

LOVE FOOD REDUCE WASTE

Training of trainers
Module n.3

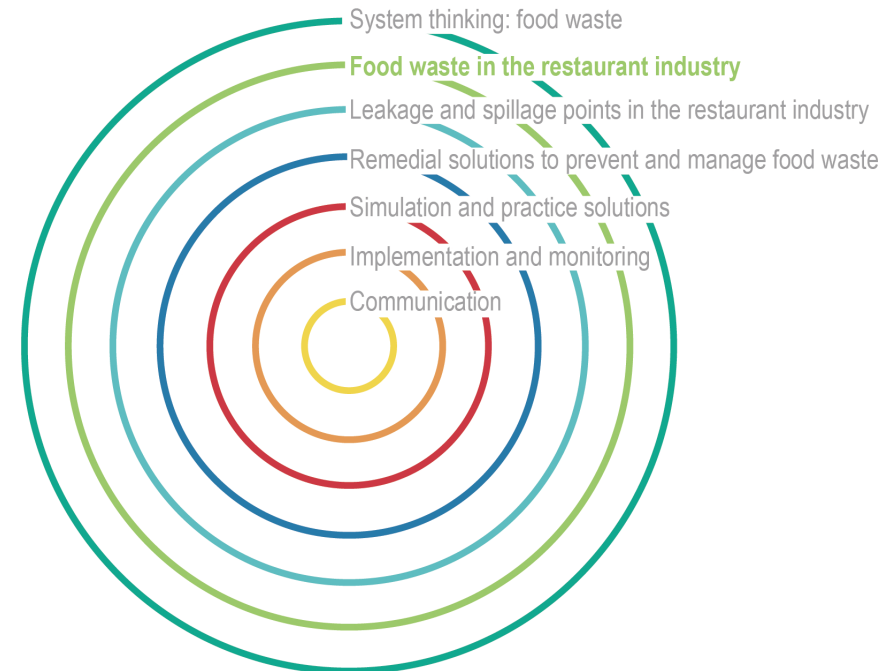
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4. FOOD WASTE IN THE RESTAURANT SECTOR (1h and 30 m) (N. Tecco)



1. Figures, fact and definitions of food waste into the restaurant sector
2. Classification within the restaurant sector
3. Comparison between household food waste and restaurant sector food waste
4. The sustainability in the restaurant sector
5. Boundaries and actors of the restaurant sector

1. Figures, fact and definitions of food waste into the restaurant sector

WHAT ABOUT THE FOOD SERVICE INDUSTRY?

- Food industry produces 10.5 million ton of food waste (equivalent to 21 kg per person) each year in Europe.
- The food service sector contributes to 12% of the total food waste (FUSIONS, 2016). Other studies estimates its contribution by 4 to 11% of the total wood waste (ADEME, 2013), 11% (Garot, 2014), 13% (Waste Watcher Report, 2015), 14% (Ministerio de Agricultura, Alimentacion y Medio Ambiente, 2013).

Table 1: Estimates of food waste in EU-28 in 2012 from this quantification study; includes food and inedible parts associated with food.

Sector	Food waste (million tonnes) with 95% CI*	Food waste (kg per person) with 95% CI*
Primary production	9.1 ± 1.5	18 ± 3
Processing	16.9 ± 12.7	33 ± 25
Wholesale and retail	4.6 ± 1.2	9 ± 2
Food service	10.5 ± 1.5	21 ± 3
Households	46.5 ± 4.4	92 ± 9
Total food waste	87.6 ± 13.7	173 ± 27

**Confidence interval*

- Based on the normalisation factor used, the amounts are equivalent to 20 tonnes of food waste for every million Euro in turnover number (PPP adjusted). The amounts include the total food waste, that is both the edible and the inedible food waste are included.
- The small number of countries (eight) supplying food waste data of good enough quality is the main reason of the high uncertainties for the sector

Table 3. Number of countries from which information about the generated food waste amounts was collected.

Sector	Number of countries submitting data	Number of countries submitting data of sufficient quality	NACE codes
Primary production	15	6	NACE 01-03
Processing	19	4	NACE 10-11
Wholesale and logistics and Retail and Markets	18 ¹	11 ²	NACE 46 and 47
Food service	18	8	NACE 55-56
Household	19	11	NA

1. 18 countries supplied data from either the wholesale and logistics or the retail and market sector. Of those, four countries only submitted data from the retail and market sector. The remaining 14 countries submitted data for both the two sectors or the two sectors as a whole.

2. Of the 11 countries submitting data of sufficient quality three countries only submitted data from the retail and market sector. The remaining eight countries provided sufficient data for both the two sectors or the two sectors as a whole.

* Data from Norway has been collected but not used since they are not part of EU-28.

