Rights

This stage explores if the ethical risk of supporting a "flawed" mechanism infringes on stakeholders' rights. According to the distributional analysis, the general population may face risks due to the Red Cross movement's support of the VCM. This is particularly true as they lack decision-making power. The right for the general population to be protected from the impacts of climate change is justifiable as they have no control over the actions of high emitting industries. Hansson (2018) framework suggests that this right should not be overruled primarily due to benefits gained from other stakeholders. It is important, however, to recognize that the solarization projects contribute to a small proportion of GHG emissions and ultimately climate change mitigation efforts. The VCM is expected to grow regardless of the NLRC's and LRC's participation. Thus, while the rights of the general population (particularly those most vulnerable to climate change) must not be ignored, the potential benefits of the Red Cross participation may justify some level of risk exposure by promoting a transparent market.

5.2.4 Power Analysis

The power dynamics are associated with the NLRC and LRC's endorsement of a "flawed" VCM. This backing could lead to unintended consequences to stakeholders who are reliant on the success of the market. This includes the general population affected by climate change, end buyers, communities, private investors/donors, and the government. If the VCM as a mechanism perpetuates inequalities and fails to deliver genuine emission reductions these stakeholders face continued exposure to climate change impacts, reputation damage and/or financial losses. The endorsement of a flawed mechanism by powerful actors like the NLRC and LRC can maintain these existing power dynamics if the projects are not managed appropriately.

5.2.5 Independent Information Stakeholders

The discourse of the NLRC's and LRC's use of VCCs will be shaped by a range of independent information stakeholders who each have distinct viewpoints. However, as previously stated, carbon trading is highly debated amongst government, academia, private corporations, and NGOs which can make it a difficult mechanism to navigate and interpret differing viewpoints (Howard et al., 2015).

The media has had a higher level of scrutiny of the VCM in 2023 highlighting current market imperfections (Dawes, 2024). As a result, there has been a downturn in the market, particularly due to perceived reputational risks. The VCM Policy Expert stated that *"we've seen a decrease in the purchase of carbon credits in 2023 due to reputational concerns, driven by science-based research from sources like The Guardian and Berkeley Carbon Trading Project".* Such perspectives may influence the NLRC's and LRC's participation and potential for reputational damage. IFRC Representative 1 acknowledged the media perceptions of VCCs and the importance of the Red Cross movement proceeding cautiously in the VCM. IFRC Representative

2 also reflected this sentiment. However, further emphasized that despite mixed views, the movement should not be driven by potential media perceptions. Despite, more negative perceptions of carbon credits in the media there has been some reports suggesting that companies that are active in buying VCCs reduce their emissions at a faster rate in comparison to companies not using credits (Carbonvert, 2023). This suggests that while the VCM can be perceived as flawed it can still have a role in reducing GHG emissions.

Perspectives on the most suitable way forward for the VCM are also fragmented. Some organizations advocate the move away from commodifying carbon and the VCM in general. While other actors are looking to expand carbon markets (Howard et al., 2015). The VCM Policy Expert highlighted the current push for higher integrity VCCs and the new developments in the market that in theory should create a more transparent environment. However, they note that full enforcement of improvements being made is yet to be seen. This was further supported by the third-party auditor who specified that there has been increasing guidelines for high-quality credits intended *"to reduce the flaw of the markets and bring credibility and integrity of the markets."* However, they go on to say that *"these don't change the flawed emissions reduction mechanism in one night, but it signals they realize the situation and want to make a change."* Despite this, the VCM Policy Expert believes that the risks do not outweigh the benefits for the NLRC and LRC given the current market's state. However, increasing transparency and regulation of VCCs can assist the carbon market in climate change efforts and support the growth of low carbon economies in the Global South.

Several NGOs are participating in the VCM, and some are actively against it. Such viewpoints can offer independent insights into how NGOs navigate and shape discourses of the VCM. While some organizations, like NGO Representative 1, believe the benefits outweigh the risks, "*they* [VCCs] *have shown flexibility and recognition of the project's benefits, which significantly outweigh the risks",* others are concerned about the market*'s* integrity. NGO Representative 2 discusses the difficulties in generating VCCs with some projects giving the market a bad name, "s*ome projects don't achieve their goals, which tarnishes the concept for everyone. There was an investigation by The Guardian that revealed issues with the verification process by Verra, showing that many projects weren't as effective as claimed."* NGO Representative 3 also reflect this sentiment.

Although the general population was not categorized as an independent information stakeholder due to their involvement as supporters of humanitarian organizations their perspective is valuable. Public perceptions of VCCs were identified to be mixed. While some recognized VCCs' potential for funding the projects and reducing emissions others were uncertain. This reflects the wider debate in the VCM and for the solarization projects regarding balancing immediate project benefits with the longer-term risk of supporting a potentially "flawed "emission reduction mechanism. For example, Stakeholder #1 General Population stated that "*I believe that providing solar water systems to Lebanese communities outweigh the long-term risks overall. However, in this specific case as the initiative aims to also bring about a reduction in emissions the long-term risks of using a flawed emission reduction mechanism cannot be overlooked. If the mechanism is flawed, it could lead to broader negative implications for climate justice and the overall effectiveness of climate action.***"** While Stakeholder #3 General Population expressed a more optimistic viewpoint by stating, **"***I think there is no perfect way of funding projects and there are always ethical risks when getting funding even with normal funding…..The risk is image versus the reward for clean water for people that don't have clean access, if there was not another viable funding solution."*

The various viewpoints highlight once again the controversial nature of the VCM (Summers et al., 2015). Such dynamics shapes the VCM landscape which NLRC and LRC will potentially operate

within. The efforts to increase regulation and transparency may create a more effective market. However, this remains uncertain.

5.2.6 ERA Summary

Based on this analysis, there is a complex dynamic of benefits versus impacts in the NLRC's and LRC's endorsement of the VCM. This reveals a clear ethical dilemma. While the solarization projects offer benefits to communities and government in Lebanon. As well as potentially aligning with the Red Cross's humanitarian mission, there is potential for reputation damage and perpetuation of a flawed system.

It is clear from this analysis that the decision whether to adopt VCCs should be based on the NLRC's and LRC's ability to navigate the complexities of the market while ensuring their humanitarian goals are not compromised. A cautious approach that fosters high integrity credits and high-quality projects is needed as VCCs are only available solution to climate change and for the Red Cross if they offer social co-benefits and represent clear representations of GHG emission reductions. Participation in the market should include appropriate risk treatment strategies and a commitment to advocate for a more regulated VCM to address the imperfections that currently exist.

A positive aspect of this assessment is the acknowledgment by a variety of actors that the system is imperfect and support for an increasingly regulated market (Pande, 2024). Miltenberger, Josphe, et al. (2021) presents an interesting take on the VCM by stating that *"the precision, thoughtfulness, and widespread understanding of VCM critiques is indicative of the need for these market-based solutions to climate change to be successful. The role of VCMs and the transition away from them we describe is back-casting perspective and posits that VCMs are not the right nor only tool, but a tool needed today for climate action success 30 years from now."* This presents a more optimistic picture of the market highlighting the need for the VCM and opportunities that can be realized to create a more effective system that supports climate action.

The reality is that the VCM is not going anywhere despite backlash from various market participants (Pande, 2024). The VCM is one of the primary approaches to manage and mitigate climate change (Howard et al., 2015). The NLRC and LRC as trusted actors have the potential to shape the VCM. However, they must have a clear understanding and acknowledgment of the current state of the market and the ethical risks posed to the movement. Risk treatment measures can assist in navigating the complexities of the market.

5.3 Risk Treatment

VCCs are only a viable solution to climate change if they have social benefits and function as real and clear representations of GHG emission reductions. High integrity projects that deliver social and environmental benefits are important to manage the impacts identified. A range of risk treatment strategies were recognized during the focus group and interviews and have been categorized into three treatment areas (treat, transfer, and terminate). These strategies have been developed in the sections below.

