ACCOUNTING FOR REDUCTIONS

The Carbon Footprint of a Zero Waste Grocery Store

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EXECUTIVE SUMMARY

BACKGROUND: Food systems and climate change

Approximately one-quarter of global greenhouse gas emissions can be traced to food production, distribution, and consumption. In fact, the global food system is so carbon-intensive that it is impossible to achieve the Paris Agreement warming target (1.5°C or less) without reducing emissions from food and agriculture.

Such a transformation will require conscious action from actors in the food system, including producers, retailers, and consumers. Understanding where carbon emissions originate from is essential for these actors to identify the practical opportunities for addressing climate change.

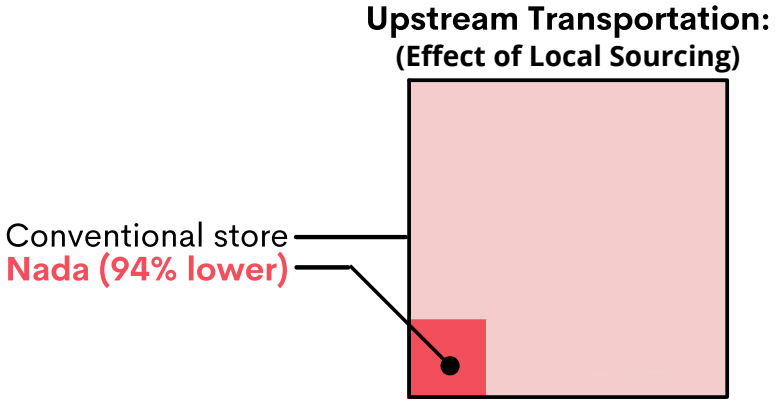
Although food retailers only contribute about 3% of total food system emissions, they maintain key relationships with suppliers and consumers. This influence may be leveraged to modify consumer behavior and encourage producers to adopt more sustainable practices.

To understand the dynamics at play for a grocery retailer we collaborated with a package-free food retailer based in Vancouver, BC called Nada. Our team quantified the store's annual carbon footprint in 2019 and 2020. We learned where their carbon hotspots were, which allowed us to offer mitigation recommendations. We also provided a framework which illustrates areas where grocery stores at large have the capacity to mitigate climate change.

KEY FINDINGS

1 Local Sourcing

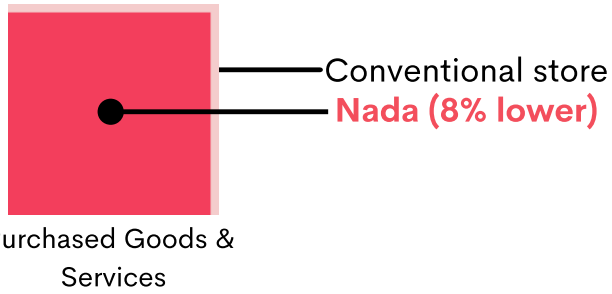
Nada strives to support their local community with over 75% of their suppliers in 2020 within 150km of their storefront. Because Nada is mindful of the environmental impact of every part of their operation, the impact of food miles and sourcing local has a larger overall effect on emissions than it may have in a conventional grocery store. When comparing Nada to a conventional grocery store we found that there was a 94% reduction in upstream transportation emissions for Nada.



2 Implications of Product Selection

The products that a grocery store carries can have a range of effects on their carbon footprint. Nada's intentional product mix that promotes a plant-based, low carbon-intense diet and doesn't offer many animal products was 8% lower than that of a conventional grocery store. This illustrates the impact that product mix can have on grocery retailer's carbon emissions.

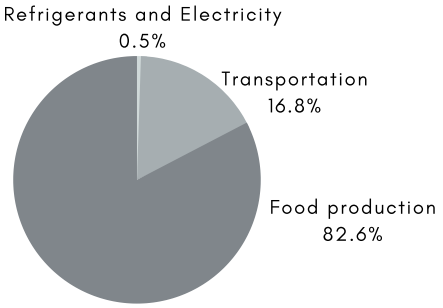
Effect of Product Mix



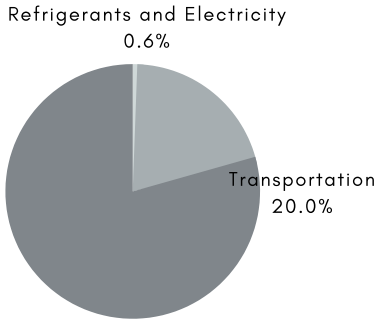
3 Supply chain emissions far outweigh Nada's emissions from operations.

Supply chain emissions, which include transportation of goods between suppliers and Nada and emissions associated with food production, dwarfed the emissions associated with electricity and refrigerant leakage.

Share of Carbon Footprint, 2019

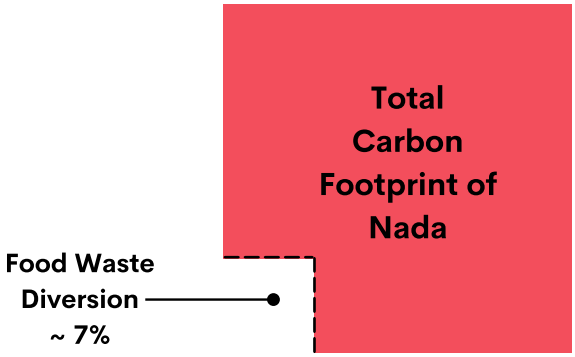


Share of Carbon Footprint, 2020



4 Impact of food waste diversion program

About one-quarter of food production emissions are wasted. When food is landfilled, it releases methane, a greenhouse gas. We found that, in 2019, Nada avoided approximately 6,000 kg CO_2e in emissions through resale in the café and compost. Across 2019 & 2020 their food waste diversion programs diverted 7% of their total carbon footprint, significantly impacting their overall footprint.



OPPORTUNITIES FOR IMPACT

Our analysis reveals 3 primary opportunities for retailers to reduce food systems emissions at scale.

- **Product Selection**: Retailer can offer a product mix that promotes a plant-based diet and source these products from suppliers that maintain regenerative growing practices.
- **Transportation:** Retailers can prioritize sourcing locally to reduce the distance that products travel. Additionally, they can prioritize products delivered via boat or cargo versus air freight.
- **Food Waste Avoidance:** Practices that minimize food waste in the supply chain, at the store, and at the household level can be expected to reduce carbon emissions significantly. Customer education around food waste can reach downstream and reduce emissions at the consumer level.