

Carbon M^{Apple}W^{Mouse}WS

Carbon Footprint of
Municipal Organic
Waste Systems

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Environment and
Climate Change Canada

Climate Action and Awareness Fund

Investing up to **\$206 million** over **five years** to support Canadian-made projects that help to **reduce Canada's greenhouse gas emissions.**

Carbon MOWS Project



Quantifying the Impact of Municipal Organic Waste Management Strategies on Carbon Footprints

Measure and model environmental impacts of the circular bioeconomy from waste collection, through processing, to receiving environments.

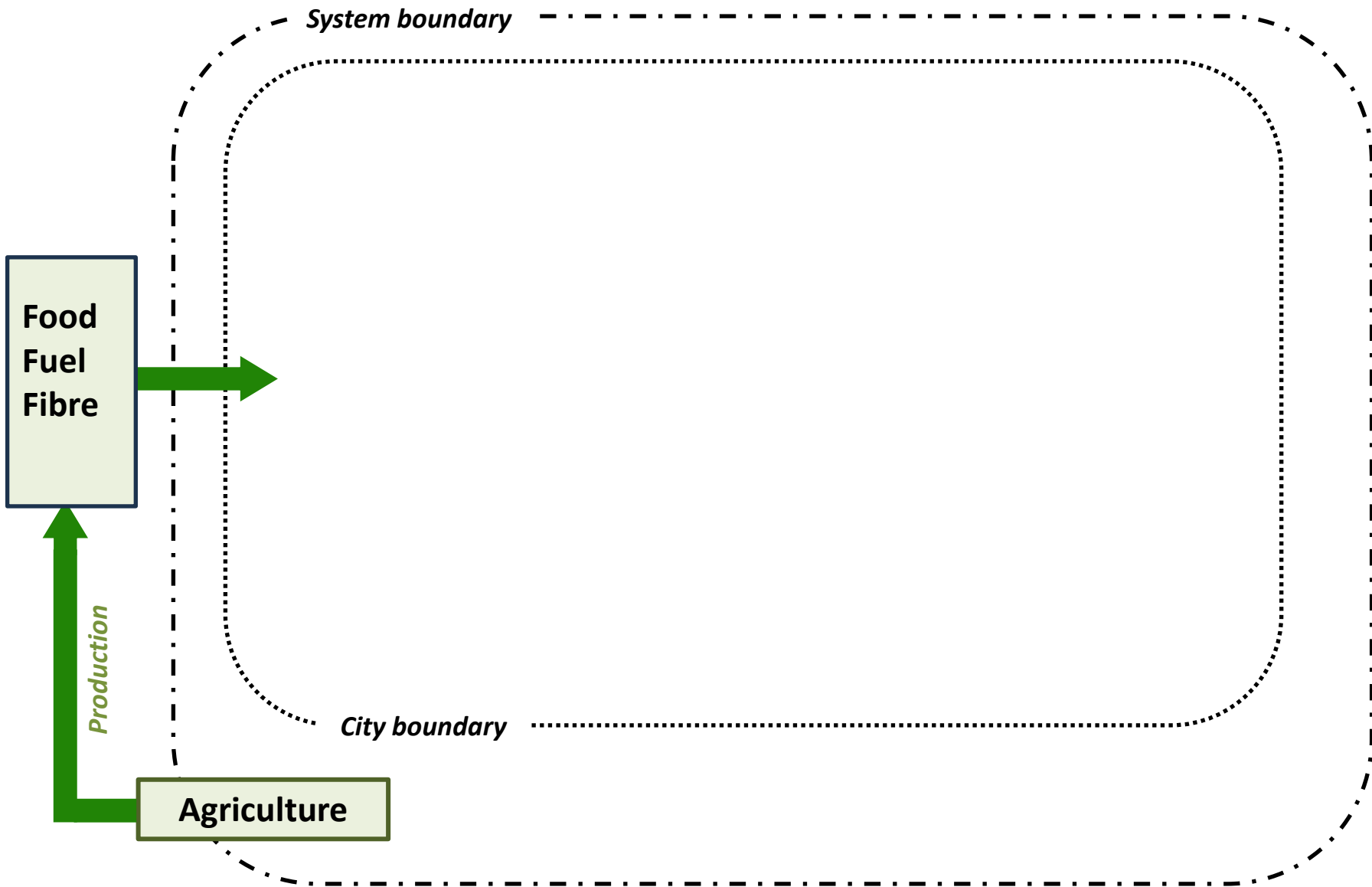


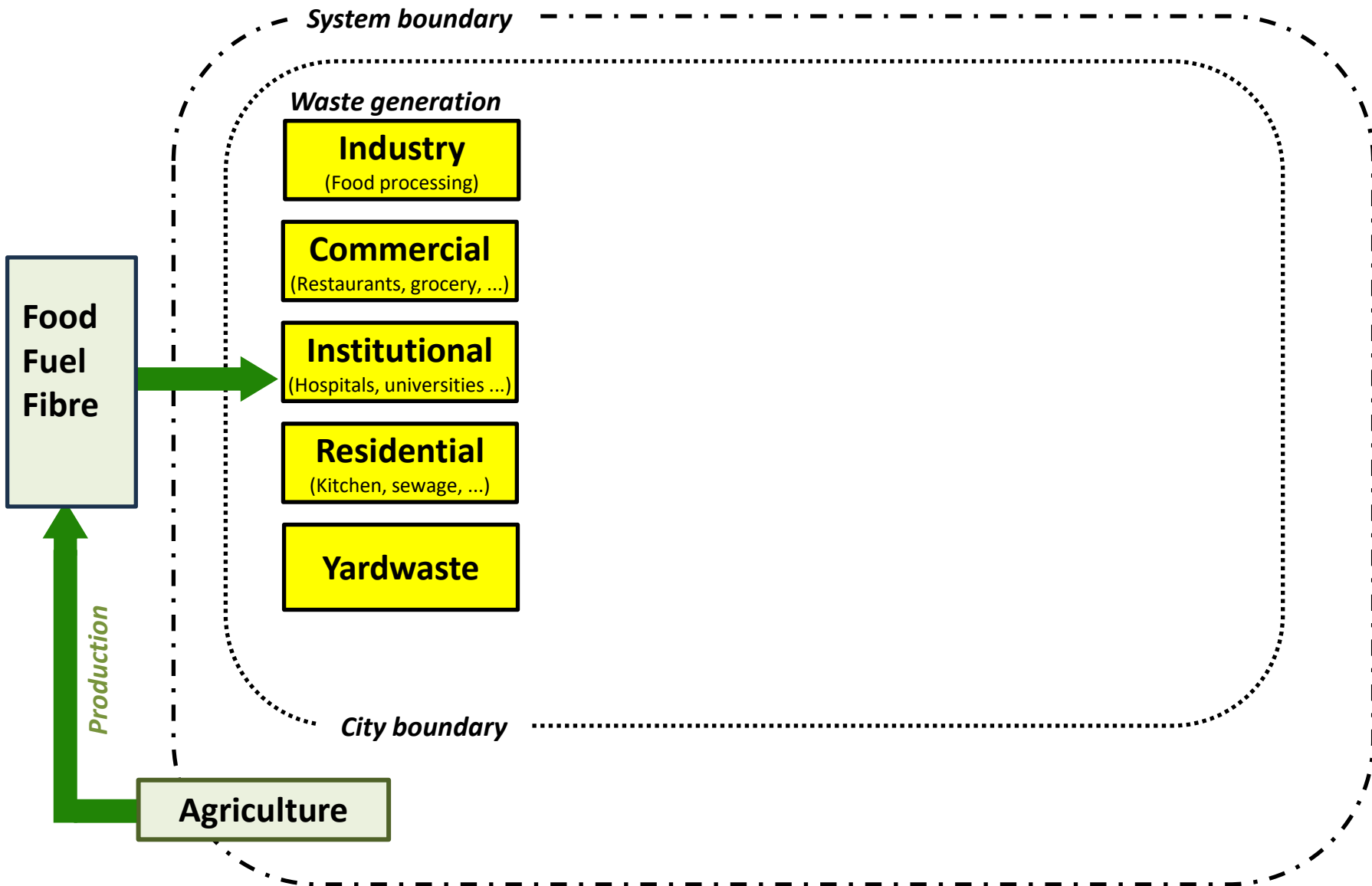
Linear Flow of Organic Materials

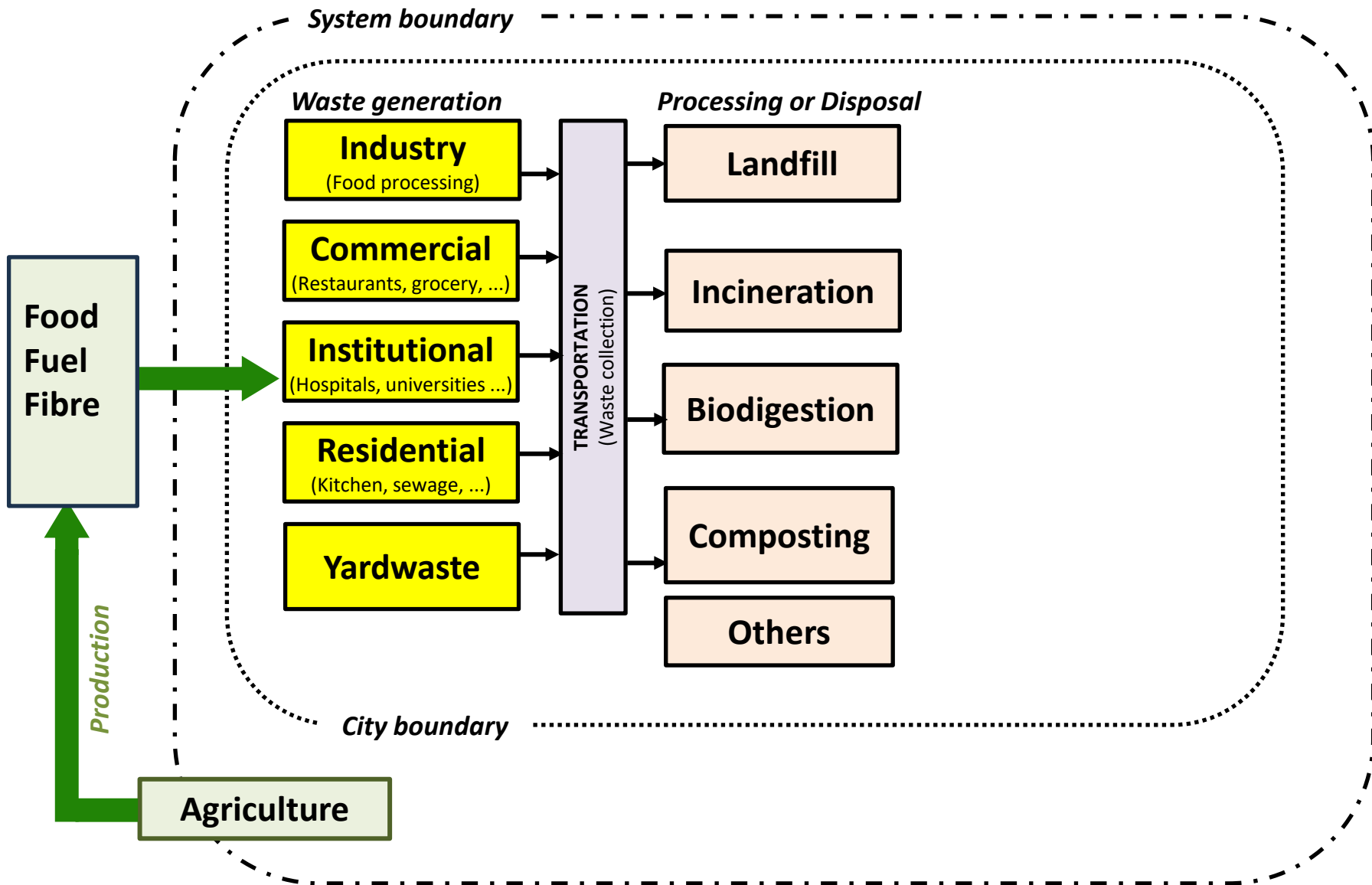


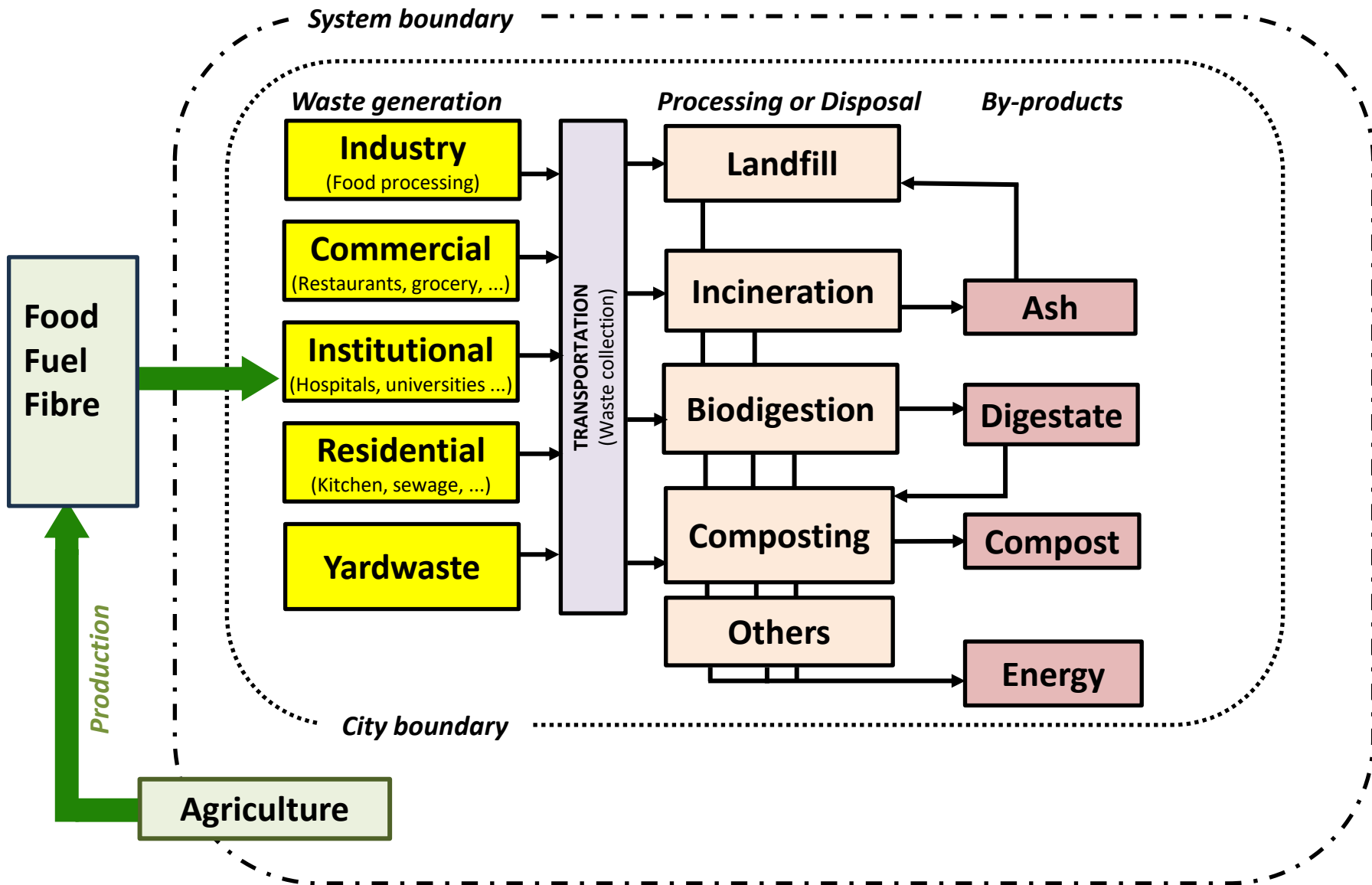