5.3.1 Treat (Mitigation Strategies)

1. VCC Framework

An overriding framework for the Red Cross to leverage VCCs was referred to by several stakeholders[4]. This is a priority not only for the establishment of the solar water system projects

[4]IFRC Respondent 1, NGO Representative 3, NLRC Director International Department, NLRC Advisor Public Affairs and NLRC Corporate Funding Manager.

but also to ensure consistency and transparency throughout the Red Cross organization if the development of carbon credit projects expands. Using stakeholder recommendations and the Core Carbon Principles (CCP) Assessment Framework (ICVCM, 2023) it is suggested that the framework encompasses the following aspects described in Table 7. This framework would act as an overriding strategy which will integrate other treatment strategies detailed in this section under one combined approach.

Table 7 Carbon credit framework

Aspect	**Description**
Governance	Defined roles (e.g., who has the authority to approve VCC projects), responsibilities, communication protocols, code of conduct (i.e., conflict of interest management), and third-party input (i.e., evaluation of projects).
Legal	Defined legislative framework for the legal treatment and sale of VCCs. Consideration of national policies, regulations, and procedures.
Financial	Clear and transparent procedures for cost tracking, financial risk management, budget allocation and reporting of revenues or potential losses.
Project eligibility criteria	A structured process for assessing project viability. This can be through a Go-No Go Decision Tree which could assess: • Humanitarian imperatives: Evaluation of the project based upon humanitarian needs alone. Ensuring that the project is not prioritized based on its VCC potential. • Technical viability: High level initial assessment of permanence, additionality, scalability, and costs. • Social and regulatory viability: Consideration of social and regulatory context. A decision-making framework specific to the technical viability of VCCs in WASH projects was developed by the Millennium Water Alliance (2024) and can be used for reference.
Integrity and quality for carbon credits	Defined safeguard mechanisms and minimum benchmarks for all carbon credit projects within the organization. Safeguards could include banning the use of emission offset methodologies that have been heavily criticized or have a higher risk of not producing real emission reductions. As well as excluding SSOs considered inadequate. It is recommended that minimum benchmarks for quality offset projects align with the 10 CCP (ICVCM, 2023). This ensures that projects meet criteria for additionality, permanence, double counting, monitoring, reporting, and verification processes. IFRC Representative 2 stated that the Red Cross movement network would not sell VCCs to an anonymous buyer and would always control the buyer. This should therefore be outlined in the framework established.
Sustainable development	Specific environmental and social safeguard mechanisms for all carbon credit projects within the organization. For example, community engagement and consent requirements.
Continuous improvement	Established monitoring and reporting protocols to track the progress and outcomes of VCC projects. This can inform additional treatment strategies and improve positive outcomes of VCC projects.

2. Transparent Communication

Transparent communication was identified as a priority by several stakeholders[5]. Communication with internal and external stakeholders is important when participating in the VCM to create transparency and assist in forward thinking risk management (World Economic Forum, 2023). Internal (within the Red Cross organization) and external communication strategies have been suggested below.

a. Carbon Credit Working Group

There has been separate interest by the IFRC, ICRC and National Societies in generating, selling, or buying VCCs. It has been acknowledged that there is currently a lack of internal capacity within the NLRC and LRC regarding generating VCCs for the solarization projects. To address this, it is recommended to establish a working group to assist with developing the solarization projects and carbon credit projects more broadly. This working group can help build internal capability and knowledge, which is important given the evolving nature of the VCM and regulatory environment (Trouwloon et al., 2023).

b. Agreed Upon Communication Protocols

Xu et al. (2023) evaluated and prioritized management strategies for carbon markets, identifying agreed-upon, honest, and open stakeholder communication and relationships as an important strategy. These relationships assist in reducing reputational damage and increase support (Xu et al., 2023). In the context of the solarization projects, the following stakeholder groups and communication protocols should be considered:

- **Local government and community:** The NLRC and LRC must communicate openly and keep local government and communities informed of project developments. Communication should include details of the distribution of funds, benefits, timeframes, hand over expectations and the potential impact to the Lebanese government. Particularly regarding contributions to their NDCs. Additionally, communication mechanisms should be culturally appropriate.
- **Public communication:** Reputation damage was the most frequently identified impact during the risk evaluation stage. Therefore, the NLRC and LRC need to be transparent about the use of VCCs. This could involve:
    - Documenting and publishing their position on VCCs: This should acknowledge both the benefits and limitations of the VCM.
    - Advocating for a more regulated and transparent VCM: The NLRC and LRC can leverage their influence to push for more accountability within the market.
    - Providing details and updates on the solarization projects: This includes reporting outcomes.
    - Disclosing financial information (where relevant): If donor funding is used there should be disclosure on the proportion of the donation allocated to administrative costs versus the humanitarian project itself.
- **Buyer:** The buyer is a key concern identified in endorsing a “flawed” emission reduction mechanism as they have the potential to influence the project's integrity. The NLRC and LRC should thus conduct due diligence on potential buyers (refer to *‘4. Buyer Due Diligence & Prioritization’* below for more information) and agree with them on what they should and should not communicate when reporting VCC claims. This has been reported to be an unregulated process and can lead to deceptive or misleading claims (Trouwloon et al., 2023). It is recommended that buyers commit to adopting best practice and transparent reporting including disclosure of:

[5] NGO Representative 1, NGO Representative 3, NLRC WASH Advisor, Stakeholder #1 General Population, NLRC Press Officer, NLRC Senior Spokesperson, NLRC Business Developer and Stakeholder #2 General Population.

- Credit details (VCMI, 2023):
  - Number of VCCs bought and retired.
  - Project name, project type and ID.
  - Certification standard name and issuing registry.
  - Retirement date and serial number.
  - Host country.
  - Credit vintage.
  - Methodology.
  - Whether a corresponding adjustment has been made to ensure emission reductions are not double counted.
- Emission source and amount covered by the VCCs: Buyers should agree to specify the types (e.g., CO_2) of emissions, source (e.g., transportation), and quantity of emissions covered by the VCCs purchased (Trouwloon et al., 2023; VCMI, 2023).
- Clear definitions: Buyers should agree to be transparent if the VCCs are being used for an offset or contribution claim and what each terminology infers. Offset claims suggest the entity is using VCCs to offset emissions. While contribution claims suggest that the buyer is contributing to global mitigation rather than offset direct emissions (Trouwloon et al., 2023).
- Framing of claims (carbon neutral vs net zero): Buyers should agree to be transparent if the VCCs are being used to support net zero or carbon neutral targets and what each terminology infers. Net zero implies that VCCs are being used only for unavoidable emissions. While carbon neutrality implies that the entity will offset emissions using VCCs, rather than reducing internal emissions (Trouwloon et al., 2023).
- Affiliation with the Red Cross: Limit media exposure from the buyers to minimize greenwashing opportunities.

Guidelines also exist (e.g., International Emissions Trading Association, Global Reporting Initiative, and the Climate Disclosure Standards Board) that outline how to effectively report on the voluntary use of VCCs which can be referred to by potential buyers (IETA, 2024; Laine et al., 2023).

3. Planning

Multiple stakeholders identified cautious planning[6] as a key requirement. A robust feasibility study is therefore recommended for the solarization projects. Feasibility studies for carbon credit projects can include (Disch et al., 2010; Millennium Water Alliance, 2024):

- Consideration of carbon trading legal and regulatory frameworks specific to the offset project (e.g., carbon ownership and review of countries regulatory frameworks).
- Market assessment including assessment of market demand.
- Technical assessment including an assessment of the project against applicability conditions of the SSO, and emission offset methodology.
- Initial stakeholder engagement.
- Cost benefit analysis including an exploration of the set-up costs, financial return, and scalability.

A comprehensive feasibility assessment increases the potential for a successful project (Disch et al., 2010; Millennium Water Alliance, 2024). Specifically, it can also assist in aligning the solarization project with the NLRC's and LRC's mission and principles. The findings of this assessment can be used to inform project design documents.

[6] NGO Representative 1, IFRC Representative 1, NLRC Corporate Partnership Manager, NLRC Manager Planning & Coordinator, NLRC Director International Department and NLRC Business Developer.

