

Food (Waste) for Thought: A Wicked Problem

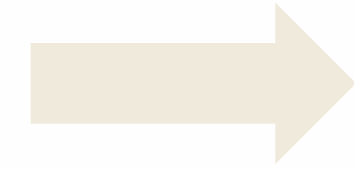
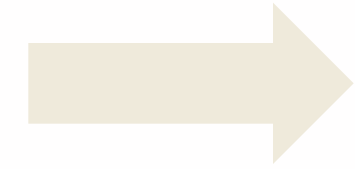
Business Applications | Personal Applications | Research Applications

Professor Jamie Murphy, PhD
University of Eastern Finland

University of Florida
THEM Research Seminar
Friday 1 May 2020



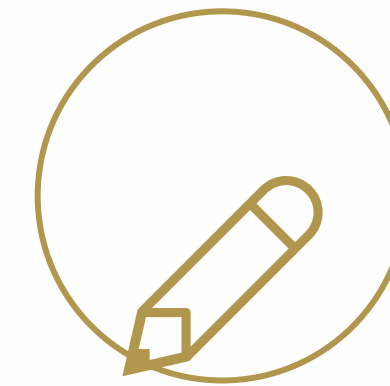
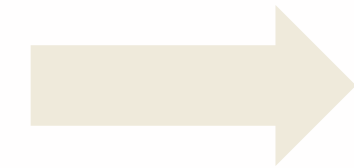
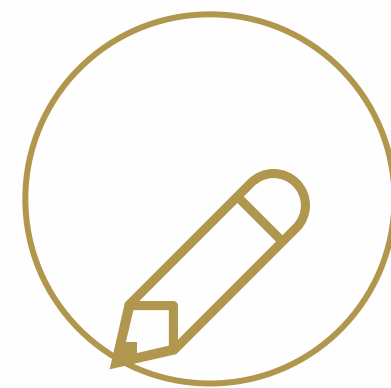
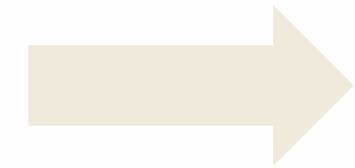
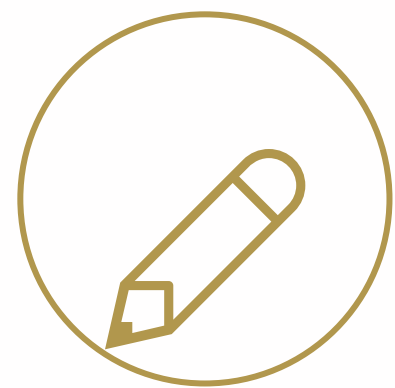
Overview



Personal Quest & Zero Waste
Decades in the making

Food Wastage: A Wicked Problem
Growing issue, globally and locally

Event, Hospitality & Tourism Food Waste
Major problem, major ignorance, minor priority



Norwood's Eatery & Treehouse Bar
Tourism icon and minuscule solution

Food Preservation
At home and at Norwood's

Conclusion & Challenges
Appreciate and address the complexity of food waste and food waste minimization

Evolving Personal Quest

- Pig farmer (late 1960s to early 1970s)
- Cornell Quarterly (1978)
- Minor research stream (early 2000s)
- Research re-branding (2017)
- Aha moment, Food Waste Hierarchy (2018)
- Norwood's Garbage to Garden (2019)
- Covid 19



Food Wastage: A Wicked Problem

Global food *wastage* annually

- Food Loss + Food Waste = Food Wastage
- One billion tons, 1/3 of all food produced for human consumption
- After USA and China, the world's third CO₂ equivalent emitter
- 2.6 trillion US\$ in economic, social and environmental costs



Food Loss

Food Loss

- Early food supply chain – farming, processing, storage and transportation
- Common in developing countries

Food Waste (FW)

