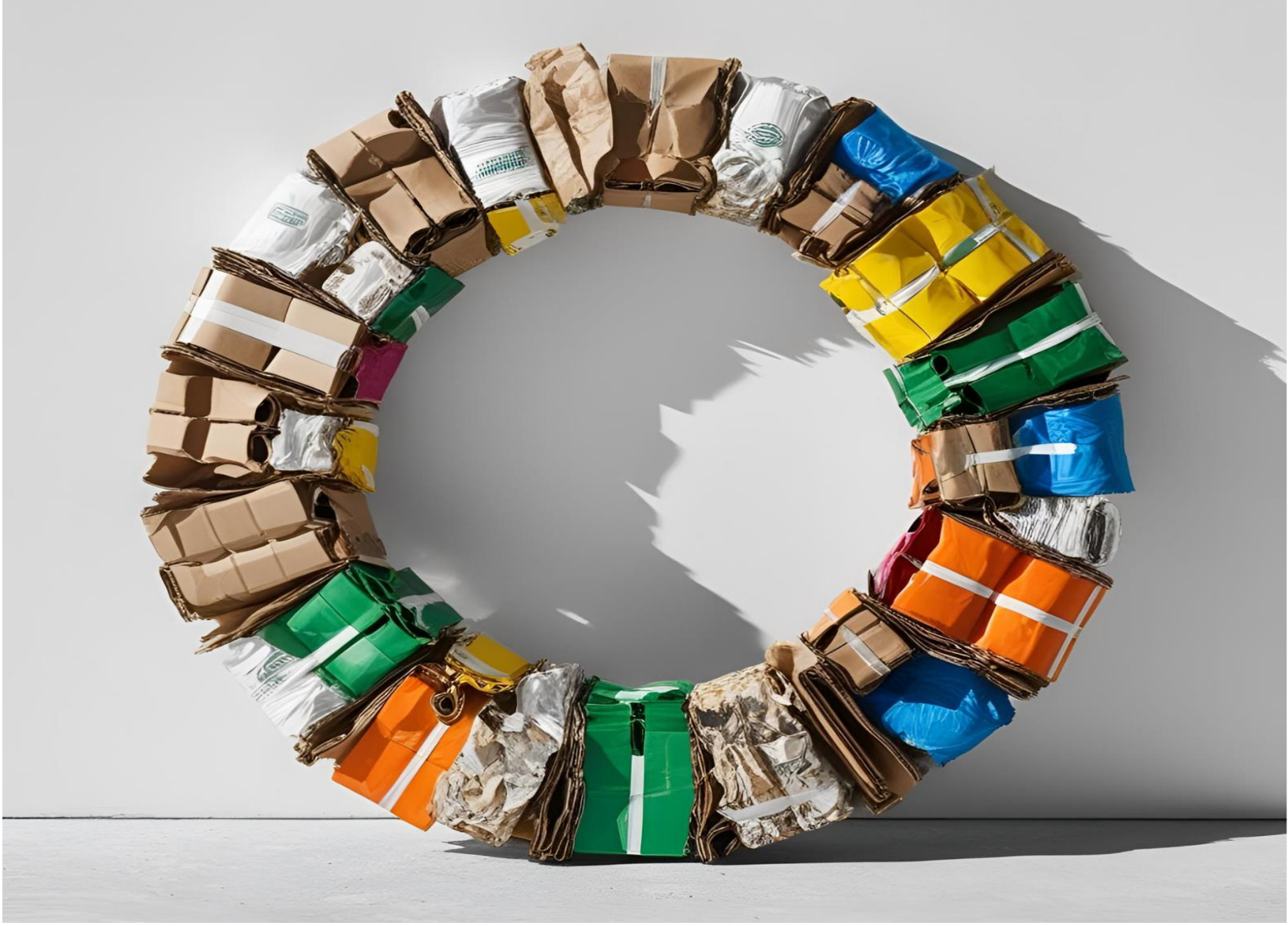

MAKING SUSTAINABILITY SUSTAINABLE TROUGH CIRCULAR ECONOMY

3W Mapping: Who is doing What Where?