4. Buyer Due Diligence & Prioritization

Undertaking buyers' due diligence was the most frequently identified treatment option by interviewees and focus group participants[7]. Despite a high-quality project being developed, the integrity of the project and project developer can be undermined if the credits are sold to buyers who are greenwashing or misusing them (Pearse & Böhm, 2015). Therefore, buyers' due diligence is important (Korthuis et al., 2023). This is critical for humanitarian organizations that have clear social and environmental agendas (Makhoul et al., 2023).

The VCM Global Dialogue created criteria to assess the credibility of VCC buyers (Korthuis et al., 2023). The guide was developed to address concerns about VCC misuse in response to the heavy scrutiny in 2023. There are seven due diligence assessment criteria (Korthuis et al., 2023):

- Buyer actively engages in environmental and social responsibility initiatives.
- Buyer has a system for measuring and reporting Scope 1, 2 and 3 emissions.
- Buyer has emission reduction targets and a climate strategy aligned with the Paris Agreement. These should be validated by a recognized standard.
- Buyer is making demonstrable progress towards meeting emission reduction targets.
- If VCCs have been purchased previously by a buyer, they have been of high-quality.
- Buyer is transparent in carbon accounting.
- Buyer's claims related to carbon projects adhere to best practices and industry guidelines.

The complete due diligence assessment is provided in Appendix C. Such criteria should be used with the standard screening procedure the NLRC and LRC use when evaluating potential donors.

One stakeholder recommended prioritizing engagement with buyers looking for long-term partnerships rather than one off purchases. This approach could reduce the risk of engaging with uncredible buyers. Another suggestion is for the NLRC and LRC to prioritize or exclusively sell to buyers who account for uncertainties in emission reductions by purchasing additional carbon credits. This is a risk adjustment approach that is gaining traction due to concerns about projects not delivering promised emission offsets (e.g., due to uncertainties in the offset methodology) (Clough et al., 2023).

5. Investor Agreement & Due Diligence

As the VCM is evolving it can create uncertainty in project outcomes and therefore it is important to have appropriate agreements[8] in place with both one time and long-term investors and conduct due diligence[7]. The following elements could be documented in the agreement (Erman, 2023; OECD, 2003):

- Objective: Clearly define the investment's purpose, expected emission reductions, and performance indicators to track progress. This fosters a mutual understanding and assists with avoiding potential disputes.
- Commitment to purchasing VCCs: Define the quantity, quality, and price agreements for VCCs. This assists in ensuring credibility and guarantees sufficient project revenue to break even.
- Delivery schedules and terms: Specify the expected delivery schedule and protocols for buyer due diligence as specified by the NLRC and LRC. This is applicable if the investor is also acting as a broker for the VCCs.
- Governance: Define roles and responsibilities, decision-making processes, and dispute resolution procedures.

[7] IFRC Representative 1, IFRC Representative 2, NGO Representative 1, NGO Representative 2, NLRC Manager Planning & Coordinator, VCM Policy Expert, NLRC Business Developer, NLRC WASH Advisor and Stakeholder #3 General Population.

[8] NLR Business Developer

- Liability: Ensure risk sharing mechanisms are in place and allocate liability arrangements in the case of project failure.
- Funding modality: Specify the investment amount, funding structure, payment schedules, timelines, and potential adjustments due to VCM unpredictability.
- Communication, reporting, and monitoring: Establish communication protocols, reporting frequencies, and procedures for monitoring project implementation.
- Term and termination: Define the agreement duration (e.g., enforceable for the lifetime of the project) and exit clauses. This provides a framework for terminating the agreement and protects both parties' interests.
- Contingency plan: Develop a plan to address project failure and manage unnecessary risk.

As part of this agreement suitably qualified individuals should hold decision making roles and agreements should be reviewed by the internal legal team (Bedenham & Ronad, 2023).

The NRLC and LRC should also follow standard screening procedures for donor partnerships, and assess the organization's financial stability, compliance history, and alignment with the Red Cross movement missions and values.

6. Quality Assurance

Although the market may be imperfect, a high-quality project can foster a more transparent mechanism. Offset claims that are verifiable, truthful, clear, and unambiguous dictate the quality of the credit (Laine et al., 2023). A range of stakeholders[9] identified that quality assurance measures should be in place and some specific measures have been suggested below.

a. Project Development

The solarization project development should align with standards considered best practice. Currently, the agreed upon best practice standards for benchmarking credits are the CCPs. This covers best practice governance, emission impact guidelines, and sustainable development (ICVCM, 2023).

Benefit sharing:

Aligned with the CCPs and the Red Cross movement's mission to support communities and government, the concept of benefit sharing requires careful consideration. Several stakeholders identified the importance of thoughtfully addressing the equitable distribution of benefits[10]. NGO Representatives 1 and 5 specifically identified that projects should consider community ownership where possible. IFRC Representatives 1 and 2, and Stakeholder #1 General Population considered that a high level of community and government engagement and decision making should be undertaken.

Various structures for benefit sharing arrangements and agreements exist (Miltenberger, Josphe, et al., 2021). This is supported by Miltenberger, Josphe, et al. (2021) who states that the critiques of the VCM can be addressed through best practice governance frameworks that focus on community benefits. Considering best practice, such agreements should be iterative and determined collaboratively with relevant stakeholders. This approach ensures fair outcomes and equitable allocation of value across stakeholder groups (USAID, 2023). An example framework for benefit sharing for carbon projects has been displayed in Figure 8 (USAID, 2023).

[9] NGO Representative 1, Stakeholder #1 General Population, NLRC Business Developer, NLRC WASH Advisor and VCM Policy Expert.

[10] NGO Representative 1, NGO Representative 3, Stakeholder #1 General Population, IFRC Representative 1 and IFRC Representative 2.

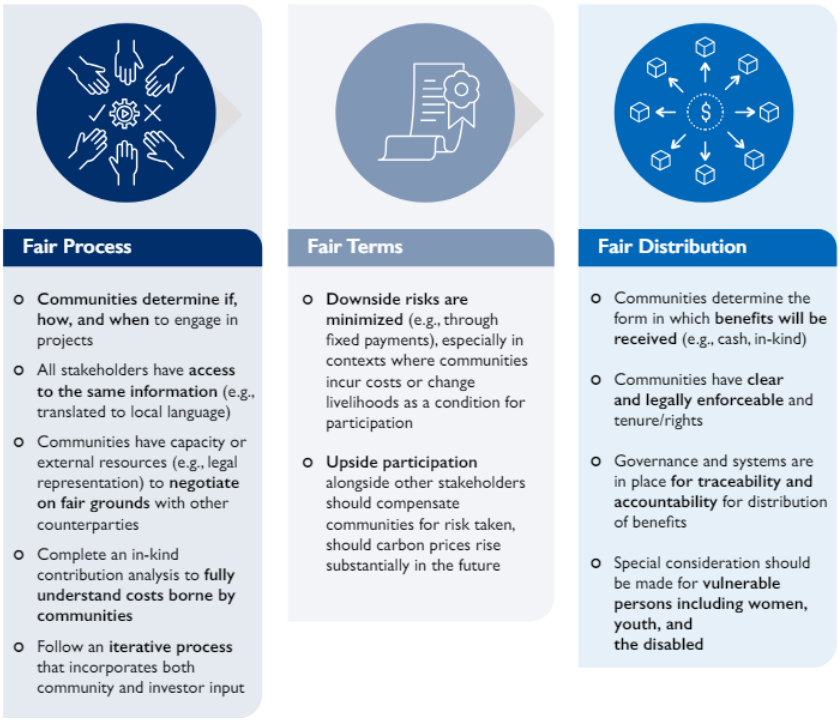

Figure 8 Benefit sharing framework
(USAID, 2023)

b. External Accreditation

To further guarantee the quality of generated credits, the Red Cross can obtain external accreditation. For example, the Integrity Council for the Voluntary Carbon Market (ICVCM) has set a common set of standards for the development of high-quality carbon credits. While the International Carbon Reduction and Offset Alliance Accreditation (ICROA) accredits organizations adhering to best practices in the VCM (IETA, 2023). Both the ICROA and ICVCM accreditation process would lead to additional indirect or direct costs for obtaining VCCs.

