Reverse Logistics feasibility assessment

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1. Why this document?

Conducting a feasibility assessment is crucial for determining whether implementing Reverse Logistics (RL) in a specific humanitarian operation is viable and beneficial. This document provides guidance on how to conduct this Reverse Logistics Feasibility Assessment (RLFA).

2. Target audience

This guide is aimed at supply chain and logistics professionals with the goal of providing knowledge and tools needed to assess the feasibility of implementing RL within their organizations.

3. What is a feasibility assessment?

A RLFA is a study that evaluates the practicality of setting up a RL system to reuse, repair, repurpose, recycle, or properly dispose of used products and waste within your supply chain.

It identifies volumes, stakeholders, structural needs, costs, environmental impact, and potential challenges and benefits to determine if the project is realistic and worthwhile.

4. How to conduct a RL feasibility assessment

This section below will provide you with practical steps that can be taken to conduct a RLFA in your office.

a. Define Scope and Objectives

A critical first step in initiating a RLFA is to establish a clear scope and measurable objectives to:

- **Identify and prioritize** the most relevant and impactful aspects to address through RL (scope) and,
- **Define the benchmarks** for tracking progress and evaluating the overall success of RL (objective).

Example: *Scope: Prevent open burning of used and broken mosquito nets in the refugee camp Y of Country X; Objective: Collect and properly manage (recycling if possible or dispose of) 80% of the used mosquito nets distributed in field office Y of Country X through take-back schemes with beneficiaries and installation / management of mosquito net recycling containers.*

b. Map your process

RL process mapping empowers organizations with a clear understanding of every step, stakeholder, and item that could be involved in their RL scheme. This transparency fosters better visibility of operations and identifies the operational needs and possible drawbacks. The following actions should be considered when creating your RL process map:

- **Identify the item's characteristics** that you aim to return through RL.[1]

Example: Organization A needs to collect the food packaging after the distribution of the food to the people of concern.
Item: food packaging. Material: PET Plastics. Color: white. Weight: 140 g.

- **Assess amount, volume, and geographical location of the items** you anticipate collecting based on past data or estimations.

[1] In case you are managing waste, consult the WREC Waste or Material Characterization Exercise Guidance | Logistics Cluster Website (logcluster.org)

Example: Each food package distributed by Organization A weighs 140 g. A total of 8,000 packages were delivered to each of the 4 locations.
Item = plastic food packaging
*Total amount = 8000*4 = 24000 packaging*
*Total weight = 24000*140 = 4480000 g = 4480 Kg*

- **Gather information on the stakeholders** involved (e.g. people of concern, implementing partners, warehouse managers, transporter).

- **Evaluate transportation options** (e.g. fleet vehicles, external transport company) that could return the items and their associated costs; **routes** including distances, and **volume capacity**.

- **Research potential markets** to reuse, repair, repurpose, recycle or properly dispose of items, considering local demand and economic viability (use the WREC Waste management facilities mapping to identify local infrastructures). Gather information on their services, costs, and compliance with environmental regulations.

- **Identify responsibilities** for each phase of the RL scheme.

Example: Cooperating partners are responsible to collect food packaging from people of concern and collect them in their warehouse, Organization A drivers are responsible for picking up food packaging from cooperating partners to Organization A warehouses, external contracted transporters are responsible to transport the consolidated food packaging to assigned recycling facilities.

- **Map your process** including the locations, stakeholders involved, responsibilities and step.

Example: The RL process to collect packaging from the people of concern to the disposal/recycling facilities is mapped in Figure 1

