



LOVE FOOD REDUCE WASTE

Training of trainers Module n.5

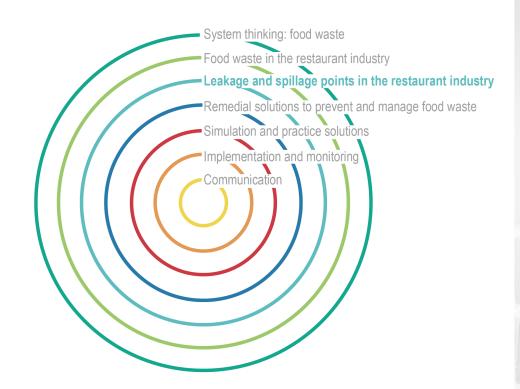
11/02/2019







5. WORK GROUP ABOUT THE FOOD FLOW ANALYSIS IN RESTAURANT SECTOR AND INDIVIDUATION OF THE LEAKAGE POINTS (1 30 m) (N. Tecco)



- 1. Adaptation of the Swiss cheese (theory of error) model to the **Restaurant Sector**
- 2. Definition of the 5W in the Restaurant sector



1.Adaptation of the Swiss cheese (theory of error) model to the RS and food waste creation



A PROBLEM WELL DEFINED IS A PROBLEM HALF SOLVED



THE SWISS CHEESE THEORY

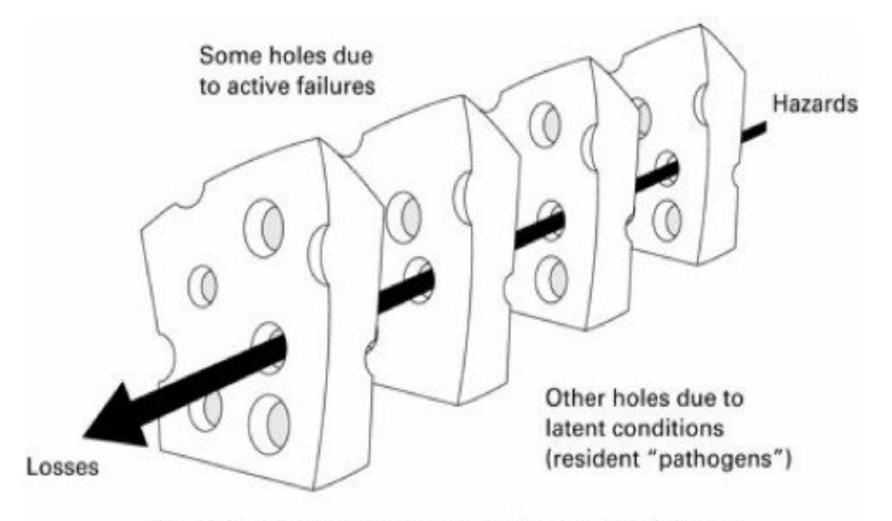
Swiss Cheese Model of organizational accidents highlights the fact that a single error at the "sharp end" of the system is rarely enough to cause an accident.

Instead, errors have to break through the multiple but inadequate safety barriers or "layers of Swiss cheese" in order to cause harm.

Understanding the complexities of accident causation is fundamental to perform meaningful root cause analysis and develop effective patient safety and quality improvement strategies. Instead of trying to achieve perfect human behaviour at the "sharp end" it is necessary to create multiple overlapping safety barriers or system defences to reduce the likelihood of the "Swiss cheese holes" being aligned and letting an error slip through.

