Request for Information

Design and prototyping of alternatives to Polypropylene bags

OBJECTIVE	To design and develop alternative packaging materials for 25 kg woven polypropylene bags for food and non-food commodity deliveries by humanitarian organizations
DEADLINE	A response to this RFI is due by 06 May 2022
TOPICS	Sustainable packaging, long-lasting polypropylene, recycled polypropylene, textile-based packaging, cellulose-based packaging
TARGET AUDIENCE	Institutes, organizations, companies that can propose and test an alternative material to polypropylene bags (each bidder can propose solutions for more than one category)

BACKGROUND

The ICRC, UNHCR and WFP (henceforth referred to as the "Partners") are committed to reduce the generation of waste from their activities and, when reduction is not possible, to improve waste management, as stated for example in the ICRC's Strategy 2019-2024, objective 2.4[1]. Almost 7 000 tons of PP bags are used by the Partners for food and non-food deliveries, mainly to pack staple food. These bags are purchased by the item suppliers and then printed with the organization logo. Most of the items are packed at the supplier sites. The packaging manufacturers are present all over the world with a majority being in India and Pakistan (especially for rice procurement). Food and non-food items are distributed all over the world mainly by boat and by trucks.

The Partners rely on central and local warehouses where food and non-food items are stored for an average time of 6 months but in some extreme cases for 2 years. The storage conditions are directly dependent on local weather: air temperature can be very high, as well as humid in some cases. The bags can also be damaged by pests, mold, and multiple handlings. The distribution is then made by trucks directly to the population or through intermediaries, in zones with open conflicts or with high insecurity. If the zone is not accessible, air drop is used.

Once empty, PP woven bags are reused by the beneficiaries, several times, for the same usage or for downgraded utilizations. There are no existing collection systems in most areas. At end-of-life, the bags are either burned or dumped under uncontrolled conditions. There is a major risk of plastic leakages and release of toxic compounds in the atmosphere.

In this context, **the Partners have designed and obtained financial support for a project to find a more sustainable packaging material to the polypropylene (PP) woven bag, that is commonly used by humanitarian organizations for staple food and other commodity packaging**. The project includes to conduct tests in real conditions of usage, and to encourage the scaling up of the pilot project to industrial level to eventually replace the PP woven bags by bags made from the chosen alternative material.

The detailed functional specifications of the bags are presented in appendix 4.

1 https://www.icrc.org/en/publication/4354-icrc-strategy-2019-2022

ABOUT THE PROJECT

Today, a consulting company, Sofies SA, based in Geneva, is managing the project aiming at finding alternatives to current PP woven bags. Under this project, the usage patterns for the PP bags were analyzed for all three organizations. In discussion with the Partners, the following four criteria were set as the expectations for alternative packaging options[2]:

- Comply with the functional specifications of the current PP woven bag (food and non-food items)
- Minimize plastic leakages but also water and CO_2 footprints
- Keep a high reuse rate of the material (even if very difficult to estimate)
- Favor high maturity and high production capacity to enable an industrial deployment of the solutions within less than 3 years

Additional criteria to take into considerations and their respective order of priority can be found in appendix 5. Based on these criteria, five categories (or "lots") of solutions have been identified:

- Lot 1: Incremental solution based on PP with improved lifetime
- Lot 2: Incremental solution based on recycled PP
- Lot 3: Solution with a cellulose-based material
- Lot 4: Solution with a material made of vegetal fiber, excluding cotton
- Lot 5: Solution with another material not belonging to the categories mentioned above

This Request for Information (RfI) aims at identifying companies, institutes and/or organizations that are interested in joining the partners to develop and prototype a new bag made of one or several of these alternatives - i.e., each applicant ("Bidder") may submit solutions for one or more lots. Bidders answering this RfI will be invited to submit a formal proposal to the partners during a forthcoming RfQ process. See details in the Application Process section

DESCRIPTION OF ACTIVITIES

The following key activities are to be undertaken by the Bidders selected at the end of the RfQ process.