The ICVCM standards are a new development in the industry and projects are assessed based on the CCPs published in March 2023 (ICVCM, 2023). Project developers can obtain CCPs labeled credits. There are no direct costs to obtain these credits and they are expected to sell for more than traditional VCCs (ICVCM, 2023). However, there are likely indirect costs. These labels are visible on registries and provide a signal to buyers and investors that the VCCs represent genuine emission reductions and have a high level of environmental and social integrity (ICVCM, 2024). The first methodologies eligible for accreditation under the ICVCM were approved in June 2024. However, they are actively expanding the range of methodologies eligible (ICVCM, 2024).

5.3.2 Transfer

7. Risk Adverse Business Model

Risk adverse business models were suggested[11] to manage the most significant ethical risk associated with the solarization projects. In the current state, the projects assume NLRC and LRC governance and development. However, this approach poses a greater risk due to the lack of internal capability. Several stakeholders[11] recommended that a certified, high-quality, external

[11] IFRC Representative 1, NLRC Corporate Partnership Manager, NGO Representative 1, NLRC WASH advisor, NLRC Director International Department, NGO Representative 2 and NLRC Legal Counsel.

partner should be used to manage the complete process according to the Red Cross movement's mission, principles, and requirements.

Given the diverse range of business models that can be used to generate and sell VCCs (Millennium Water Alliance, 2024) it is suggested that an external study be undertaken to determine the most appropriate model for the Red Cross.

5.3.3 Terminate

8. Climate Philanthropy

Consider exploring climate philanthropy as an alternative funding strategy if VCCs prove too complex or costly. NGO Representative 1 stated that, had they (Nubian Vault Association) been more aware of the complexities and high costs associated with generating VCCs they may have chosen an alternative funding strategy such as climate philanthropy. Climate philanthropy can be defined as philanthropic giving for climate change mitigation (Morena, 2023). However, NGO Representative 1 noted that the budgets for philanthropy and investment into carbon credits are managed in different areas of an organization and have separate budgets. This means that such philanthropic funding is not as sustainable as carbon credit revenue, and functions similarly to traditional donor funding.

9. Rejection of VCCs

Consider rejecting the use of VCCs entirely if the risks are deemed unacceptable. This was suggested by NGO Representative 2 and the VCM Policy Expert due to current market dynamics.

5.4 Treatment Options

Table 8 summarizes the risk treatment options identified. The NLRC and LRC should adopt relevant strategies based on the Red Cross movement's risk tolerance levels.

Table 8 Risk treatment options

Risk Treatment	Strategies Identified
Tolerate	*No stakeholders identified that the risks associated with VCCs can be tolerated without treatment strategies.*
Treat	1. VCC Framework 2. Transparent Communication: Carbon Credit Working Group & Agreed Upon Communication Protocols 3. Planning 4. Buyer Due Diligence & Prioritization 5. Investor Agreement & Due Diligence 6. Quality Assurance: Project Development & External Accreditation
Transfer	7. Risk Adverse Business Models
Terminate	8. Climate Philanthropy 9. Rejection of VCCs

6. Conclusions

This chapter presents the answers to the research questions, provides recommendations for the Red Cross, reflects on methodological limitations, and identifies directions for future research.

6.1 Answers to the RQs

RQ1) What is the perceived most significant ethical risk for the NLRC and LRC in financing the solarization of public water systems in Lebanon through VCCs?

To identify the perceived most significant ethical risk for the NLRC and LRC, the ethical landscape surrounding their potential use of VCCs was explored. Thirteen ethical risks were identified through literature and focus group discussions which reflects the complex environment in which humanitarian organizations operate within. While a range of ethical risks were identified relevant to the NLRC and LRC in leveraging VCCs, some risks are ethical challenges that humanitarian organizations must manage using traditional donor funding and in projects generally, regardless of the use of VCCs.

Endorsing a “flawed” emission reduction mechanism was perceived by participants as the most significant risk. This is one of the largest critiques of the VCM, particularly the argument that the mechanism does not effectively contribute to reducing GHG emissions, it can give misleading perceptions of offsets, and can fail to have social benefits. Furthermore, it is argued that the lack of strict regulation can foster low quality projects, and participants. This being identified by the NLRC as the most concerning risk therefore reflects broader concerns in navigating the complexities and controversies of the mechanism, while upholding the organization’s mission. Particularly, focus group participants questioned offsetting as a principle, which shows that some stakeholders were not confident in the mechanism. Furthermore, this ethical risk concerns the integrity of the entire carbon mechanism, while many of the other risks identified are isolated to selected phases of the offset project. The potential impacts would therefore extend beyond the solarization projects. This displays the need for careful consideration and management of VCCs by the NLRC and LRC.

RQ2) How does the perceived most significant ethical risk affect the stakeholders involved and the actions of the NLRC and LRC in leveraging VCCs?

An exploration of the potential impacts of the NLRC and LRC endorsement of an imperfect VCM was undertaken. For the NLRC and LRC, there are clear benefits in engaging in the VCM due to their ability to access long-term funding which assists in fulfilling their social and climate agenda. However, the largest potential impact is reputation damage because of the VCM's perceived flaws and misalignment of the movement's core principles. The Red Cross movement will also benefit from the success of VCC projects. The solarization projects can function as a pilot project to expand throughout the organization, therefore assisting in scaling up climate commitments. In turn, potentially enhancing reputation and building internal capacity. However, similar to the impacts identified to the NLRC and LRC, reputation damage and mission misalignment are the major potential negative impacts. These risks are apparent for the broader Red Cross movement due to the interconnected nature of the organizations.

The impact of the NLRC’s and LRC’s support also affects external stakeholders. The communities and government directly benefit from improved water access and public infrastructure. Conversely, the main risk is the potential for project failure and the Red Cross not achieving promised expansion outcomes. The general population is indirectly benefiting from reduced emissions. However, these stakeholders lack decision making power and are most at risk if the VCM proves ineffective. Finally, private investors/donors and end buyers can both benefit and be impacted by the VCC project outcomes from a financial and reputational perspective.

An aspect that makes it challenging for the NLRC and LRC to navigate VCCs is the controversial nature of the VCM and differing perspectives from market and non-market participants (Summers et al., 2015). It is clear from this analysis that the decision whether to adopt VCCs should be based on the NLRC's and LRC's ability to navigate the complexities of the market.

RQ3) What risk treatment options can be used by NLRC and LRC to address the most significant ethical risk in using VCCs for solar water system financing in Lebanon and carbon credit projects more broadly?

VCCs are only a viable solution to the climate crisis if they produce social benefits, are high-quality, and function as real representations of GHG emissions reductions. Six treatment strategies, one risk transfer strategy, and two termination options were identified as potentially suitable. It is recommended the NLRC and LRC adopt relevant strategies based on the Red Cross movements risk tolerance levels.

How can the NLRC and LRC address the most significant ethical risk in using VCCs to finance the solarization of public water systems in Lebanon?

The reality is that the VCM is not going anywhere despite negative criticisms. The mechanism is one of the primary approaches to manage and mitigate climate change (Howard et al., 2015) and represents a large untapped market for humanitarian organizations to assist the provision of aid. Currently, the market is driven by private actors which can change its central focus and perpetuate a flawed system. However, there is a push for market transformation to promote transparency and credibility. The Red Cross movement as a trusted actor has the potential to shape the VCM. However, the movement needs to have a clear understanding of the mechanisms downfalls, ethical risks posed to the movement and have safeguards to not perpetuate a flawed system. Additionally, the NLRC and LRC should only support this mechanism if humanitarian goals are prioritized over financial outcomes. By prioritizing humanitarian goals, adopting relevant risk treatment strategies and advocating for market transformation, the NLRC and LRC can effectively address the potential ramifications of the most significant ethical risk. It is noted however that the actions of the Red Cross cannot resolve the imperfections of the market itself and ultimately, the choice of whether to use VCCs will impact beyond the solarization projects in Lebanon. Therefore, the decision whether to adopt VCCs should weigh all the ethical risks and benefits involved. As well as capacity to navigate the complexities of the VCM.

