



Waste Management at Rapid Onset Disaster Sites

USAID IS WORKING WITH WORCESTER POLYTECHNIC INSTITUTE TO DEVELOP SOLID WASTE MANAGEMENT FOR RAPID ONSET DISASTERS SITES

OVERVIEW:

Humanitarian assistance helps regions struck by hardships. The *United States Agency for International Development (USAID)* supplies humanitarian assistance to devastated people after a disaster strikes. When humanitarian assistance is supplied, it is delivered in multi-layered, durable packaging. Excess packaging waste, in the form of plastic, cardboard, and metal, has devastating impacts on the local environment when not properly processed. This project provided USAID with [assessment tools](#) necessary for evaluating waste management systems and their application to rapid onset disasters. The generation of such tools required analysis of waste management solutions employed in a variety of fields to optimize them for use during a rapid onset disaster. These assessment tools were provided to the USAID Supply Chain Management Division to provide an outline for implementing effective solid waste management methods in the aftermath of a disaster.



Typical USAID Packaging^[1]

Plastic Waste Processing

Processing large quantities of plastic waste during disaster response requires innovative waste management solutions. The team has developed 3 solutions for processing plastic waste. These solutions include: a centralized and decentralized method for creating plastic bricks, as well as a potential partnership with a company called Precious Plastics.

Centralized Plastic Brick Method:

A method the team proposed to USAID was the utilization of a centralized distribution facility as a waste processing facility. This proposal is most suited towards relief efforts in disasters that have not destroyed or severely interrupted transportation routes. As supplies are received and begin distribution, their initial plastic packaging can be collected and processed onsite. The plastic waste of the supplies, following consumption, will be collected when new shipments of supplies are received. This follows the principle of developing reverse logistics, supplies are available for distribution and the same can be said for their waste. The processing of plastic packaging, both from onsite and reclaimed waste will be shredded. Plastic shreadings can be turned into plastic bricks, inspired by [Conceptos Plasticos](#), as their machinery will have critical role in development of a centralized waste processing facility. These bricks can then be used in reconstruction efforts or sold internationally.



Recycled Plastic Brick on the Ivory Coast by France24^[2]

Decentralized Plastic Brick Method:

The Decentralized Plastic Brick Method requires smaller, hand crank or lever operated shredders and compactors. Bricks developed in this manner will be of a lower quality than brick created in a centralized facility. The weakness of the bricks produced using this method is counteracted by the simplicity of design and implementation. Brick making machines can be distributed across a disaster site, allowing rapid processing of plastic waste. The machines required for this method include a hand operated shredder, and a hand operated press. These plastic bricks can serve the role of any other brick at a fraction the price.



Hand Operated Plastic Brick Machine by Lewin Day^[3]

Precious Plastic Partnership:

Precious Plastics is an open source company, founded in the Netherlands, with the goal of repurposing plastic waste. [Precious Plastics](#) uses collected plastic waste by shredding and extruding it to form new products like plastic chairs, tiles and beams. Due to the open source nature of Precious Plastic their technology is publicly available, making it feasible for a possible partnership. A partnership with Precious Plastic would grant USAID access to the “Precious Plastic Universe”, a [global network](#) of waste processing and distribution facilities



A chair developed of recycled material by Precious Plastic^[4]

For more Information on Solid Waste Management Solutions for Rapid Onset Disaster Sites, please contact:

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Citations:

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<https://pk.usembassy.gov/america-provides-100-ventilators-to-pakistan-to-support-covid-19-response/>.

2) HERSEY, F. (2019, September 26). *Classrooms made from recycled plastic waste come to Ivory Coast*. France 24. <https://www.france24.com/en/20190925-classrooms-recycled-plastic-waste-ivory-coast-unicef>.

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4) *Precious Plastic Universe*. Sustainable Waste Management. (2020, February 7). <https://viablealternativenenergy.com/precious-plastic-universe/>