How humanitarian organizations are achieving both environmental and financial sustainability in their supply chains

WREC
Environmental Sustainability in Humanitarian Supply Chain

LOGISTICS CLUSTER

Contents

Glossary

ALIMA	The Alliance for International Medical Action
DRC	Danish Refugee Council
FCDO	UK Government's Foreign, Commonwealth & Development Office
HSOT	Humanitarian and Stabilisation Operations Team (UK)
ICRC	International Committee of the Red Cross and Red Crescent Society's
IRC	International rescue Committee
IFRC	International Federation of Red Cross and Red Crescent Societies
SCI	Save the Children International
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
UNGSC	United Nations Global Service Centre
IMC	International Medical Corps
WFP	World Food Programme
WHO	World Health Organization
WREC	Waste management and measuring, Reverse logistics, Environmentally sustainable procurement and transport, and Circular Economy (Logistics Cluster's environment team)
WWF	Worldwide Fund for Nature

Introduction

In an era marked by escalating humanitarian crises and increasingly constrained funding, the need for efficient and cost-effective solutions is paramount. This document explores how the principles of a circular economy offer a pathway to not only enhance the environmental sustainability of humanitarian operations but also to ensure their long-term financial viability.

A circular economy presents an alternative to the traditional linear "take-make-dispose" model. It focuses on **designing out waste and pollution, keeping products and materials in use for as long as possible,** and regenerating natural systems.

By adopting circular practices —such as **rethinking, repairing, reusing, refurbishing, and recycling**— humanitarian organizations can significantly reduce resource consumption and waste generation, while enhancing financial sustainability through cost avoidance and return on investment. Indeed, **sustainable and circular supply chain practices can lead to substantial cost reductions**, with estimates suggesting potential savings of **9–16%[1].** By improving resource use and lowering operational expenses, circular strategies enhance the resilience and impact of humanitarian assistance in a world facing unprecedented humanitarian and funding challenges.

To support this vision, the document is structured to provide **practical examples across each stage of the supply chain**—from procurement to end-of-life, including a dedicated section on facilities management. This format provides information about potential applications of circular economy principles in humanitarian operations that are financially sustainable.

[1] Beyond Supply Chains - Empowering Responsible Value Chains | World Economic Forum

Planning and procurement

This section explores how organizations are integrating environmental and circular considerations into their planning and procurement activities – such as reducing packaging, extending the lifespan of items, and many more strategies – to achieve both sustainability goals and cost efficiency and has the potential to have a positive return on investment.

DRC

DRC team in Iraq purchased sustainable laptops that include significant **post-consumer recycled plastic content (up to 90% in some components).** These devices were **acquired at a comparable and competitive cost,** demonstrating a commitment to sustainability without compromising economic viability. Link to the initiative

HSOT

In collaboration with their supplier, the HSOT successfully reduced single-use plastic packaging, ensuring that only essential packaging remained, **which was 100% recycled and 100% recyclable**. This was achieved at **zero cost and led to reduced transport volumes, waste management needs, and subsequent cost savings**. Link to the initiative

ICRC

ICRC partnered with RISE (Research Institutes of Sweden) to assess packaging alternatives for polypropylene (PP) bags. Due to long shelf-life requirements and lack of temperature control in warehouses, replacements weren't feasible. Instead, **in agreement with the supplier**, the bags **were redesigned** using transparent vacuum packaging, minimal graphics, and natural ink—resulting in at least a **10% cost reduction and lower chemical consumption**. Link to the initiative

IFRC, UNHCR & ICRC

The IFRC, UNHCR, and ICRC designed a new tarpaulin with a significantly reduced environmental impact through (**e.g., sustainable materials and efficient production**) and a doubled lifespan. This aims for a **50%+ decrease in overall environmental impact** and **major long-term financial savings in procurement and logistics.** Link to the initiative