Circular Flow of Organic Materials

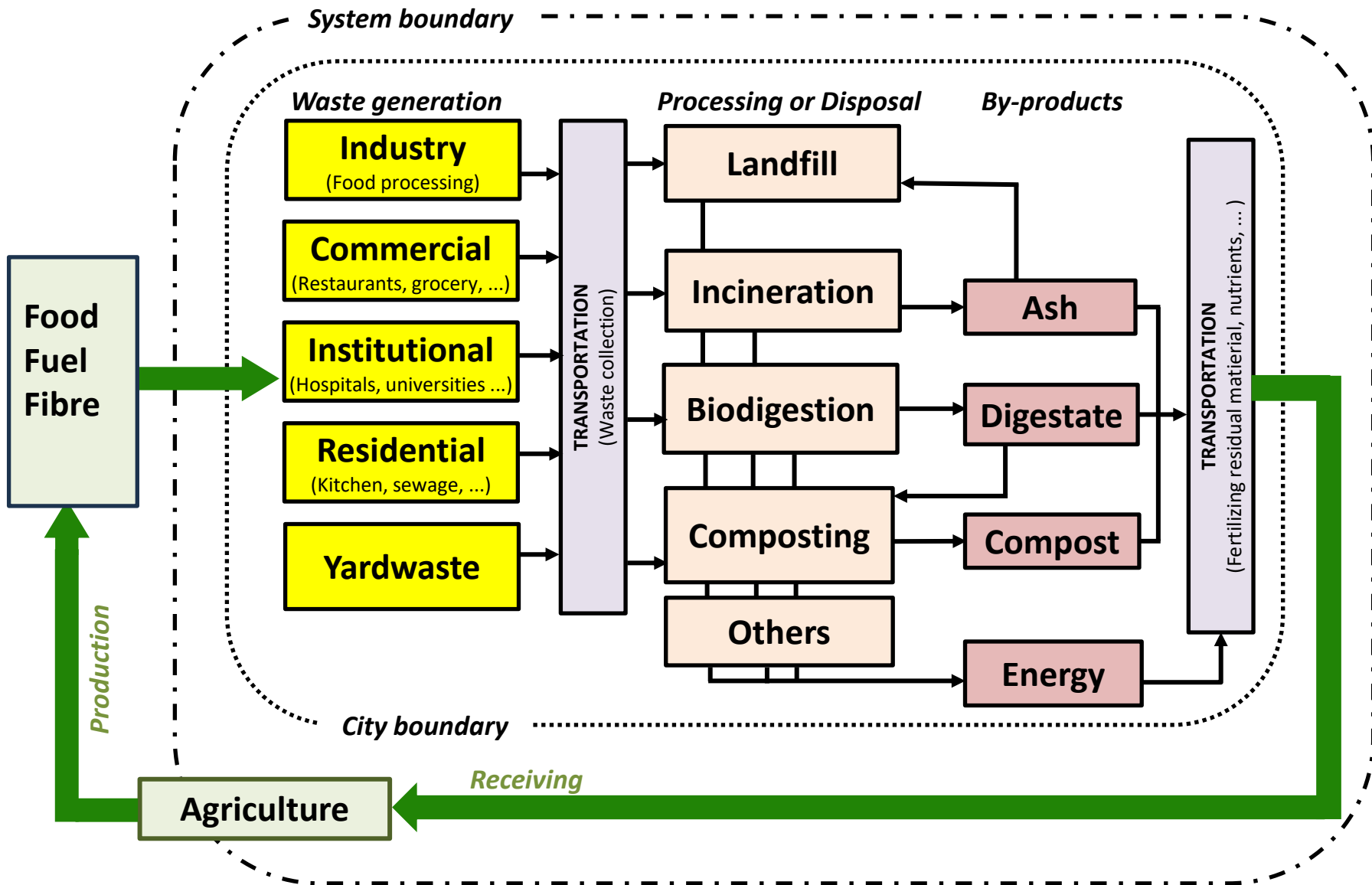


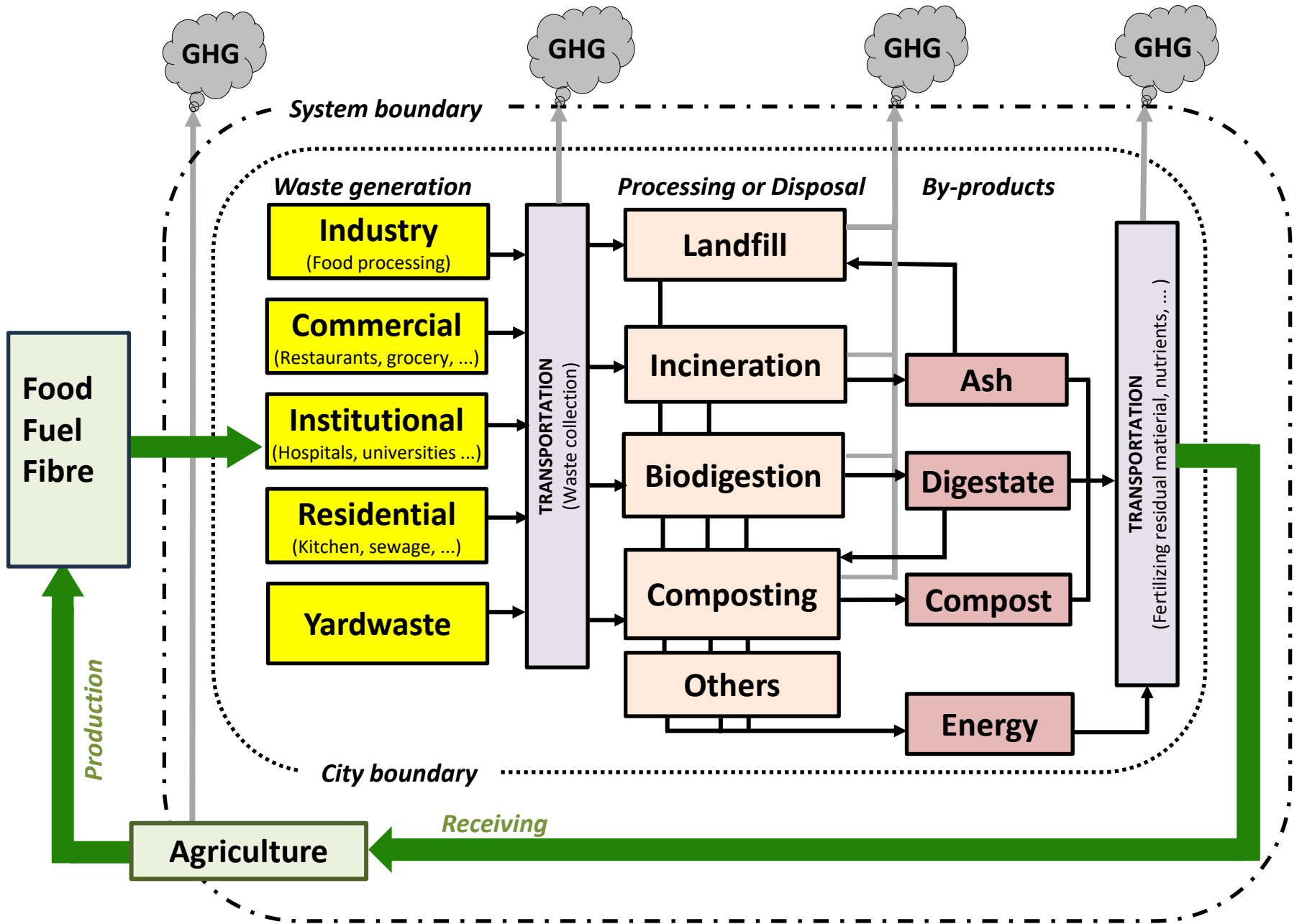


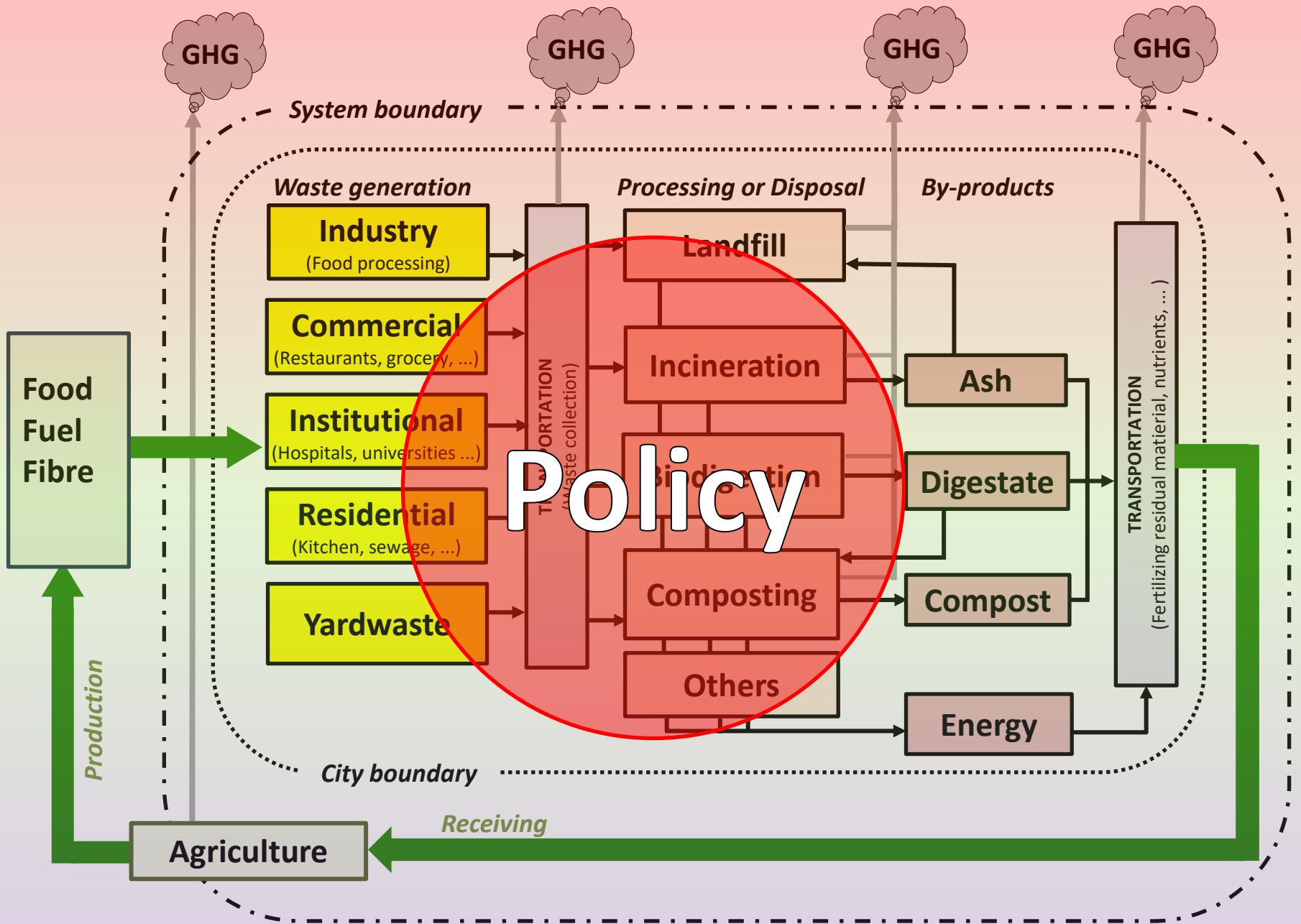








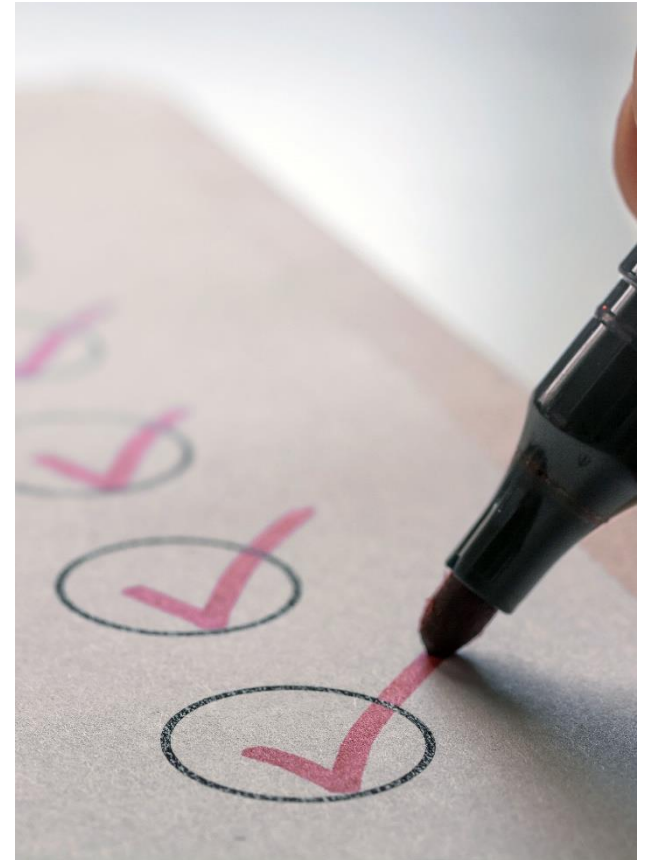




Objectives

Waste Characterization

- Strategies to **inventory waste**