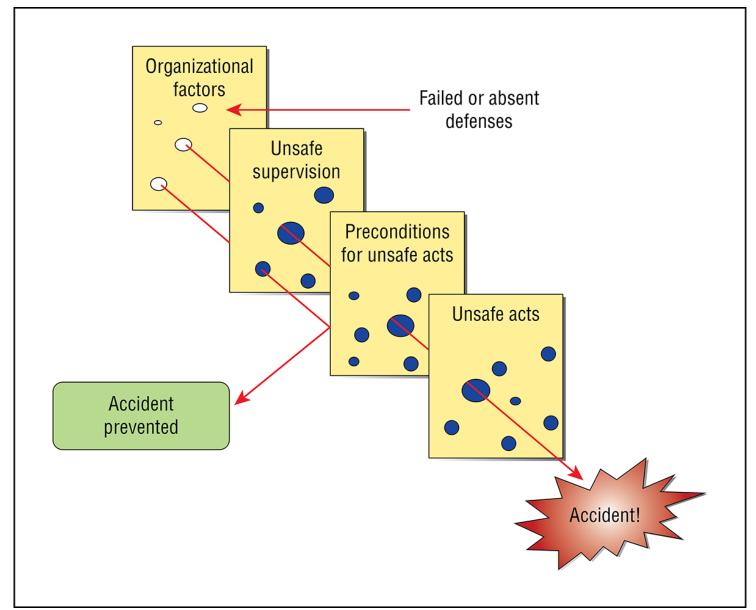






Successive layers of defences, barriers and safeguards





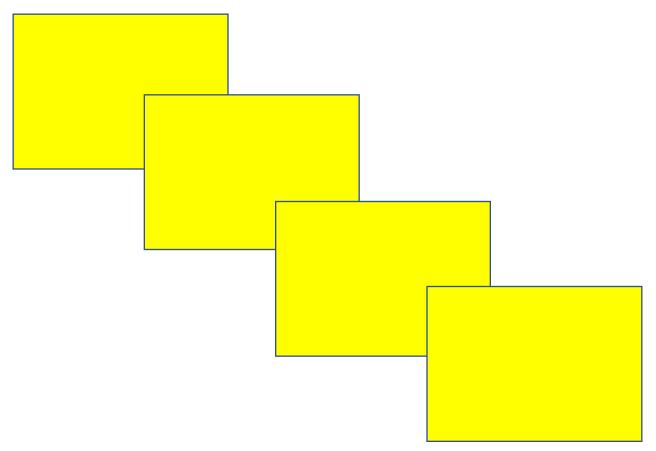






TALKING ABOUT FOOD WASTE IN RESTAURANTS (an hyphothetical one)

Different layers where different stakeholders act and interacts

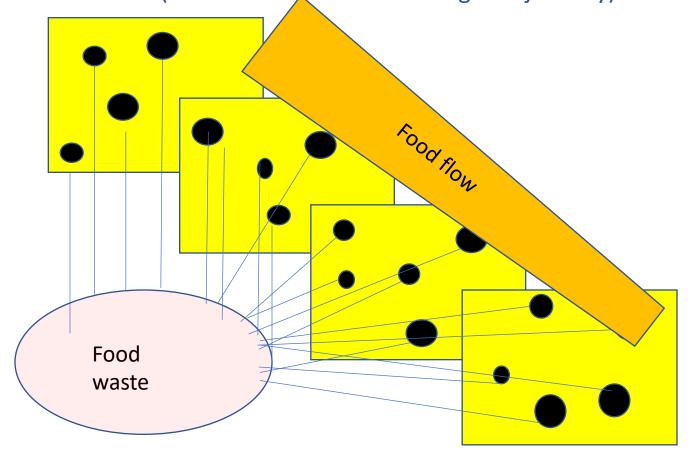


1. Define the layers and the relevant stakeholder. How many layers? (corresponds to the number of papers)



TALKING ABOUT FOOD WASTE IN RESTAURANTS (an hypothetical one)

For each layers there are some leakage and spillage points (holes, more or less big) that creates waste (a loss in the food flow along the journey):



