
Developing Value-added, Community-appropriate Options for Repurposing of Wasted Juice Cartons in Chiang Rai, Thailand

**An Interactive Qualifying Project and Science and Social Project Submitted
for Fulfillment of the Requirements for the Degree of Bachelor of Science at
Worcester Polytechnic Institute and Faculty of Science in Applied Chemistry
at Chulalongkorn University**

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Project Sponsored by Doi Kham Food Products Co. Ltd.



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Report Submitted on March 3rd, 2017

Abstract

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Due to unavoidable manufacturing inefficiencies, thousands of wasted juice cartons accumulate daily at Doi Kham Food Products' juice packaging factory in Chiang Rai, Thailand. Furthermore, this waste cannot be managed because there are no recycling facilities in the area. Our goal was to find solutions for repurposing the wasted juice cartons in a way that benefitted the community. Our team evaluated Doi Kham's problem and expectations, assessed the needs of the community, and analyzed the feasibility of different reuse programs. We developed three effective and beneficial solutions: a microenterprise plan that will strengthen Doi Kham's community relations, an educational reuse program for local schools, and a partnership between Doi Kham and a recycling company.

Executive Summary

Problem

Doi Kham Food Products Co Ltd. is currently facing a waste generation problem at their juice factory located in the Chiang Rai province. The factory currently produces over 3,000 wasted juice cartons every day as a byproduct of their manufacturing process. With no recycling plants nearby, the wasted cartons are currently building up at a local waste facility. Doi Kham has asked us to find repurposing or recycling solutions for the waste that benefit the local community.

Background

Doi Kham was founded in 1969, under his majesty King Bhumibol Adulyadej, as a Royal Foundation project initiative designed to provide an alternative source of income to opium poppy farming. While the company now operates independently from the Royal Foundation, the original Corporate Social Responsibility (CSR) goals and community focus of the late King are still fundamental to the company.

In conjunction with their CSR goals, Doi Kham is also focused on minimizing the negative environmental effects of their manufacturing process. Waste generation is rapidly increasing around the world and packaged food containers, such as the ones that Doi Kham produces, are significant contributors to the waste problem. For this reason, Doi Kham has made it a goal to mitigate the detrimental effects of their waste production.



Project Goal

The goal of our project was to develop the most effective and feasible plan for repurposing Doi Kham Food Products' waste juice cartons in order to benefit the Pa Sang community.

Methodology

To achieve our goal we toured the Doi Kham factory in Mae Chan and interviewed Doi Kham employees and community members, to determine the current waste situation and the expectations for the project. We researched and contacted recycling organizations in Thailand and worldwide, that are familiar with beverage carton waste problems. Using the information from our research and interviews we evaluated possible reuse techniques based on their feasibility and the impacts they would have on Doi Kham and the local community. Finally, we developed microenterprise and corporate partnership plans that would best fulfill Doi Kham's CSR and waste management goals.

Key Finding One:



Doi Kham's equipment and manufacturing process is extremely productive at approximately 99 percent efficiency. For this reason, the team determined that altering the machinery or production process would not be a feasible solution to the waste problem. There are several sources and types of waste being generated, but wasted beverage cartons are the most abundant and concerning.

Key Finding Two:



Both Doi Kham and the community expressed interest in making upcycled goods, such as baskets, from the wasted juice cartons, and in incorporating reuse programs into local schools' curriculums. These projects could serve as an alternative source of income for community members, and could spread awareness of reuse throughout the community. However, due to the large volumes of waste being generated, Doi Kham wanted to find a solution that could manage the entirety of the waste produced. For these reasons, Doi Kham decided they needed multiple options that, enacted together, could fulfill their CSR goals and manage all the waste.

Key Finding Three:



We learned that Doi Kham is very interested in forming a partnership with a recycling organization to manage all of their waste. After contacting several recycling companies in Thailand and around the world, the Thai company Fiber Pattana seemed best fit to form a partnership with Doi Kham. This is because we discovered that Fiber Pattana's CSR ambitions are synonymous with Doi Kham's ambitions. In their not-for-profit accounts, donated wasted cartons are recycled into products which Fiber Pattana donates back to victims of natural disasters. The paper pulp byproduct from these donations, and the ensuing sales from Fiber Pattana's 'Eco-Paper' products, allows the company's not-for-profit account to be economically feasible.

Reccomendations



We recommend an agreement and partnership to be formed between Doi Kham and Fiber Pattana that results in a collaborative CSR project.

The solution we have found most effective in addressing Doi Kham's waste generation problem, and in augmenting Doi Kham's CSR ambitions, is a partnership between Doi Kham and the beverage carton recycling company, Fiber Pattana. Doi Kham would donate their wasted juice cartons to Fiber Pattana, and in turn, Fiber Pattana would repurpose them into green building materials and donate the products to those in need or sell them at reasonable prices in the Chiang Rai province. Fiber Pattana needs more beverage cartons and Doi Kham aims to mitigate the effects of its waste production. This partnership would be mutually beneficial to both companies' CSR goals.



We recommend a small portion of the wasted beverage cartons be repurposed into upcycled goods such as baskets.

We recommend a microenterprise, where wasted juice cartons are repurposed into upcycled goods, such as baskets, to support the relationship between Doi Kham and the local community. Doi Kham would buy the baskets from the local residents, which would provide an added income for the local residents. The baskets would be sold for special occasions at the Doi Kham store.



We recommend Doi Kham send a small fraction of their wasted juice cartons to local schools in the Pa Sang district.

We recommend that Doi Kham send some of their wasted juice cartons to the local schools in Pa Sang to be used as planters or art supplies. This would not only help educate children on how to repurpose waste and develop their creativity skills, but it would also fulfill Doi Kham's CSR goal. If this project is successful, we recommend that Doi Kham's wasted juice cartons be sent to other schools in Chiang Rai as well.

Conclusion

With these recommendations, we hope that Doi Kham is able to mitigate the effects of the waste generated in their packaging processes, while strengthening their relationship with the Pa Sang community.

Acknowledgements

Acknowledgements

We would like to express our sincerest gratitude to the following organizations, professors, and individuals that supported us throughout the course of this project. Without their help, this project would not have been possible.

Doi Kham Food Products for providing us with this project opportunity, and for supporting us throughout the project.

Thanapon Sitti, from Doi Kham Food Products, for taking care of us during our trips, being accessible to answer all of our questions, and organizing all of our meetings and events while in Chiang Rai.

Napol Muenkiang and Amaruta Phaitecha, from Doi Kham Food Products, for their support and guidance throughout the project.

Preecha Kumboonrong, the mayor of the Pa Sang community, for meeting with us, offering his feedback, and providing a tour of the community.

Saichon Sittikulwanich, the marketing manager of Fiber Pattana, for his significant contribution to this project, and for his support during our meeting in Bangkok and our presentations to Doi Kham.

Ajarn Sumalee for preparing the WPI students for their term in Thailand, and for being a wonderful Thai teacher.

Ajarns Supawan Tantayanon, Melissa Belz, and Dan DiMassa for their continual guidance and support throughout the project.

Chulalongkorn University and Worcester Polytechnic Institute for providing their students with the opportunity to work on a collaborative social science project.

The Department of Chemistry and the Bachelor of Science in Applied Chemistry (BSAC) program for providing students with resources and a pleasant work space.

The office of Interdisciplinary and Global Studies Division (IGSD) at WPI for preparing students to travel abroad, providing valuable travel information, and handling students' visas.



