

The Commoditization of Food Waste: A Case Study in the Province of Québec

By Erika Szabo, BA Honours Urban Studies

Supervisor: Dr. Graham MacDonald. Reader: Dr. Benjamin Forest

INTRODUCTION

In 2019, 3.1 million tonnes of food were discarded in landfills in the Province of Québec, Canada. Of these, over a third were still edible.

This ensuing waste has negative consequences on society and the environment, as the decomposition of food in landfills is an important source of greenhouse gas emissions and its prevention could contribute to greater food security.

Food policy initiatives have been inadequate in mitigating this issue, leading to a greater involvement of private actors in food waste management. Such for-profit initiatives include food upcycling companies, representing a growing sector of Québec's economy.

RESEARCH AIM & QUESTIONS

Using commodity chain and social network analysis, I investigate the operational characteristics of food upcycling initiatives in Quebec, highlighting their main challenges and opportunities.

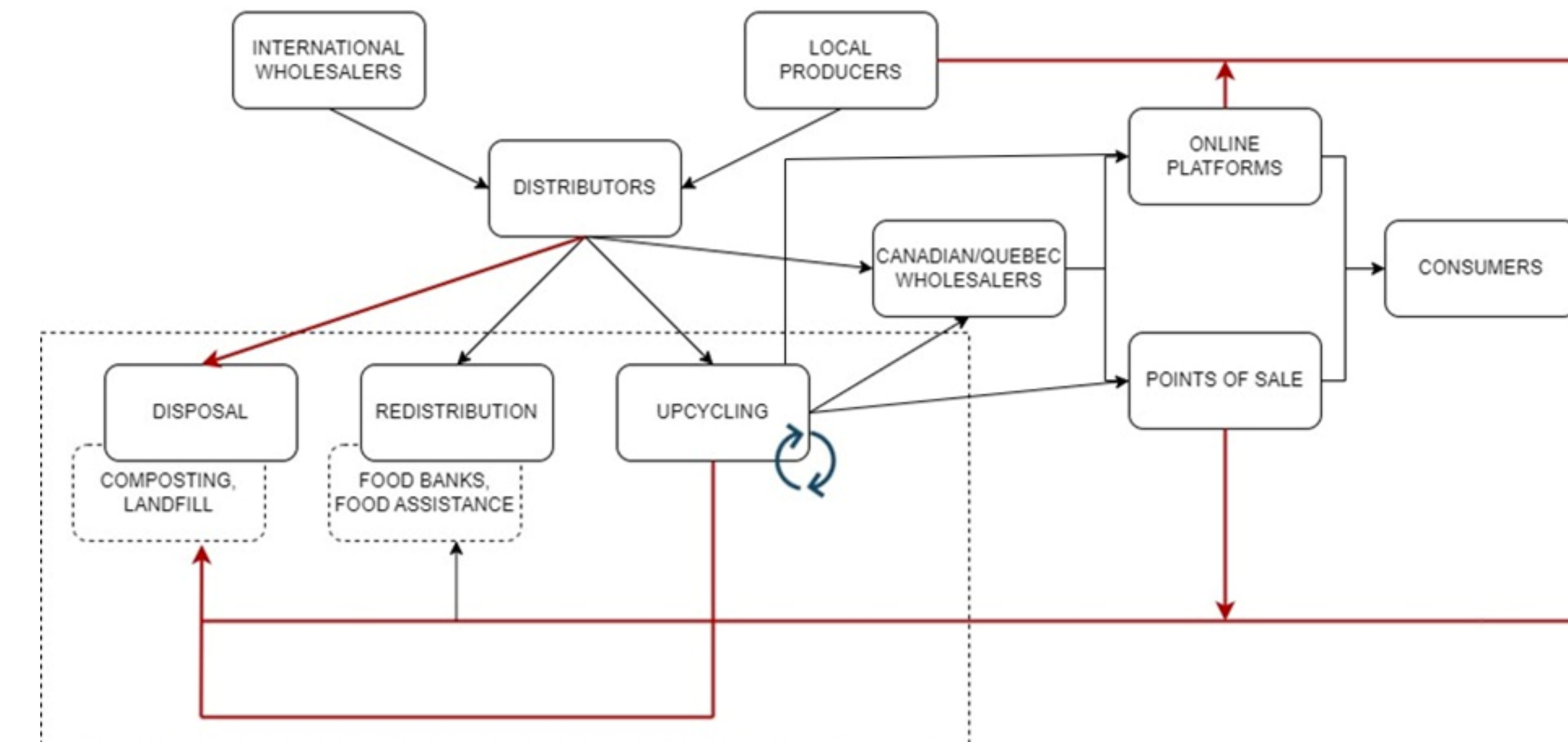
1. What are the main production characteristics of these upcycled food companies, and in what ways do their commodity chains compare or differ from one another?
2. What types of relationships underly the commodity chains of each company, including among the different actors involved in the processing of food waste or facilitating the company's mission?
3. What are the main challenges and successes facing companies engaging with circular economy ideals related to upcycling food waste in Québec?