2. Find what are the leakage and spillage points for each layers. Let's draw a circle for each points and define it



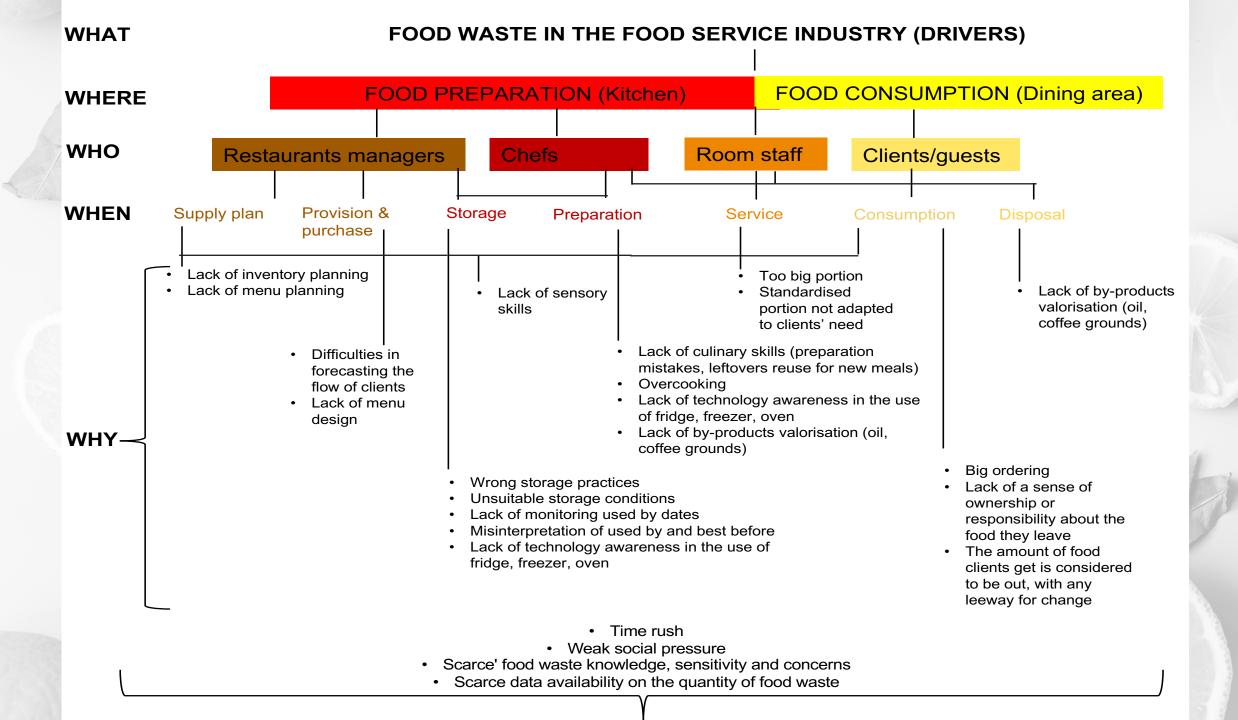
How big is the problem?							
	40% of all food produced or \$27 billion						
			Where does food waste occ	ur?			
Field (99 Crop/livestock Production	6) Post-Harvest	Processing & Packaging (18%)	Distribution (3%)	Retail (11%)	Food Service (8%)	Households (51%)	
		Wha	at are the hot spots for food	waste?			
Fruits & vegetables Seafood	 Fruits & vegetables Meat Grain products 	 Grain products Seafood Meat Dairy products Beverages 	 Fruits & vegetables Seafood Meat 	 Fruits & vegetables Seafood Meat Bakery & deli Ready-made food 	N.A.	 Fruits & vegetables Meat & seafood Grain products Dairy products Beverages 	
		Why	does food waste occur (root	causes)?			
 Climate change & weather extremes Incorrect planting & subsequent crop management Incorrect harvesting Market conditions (low price, lack of demand) Labour shortages Over-production Over-feeding Health management protocols/processes Lack of connectivity to downstream elements of value chain Regulatory standards Food safety scares 	 Inadequate sorting Spillage & degradation Grading standards for size & quality 	 Incoming quality Process losses Cold chain deficiencies Employee behaviour Poor machine set up Inaccurate forecasting Contamination Trimming & culling Supply/ demand issues Date codes Customers' rejections Inconsistency in quality of ingredients Food safety issues 	 Damage Demand amplification Rejection of perishable shipments Poor record keeping allowing some products to exceed shelf life Inappropriate storage conditions Incorrect/ineffective packaging 	 Inaccurate forecasting Food safety issues Increasing market share of ready-made food Date codes Fluctuations in delivery from suppliers Cold chain deficiencies Rejection on arrival at distribution centres or store or during handling Increasing merchandising standards Product differentiation Market over-saturation 	 Plate composition Expansive menu options Over-serving Unexpected demand fluctuations Preparation mistakes Improper handling & storage Rigid management 	 Excess purchases Infrequent purchases Date codes Attitudes towards food Over-preparation 	
			Who can change the outcon	ne?			
 Managers Employees Value chain partners (processors, retailers) Service providers (equipment, genetics) Regulators 	 Farmers Service providers (storage, equipment) 	 Managers Employees Value chain partners (retailers, agricultural producers) Service providers (equipment, process engineers) Food banks Waste users 	 Managers Employees Service providers (equipment, transport, packaging) Value chain partners (farmer, processors/ packers, retailers, food service) Food banks 	 Managers Employees Service providers (packaging, technology) Food banks Waste users 	ManagersEmployeesWaste users	 Consumer organizations Schools Media Retailers Consumers 	

Source: Agri-food@Ivey and Value Chain Management Centre

Training, education and communication to reduce food waste in the food service industry - $LIFE17\ GIE/IT/000579$ Life FOSTER



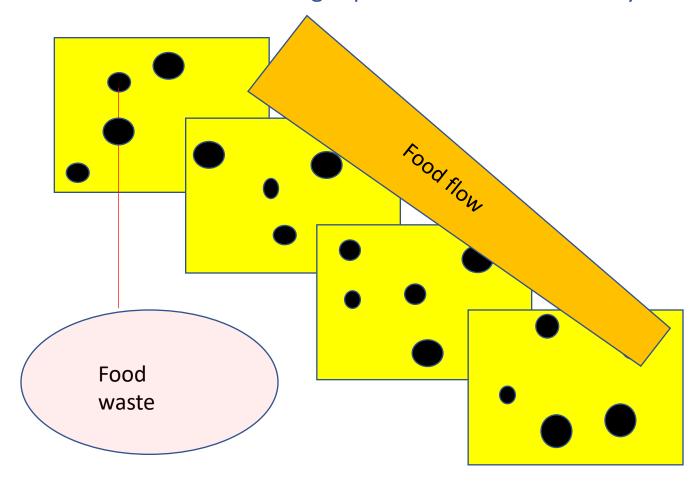
2. Definition of the 5W in the Restaurant sector





TALKING ABOUT FOOD WASTE IN RESTAURANTS (an hyphothetical one)

Are there interrelated leakages points within the same layers?