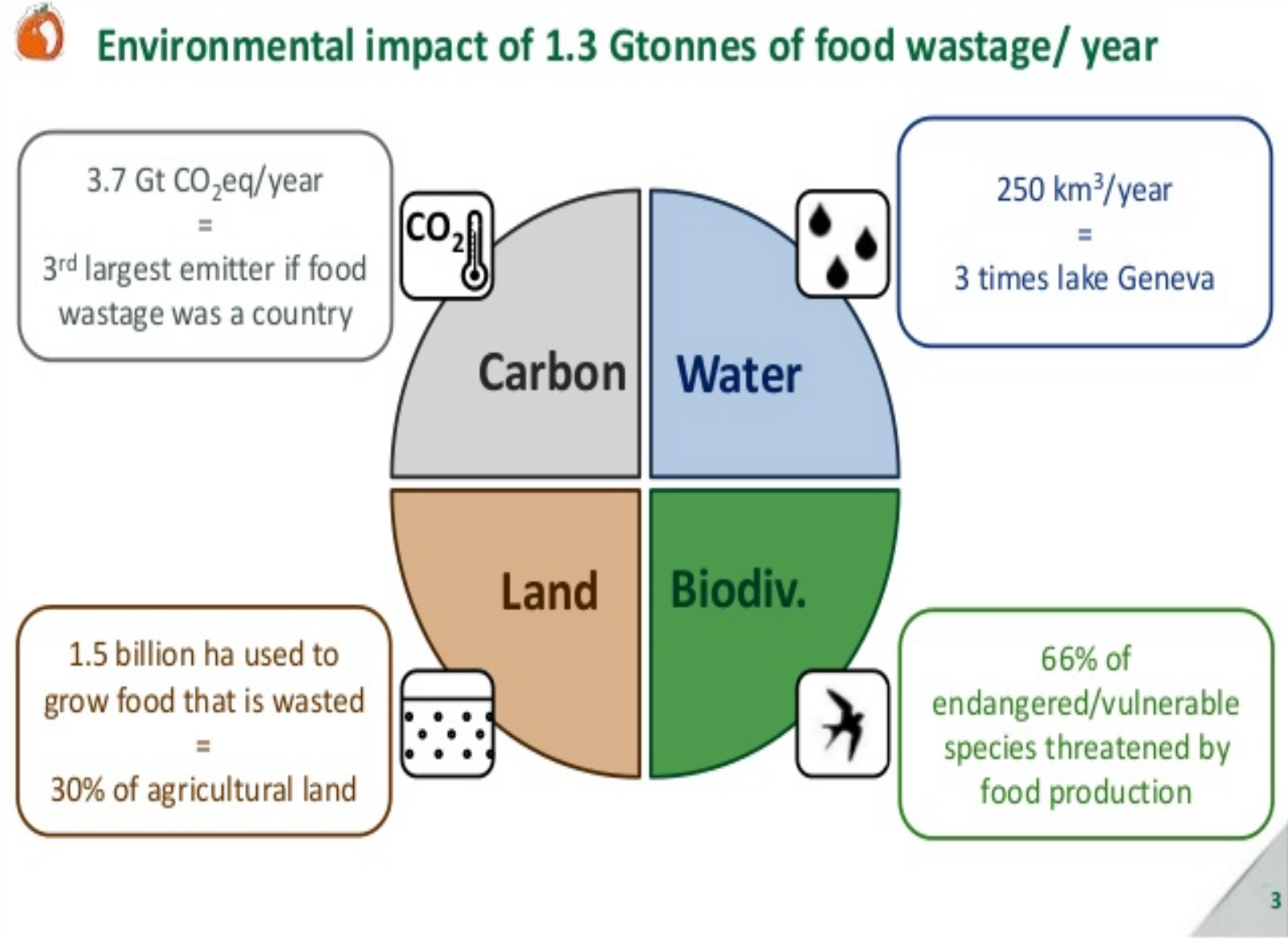
- Late food supply chain - retail and consumption
- Common in developed countries
- Focus of this presentation



Food Waste

FW: Environmental, Social and Economic Costs

Food Waste Footprint
Environmental Impacts



Environmental

- Wasted resources: i.e., land, water, energy, fuel and labour.
- Pollution: i.e., landfill, odour, vermin and CO₂ equivalents
- Biodiversity

ALMOST A BILLION PEOPLE are going hungry, while we waste **1/3 OF THE FOOD WE PRODUCE.**