ACTIVITY 1: Specify the target packaging

a. Translatethe functional specifications and target cost provided by the Partners into technical specifications.
b. If required, analyze a sample of a representative PP bag provided by the Partners and make a gap assessment between functional/technical specifications and the current characteristics of the PP bags (possibly some performance of the current PP bag could be higher than the expectations and could be downgraded and vice-versa).
c. Participate to a dialogue session, organized by the Project Manager, to facilitate the integration of packaging suppliers' concerns/comments into the development.

ACTIVITY 2: Design and material validation tests

a. From its experience, the Bidder should propose and describe one or several concept of bags with specific formulations and manufacturing process (max: 5 formulations). If required, ad-hoc lab tests should be proposed to fine-tune/validate the formulation: describe the factors to be tested, expected test protocols and answers.
b. Perform the optional lab tests and propose a maximum of two designs of bags, including a cost estimation.

[2] Internal liners made of plastic or other innovative materials have not been excluded as they can, in some cases, guarantee a barrier compliant with food-contact requirements, and they do not account for a large part of the packaging (thus not the most significant in terms of plastic leakage).

c. Design the prototyping tests (manufacturing and testing protocols and cost evaluation) for validation by the Partners.
d. Provide environmental data (for the purpose of a LCA performed by Sofies SA) and discuss/detail the performance of the solution in accordance with the multicriteria assessment detailed in appendix 2.

Note: before the bag prototyping, the Partners will approve the concept and the design of the tests. If not approved, the project will be stopped at that stage and the Bidder paid according to the budget provisioned for ACTIVITIES 1 and 2.

ACTIVITY 3: Bag prototyping with the 2 most promising formulas and quality assessment

a. Manufacture a series of bags designed to carry 25 kg of food or non-food items (capacity to be agreed with the Partners before starting the design), with the two selected formulations. The Partners may visit the Bidder once the bags are formulated.
b. Analyze the performance of the bags:
    i. At minimum, the assessment must answer the functional specifications provided by the Partners.
    ii. Additional tests can be proposed, linked for instance to biodegradability, recyclability, compatibility with food contact if required, etc.

We strongly suggest including in this analysis the characterization of the current PP woven bag, as a baseline.

c. Selection of appropriate bag formulation and manufacturing.

ACTIVITY 4: Scaling-up

a. Identify industrial partners that would be able to manufacture the bag at industrial scale.
b. Provide a first estimate techno-economic study on scaling up the selected solution (in 3.c)
c. Consolidate environmental data for the LCA performed by Sofies SA.
d. Discuss the scaling-up plan for worldwide access with the Project manager and the Partners
e. Design pilot trials (in collaboration with Sofies SA).

Note: this list of activities is only indicative and will be finalized (along with the list of deliverables) for the Request for Quotation phase (see below).

APPLICATION PROCESS

The selection of suitable organizations to execute the work outlined in this document will be done through a three-step process. This Request for Information is the first step, which seeks to understand the interest among potential bidders and their capability to deliver the required efforts. The selection process will also demonstrate two **Open Dialogue sessions** – where interested bidders and other stakeholders are invited to discuss their suggestions, interpretations, ideas and concerns with the Partners. These inputs will be incorporated into the Request for Quotation that will be released in the second step. The meeting links for both Open Dialogue sessions are given in the table below.

Step	Key milestone	Due date
Request for Information	RFI is launched	April 04
	Open Dialogue sessions	April 25 – 1pm CET May 02 – 1pm CET
	RFI proposal is due	May 06
Request for Quotation	Request for Quotation (RFQ) is launched	May 20
	Deadline for any email queries	May 30
	RFQ proposal, pricing/quotation & other relevant documents are due	June 15

Final Selection	RFQ proposals and quotations are scored against a pre-determined assessment framework (the framework will be shared in the RFQ document)	
	Best suited candidates are notified of their selection	July 04

The template for the RFI proposal is given in Appendix.