6.2 Recommendations

The VCM, despite challenges, is experiencing a growing recognition of its imperfections among market participants. This increased awareness is driving efforts to create higher integrity VCCs and foster greater transparency within the market. However, it is unclear at this stage whether these efforts will effectively address the underlying flaws of the VCM. Based on the findings of this research the following recommendations are proposed to the NLRC and LRC, and other humanitarian organizations contemplating the use of VCCs:

- Due diligence: A cautious approach is needed prioritizing high-quality credits and high integrity project implementation.
- Risk aware decision making: Decide on a risk tolerance level for the organization and adopt relevant risk treatment strategies based on this defined level.
- Adaptive risk management framework: Develop a risk management framework incorporating the ethical risks discussed in the research. This framework can be used across a range of VCC projects and adapted. It should include a risk assessment, risk register reporting and response plans (Xu et al., 2023).

- Advocacy for market transformation: Use humanitarian organizations influence to advocate for stronger regulation that promotes integrity, transparency, and social co-benefits in the VCM.

These recommendations recognize that VCCs are not a panacea for addressing the climate crises. They are a complex financial instrument with potential benefits and risks. Humanitarian organizations must approach VCCs with caution and critical thinking, carefully weighing the potential benefits against the potential ethical pitfalls. However, by implementing these recommendations, the Red Cross and other humanitarian organizations can better navigate the market and assist in ensuring that their use of VCCs aligns with their mission and climate change efforts.

6.3 Limitations

The research was undertaken over four months, limiting the scope of primary data collection (e.g. number of interviews and type of interviewees). Thus, the research may not fully represent the moral concerns of all stakeholders involved. Particularly, the LRC was not included in this study due to their limited capacity and to reduce pressure on the LRC. This may have led to overlooking perspectives and failing to understand the full ethical landscape of the research. Given the importance of LRC in the solarization projects it is recommended that the LRC undertake a proper review of the findings of this report to ensure their perspective has been considered. Furthermore, exploring ethical issues can be subjective in nature. Specifically, when interpreting and synthesizing participant's perspectives using a multi-method research design. This may limit the generalizability and replicability of the study. Finally, the theoretical framework used in this research combined a risk management approach with an ERA. The ERA framework, while providing valuable perspectives is relatively new and not widely used in humanitarian contexts. This can make it challenging to apply the framework and potentially lead to uncertainties and inconsistences in its application. Therefore, potentially affecting the reliability and validity of findings. These limitations should be considered when interpreting the results and conclusions of this research.

6.4 Future Research

The findings of this research can be used by other humanitarian organizations exploring the use of VCCs. The study offers insights into the ethical landscape of VCC projects, potential risks and strategies for risk treatment. The research design can also be used to assist in the ethical evaluation of other projects or funding sources where ethical concerns are apparent.

Future research focused on leveraging VCCs in humanitarian organizations should consider exploring the impact of the other ethical risks identified as interconnected risks rather than distinct risks. This will assist in understanding the results more thoroughly. The VCM is an evolving market and the integration of the Paris Agreement and associated regulatory changes could impact the ethical landscape. Therefore, another research topic could examine how the regulatory changes impact the landscape and risk profiles of humanitarian organizations. Finally, future research could explore and reflect on the ethical risks encountered by NGOs that have already generated and sold VCCs to understand the impact and likelihood of the risks occurring. By addressing these research gaps, future studies can contribute to a more nuanced understanding of the ethical dimensions of VCCs and provide actionable guidance for humanitarian organizations navigating this complex landscape.

References

Ahmed, M. (2021). *Humanitarian Funding in Crisis and the Rise of Innovative Humanitarian Finance*.

Battocletti, V., Enriques, L., & Romano, A. (2023). The Voluntary Carbon Market: Market Failures and Policy Implications. *European Corporate Governance Institute-Law Working Paper*, *688*.

Bedenham, G., & Ronad, J. (2023). *Netherlands Red Cross Mangroves Trust Fund - Risks and Mitigations*.

Bell, D. A., & Carens, J. H. (2004). The ethical dilemmas of international human rights and humanitarian NGOs: Reflections on a dialogue between practitioners and theorists. *Human Rights Quarterly*, *26*(2), 300–329.

Cames, M., Harthan, R. O., Füssler, J., Lazarus, M., Lee, C. M., Erickson, P., & Spalding-Fecher, R. (2016). *How additional is the Clean Development Mechanism?*

Caney, S., & Hepburn, C. (2011). Carbon Trading: Unethical, Unjust, and Ineffective. *Royal Institute of Philosophy Supplement*, *69*, 201–234. https://doi.org/10.1017/S1358246111000282

Carbonvert. (2023). *Best Practices in Risk Management for the Demand Side in Voluntary Carbon Markets*. https://carbonvert.com/uploads/carbonvert-voluntary-carbon-markets-risk-management-whitepaper-june-2023.pdf?_cchid=5b6188ec48acbd13798eac07db90e57d

Chen, S., Marbouh, D., Moore, S., & Stern, K. (2021). Voluntary Carbon Offsets: An Empirical Market Study. *SSRN*. https://doi.org/http://dx.doi.org/10.2139/ssrn.3981914

Clarinval, C., & Biller-Andorno, N. (2014). Challenging Operations: An Ethical Framework to Assist Humanitarian Aid Workers in their Decision-making Processes. *PLoS Currents*, *6*.

Clough, B., Jenkins, J., & Montag, T. (2023). *A Risk Adjustment Approach for Creating High Integrity Carbon Credits*.

Dany, L., Urdapilleta, I., & Lo Monaco, G. (2015). Free associations and social representations: some reflections on rank-frequency and importance-frequency methods. *Qual Quant*, *49*, 489–507. https://doi.org/https://doi.org/10.1007/s11135-014-0005-z

Dawes, A. (2024, February). What's Plaguing Voluntary Carbon Markets? *CSIS*. https://www.csis.org/analysis/whats-plaguing-voluntary-carbon-markets

Disch, D., Rai, K., & Maheshwari, S. (2010). *Carbon finance: A guide for sustainable energy enterprises and NGOs*.

Erman, N. (2023). Key Terms and Risks in Carbon Credit Agreements: Navigating Sustainability Contracts for a Greener Future. *Amir Khusyairi & Associates*. https://law-aka.com/key-terms-and-risks-in-carbon-credit-agreements-navigating-sustainability-contracts-for-a-greener-future/

Development Initiatives. (2023). *Global Humanitarian Assistance Report 2023*. Global Humanitarian Assistance Report 2023

European Union (External Action). (2022). *Humanitarian & Emergency Response*. European Union. https://www.eeas.europa.eu/eeas/humanitarian-emergency-response_en

Franki, N. (2022). Regulation of the Voluntary Carbon Offset Market: Shifting the Burden of Climate Change Mitigation from Individual to Collective Action. *Colum. J. Env'T L.* , *48*, 177. https://doi.org/https://doi.org/10.52214/cjel.v48i1.10442

Gill-Wiehl, A., Kammen, D. M., & Haya, B. K. (2024). Pervasive over-crediting from cookstove offset methodologies. *Nature Sustainability*, *7*, 191–202. https://doi.org/https://doi.org/10.1038/s41893-023-01259-6

Gold Standard. (2021). *Methodology for Emission Reductions from Safe Drinking Water Supply*. https://globalgoals.goldstandard.org/standards/429_V1.0_EE_SWS_Emission-reductions-from-Safe-Drinking-Water-Supply.pdf

Hansson, S. O. (2018). How to Perform an Ethical Risk Analysis (ERA). *Risk Analysis*, *38*(9), 1820–1829. https://doi.org/https://doi.org/10.1111/risa.12978