Social

- Food insecurity
- Stress
- Malnutrition
- Obesity

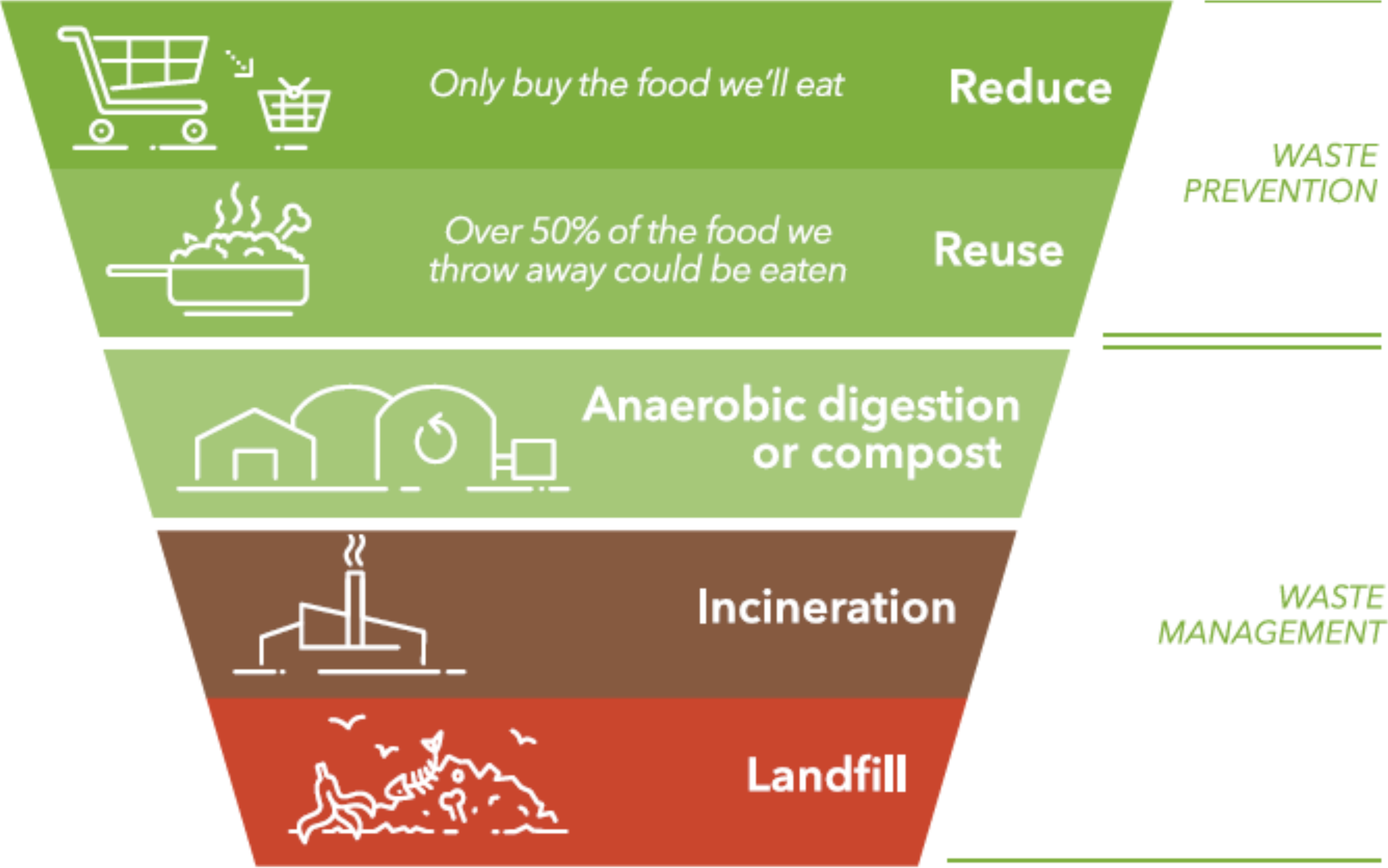
Food Waste Footprint
Economic Impact



FW Total Cost

Food waste's total – *environmental, social and economic* – cost in Australia: \$20 billion a year