- Protocols to **characterize waste**
- Cross-section of **Canadian jurisdictions** (Halifax, Montreal, Edmonton, Yellowknife, *etc.*)
- Characterize **organic waste streams** and **processing facilities** (GHGs, carbon, nutrients, energy)





Objectives

Receiving Environments

- Monitor **soils** that receive processed organics (composts, digestates) for GHGs, carbon, nutrients
- Study GHGs from **landfills** using complementary techniques (chambers, micrometeorology)

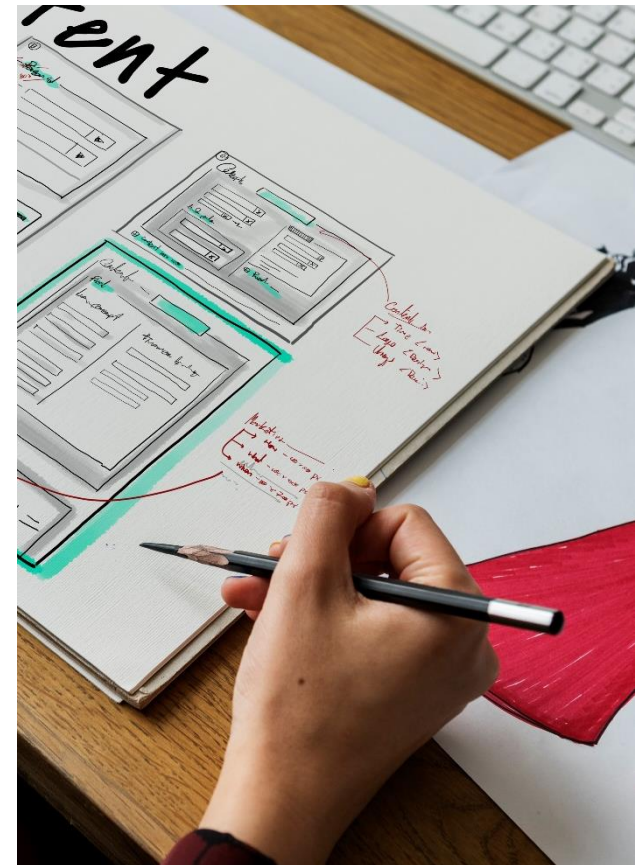




Objectives

System Modeling

- Spatial models of **organic waste generation** (land use, demographics, building footprints, *etc.*)
- Spatial framework for **material flow analysis**
- **Carbon footprint** of organic waste management in cities combining material flows with **life cycle assessment**