Haver, K. (2016). *Ethical decision-making to enable humanitarian access in high-risk environments* . https://odihpn.org/wp-content/uploads/2016/10/NP80-web-string.pdf
Healy, S., Pietschmann, M., Schneider, L., & Karki, A. (2023). *Assessing the transparency and integrity of benefit sharing arrangements related to voluntary carbon market projects*.
Hielscher, S., Winkin, J., Crack, A., & Pies, I. (2017). Saving the Moral Capital of NGOs: Identifying One-Sided and Many-Sided Social Dilemmas in NGO Accountability. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, *28*(4), 1562–1594. https://doi.org/10.1007/s11266-016-9807-z
Hopkin, P. (2017). *Fundamentals of risk management: understanding, evaluating, and implementing effective risk management* (4th ed.). Kogan Page Publishers.
Hota, P. K., Bhatt, B., & Qureshi, I. (2023). Institutional work to navigate ethical dilemmas: Evidence from a social enterprise. *Journal of Business Venturing*, *38*(1), 106269. https://doi.org/https://doi.org/10.1016/j.jbusvent.2022.106269
Howard, R. J., Tallontire, A., Stringer, L., & Marchant, R. (2015). Unraveling the Notion of "Fair Carbon": Key Challenges for Standards Development. *World Development*, *70*, 343–356. https://doi.org/10.1016/j.worlddev.2015.02.008
Hyams, K., & Fawcett, T. (2013). The Ethics of Carbon Offsetting. *Wiley Interdisciplinary Reviews: Climate Change*, *4*(2), 91–98.
ICVCM. (2023). *Core Carbon Principles Assessment Framework and Assessment Procedure*. https://icvcm.org/wp-content/uploads/2024/02/CCP-Book-V1.1-FINAL-LowRes-15May24.pdf
ICVCM. (2024). *Integrity Council announces first high-integrity CCP-labelled carbon credits, as assessments continue*. ICVCM. https://icvcm.org/integrity-council-announces-first-high-integrity-ccp-labelled-carbon-credits-as-assessments-continue/
IETA. (2023). *Best practice guidance on private sector voluntary action and carbon credit use: state of play*.
IETA. (2024). *Guidelines for High Integrity Use of Carbon Credits*. https://www.ieta.org/wp-content/uploads/2024/04/IETA_VCM-Guidelines.WEB-2.pdf
IFRC. (2022). *IFRC Annual Report 2022*. https://www.ifrc.org/sites/default/files/2023-11/AnnualReport2022_Final-web%20NEW.pdf
IFRC Climate Centre. (2023). *A Climate Action Journey*. https://www.climatecentre.org/wp-content/uploads/Visual-Climate-Action-Journey-landscape_EN-March-6x.pdf
Inter-American Dialogue. (2023). A New Player in Carbon Trading: Governments. *The Dialogue Leadership for the Americas*. https://www.thedialogue.org/blogs/2023/11/a-new-player-in-carbon-trading-governments/
International Committee of the Red Cross. (2008). *Handbook of the International Red Cross and Red Crescent Movement* (14th ed.). https://library.icrc.org/library/docs/DOC/icrc-0962-002.pdf
International Energy Agency. (2021). *Energy System of Lebanon*. IEA. https://www.iea.org/countries/lebanon
ISO. (2018). *ISO 31000 Risk Management - Guidelines*. https://shahrdevelopment.ir/wp-content/uploads/2020/03/ISO-31000.pdf
Juvonen, J., Platvoet, V., & Annola, V. (2023). *Corporate Carbon Neutrality Claims and the Legal Effects of Double Counting* [Master's Programme in International Business Law, University of Helsinki]. https://helda.helsinki.fi/server/api/core/bitstreams/bc5021b6-002a-4c49-9837-9cc6294cf208/content
Kaba, M. (2021). NGO Accountability: A Conceptual Review across the Engaged Disciplines. *International Studies Review*, *23*(3), 958–996. https://doi.org/10.1093/isr/viaa094
Korthuis, A., Drion, B., Dingkuhn, P., Mikolajczyk, S., Biggelaar, M. van den, Tierney, M., Martinez de la Hoz, G., & Tonneijck, F. (2023). *Responsible use of Carbon Credits: How project developers can mobilise buyers. Draft for Public Consultation*. https://vcm-gd.org/wp-content/uploads/2024/02/Responsible-use-of-carbon-credits.pdf

Kreibich, N., & Hermwille, L. (2021). Caught in between: credibility and feasibility of the voluntary carbon market post-2020. *Climate Policy*, *21*(7). https://doi.org/https://doi.org/10.1080/14693062.2021.1948384

Laine, A., Ahonen, H.-M., Pakkala, A., Laininen, J., Kulovesi, K., & Mäntylä, I. (2023). *Guide to good practices for voluntary carbon markets : Supporting voluntary mitigation action with carbon credits*.

Lamberton, G. W. (2011). An ethical response to climate change. *Journal of Law and Governance*, *6*, 13–28. https://doi.org/https://doi.org/10.15209/jbsge.v6i2.201

Lebanon Government. (2020). *Lebanon's Nationally Determined Contribution (Updated 2020 Version)*.

Mahajan, R., Lim, W. M., Sareen, M., Kumar, S., & Panwar, R. (2023). Stakeholder theory. *Journal of Business Research*, *166*, 114104. https://doi.org/10.1016/J.JBUSRES.2023.114104

Makhoul, J., El Ashkar, C., Mialon, M., Levy, A., Sabbagh, D., & Nakkash, R. (2023). Benefits and risks: Views of humanitarian organizations in Lebanon on corporate assistance. *PLOS Global Public Health*, *3*(11). https://doi.org/10.1371/journal.pgph.0002291

Michaelowa, A., Samaniego, X., Kessler, J., Ahonen, H.-M., & Spence, C. (2022). *Pocket Guide to Article 6 Under the Paris Agreement*. https://ecbi.org/sites/default/files/Pocket_Guide_to_Article_6.pdf

Millennium Water Alliance. (2024). *Learning and Feasibility Study Carbon Credits for WASH Interventions*. https://mwawater.org/learning-paper-carbon-credits-for-water-sanitation-and-hygiene-wash-interventions/

Miltenberger, O., Jospe, C., & Pittman, J. (2021). The good is never perfect: why the current flaws of voluntary carbon markets are services, not barriers to successful climate change action. *Frontiers in Climate*, *3*, 130. https://doi.org/https://doi.org/10.3389/fclim.2021.686516

Morena, E. (2023). *The Spirit of Climate Philanthropy*. The Routledge International Handbook of Critical Philanthropy and Humanitarianism Routledge. https://www.routledgehandbooks.com/doi/10.4324/9781003162711-21

NLRC. (2024). *IA Risk Management Framework*.

OECD. (2003). *Harmonising Donor Practices for Effective Aid Delivery*. https://www.oecd.org/dac/effectiveness/20896122.pdf

Pande, R. (2024). Can the market in voluntary carbon credits help reduce global emissions in line with Paris Agreement targets? *Science*, *384*(6696). https://doi.org/10.1126/science.adp5223

Pearse, R., & Böhm, S. (2015). Ten reasons why carbon markets will not bring about radical emissions reduction. *Carbon Management*, *5*(4), 325–337. https://doi.org/10.1080/17583004.2014.990679

Pickering, A. J., Arnold, B. F., Dentz, H. N., Colford, J. M., & Null, C. (2017). Climate and Health Co-Benefits in Low-Income Countries: A Case Study of Carbon Financed Water Filters in Kenya and a Call for Independent Monitoring. *National Library of Medicine*, *3*, 278–283. https://doi.org/10.1289/EHP342

Pierre Côté, L., & Drolet, M.-J. (2021). Conceptualizing Ethical Issues of Humanitarian Work: Results From a Critical Literature Review. *Canadian Journal of Bioethics*, *4*(1). https://doi.org/10.7202/1077631ar

Rogers, W. A., Entwistle, V. A., & Carter, S. M. (2019). Risk, Overdiagnosis and Ethical Justifications. *Health Care Analysis*, *27*, 231–246. https://doi.org/https://doi.org/10.1007/s10728-019-00369-7

Seawright, J., & Gerring, J. (2008). Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options. *Political Research Quarterly* , *61*(2). https://doi.org/https://doi.org/10.1177/1065912907313077

Sharma, L. R., Bidari, S., Bidari, D., Neupane, S., & Sapkota, R. (2023). Exploring the mixed methods research design: types, purposes, strengths, challenges, and criticisms. *Glob Acad J Linguist Lit*, *5*. https://doi.org/10.36348/gajll.2023.v05i01.002

Slim, H. (2015). *Humanitarian Ethics: A Guide to the Morality of Aid in War and Disaster.* (1st ed.). Oxford University Press.