IRC

IRC, in collaboration with its Global Health Unit and Pharma Advisors, strengthened their pharmaceutical supply chain systems—from selection and procurement to storage and distribution—by implementing a robust Quality Management System (QMS) with SOPs and data tracking. This initiative reduced waste and improved cost efficiency, with **96% of IRC**

countries in FY2022 reporting expired stock costs below 2% of total stock value. Link to the initiative

UNICEF

UNICEF is reducing plastic waste in the delivery of Insecticide-Treated Nets (ITNs) by strategically shifting packaging requirements from individual plastic bags to bulk packing. This approach has **prevented 526.165KG of plastic waste**, **saved US$1,340,156, lowered procurement costs,** and created opportunities for reinvestment. Link to the initiative

WWF

WWF-UK's purchase of **510 remanufactured laptops** met performance needs while significantly reducing their environmental footprint and carbon emissions, supported by an equivalent warranty. The supplier's buyback of nearly 500 of WWF-UK's old laptops for remanufacturing completed a circular deal. This approach, offering "equal or better than new" performance with up to **40% cost savings** and low returns, prevented **281 tonnes of CO2 emissions, sequestered 720 tonnes of CO2 emissions, saved 169.4 million litres of water**, and resulted in the planting of five trees per bought-back laptop Link to the initiative

Transport (Freight & Fleet)

Humanitarian organisations worldwide are rethinking their transport strategies to achieve remarkable cost reductions and environmental gains. From prioritizing sea freight to adopting electric vehicles and optimizing fleet management, the initiatives showcased here demonstrate a clear commitment to more sustainable and efficient humanitarian operations.

ALIMA

By consolidating and planning its orders in Mauritania, ALIMA shifted to prioritizing sea freight over air freight for medical equipment. For a 20-ton container transported over 3,000 km, this change resulted in **savings of €12,000 and nearly 100 tons of CO2 emissions** compared to air transport. ALIMA plans to extend this successful approach to other missions. Link to the initiative

DRC

DRC Lebanon's vehicle sharing program successfully eliminated **25 trips in the first quarter of 2024**, **resulting in approximately US$110 in fuel savings and preventing 0.17 metric tons of CO_2 equivalent emissions**. Given that similar vehicle sharing initiatives have been **adopted by several organizations across Lebanon, the overall impact is significantly greater**. The collective efforts contribute to substantial reductions in fuel consumption and greenhouse gas emissions, reinforcing the value of coordinated transport strategies in humanitarian operations. Link to the initiative

ICRC

In Ethiopia, ICRC's adoption of rail transport for container delivery from Djibouti to Addis Ababa has proven significantly more sustainable and cost-effective than road transport, **achieving a 130% reduction in emissions and 36% cost savings (US$ 510 per 40ft container).** Link to the initiative

Save the Children

SCI, facing an old, expensive, and oversized fleet, implemented a global fleet transformation strategy in 2021. The core change was centralizing vehicle purchases and leasing them to projects based on need, with costs recovered through a Fleet Service Charge that is charged to donors. This, combined with a fleet management system and driver training, allowed SCI to optimize its fleet size, reducing the number of vehicles, drivers, and rentals with an **estimated savings US$ 10.9 million over next 5 years.** Link to the initiative

UNICEF

UNICEF completed its first **vaccine shipment by sea**, delivering over 500,000 doses of pneumococcal 13-valent conjugate vaccines (PCVs) to Côte d'Ivoire's routine immunization programme. **This pilot reduced greenhouse gas emissions by up to 90% and cut freight costs by approximately 50% per shipment**, offering a more sustainable and cost-effective logistics model for vaccine delivery. Link to the initiative