Food Waste (FW) Hierarchy



Food Preservation / Reuse

Deterioration

- Physical
- Chemical / Biochemical
- Biological / Microbiological

Deterioration Factors

- Temperature
- Water
- Microbes

Preservation Techniques

- Thermal, e.g., cooking and freezing
- Reduced water, e.g., drying, curing, sugaring
- Antimicrobial, i.e., pickling, fermentation, canning, jugging, vacuum packing, preservatives, radiation, atmospherics



Reducing Food Waste Behaviors

Changing Entrenched Behaviors

- Behavioural Economics/Nudging
- Theory of Planned Behaviour
- Elaboration Likelihood Model (ELM)
- Social Influence/Judgement/Learning Theories

Interventions and Experiments

- Quantitative and Qualitative Outcomes
- Behavioural Measures

Selected Readings

- Food Waste in Tourist Households (Gretzel et al., 2018)
- Food Waste Hierarchy (Papargyropoulou et al., 2014)
- Food Waste: A Wicked Problem (Murphy et al., 2019)
- Squander Sequence (Block et al., 2016)
- Wasted Food (Nikolaus et al., 2018)



Food Waste Disposal

Source Separation (changing behaviour)

- Divert for human and animal consumption
- Composting
- Vermiculture
- Biogas
- Incineration

Same old, same old

- Landfill
- Incineration



Food Waste Policy Formulation

Tackling A Wicked Problem

- Industry self-regulation
- Existing government/industry incentives
- Legislation (federal, state, local)
- Behaviour modification



UN and Country Food Waste Initiatives




 12th of the UN's 17 Sustainable Development Goals (2015), *sustainable consumption and production patterns*

 United Nations' 2017 International Year of Sustainable Tourism for Development




EPA's 2030 Food Loss and Waste Reduction Goal (2015)

 Led by USDA and EPA, the USA will work with communities, organizations and businesses, and state, tribal and local government partners to

- reduce food waste going to landfills and combustion with energy recovery by 50 percent to 109.4 pounds per person by 2030.
- cut food loss at the retail and consumer level in half, approximately 66 billion pounds, by 2030.

Australia's National Food Waste Strategy (2017)

 Seek industry and academic collaboration across:

1. policy support
2. business improvements
3. market development
4. behavior change.

United Nation's Sustainable Development Goal 12.3

"By 2030, halve per capita food waste at the retail and consumer levels and reduce food losses along the production and supply chains, including post-harvest losses."

Australia's National Food Waste Strategy:

"... identify where improvements can be made so that we can change our behaviour, improve technology and make our food system more efficient to achieve the goal of halving our food waste by 2030."

EPA's FLW Reduction Goal:

"... to reduce food loss and waste by half by the year 2030."

Event, Hospitality and Tourism Food Waste

ELLEN MACARTHUR FOUNDATION
Rethink the future

Waste = food
Lesson two: Festival food waste

Learning objectives:

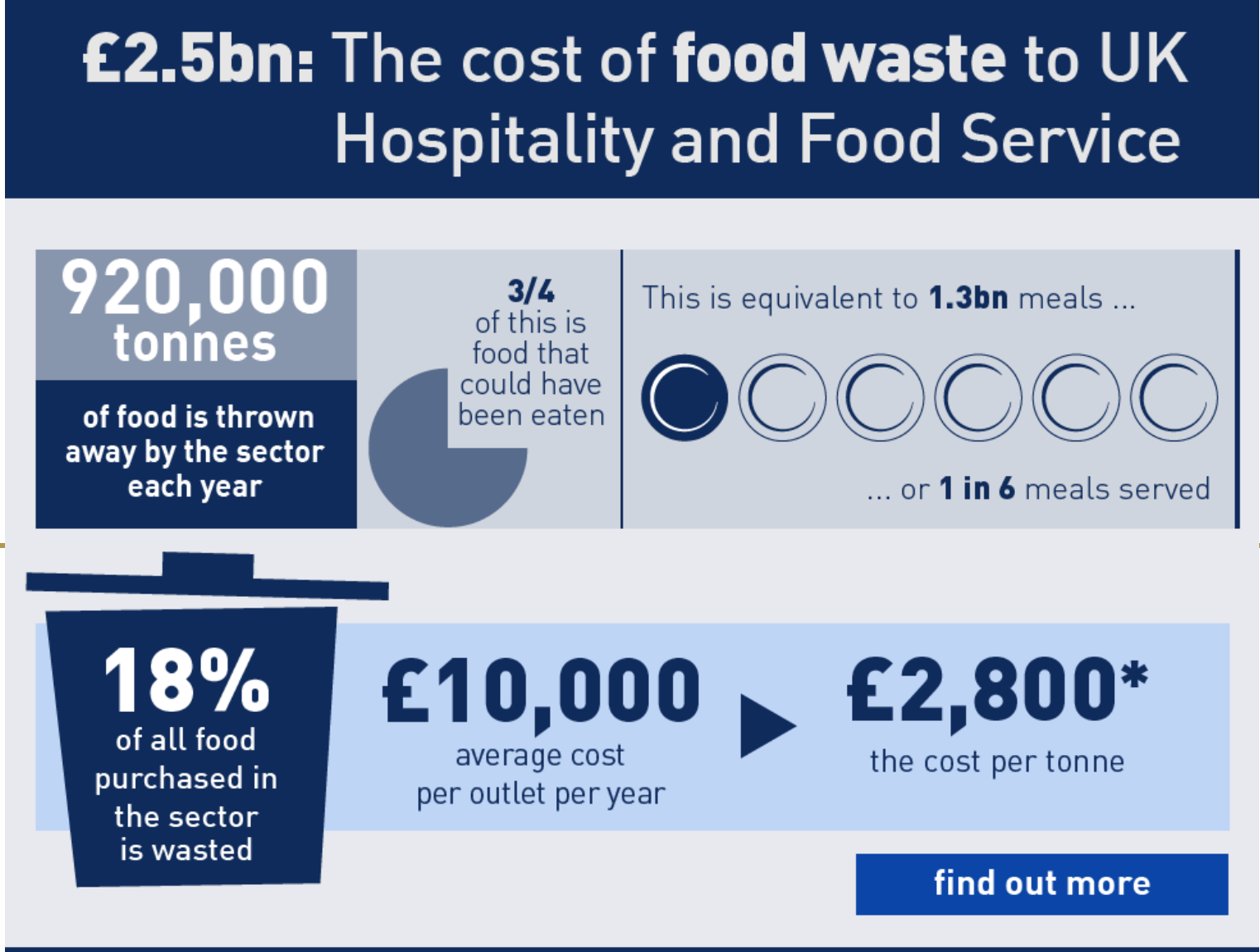
- To understand how much waste is produced at festivals and large outdoor events
- To understand what the festival event organisers have done to manage the waste
- To identify what the festival event organisers have to consider



Events

Concerts, festivals, sports, weddings, etc.

Little research



Hospitality

Hotels, restaurants, pubs, catering, fast food, etc.

Some research



Tourism

Airlines, camping, self-service accommodation, destinations, boats, ships, etc.

Little research

Tourist Households

Another unit of analysis

	Commercial Housing	Non-Commercial Housing
Little to No Self-Catering Facilities	E.g., Hotels, Resorts, Motels, Cruise Ships Some THFW research	E.g., Bare bones camping Little THFW research
Self-Catering Accommodation	E.g., Airbnb, Vacation rentals Little THFW research	E.g., VFR, Second homes, Drive camping Some HFW research



Tourism comprises the activities of persons traveling to and *staying in places outside their usual environment* for not more than one consecutive year for leisure, business and other purposes.

Norwood's Eatery and Treehouse Bar

Since 1946



Norwood's Garbage to Garden



In Closing

Thank-you

- THEM Research Seminar Series
- Andrei Kirilenko & Karen Tavares
- Audience

Challenges?

- FW—A Wicked Research Problem
- FW at home, e.g. personal audit
- FW in your community, e.g., landfill and local establishments
- FW at work, e.g., audit

Your Thoughts & Comments

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