FUSION, 2016

F.3 Food service

Table 17. Underlying data and calculations for food waste estimations for the food service sector.

Country	Food waste (tonnes)	Turnover (€million) PPP adjusted	Amounts (ton/€million) PPP adjusted	Reference
Austria	280 000	17 590	15.9	Schneider et al, 2012
Denmark	115 700	5 536	20.9	Environmental protection agency Denmark, 2014
Finland	130 000	5 812	22.4	Katajajuuri et al, 2014; Silvennoinen et al, 2012; HSY, 2013 ¹⁴
France	1 080 000	93 429	11.6	Bio Intelligence Service, 2010
Germany	1 900 000	63 611	29.9	ISWA University of Stuttgart, 2012
Ireland	258 900	9 321	27.8	Environmental Protection Agency Ireland, 2015
Sweden	200 000	10 688	18.7	Swedish EPA, 2014; Stare et al, 2013
United Kingdom	920 000	91 352	10.1	WRAP, 2013b
Total	4 884 600	297 338	-	
Average (mean)	-	-	19.6	

Total turnover (PPP adjusted) for countries which have no food waste data available or have food waste data of insufficient quality = 287 206 €million
 Multiply by above average (19.6×287 206) leads to 5 642 737 tonnes
 Total for EU28= 5 642 737+4 884 600= 10 527 337 tonnes

In the food service sector the potential food waste flows in general can be split up in four categories:

- a) Products **removed from the inventory** including food damaged during transportation and food thrown away from storage (e.g. food exceeding a use-by date or loss of quality);
- b) Product waste **during food preparation** at the food service location;
- c) Products **prepared front and back office** (and possibly exposed (catering) or transported (patients in a hospital)) for ready-to-eat human consumption **but not consumed** (because e.g. not purchased by any consumer);
- d) **Plate leftovers**

According to a study made in UK (WRAP, 2013), food waste in restaurants happens during the preparation phase (45%) or for food deterioration (21%) or due to client's leftovers 34%).



WRAP, 2013

FOOD WASTE: THE POTENTIAL OF PREVENTION AND REDUCTION

- The reduction of food waste hence enforces the economic outcome of a catering business, restaurant and the benefit-to-cost ratio of food waste reduction is compelling: **for every dollar invested in food waste reduction, restaurants can realize 8\$ of savings** (REFED, 2018).
- In a typical restaurant, up to **35-40% of sales is attributed to food costs** and approximately **12% of food cost is attributed to food waste**.
- Tracking food thrown away system **could cut food cost by 2 to 6%** by increasing awareness of food waste within the company and focusing attention on front and back of house prevention activities (REFED, 2018).



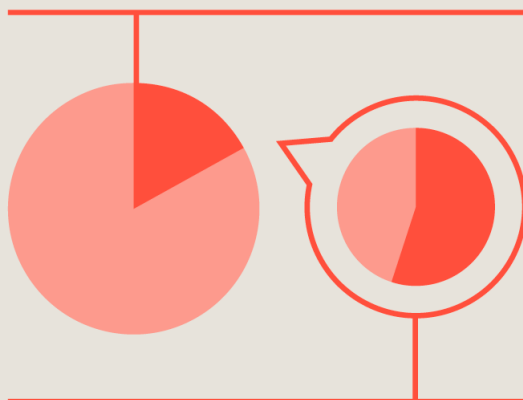
THE AVERAGE RESTAURANT MEAL IS MORE THAN FOUR TIMES LARGER THAN IT WAS IN THE 1950S



THIS MEANS WE:

EAT MORE
- and -
WASTE MORE

RESTAURANT DINERS LEAVE 17% OF MEALS UNEATEN



55% OF THOSE LEFTOVERS ARE NOT TAKEN HOME



38% OF PEOPLE WHO TAKE HOME LEFTOVERS SAY THEY OFTEN END UP THROWING THEM AWAY



2. Classification within the restaurant sector

The food service sector comprises of the businesses and people engaged in preparing meals and drinks for consumption outside of the home (of the people buying it).

It is a very diverse sector and stakeholders have significantly different characteristics, which **makes it a challenge to avoid a highly differentiated approach for food waste prevention, management and measurement.**

Moreover definitions of food service sub-sectors are not standardised and show much overlap from one sub-sector to the other, which makes it complex to compare between them.