RESEARCH METHODS

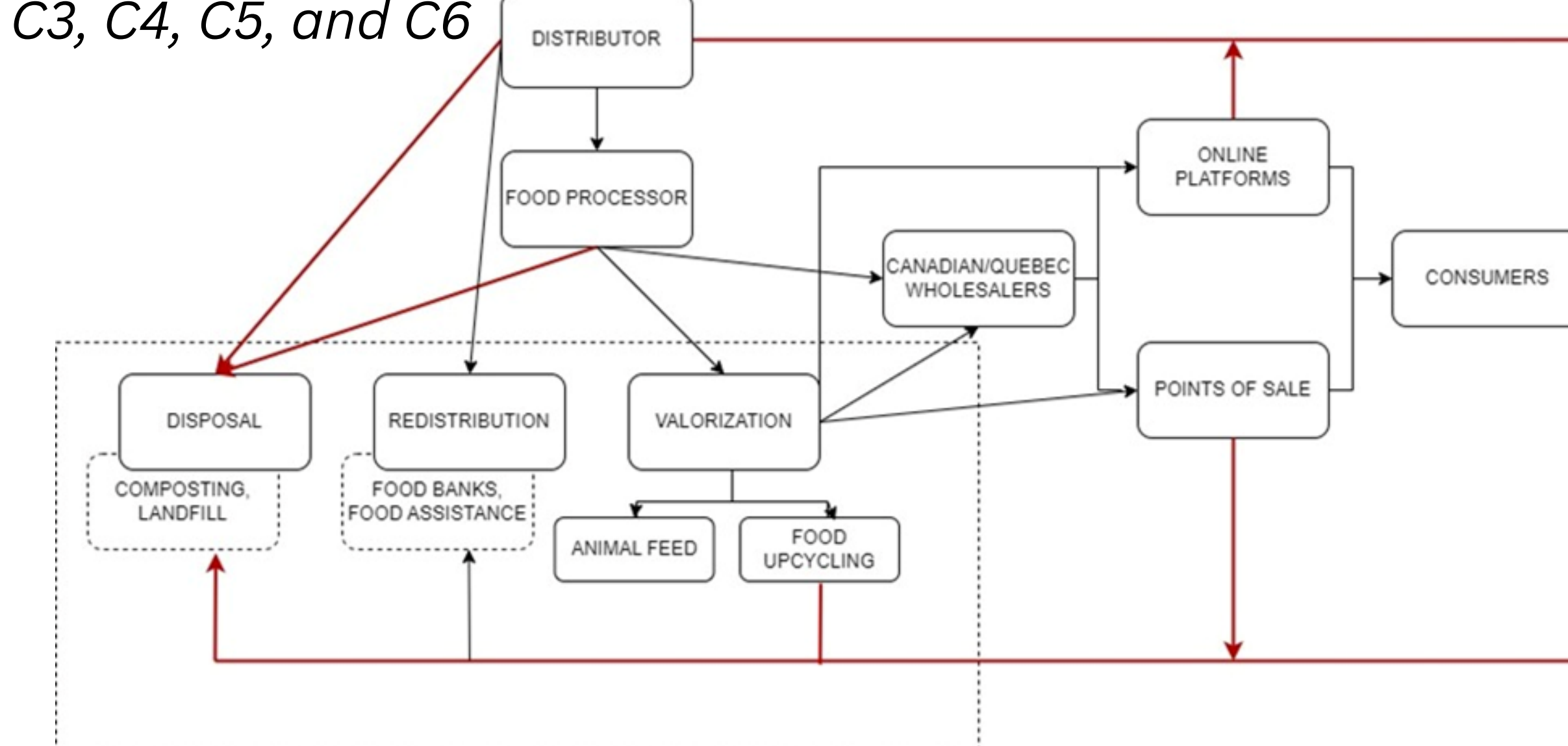
| Interview | Commodity Chain Analysis | Social Network Analysis |
|--|---|---|
| <ul style="list-style-type: none"> Transcription of eight interviews with six different upcycled food companies. Qualitative coding of the interviews. | <ul style="list-style-type: none"> Categorization of the six companies as either 'alternative' or 'novel' use companies. Conception and analysis of the ensuing two commodity chains. | <ul style="list-style-type: none"> Use of codes relating to social relationships to draw a social network graph. |

WHAT ARE UPCYCLED FOODS?