WHO

WHO Jordan has made significant strides in **reducing emissions and operational costs by upgrading its fleet and energy systems**. The introduction of electric and hybrid vehicles into daily operations led to a fuel cost savings of approximately **US$8,000 and a reduction of 8,116 kg of CO_2 emissions**. Maintenance has also become more efficient, as electric vehicles require fewer replacement parts compared to petrol-powered ones. Additionally, the installation of solar panels across the entire facility resulted in a dramatic drop in electricity costs—from nearly **US$10,000 to just US$500 per month, representing a 95%**

reduction. These initiatives, strongly backed by senior management, have not only streamlined operations but also positioned WHO Jordan as a leader in sustainable humanitarian logistics. Link to the initiative

WFP

WFP invested US$ 600,000 to rehabilitate railway wagons for transporting food from Dar-es-Salaam (Tanzania) to Kampala (Uganda), switching from road to rail and ferry. WFP reports this **reduced operational costs by 40%** on this route, **with one train carrying the equivalent of 27 trucks**. While the initial investment is noted, the long-term savings on transport costs for large volumes are significant. Link to the initiative

Warehousing & Facility Management

Humanitarian organizations are increasingly optimizing warehousing and facility management to reduce operational costs and environmental impact. From energy-efficient buildings and solar-powered systems, the examples highlighted here reflect a growing commitment to sustainable, cost-effective infrastructure that supports more resilient humanitarian operations.

DRC

DRC Syria streamlined its warehouse operations in Sahnaya to reduce costs and environmental impact. The 1,400 sqm facility, rented since May 2019, had accumulated items from previous storage units, a closed community center, and office relocations. By October 2023, DRC sorted, donated, recycled, and properly disposed of excess materials, **reducing the warehouse size by 85%.** The initiative not only improved operational efficiency and resulted in annual rental savings of **63,840,000 SYP (approximately US$11,247),** but also demonstrated how the end-of-life of items can be managed sustainably, minimizing waste and emissions linked to unnecessary storage. Link to the initiative

DRC Nigeria's 2023 solarization project in Maiduguri and Adamawa aimed to cut reliance on expensive diesel generators by improving energy access and lowering costs. Sites that migrated to hybrid solar systems reported a **60–65% reduction in fuel consumption**, translating into significant cost savings and preventing **500 tonnes of CO2 emissions** annually across various locations, all while maintaining operational continuity.

ICRC

By insulating its medical depot, ICRC Niger drastically **reduced its air conditioner usage from 15 to 2 units**, projecting **significant energy, emissions, and cost reductions.** Despite the upfront construction cost, **the project is expected to pay for itself within just 3–4 years** thanks to significant savings in electricity and fuel. This demonstrates how strategic

investments in sustainable infrastructure can lead to long-term financial and environmental benefits. Link to the initiative

INTERNATIONAL MEDICAL CORPS

IMC calculated the return on investment (ROI) of its solarization project in South Sudan by comparing generator fuel savings to total installation costs, including a 25% buffer for maintenance and battery replacement. Over three years, the project achieved a total ROI of 230.5%, with the highest returns in the first two years. Even in year three, despite additional investments, the ROI remained strong at 103.9%, confirming solarization as a financially sustainable solution for IMC South Sudan. Link to the initiative

UNHCR

UNHCR's 700kW solar photovoltaic powerplant in Uzbekistan is expected to generate around 989,993kWh of electricity annually. With the installation of high-efficiency solar panels, a substantial amount of renewable energy will be generated each year, reducing the Hub's reliance on the grid and significantly lowering its carbon emissions, **reducing emissions by approximately 495 metric tons CO2 emissions per year. It will also result in significant annual electricity savings**, which will benefit local energy infrastructure by reducing operating costs and allowing for reinvestment in further sustainable initiatives. Link to the initiative

WFP

A programme to increase energy efficiency in the field has so far funded 43 energy-saving projects in 14 countries, which together expect to save an estimated **US$1.35 million and more than 2,600 tonnes of GHG emissions a year** Link to the initiative