Framework for IC&I sector classifications

Legend

Restaurants

- ◆ Bar
- ◆ Café
- ◆ Club
- ◆ Dessert Shop
- ◆ Fast Food
- ◆ Restaurant

□ Standard Deviation Ellipse

— Roads

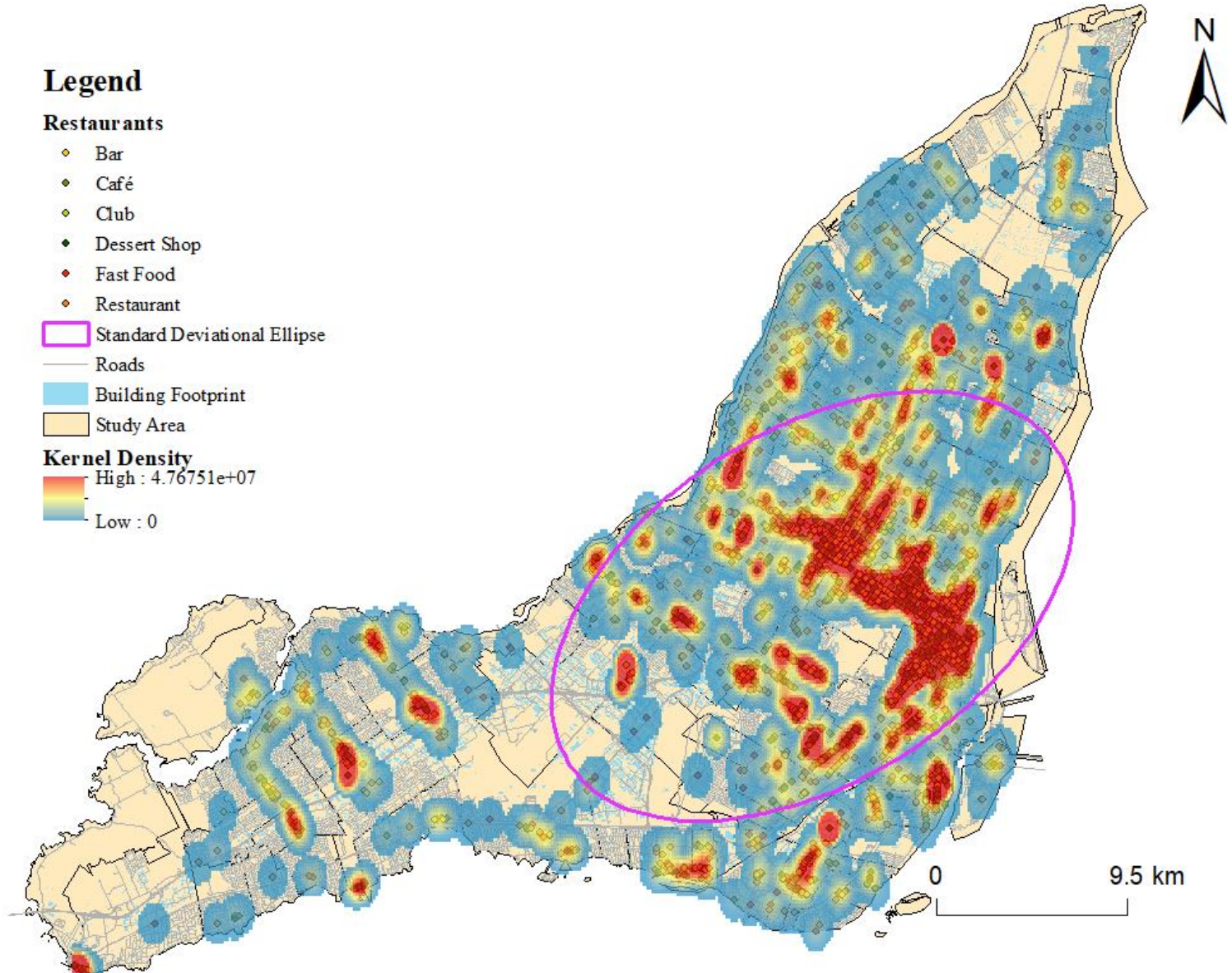
■ Building Footprint

■ Study Area

Kernel Density

High : $4.76751e+07$

Low : 0



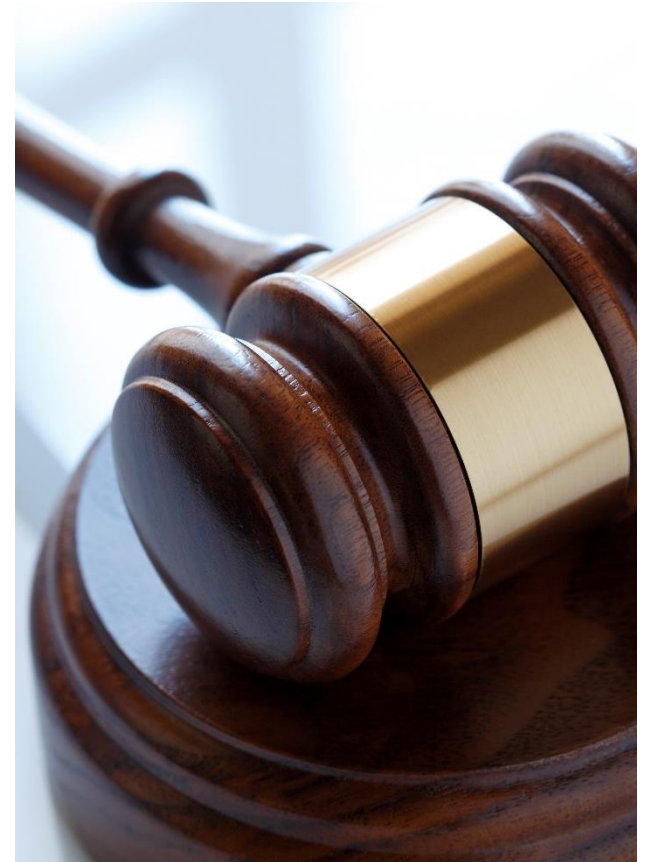
Objectives Simulation

- Environmental performance in **alternative scenarios** (climate change, population, consumer trends, infrastructure, *etc.*)



Objectives Policy

- Compare **laws and policy** governing waste management for each jurisdiction







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Environment and Climate Change Canada

- **Compost Council of Canada**
- **Courthouse Hill Energy**
- **Divert Nova Scotia**
- **Regeneration Canada**
- **Waste Connexions**
- *etc.*



RÉGÉNÉRATION
CANADA



WASTE CONNECTIONS, INC.

- **Edmonton**
- **Guelph**
- **Halifax**
- **Montreal**
- **Northwest Territories**
- *etc.*



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