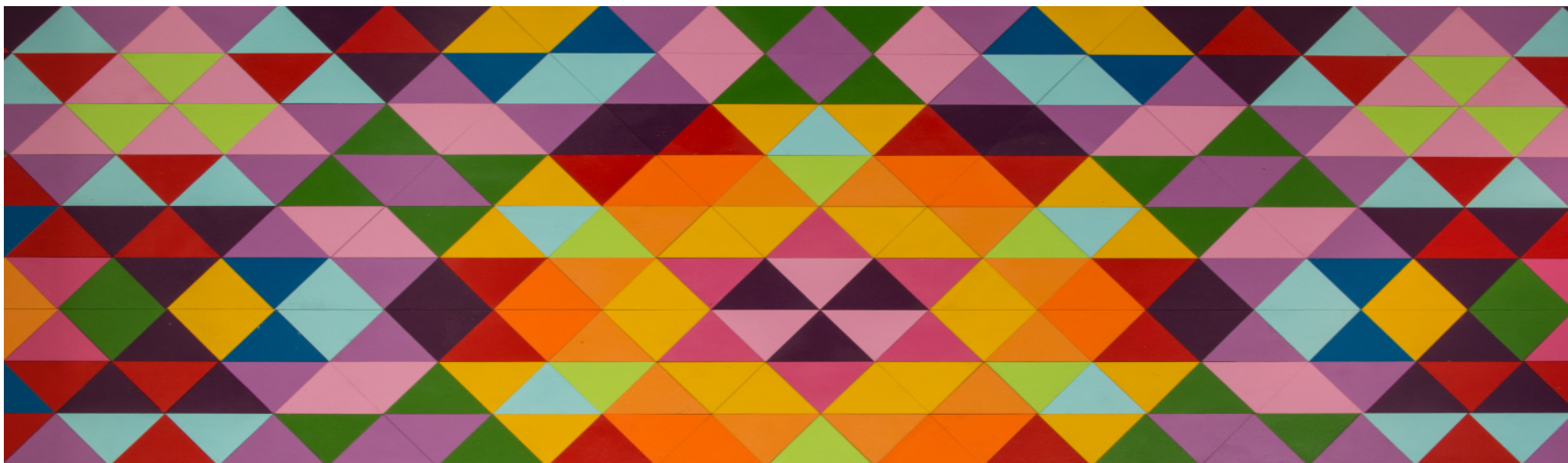


Table 8 – Sub-sector segmentation of food service sector

Sub-sector	Definition	Examples
Pubs	Outlets that focus on providing alcoholic drinks. Food sales are less than 50% of turnover	Pubs (tenanted, managed branded, managed unbranded).
Restaurants	Outlets that have table service.	Italian, Chinese, Indian, French restaurants.
Hotels	Outlets that provide overnight accommodation. Food accounts for less than 50% of turnover.	Hotels, bed & breakfasts, youth hostels, caravan parks.
Leisure	Outlets located in places where leisure services are the prime focus of activity. Outlets in this sector may provide restaurant, quick service or pub style catering.	Museums/galleries, theatres, cinemas, sports clubs, events and mobile caterers, visitor attractions.
Travel	Outlets on locations where people are on the move except air travel.	Gas station, railway and airport kiosks
Inflight catering	Food service in airplanes	
QSR	Outlets that may have take-away or eat-in, or both.	Fast food, cafes, take-aways, fish & chip shops, sandwich bars.
Staff catering	Feeding employees at the place of work	Run in-house, contracted staff restaurants.
Healthcare	Outlets whose main focus is providing healthcare (including short- and long-stay care).	Private & National Health Service hospitals, care & nursing homes.
Education	Outlets that are primarily concerned with educating children or adults (or both).	Nursery, primary, secondary schools; further & higher education establishments.
Services	Outlets that provide a publicly-funded service and which are not healthcare or educational establishments	Prisons, armed forces, police & fire service catering, other publically funded organisations

Lists of types of Catering Establishments

Residential

- Hotels
- Guest Houses
- Holiday Parks
- Farmhouses
- Public Houses
- Bed and Breakfasts