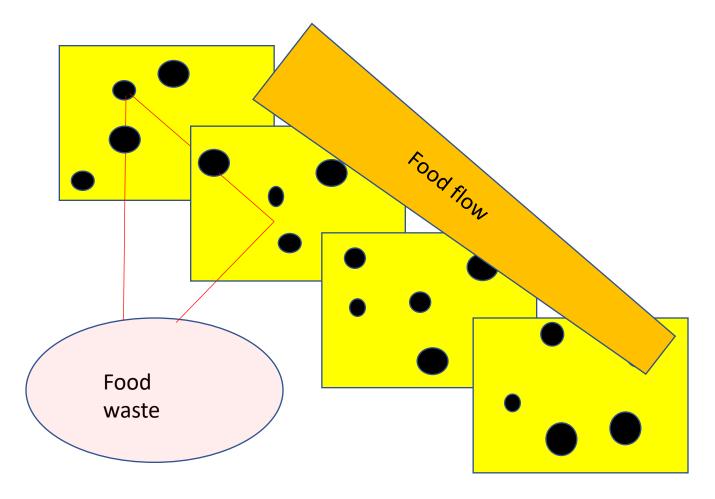
3. Let's draw a connection between the circle within the paper





TALKING ABOUT FOOD WASTE IN RESTAURANTS (an hyphothetical one)

Are there some spillage points that cross more than a layers?

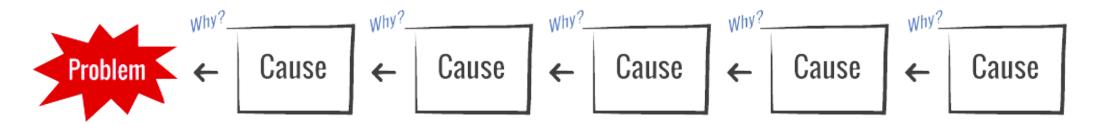


4. Let's draw a connection between the circle across the papers





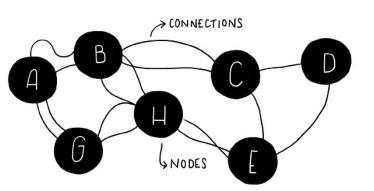
By finding the interconnections within the layer and across the layer is possible to elaborate a cause-effect map



to understand the connections among the causes and finding root causes and

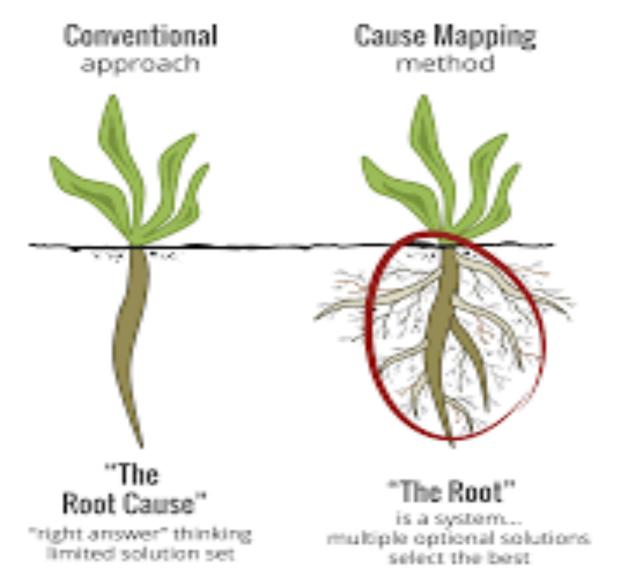
feedback loops.

INTERCONNECTED FEEDBACK LOOPS?