Spilker, G., & Nugent, N. (2022). Voluntary carbon market derivatives: Growth, innovation & usage. In *Borsa Istanbul Review* (Vol. 22, pp. S109–S118). Borsa Istanbul Anonim Sirketi. https://doi.org/10.1016/j.bir.2022.11.008

Summers, S., Rainey, R., Kaur, M., & Graham, J. (2015). CO2 and H2O: Understanding Different Stakeholder Perspectives on the Use of Carbon Credits to Finance Household Water Treatment Projects. *Plos One*. https://doi.org/https://doi.org/10.1371/journal.pone.0122894

The World Bank. (2023). *Lebanon Economic Monitor - In the Grip of A New Crisis* . https://documents1.worldbank.org/curated/en/099518112202340074/pdf/IDU1cbb9a9271d02b14f6a18d8c1cd99718adaaf.pdf

Thomas, E., Barstow, C., MacDonals, L., Ecklu, J., Frankhauser, K., & Johnson, A. (2024). *Decarbonizing Water: Applying the Voluntary Carbon Market toward Global Water Security*.

Trouwloon, D., Streck, C., Chagas, T., & Martinus, G. (2023). Understanding the Use of Carbon Credits by Companies: A Review of the Defining Elements of Corporate Climate Claims. *Global Challenges*, *7*(4), 2200158. https://doi.org/https://doi.org/10.1002/gch2.202200158

United Nations. (2022a). *CDM Methodology Booklet*. https://cdm.unfccc.int/methodologies/documentation/2303/230426 _CDM_booklet_v04.pdf

United Nations. (2022b). *UN Sustainable Development Cooperation Framework - CCA Report*. https://lebanon.un.org/sites/default/files/2022-07/UN%20Lebanon%20CCA_27May%202022_FINAL.pdf

United Nations. (2022c). *United Nations in Lebanon - 2022 Results Report*. https://lebanon.un.org/sites/default/files/2023-09/FINAL%20Results%20Report_2023.09.04_signed.pdf

United Nations. (2023). *Escalating Needs in Lebanon - A 2023 Overview*. https://lebanon.un.org/sites/default/files/2023-05/Escalating_Needs_Lebanon.pdf

United Nations, & Government of Lebanon. (2023). *Lebanon Crisis Response Plan*. https://lebanon.un.org/sites/default/files/2023-05/Lebanon%20Crisis%20Response%20Plan%202023_0.pdf

USAID. (2023). *Carbon Finance Playback* . https://crossboundary.com/wp-content/uploads/2023/12/PLANETA-Carbon-Finance-Playbook.pdf

VCMI. (2023). *Claims Code of Practice - Version 2*. https://vcmintegrity.org/wp-content/uploads/2023/11/VCMI-Claims-Code-of-Practice-November-2023.pdf

Verra. (2023). *Verified Carbon Standard Program Guide (V4.4)*. https://verra.org/wp-content/uploads/2023/08/VCS-Program-Guide-v4.4.pdf

Weiss, J. W. (2021). *Business ethics: A stakeholder and issues management approach* (7th ed.). Berrett-Koehler Publishers.

Wessel, G., & Boer, R. (2023). *Voluntary Carbon Markets: Supervisory issues*.

West, T. A. P., Wunder, S., Sills, E. O., Börner, J., Rifai, S. W., Neidermeier, A. N., Frey, G. P., & Kontoleon, A. (2023). Action needed to make carbon offsets from forest conservation work for climate change mitigation. *Science*, *381*(1660), 873–877. https://doi.org/10.1126/science.ade3535

World Economic Forum. (2023). *Scaling Voluntary Carbon Markets: A Playbook for Corporate Action*.https://www3.weforum.org/docs/WEF_Scaling_Voluntary_Carbon_Markets_2023.pdf

Xu, L., Ahmed Solangi, Y., & Wang, R. (2023). Evaluating and prioritizing the carbon credit financing risks and strategies for sustainable carbon markets in China. *Journal of Cleaner Production*, *414*(137677). https://doi.org/https://doi.org/10.1016/j.jclepro.2023.137677

Appendix A Red Cross fundamental principles (IFRC, 2023)

7 Fundamental Principles	Fundamental Principles components	Related Humanitarian values
Humanity	• Alleviate and prevent suffering • Protect life and health • Ensure respect for and protection of the individual	• Active goodwill and care • Protection of human dignity and well-being • Mutual understanding and peace
Impartiality	• Non-discrimination • Actions are solely guided by needs, proportional to the degree of suffering and prioritised on the basis of urgency • No individual action or decision on the basis of prejudice or personal preference	• Equality of rights, equity of treatment • Respect for diversity and openness • Objectivity and accountability
Neutrality	• Based on the need to build and maintain the trust of all • No taking sides in armed conflicts • No engagement in controversies of a political, racial, religious or ideological nature.	• Confidence (trust) • Self-control and discipline • Freedom of action and objectivity
Independence	• Not letting political, economic, social, religious or financial pressure interfere with Red Cross Red Crescent position or action • Auxiliary to public authorities respecting the country's legislation • Maintain autonomy to be able to act in accordance with the Fundamental Principles• Auxiliary to public authorities respecting the country's legislation • Maintain autonomy to be able to act in accordance with the Fundamental Principles	• Sovereignty and freedom of action • Cooperation • Integrity and transparency
Voluntary Service	• Freely accepted commitment • No desire for gain • Selflessness	• Spirit of altruism and generosity • Spirit of service and humility • Spirit of responsibility and discipline
Unity	• One National Society per country • Open to all • Active in entire country	• As One • Diversity and inclusiveness • Harmony and cohesion
Universality	• Global mission • Equality of National Societies • Solidarity	• Openness to all in the world • Cooperation • Mutual assistance

Appendix B VCC lifecycle description

Stage	Description	Timeframe
Design	The project developer begins by submitting an account application to the SSO. This account is used to register, issue, trade and retire the VCCs. The account application is reviewed and approved by the SSO. Following this, the draft project design documents are submitted to the SSO, and the project has a public commenting period of 30 days. The SSO then creates a project pipeline listing. The design documents should include the methodology and calculations for emission offsets, stakeholder consultation results and demonstrate compliance with the standards (Verra, 2023).	6-12 months
Validation & Registration	<u>Validation:</u> The project developer submits the draft project design documents to an external certified validation body. The third-party is hired by the project developer. Validation generally occurs pre-construction, however, in some cases, validation can occur during construction or after construction has been completed (Verra, 2023). Validation bodies generally undertake a desktop review and field visit to independently validate the design documents and prepare a validation report which states if the project conforms to the adopted standards and methodology (Verra, 2023). <u>Registration:</u> Once approved by the validator, an official registration request can be made by the project developer and the SSO will review the project for accuracy and completeness before the successful registration of the project (Verra, 2023). Construction of the offset project can then commence.	6-12 months
Monitoring & Reporting	After registration, the project can start producing VCCs. The project developer monitors the project based on the monitoring report plan and prepares annual monitoring reports tracking the emission reductions achieved. For the AMS-I.B methodology, the following is required to be reported yearly (United Nations, 2022a): • Number of project systems in operation (annual). • Number of annual hours of operation (annual). • Quantity of electricity produced (hourly measurement and monthly recording). In addition to this, the SSO requires SDG contribution monitoring. It is noted that monitoring can start prior to registration of the project (Millennium Water Alliance, 2024).	Annually for the entirety of the project lifespan.