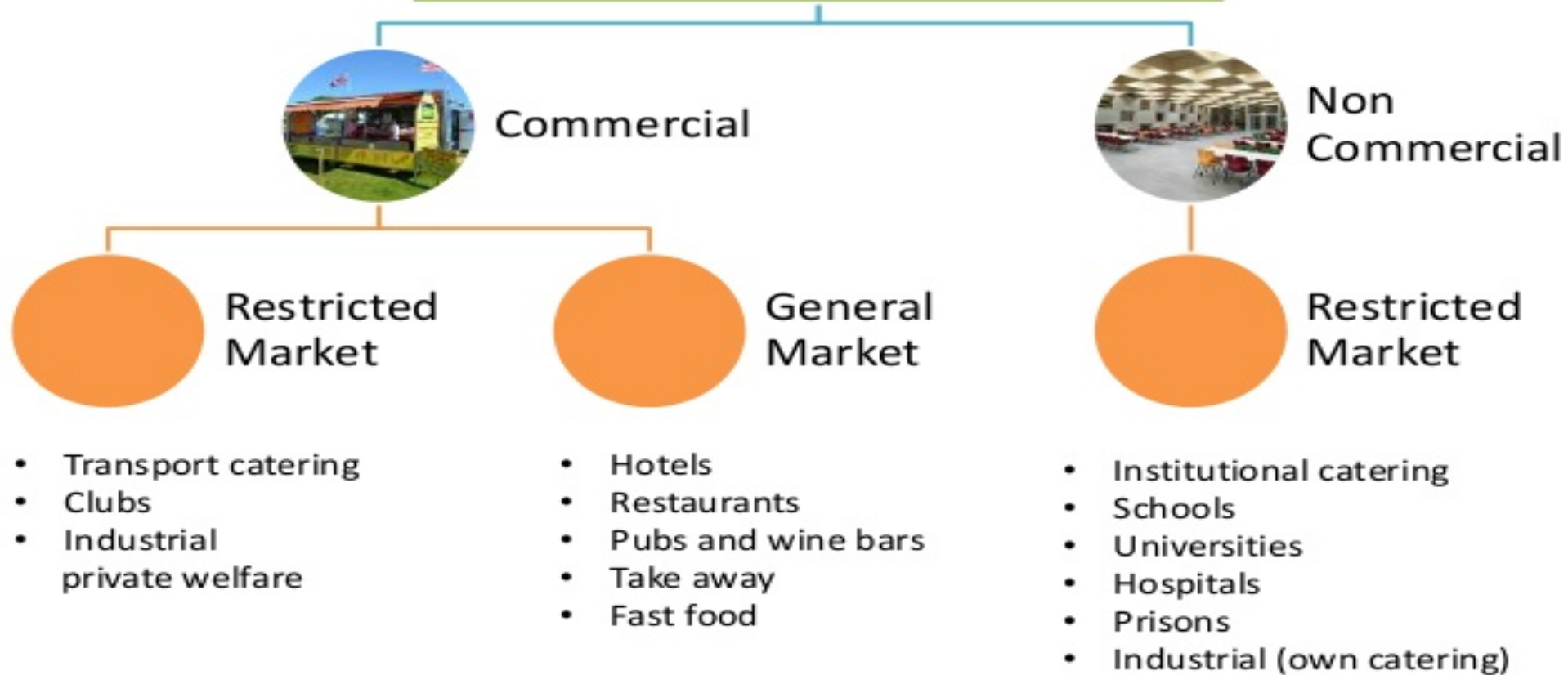
Non -Residential

- Restaurants
- Cafes
- Fast-food outlets
- Public houses
- Wine bars
- Delicatessen & Salad Bars
- Take-away outlets
- School meals & transport catering
- Burger vans

Non-Commercial residential Establishments

- Hospitals
- Residential homes
- Prisons
- Armed Services

Catering establishments



VET CENTRE?

3. Comparison between household food waste and restaurant sector food waste

The generation of food wastes in the food service industry shares many facets with the household one. Food wastes happens at the household and away from home as the **outcome and concatenation of multiple factors**, deeply rooted in the **decision making and consumer food management processes**.

However, the food service industry is characterized by a greater (or it could be defined at least different) **complexity** given by a **larger potential scale for food waste generation** (also considering the increasing rate of food consumption away from home), **the sharing of responsibility among restaurants managers, chefs and the clients/food service consumers**, the **different models of food administration** (restaurants, bar, cafeterias, hotels, catering services, quick service restaurants).

Unlike the household context **consumers has a lower a sense of ownership or responsibility about the food they leave** and the amount of food they get is considered to be out, with any leeway for change.

4. The sustainability in the restaurant sector

*Focus on preventing and managing
food waste
by taking care of the overall
restaurant's sustainability factors*