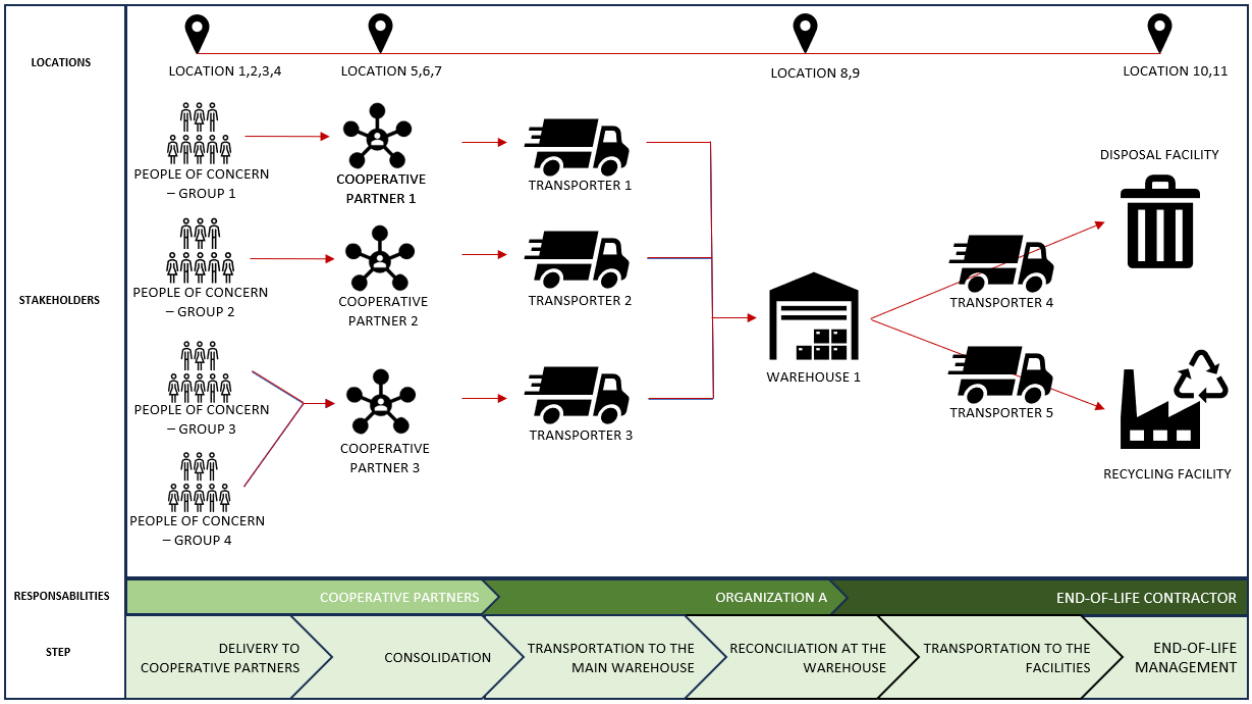

Figure 1 Map of the process

c. Conduct a Cost-Benefit Analysis

A cost-benefit analysis is used to assess the **financial viability** of RL implementation. It considers all the costs associated with collection, storage, transportation, and treatment. Once that data is collected, the cost-benefit analysis exercise compares the variables to the potential return on investment, such as revenues from sold items or recycled materials.

Comparing costs and benefits provides a framework and clear picture of a RL project's economic sustainability and provide decision-makers with an understanding of the financial implications associated with RL implementation.

To conduct a comprehensive cost-benefit analysis, consider the following steps which outline the key factors to be evaluated.

I. **Assess the value of the returned materials/items**. **High-value items** can be reallocated, reused, or sold, generating cost savings or potential financial benefits that can be re-invested in the organization, while **low-value** items may require additional costs for proper treatment of the material with no opportunity of a return in investment. Table 1 provide an overview of the value of different materials/items and the possible impact on cost-benefit analysis.

Material/Item Category	Examples	Impact on the cost-benefit analysis
High Value	Vehicles, aluminum cans, copper wiring, used electronics, furniture, high quality paper	Reallocation, sale, repurposed or recycling of these items can generate significant cost savings or return in investments/revenues.
Medium Value	Cardboard, broken plastic or wooden pallets, some plastics (HDPE, PET)	Reallocation, sale, repurposed or recycling of these items can generate minimum cost savings or return in investments/revenues.
Low Value/No Value	Mixed waste (contaminated), food scraps (if not composted), laminated packaging, heavily used tires.	Low potential for cost savings, and sorting/treatment processes might require financial resource allocation.

Table 1 Materials/items value classification

II. **Estimate the financial costs** associated with implementing RL, including:
- Collection point setup and maintenance (with external stakeholders or not);
- Sorting and processing costs (with external stakeholders or not);
- Storage costs;
- Transportation (with fleet vehicles or external transporters);
- End-of-life management costs (e.g. recycling, reparation, disposing of, incineration).