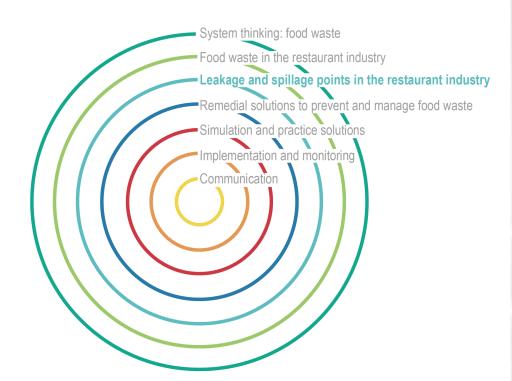


THE ROOT CAUSE AND THE ROOT AS A SYSTEM





FOOD WASTE PROBLEM MAP (1h and 15 m) (N. Tecco)



- 1. Selection of critical and representative products for the food waste generation
- 2. Product analysis



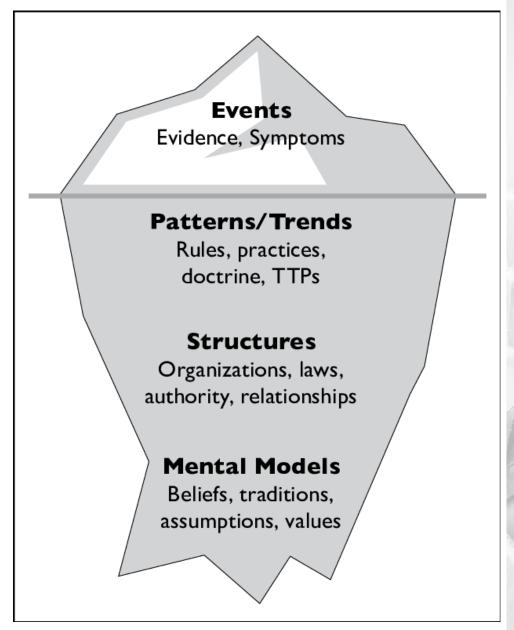
LET'S GO DEEPER INTO THE FOOD WASTE CHALLENGE IN THE RESTAURANT SECTOR



THE ICEBERG MODEL

The iceberg model is a valuable tool to encourage systemic thinking and help you contextualize an issue as part of a whole system. By asking you to connect an event—a single incident or occurrence—to patterns of behaviour, systems structures, and mental models, the iceberg allows you to see the structures underlying the event.

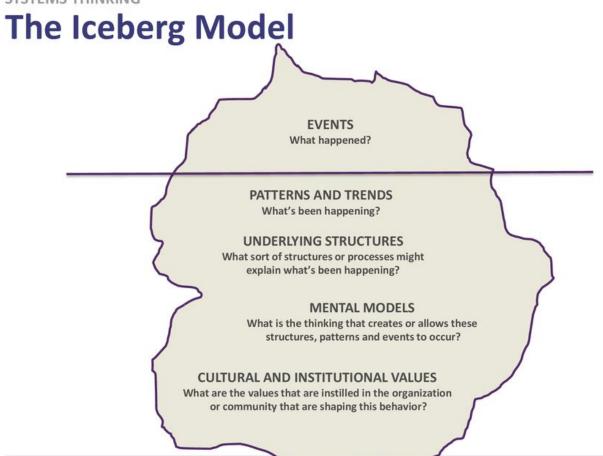
Just like an iceberg, 90% of which is invisible beneath the water, these structures are often hidden below the surface. However, if you can identify them and connect them to the events that you are seeing, you may be able to develop lasting solutions that target the whole system rather than short term, reactive solutions.





THE ICEBERG OF FOOD WASTE CAUSES

SYSTEMS THINKING



TOO BIG PORTION!

- When I go eating out I cannot finish the food on my plate
- On the menu, there no customized portion and I'm so curios to taste many things
 - Customers find satisfaction only with big portions
 - When people go eating out wants to eat more

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Contents

Consumer research

WRAP has carried out extensive research in 2012-13 to identify why we waste food when we eat out in UK:

- Restaurants
- Pubs
- Quick service restaurants
- Hotels
- Staff restaurants
- Leisure venues.

The research also looked at what food we leave on our plates and what can be done to reduce the amount of food wasted.

Here's a summary of the way the research was carried out.

Stage one

An **on-line survey** of more than 5,000 adults to find out why people leave food when eating out. This was followed by 12 discussion groups. The groups involved in-depth discussions about food waste when eating out-of-home.

Stage two

Six discussion groups were held. Participants discussed what, if any, messages would encourage them to waste less food out-of-home.

Stage three

Nine discussion groups were held. The discussions explored messages which were included on menus, table cards, place mats and drinks mats to find out what food waste reduction messages might influence people and where these messages could be used to change food waste behaviour.



Why customers leave food on their plates - research findings

This section has details of the research findings. More details are available in the research report and PowerPoint slide decks available via links on page 7.