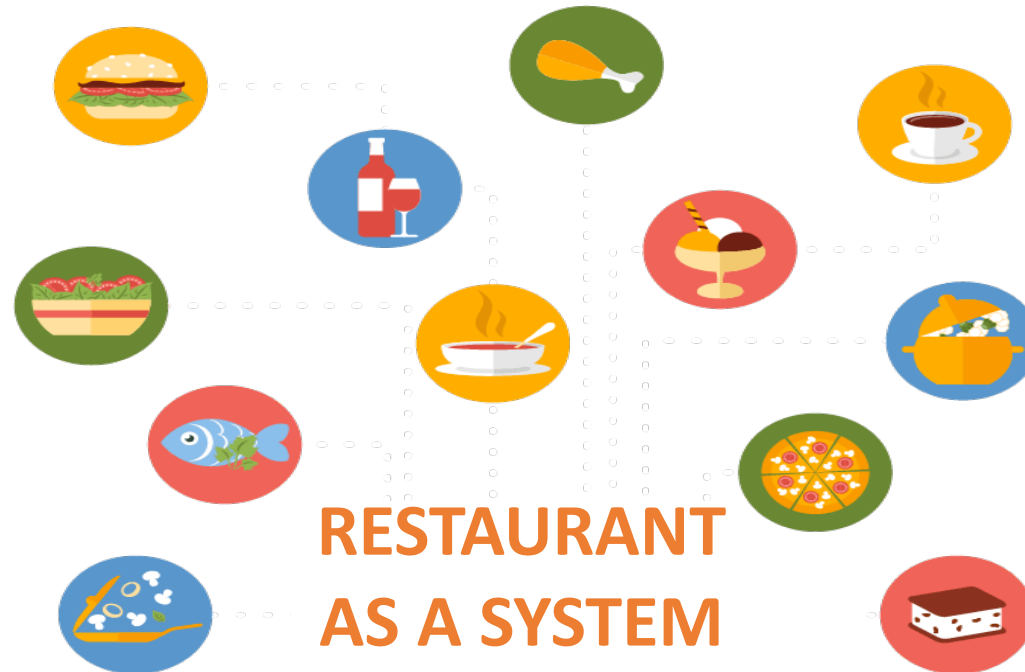


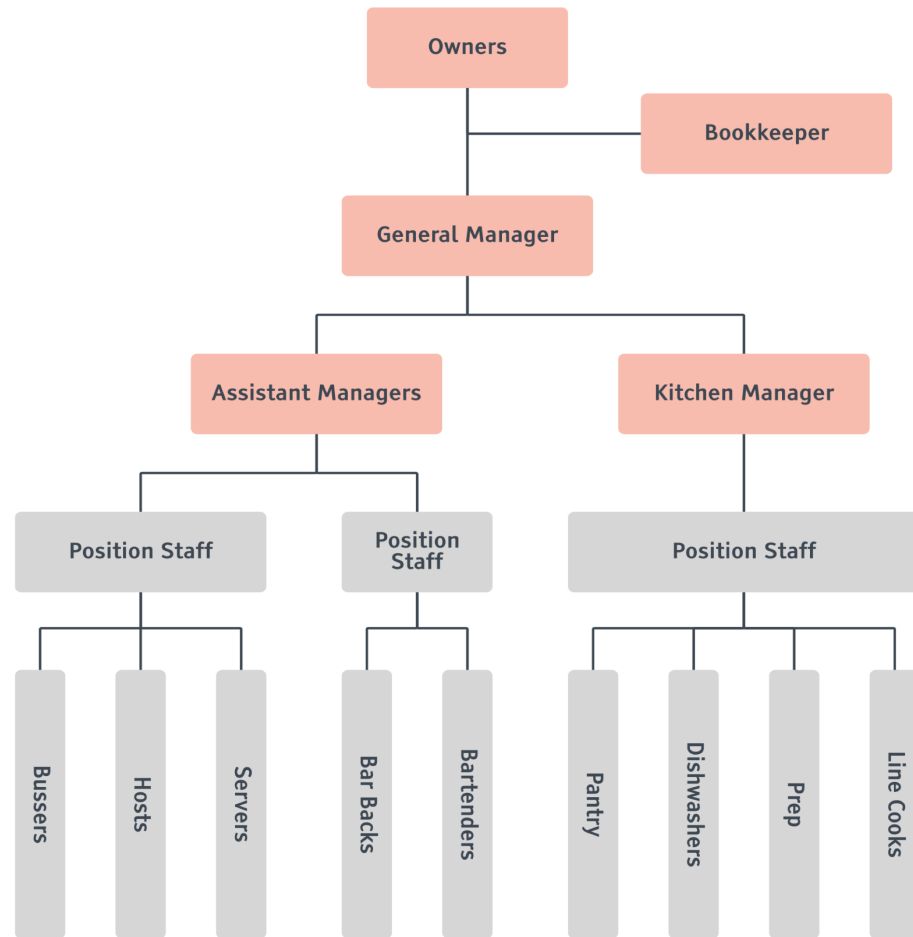
RESTAURANT SUSTAINABILITY

5. Boundaries and actors of the restaurant sector: restaurant as a system

WHAT IS A SYSTEM?