III. **Estimate the potential financial benefits** such as:
- Revenue generated from selling used materials/items;
- Cost saving from reduced storage needs (e.g. rent of a warehouse – or part of it – that it is no more needed);
- Potential cost saving in reusing the same item instead of purchasing a new one *Example: Price to return an armed vehicle (from field office to a workshop): 1000USD; Price to fix an armed vehicle: 20.000 USD; Price of the new vehicle: 80.000 USD; Cost saving= Price of the new vehicle – Price to return an armed vehicle -Price to fix a armed vehicle = 80.000 – 20.000 = 59.000USD;*
- Potential grant funding or support from donors.

IV. Compare cost and benefits

Results of the Cost-Benefit analysis	Scenarios
Cost < Benefits	Optimal scenario: the organization benefits from the investment in RL. Highly chance of getting full support from management.
Cost = Benefits	Good scenario: the organization is able to implement RL in an economically sustainable way. Good chance to gain full management support.
Cost > Benefits	Challenging scenario: the organization must make an investment to implement RL. The necessary funds must be found and approved. Management may not be willing to support this initiative.

d. Assess the Environmental Impact

Evaluating the environmental impact of implementing RL is another crucial step for informed decision-making. This assessment can demonstrate the significant contribution RL makes towards achieving organizational goals of minimizing the environmental footprint associated with supply chain operations.
For an evaluation of your environmental impact, a quantitative or qualitative examination of the following key aspects should be considered[2]:

- resource conservation (reuse & recycling vs. disposal),
- green gas house emissions produced vs avoided ,
- waste prevention[3],
- virgin material avoidance[1],

Example: Broken laptops that are brought back through RL, remanufactured and redistributed have a lower environmental impact compared to purchasing a new one. Remanufactured

[2] Environmental impact assessment may require time and expertise that not all organizations may have. For this reason, it is recommended to assess environmental impact based on the organizational resources and to search the Internet for data, tools, and information already available (e.g., industry reports, academic papers, and environmental impact databases). For further assistance, contact global.wrec@wfp.org .

[3] Check examples in the "How to do it concretely" paragraph in WREC - Introductory Guide to Tender and Purchase Circular Products

laptops prevent 318 Kg of CO2 saved, 190.000 liter preserved, 1200 Kg of natural resources saved, 2,5 Kg of waste avoided per item[4].

e. Identify Challenges and risks

The successful implementation of RL hinges on a comprehensive understanding of potential infrastructural, operational, and context-specific challenges and risks. By proactively identifying these hurdles, organizations can take timely actions to mitigate them and ensure project success. Here's a breakdown of some key considerations:

- **Limited and unstable infrastructure:** Many crisis-affected areas lack the stable infrastructure necessary for efficient RL systems, such as proper collection facilities, recycling plants, or reliable transportation networks.
- **Resource constraints**: humanitarian organizations often operate with limited budgets and personnel. Setting up and managing RL may require additional resources for training, equipment, and logistics coordination.
- **Lack of awareness**: Fostering a shared understanding of environmentally sustainable management of materials/items and RL practices among local staff and communities can be challenging and may require an investment of time and resources.
- **Inefficient operations**: Implementing RL without proper planning and infrastructure can lead to inefficiencies, delays, and increased costs.

f. Provide Conclusion and Recommendation

To finalize your RL feasibility assessment, effectively communicate your results and combine your findings, draw conclusions, and develop recommendations to share with key stakeholders.

- **Combine your findings** from data analysis, cost-benefit assessment, and environmental impact assessments.
- **Draw a conclusion** regarding the feasibility of implementing RL based on the collected data and potential benefits and drawbacks.
- **Develop a recommendation** stating whether to proceed with the program, suggesting alternative approaches, or highlighting further research needs.
- **Draft a short report to be shared** with management or relevant stakeholders to foster their support and collaboration.

[4] https://circulareconomy.europa.eu/platform/en/good-practices/circular-computing-remanufactured-laptops-go-mainstream

Example: Title of the report "Implementation of Reverse Logistics in Uganda for broken solar lamps". Structure of the report: Scope & Objective, Process Mapping, Cost-benefit analysis, Environmental impact assessment, Challenges and risks, Conclusion.

5. Conclusion

By following the steps outlined in this guide, you will be well-equipped to assess the viability of implementing RL within your organization and be able to make informed decisions about the potential benefits, challenges, and resource requirements associated with RL.

Please reach out to global.WREC@wfp.org if you would like to receive ad-hoc free support through the help desk request, if you have any questions, comments, or concerns that you'd like support with or if you simply have a story to share.