- The majority of people don't want to think about food waste when having a meal out. Three-fifths of people surveyed in stage one agreed with the statement 'I don't want to think about leaving food when I eat out'.
- The main reason people gave for leaving food is that portion sizes are too big - 41%.
- People feel portion sizes are predetermined for them and not something they have control over.
- Chips, vegetables and salad (including garnishes) are the types of food most likely to be left on customers' plates. People consider some of this food to be 'plate fillers' rather than part of the meal they ordered. Some didn't even consider them to be food, especially salad garnishes.
- At a UK level 32% of people who left food, left chips or French fries. 18% left vegetables, 11% left meat/meat products and the same percentage left salad/coleslaw or potatoes.
- More people leave food on their plates in hotels, pubs and restaurants than other venues.

- People who leave food at the end of their meal are more likely to be women - 59% women, 41% men.
- Large portions of food are off putting to 44% of people.
- Having a meal out is often perceived as being a treat, an occasion for people to indulge and a time when they don't want to have to worry about leaving food.
- People who have eaten out for the 'experience' rather than simply to 're-fuel' are more likely to leave food at the end of their meal.
- People who leave food don't appear to feel a sense of ownership or responsibility over the food they leave. The amount of food they get is considered to be out of their control and a sizeable number of people won't ask for anything different.
- If eating more than one course, people will often leave part of their main dish and accompanying sides so they can eat a starter or pudding.

continued...



Why customers leave food on their plates - research findings (continued)

- People want to feel comfortable asking for different portion sizes and getting the size of meal they want. The most popular suggestion for ways to help reduce food waste was around providing different portions sizes, with 38% of people suggesting this.
- People expect to pay less for smaller portions - between 20% to 30% cheaper.
- Technical' changes have to be made, because messages by themselves won't change your customers' behaviour. Consider offering a chioce of portion size, training staff and making menu options available. Messages can support these technical changes.
- Messages help give your customers permission to ask about the food they're ordering and to find out more about the options available, including portion sizes. They can help boost customer confidence to ask for that they want, which is one of the key elements in helping to tackle plate waste.

- The concept of using messages, which will help reduce plate waste, was well received in the research but the language used needs to be carefully considered.
- Some people were keen for venues to offer doggy bags, for them to take away leftover food, rather than having to ask for one. 42% of people agreed with the statement 'asking for a container to take leftovers home is embarrassing's
- Avoid linking messages about waste to messages about choice and smaller portions. Offering choice and portion options will help to reduce plate waste but people are not keen to see the direct link when they order food.
- Use food ordering mediums for messages about food choice, for example on menus.
- Use posters and table cards for 'cues' about food waste concerns or to publicise the actions you're taking to address food waste. These 'cues' can help inform customers about food waste and impact on their behaviour





SELECT ONE OF THE PROBLEM FROM THE MAP AND TRY TO BUILD THE ICEBERG

SYSTEMS THINKING The Iceberg Model **ONE OF THE CAUSES EVENTS** What happened? **PATTERNS AND TRENDS** What's been happening? UNDERLYING STRUCTURES What sort of structures or processes might explain what's been happening? **MENTAL MODELS** What is the thinking that creates or allows these structures, patterns and events to occur? **CULTURAL AND INSTITUTIONAL VALUES** What are the values that are instilled in the organization or community that are shaping this behavior? ------

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2. Selection of critical and representative products for the food waste generation



TALKING ABOUT PRODUCTS/INGREDIENTS



HOTSPOT PRODUCTs: Move into the food flow and follow the products

 What are the main hotspots products for food waste in restaurants? Please make a list
••••••
2) Please located them on the layer where they more easily turn into food waste
••••••
••••••



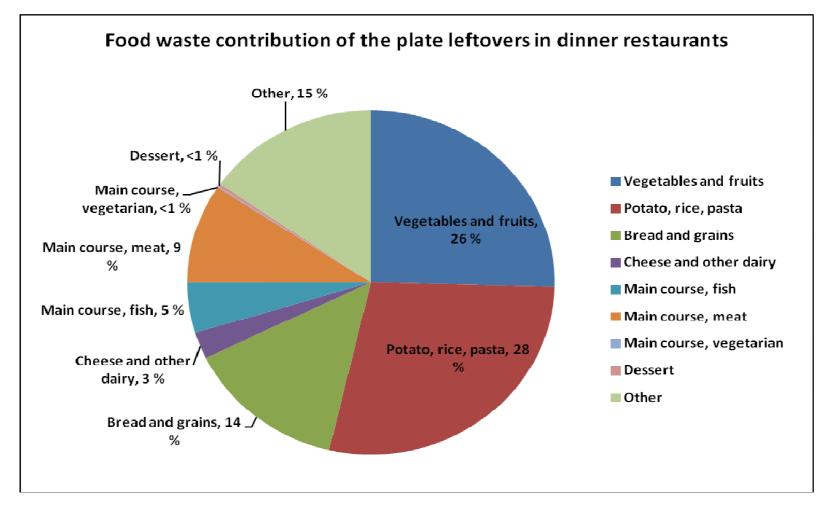


Figure 4: Food waste contribution of the plate leftovers in dinner restaurants.