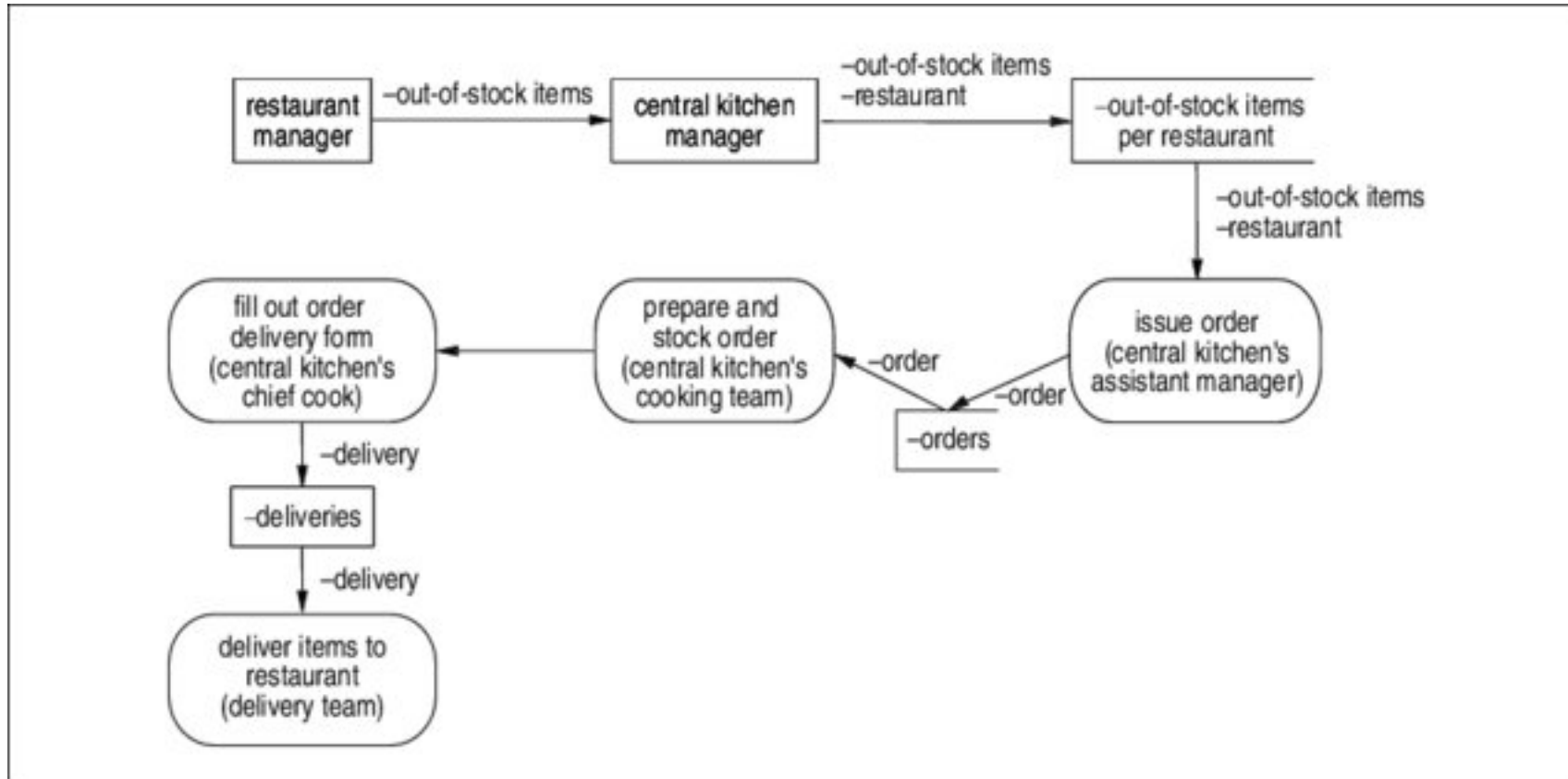
- The founder of systems thinking, Ludwig von Bertalanffy, defined a system as ‘an entity which maintains its existence through the mutual interactions of its parts’ (etymology=stay with)
- Five elements are essentially to recognise in a system: **the components, the interactions between components, the flow, the boundary, and the hierarchy.**