In particular, WFP Afghanistan has demonstrated a progressive investment in solar power, significantly reducing reliance on diesel generators and improving energy access. These installations have led **to substantial cuts in CO2 emissions and operational costs, including a 70% reduction in electricity expenses projected to pay off within 5-7 years,** serving as a model for sustainable humanitarian energy solutions. Link to the initiative

In 2017, WFP conducted an inventory of MSU spare parts in Ethiopia and Djibouti, consolidating them into a single Mobile Storage Units (MSU) refitting plant. As a result, **35 MSUs were refurbished, eliminating the need to purchase new units**. This initiative had a positive environmental and financial impact, **saving US$ 260,000**. Additionally, it ensured easier access to MSUs within the region supporting prepositioning which further improves logistics response and saves money and CO2 for emergency shipments. Link to the initiative

Reverse Logistics & End-of-life management

Managing the return, reuse, and disposal of materials is becoming a strategic priority in humanitarian supply chains. Reverse logistics and end-of-life practices—such as refurbishing equipment, repurposing surplus items, and implementing responsible recycling—help recover value, reduce waste, and improve cost-efficiency. These approaches support more circular and financially sustainable operations while extending the lifecycle of critical assets.

DRC

DRC Iraq partnered with a local supplier to establish a take-back program for used printer cartridges, successfully enabling their return, recycling, and reuse at **no additional cost and significantly reducing waste** in a highly cost-efficient manner. Link to the initiative

FCDO

By choosing to return and refurbish existing armoured vehicles rather than purchasing new ones, FCDO achieved significant benefits for its operations. The initiative has led to substantial cost savings (**about 77% - new armoured vehicle can cost around US$ 260,000, whereas refurbishing typically costs around USD 65,000**) while minimizing environmental impact by reducing the need to manufacture and dispose of vehicles. Link to the initiative

WFP

WFP Kenya's waste management and reverse logistics initiative sustainably manages significant volumes of supply chain packaging waste like plastic pallets and PP bags, turning a disposal challenge into a revenue stream. **By backhauling waste on contracted trucks returning from deliveries,** they've achieved cost-effective transport and generated **KES 4,579,910 (US$ 35,230**) in recovery, demonstrating a financially and environmentally sound approach.

WFP Ethiopia has successfully implemented a recycling and reverse logistics initiative, leveraging its existing fleet to efficiently manage diverse materials like packaging, jerrycans, and vehicle waste. This innovative program has not only **generated US$ 185,000** from the sale of recovered packaging and fleet waste but also **diverted over 1,000 tons of these materials from landfills**. By transforming waste into a valuable resource, WFP Ethiopia is significantly reducing its environmental footprint and actively contributing to a more circular economy. Link to the initiative

WFP Yemen recycled and repurposed **3,614.4 MT** of materials from twelve warehouses, generating a **US$ 315,018** return on investment through their sale, thus reducing waste and creating value. Link to the initiative

ICRC

ICRC facilitated the collection of **270 kg of cans and 150 kg of plastic, totalling 420 kg** diverted from waste streams. By partnering with a local recycling business, the initiative not only mitigated the environmental consequences of this waste but also generated **US$ 270** in income for the local community through the sale of the collected cans at US$1 per kilogramme. Link to the initiative

UNGSC

The UNGSC's 3R (Return-Refurbish-Reuse) program focuses on creating a more circular supply chain for UN assets, promoting significant cost savings and environmental benefits. By identifying, refurbishing, and redeploying unused or surplus high-value equipment, the program has achieved **cost savings of up to 70% of the acquisition value**. This initiative not only extends asset lifecycles and reduces waste, aligning with Sustainable Development Goal 12 on responsible consumption and production, but also offers faster delivery times for field operations. Link to the initiative

Conclusion

Circular economy strategies aren't just environmentally responsible—they're financially smart. By reusing materials, reducing waste, and optimizing supply chains, humanitarian organizations can unlock savings of up to 16%, minimize costly procurement cycles, and extend the life of critical assets. In a time of tight budgets and rising demands, circular practices offer a proven path to greater efficiency, resilience, and long-term financial viability.