Stage	Description	Timeframe
Verification & issuance	Verification: The verification stage is then undertaken and third-party's audit the monitoring reports prepared by the project developer to verify if the project is achieving emission reductions. The third-party needs to successfully verify the project before the SSO issuing VCCs (Verra, 2023). Issuance: Following successful verification, the project developer submits a verified carbon unit issuance request to the SSO. The SSO reviews project records and the issuance fee is paid by the project developer. Following this the SSO deposits the VCCs into the project developer's account. The VCCs issued can be distributed over the project life, frontloaded or backloaded (Wessel & Boer, 2023).	6-12 months per cycle. One cycle at least every 5 years.
Sale	The project developer decides how the VCCs are sold on the VCM. VCCs can be sold via direct sale, through a broker, or on carbon exchange platforms. For the solarization projects, the VCCs are assumed to be sold via direct sale. Once bought by end buyers the VCCs are retired and removed from the SSO registry. The VCCs cannot be sold again (Wessel & Boer, 2023).	Variable

Appendix C *Criteria to assess potential VCC buyers* (Korthuis et al., 2023)

Component	Performance indicator basic level	Performance indicator advanced level	Means of Verification	Interpretation guidance
1. Buyer demonstrates wider environmental and social responsibility	• Adheres to OECD guidelines for multinational companies or similar • Is not on a blacklist (e.g. weapons, boycott lists) • Refrains from negative climate lobby Optional: • Fits a Positive list set by the project developer • Exclusion criteria set by the project developer do not prevent engagement with this buyer • For sectors with land-use impact: buyer demonstrates intention towards zero deforestation and/or zero drainage commitments or equivalent	• Buyer taking on a leading role in its sector Optional: • For sectors with land-use impact: zero deforestation or zero drainage commitments in place	Annual social and environmental reports Optional: external communications, presence in sector roundtables/ pioneering initiatives	This is the first filter to apply when doing business with a carbon buyer Part of this filter includes the consideration of whether to do business with heavy emitting extractive, fossil-based or land use sector
2. Buyer employs robust and comprehensive quantification of scope 1, 2, and 3 emissions	Buyer is working on quantification.	Established emissions quantification for scopes 1, 2 and 3 as per sector-specific GHG Protocol Guidance.	Emissions inventory report / submission to GHG Protocol or to other initiative Third party validation of the document AlliedOffsets carbon credit buyer rating system	For the basic level requirement: estimate if buyer will be able to disclose emissions within the next two years National regulations generally do not require comprehensive GHG quantifications/reporting and scope 3 emissions are often reported on a voluntary basis. The US Securities and Exchange Commission (SEC) recently issued a rule proposal that would require all reporters, except for smaller reporting companies, to disclose their Scope 3 emissions if they are material or if the reporting party has set a GHG emissions target or goal that includes Scope 3 emissions.
3. Buyer has developed a Paris Agreement aligned emissions reduction target and associated corporate climate strategy approved by a recognised standard	Decarbonisation target and strategy , at least aligned with a 1.5°C scenario under development.	Decarbonisation target and strategy have been established, aligned with a 1.5°C scenario.	Decarbonisation strategy document / submission to SBTi or other initiative Third party validation of the document	Recommended standards include SBTi Net Zero, ISO IWA 42:2022, PAS 2060, Climate Neutral Certification Standard The standards mentioned warrant a/o that the decarbonisation pathway is sufficiently ambitious, aligned with climate science, and adheres to the mitigation strategy: avoid, reduce, offset If the decarbonisation strategy follows another protocol or was tailored by the buyer, then component 3 needs to be checked and justified

Component	Performance indicator basic level	Performance indicator advanced level	Means of Verification	Interpretation guidance
4. Buyer is on-track to meet Paris Agreement aligned emissions reduction target	First annual progress report planned in two years latest.	Annual progress reports confirm planned emission reductions.	Progress reports of the past three years Third party verification of these reports Allied Offsets carbon credit buyer rating system	Recommended standards include: VCMI Claims Code of Practice, Nordic Code, SBTi Net Zero, HLEG, ISO IWA 42:2022, Climate Neutral Certification Standard, South Pole's Climate Neutrality Label Some companies don't implement their widely communicated decarbonisation strategies, known as "greenhushing" It should be noted that the demand of three years progress reporting may cut away new buyers with good intentions but who had no chance to demonstrate them. Hence, special considerations may be given to the new market entrants in order to give them a fair chance to prove their good faith This guide does not provide insights on how to develop/evaluate "home-made" methodologies to assess whether the buyer is on track to meet its (intermediary) climate targets
5. Buyers purchases high-quality credits verified by recognised standards	High quality credits at least 50% of the portfolio	High quality credits at least 80% of the portfolio, half of which from NBS	Minimum quality criteria for carbon credits can be ensured by restricting to carbon standards that are CCP-approved OR endorsed by the International Carbon Reduction & Offset Alliance (ICROA), such as VCS, Gold standard and Plan Vivo Standard. In the future, the CCP may become the only eligible quality criteria in the market Carbon credit registries of VCS including Jurisdictional and Nested REDD+ framework (JNR), the Climate, Community & Biodiversity (CCB) Standards, the Sustainable Development Verified Impact Standard (SD VISta), LandScale; and Gold Standard Additional certification of co-benefits through standards such as the Climate, Community and Biodiversity (CCB) Standard, the Sustainable Development Verified Impact Standard (SD VISta) and Landscale are recommended Websites of ranking agencies Contracts with other buyers AlliedOffsets carbon credit buyer rating system	In some cases, buyers use high-quality carbon credits merely as a communication tool to upgrade a portfolio of cheaper lower grade carbon credits This guide considers that no high quality carbon credit claim can be made with the use of carbon credits that are not certified by a standard Carbon credits in buyers' portfolio are consistently of high quality, as ranked by independent ranking agencies like Calyx, BeZero, or Sylvera With regard to quality of NBS credits specifically, NBS projects can align with: IUCN NBS Standard, Plan VIVO, Climate Community and Biodiverity Standard, Gold Standard for the Global Goals and Oxford University guidelines, Meridian High-Quality Blue Carbon Principles and Guidance

Component	Performance indicator basic level	Performance indicator advanced level	Means of Verification	Interpretation guidance
6. Buyer communicates transparently on accounting	Emissions registry is transparent Used carbon credits are unequivocally retired in the name of the buyer	Explicit communication on the type of carbon credit used (with or without host country's corresponding adjustments).	Buyer's emissions reporting Carbon credit registries of VCS and Gold Standard	Double counting comes in many types, including double issuance, double claiming, double use. There are no formal regulations on linking the voluntary use of carbon credits by corporates and the international emissions accounting under the Paris Agreement. Users of carbon credits are advised however to be transparent about other uses of the carbon credits applied to compensate their emissions, including reporting by the host country to the UNFCCC Developments and discussion on double counting are ongoing and should be closely monitored Recommended standards following this approach include: VCMI Claims Code of Practice, HLEG
7. Buyer's claims relating to carbon project investments adhere to authoritative claims guidance	VCMI Silver or similar Non-carbon claims, or co-benefits -claims relating to project outcomes (improved livelihoods, enhanced biodiversity) are transparent and do not overstate the buyer's impact Self-reporting	VCMI Gold, Platinum or similar	Self-reporting Third party verification reports AlliedOffsets carbon credit buyer rating system	All claims related to climate by the buyer follow guidance by VCMI Claims Code of Practice, Nordic Code, PAS 2060, Climate Neutral Certification Standard and refer to these standards Gold Standard provides differentiating guidance for offsetting/ compensation claims and for impact claims (Beyond the Value Chain Mitigation) VCMI Claims Code of Practice only facilitates making impact claims Compliance with any of the proposed authoritative claim guidance documents, automatically includes compliance with Component 2, 3, 4, 6 and 7 Emerging guidance on non-carbon claims should be closely monitored and these are often most developed in the context of NBS projects given that these typically deliver co-benefits Assessed standards do not yet address non-carbon claims specifically. Guardrails are being developed by the WRI
8 (optional): Buyer recognises and communicates on the benefits of NBS project types, and commits to promoting their diligent use	Portfolio of carbon credit projects includes both protection and restoration projects	Portfolio of carbon credit projects consists of >50% of NBS credits Portfolio includes both protection and restoration projects, both removals and emission reductions Buyer communicates and promotes NBS through dedicated efforts	Share within portfolio: see means of verification for criterion 5 Expressions in the media Evidence for promotion Carbon credit registries of VCS including Jurisdictional and Nested REDD+ framework (JNR), the Climate, Community & Biodiversity (CCB) Standards, the Sustainable Development Verified Impact Standard (SD VISta), LandScale; and Gold Standard Contracts with other buyers	Project developer will have to check this component in conversations with buyer