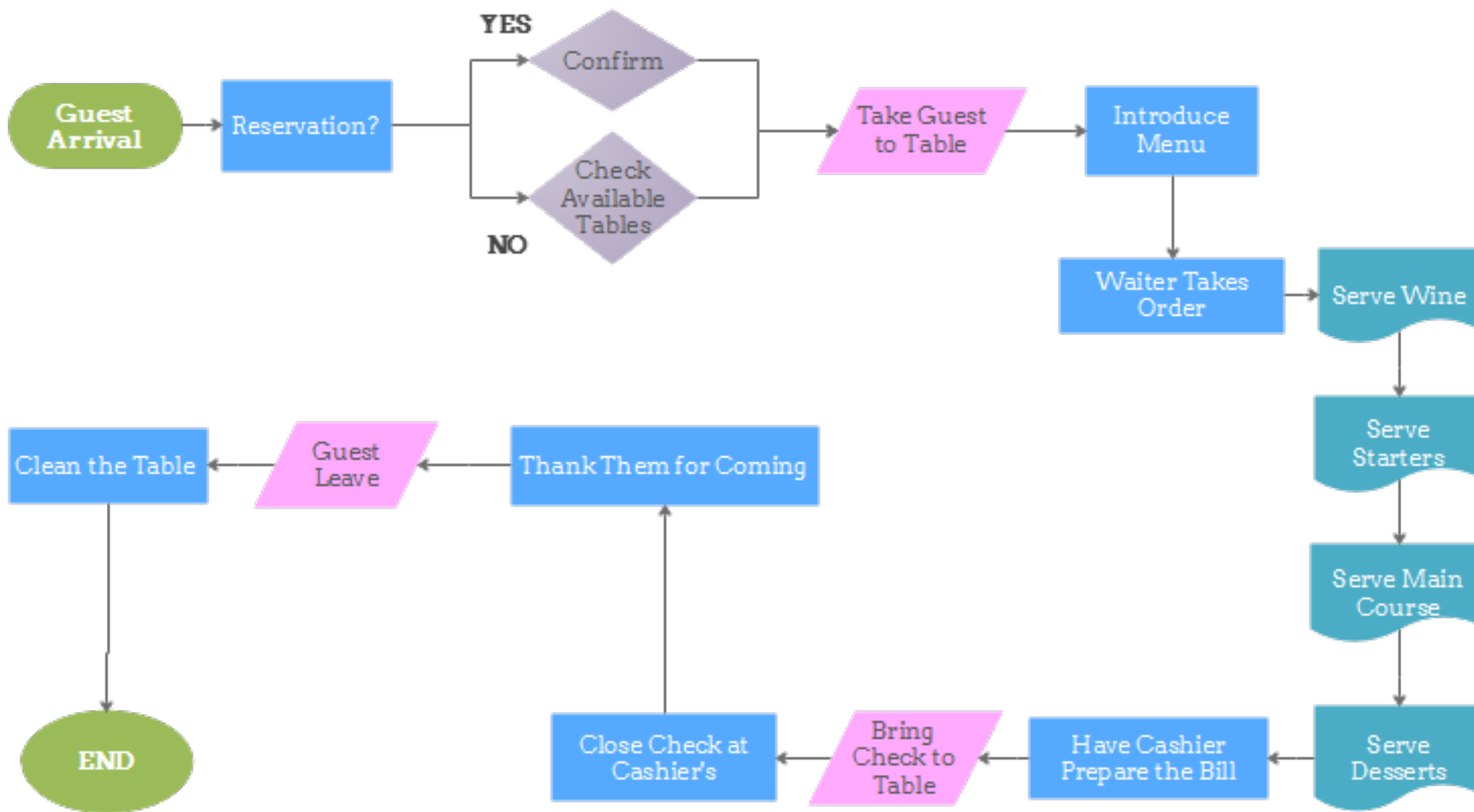
+ Clients

INTERACTIONS BETWEEN COMPONENTS

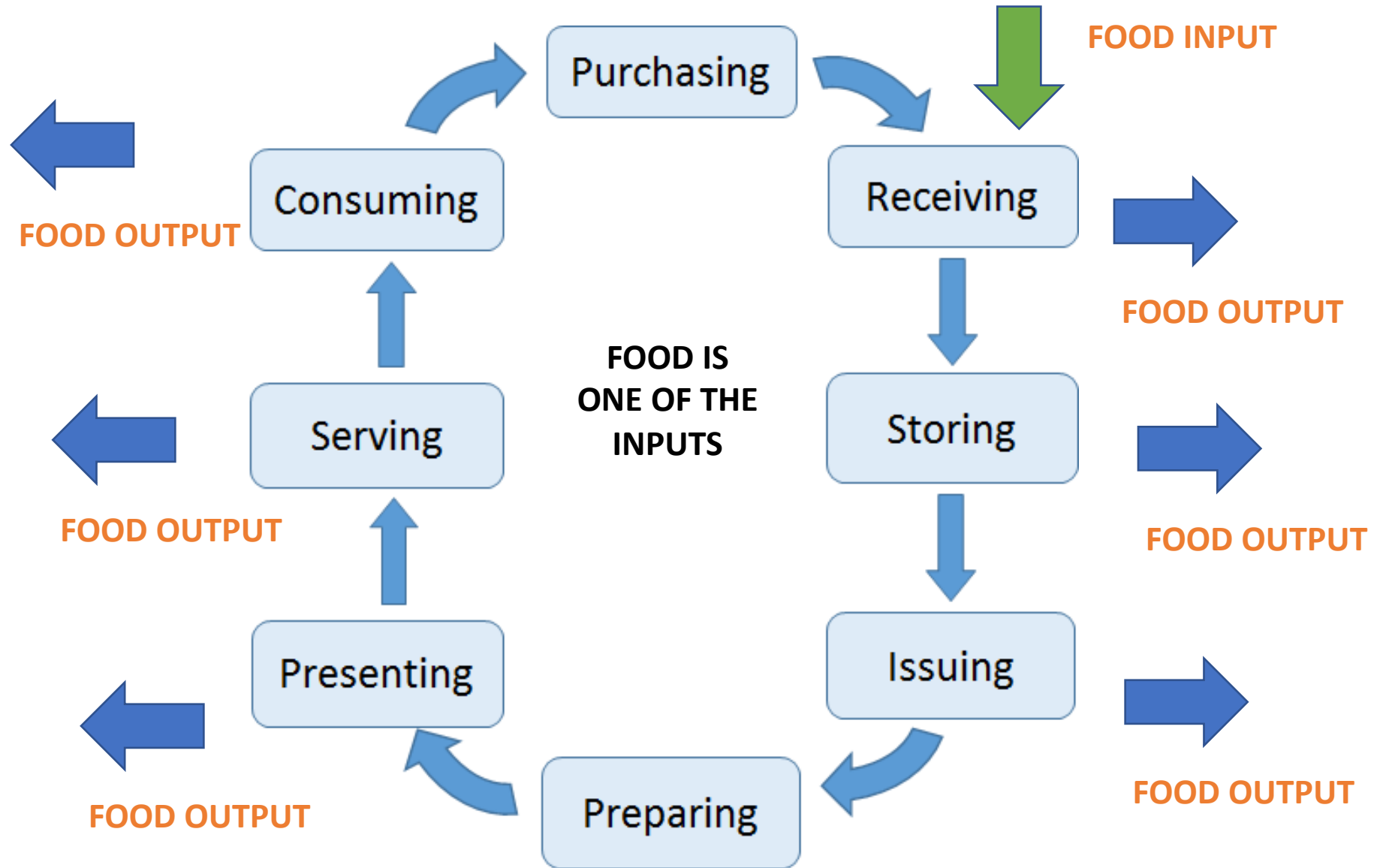


" Fulfill Order " Process of a Central Kitchen at an Italian Restaurant Chain.
Adapted from Kock (1995, p. 44).

INTERACTIONS BETWEEN COMPONENTS



FLOW



BOUNDARIES OF THE SYSTEM

- **STARTING POINT:** Ownership of the food is the starting point
- **END POINT:** The end point is when the food provided by the food service business is actually put in a bin. Food waste may be generated during preparation and/or storage by the food service business as well as during the consumption stage (serving of food).

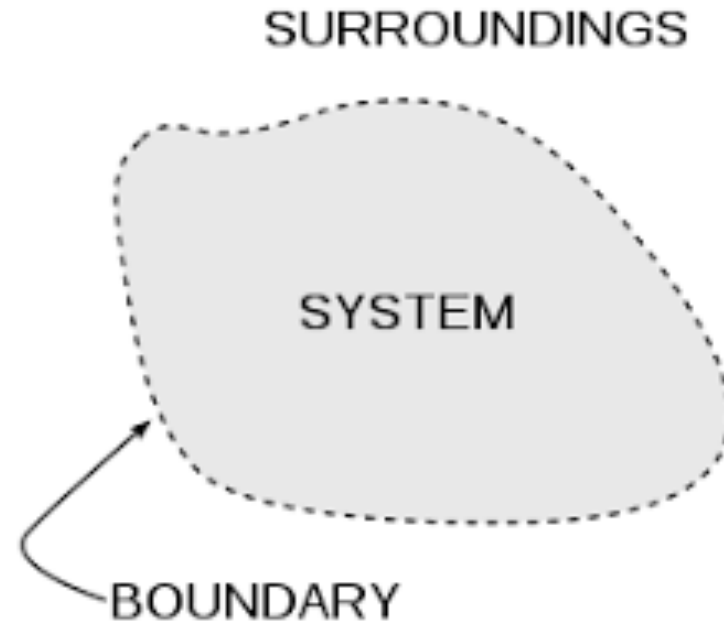


Table 2.2 Food waste away from home. The conceptual framework

	Responsibilities	FW Reduction Behaviours	FW Reuse or Redistribution Behaviours
<p>Kichen food waste Food wasted during the preparation phase, due to overproduction, peeling, cutting, expiration, spoilage, overcooking, etc.</p>	<p>Restaurant's managers and chefs</p>	<p>Careful ordering and menu planning; Avoiding spoilage waste by monitoring used by dates and storage ; Offering different portion sizes. Educate the client to carefully order to avoid leftovers.</p>	<p>Reuse edible food items for making other recipes; Donation of surplus food; Offering a doggy bag to the client.</p>
<p>Client food waste Food wasted by the client after the food has been served to them</p>	<p>Restaurant's clients</p>	<p>Avoid leftovers</p>	<p>Doggie bag adoption</p>

Author elaboration based on an idea by Principato, Pratesi, Secondi, 2017

HIERARCHY: THE UP-SYSTEM