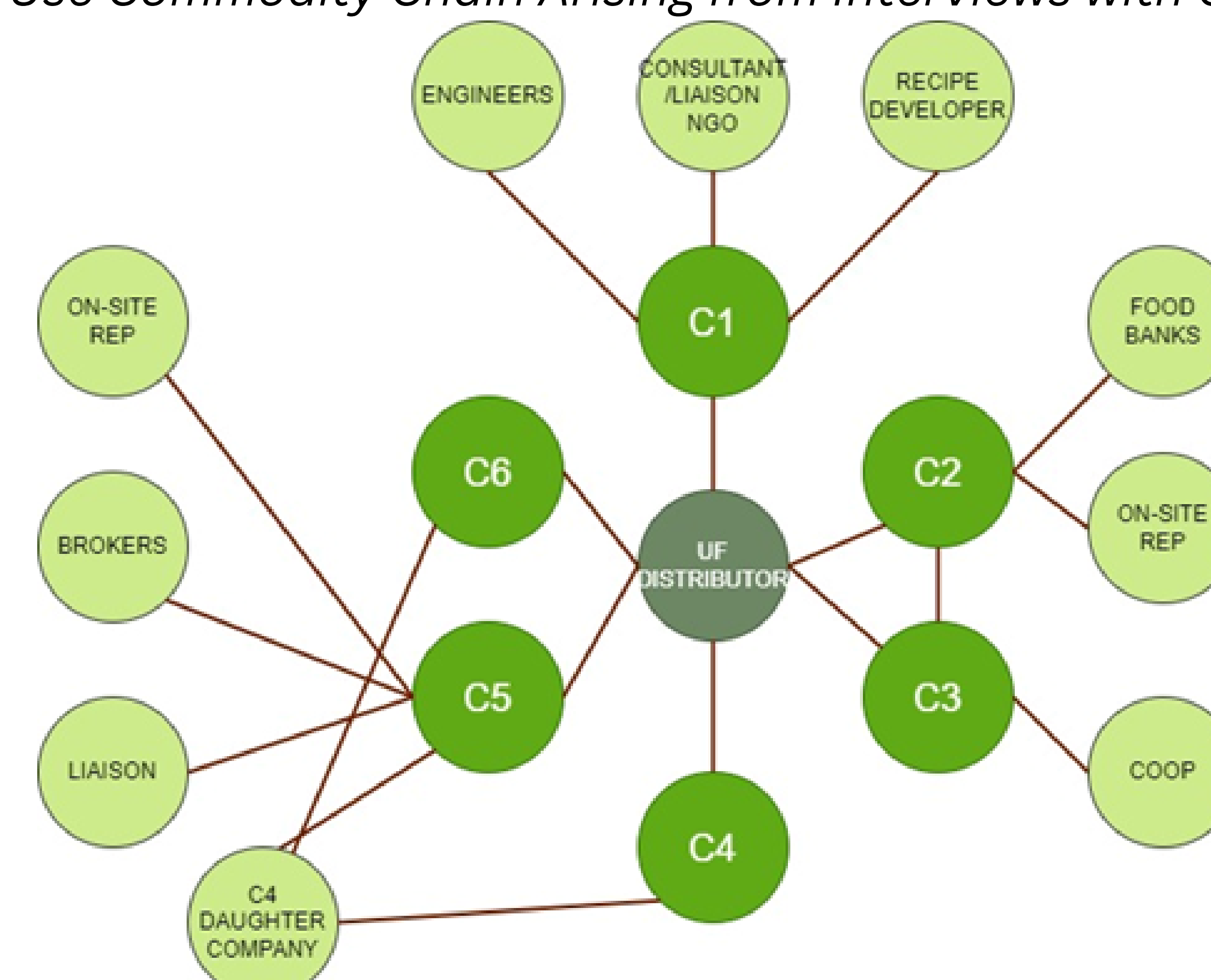
Upcycled foods are value-added products made from ingredients that would otherwise end up in a food waste destination (i.e. landfill). They are divided into two main categories: **'alternative'** and **'novel'** use upcycled foods. 'Alternative' upcycled foods divert agricultural or market surpluses from landfills (e.g. 'ugly produce'). 'Novel' use upcycled foods transform industry byproducts that are deemed unfit for human consumption (e.g. brewer's spent grain) into edible products.



Generalized 'Alternative' Use Commodity Chain Arising from Interviews with C3, C4, C5, and C6



'Novel' Use Commodity Chain Arising from Interviews with C1 and C2



Social Network Graph Highlighting the Relationships of C1-C6

KEY FINDINGS

1. Operational distinctions: 'Novel' use upcycled food companies operate at a later stage of the food chain and rely on greater technological sophistication. 'Alternative' use companies not only salvage surpluses, but they also reintroduce their own waste on the market by selling or transforming it further.

2. Perceived challenges: The most common challenges of food upcycling companies were social acceptability, supply inconsistencies, and production volumes.

3. Coping strategies: The use certifications from the Upcycled Foods Association and the 'Aliments du Québec' logo were useful in fostering consumer trust. Collaboration is also key in this industry, as smaller companies rely on the knowledge and technology of larger ones to increase output capacity. As this is a form of mission-driven entrepreneurship, upcycling activities are often facilitated by non-profit organizations.

4. Perceived opportunities: The collaborative nature of this sector, coupled with its profitability and expanding market are identified as the primary opportunities. Finally, the trust built with large industry stakeholders leads to greater transparency in the amount of waste they produce.



CONCLUSIONS

- Upcycled foods turn a market externality into profit.
- While this industry is growing, entrepreneurs are still faced with serious challenges surrounding supply consistency and scalable production volumes.
- Partnerships with other companies and the non-profit sector remain crucial in mitigating these difficulties.
- The redefinition of food waste diversion as both profitable and innovative is key in building long-lasting partnerships with distributors