FOOD WASTE VOLUME AND COMPOSITION IN THE FINNISH SUPPLY CHAIN: SPECIAL FOCUS ON FOOD SERVICE SECTOR (2012) K. SILVENNOINEN*, J. M. KATAJAJUURI*, H. HARTIKAINEN*, L. JALKANEN**, H.K. KOIVUPURO* AND A. REINIKAINEN*





8.1 Scheda Prodotto: PANE



Composizione e parti: crosta e mollica

Valori nutrizionali⁷²:



Descrizione	Quantità	Parte	Peso	Acqua	Energia	Proteine	Carboid.	Fibre	Lipidi
alimento		edibile	(g)	(g)	(kcal)	(g)	(g)	(g)	(g)
Pane,		100%	100	31	284	8,1	64	3,8	0.5
farina di									
tipo 0									
Pane		100%	100	36,6	255	7,5	53,8	5,7	1,3
integrale									
Italian	1		30	10,7	81	2,6	15.0	0,8	1,1
bread									
White	1		25	9,1	67	1,9	12,7	0,6	0,8
bread									

Possibili benefici e controindicazioni:

<< Il pane è un alimento molto importante per la nostra alimentazione. Apporta molti carboidrati (63 grammi circa ogni 100 grammi di prodotto) che una volta introdotti nell'organismo vengono trasformati in glucosio, che a sua volta viene impiegato come energia per cervello e muscoli. La totale assenza di colesterolo lo rende un alimento adatto a essere inserito anche nelle diete di soggetti con problemi cardiovascolari. Ha un alto potere saziante ed è quindi in grado di ridurre l'appetito.

Il pane integrale è particolarmente utile soprattutto per chi soffre di stitichezza perché rispetto al pane bianco contiene più minerali e fibre utili a migliorare il transito intestinale. Per chi ha problemi di colesterolo è consigliabile il pane all'avena, date le proprietà anti-colesterolo di questo cereale. Per chi soffre di intolleranza al glutine il pane adatto è invece il pane a base di farina di mais, ricco di proteine ma senza glutine.

A oggi non sono note controindicazioni al consumo di pane; particolare attenzione deve essere però prestata al consumo di questo alimento da parte

⁷² Valori nutrizionali provenienti da fonti differenti: McGuire M., Beerman K. A., (2018), *Table of* food composition for Nutritional Sciences: from fundamentals to food, Boston, Cengage Learning; e la banca dati IEO http://www.bda-ieo.it/

di soggetti diabetici per mantenere una dieta idonea alla propria condizione di salute. Poiché il pane viene preparato perlopiù con farine provenienti da cereali contenenti glutine, le persone con intolleranza al glutine **o** celiachia devono prestare attenzione al consumo di questo alimento e orientarsi verso il consumo di tipologie di pane senza glutine.⁷³>>

- Modalità di conservazione⁷⁴:

Luogo non refrigerato,	piani alti	Piani medi	Piani bassi	Cassetti	Anta della porta
buoi e asciutto	~ 6°C	~ 4/5 °C	~ 2/4°C	~ 7/8 °C	~ 10°C

- Frequenza giornaliera consigliata⁷⁵:

Alimento/gruppi alimenti		1700 kcal*	2100 kcal**	2600 kcal***		
		Porzioni giornaliere				
Cereali,	Pane	3	5	6		
tuberi	Prodotti da forno	1	1	2		
	Pasta/riso/ pasta all'uovo fresca	1	1	1-2		
	patate	1 (a settimana)	2 (a settimana)	2 (a settimana)		

^{*}Esempi: bambini oltre ai 6 anni; donne anziane con vita sedentaria

^{**}Esempi: adolescenti femmine; donne adulte con attività lavorativa non sedentaria, uomini adulti con attività lavorativa sedentaria

^{***}Esempi: adolescenti maschi, uomini adulti con attività lavorativa non sedentaria o moderata attività fisica

⁷³ Humanitas Research Hospital, Enciclopedia,

<<https://www.humanitas.it/enciclopedia/alimenti/carboidrati/pane>>

⁷⁴ Slow food, *Frigo Slow, ecco come organizzarlo per evitare gli sprechi,* 5 Febbraio 2018

⁷⁵ Ministero delle Politiche Agricole e Forestali, Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (2003), Linee Guida per una sana alimentazione italiana



Quantità per porzione solitamente somministrata⁷⁶:

Gruppo di Alimenti	Alimenti	Porzioni	Peso (g)
		(*)in mines	tra metà porzione)
Cereali e tuberi	Pane	1 rosetta piccola/ 1 fetta media	50
	Prodotti da forno	2-4 biscotti/ 2,5 fette biscottate	20
	Pasta o riso (*)	1 porzione media	80
	Pasta fresca all'uovo (*)	1 porzione piccola	120
	Patate	2 patate piccole	200
	Formaggio fresco	1 porzione media	100
	Formaggio stagionato	1 porzione media	50

- Costo medio per kg di prodotto⁷⁷:

Dai 2,1 ai 3,49 euro al chilo, prezzi rilevati Dicembre 2018, provincia di Torino

Costo ambientale per la produzione di 1 kg di prodotto (H₂O, CO₂, superficie utilizzata)⁷⁸

Carbon footprint: 1,2 Kg di CO₂ (il dato comprende coltivazione, macinazione, cottura trasporto).

Water footprint: dato non disponibile Ecological footprint: dato non disponibile

- Consigli e suggerimenti sul riutilizzo:

Crostini: classici e sfiziosi, sono ottimi da utilizzare come snack oppure da inserire all'interno di passati di verdure piuttosto che per rendere croccanti le insalate. Una volta tagliati, i cubetti di pane possono essere conservati in congelatore, basterà soffriggerli poco



⁷⁶ Ministero delle Politiche Agricole e Forestali, Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (2003), Linee Guida per una sana alimentazione italiana

prima di utilizzarli, per renderli ancora più gustosi.

Panzanella⁷⁹:

Ingredienti:

300 gr di pane	500 gr di	1 cipolla rossa	Basilico
raffermo	pomodori		
Olio EVO	Sale	Pepe	1 cucchiaio di
			aceto

 Preparazione: lavare e tagliare a cubetti i pomodori, affettare finemente la cipolla, spezzettare il pane grossolanamente. Unire in una ciotola i tre ingredienti tagliati, e condire con basilico, olio, aceto, sale e pepe. prima di servire lasciar riposare la panzanella per una decina di minuti.



Gnocchi di pane e spinaci:

• Ingredienti:

300 gr spinaci lessi	120 gr di pane	120 ml di latte	150 gr farina
	raffermo	intero	
1 uovo	1 cucchiaio colmo	Sale	рере
	di grana		
	grattugiato		

 Preparazione: tagliare il pane a cubetti e metterlo a riposare cosparso di latte per almeno 30 minuti. Lavare gli spinaci, lessarli in un tegame con poca acqua per 5-10 minuti. Una volta cotti,



⁷⁹ Casali Lisa (2012), *Ecocucina. Azzerare gli sprechi, risparmiare ed essere felici,* Milano, Edizioni

⁷⁷ Ministero dello Sviluppo, Osservatorio Prezzi e Tariffe,*Beni e servizi di largo consumo,* << http://osservaprezzi.sviluppoeconomico.gov.it/index.php?option=com_content&view=article&id =22&Itemid=138 >>

⁷⁸ Database da cui sono stati presi questi dati è fornito dalla *Barilla Center fo Food & Nutrition,* il file in formato Excel si può scaricare dal sito << https://www.barillacfn.com/it/pubblicazioni/doppiapiramide-2016-un-futuro-piu-sostenibile-dipende-da-noi/ >>



10 THINGS TO DO WITH STALE BREAD

AMERICANS BUY APPROXIMATELY

3 BILLION LOAVES OF BREAD A YEAR



THAT'S 750 MILLION LOAVES!

How many times have you dug into the breadbox only to find a hard, crusty rock where a fresh loaf of bread used to be? It's time to take back the bread! Here's how to use up those stale bits, plus tips for keeping it fresh as long as possible.



1. REFRESH IT

Revive stale bread by placing it in a dampened paper bag and baking in a



2. USE IT IN RECIPES

like French toast, bruschetta, bread pudding, French onion soup, stuffing, stratas, meatloaf, and panzanella - and it makes excellent grilled cheese sandwiches.



3. FREEZE IT

toss it in a zip-top bag and freeze it for later. Leave room in the bag to add future stale bread.



Dry out bread slices on a baking sheet at your oven's lowest temperature. Grind dry bread an airtight container for up to 6 months.



5. MAKE CROUTONS

Cube stale bread, toss it with olive oil baking sheet and toast in the oven on



6. THICKEN SOUP

Add a slice of stale bread into blended soups to add texture.



7. DIP IT

The sturdiness of stale bread pieces make them perfect for dipping in fondue or other sauces.



8. KEEP VEGGIES FRESH

A piece of stale bread in the crisper drawer fresh. Replace every day or two.



9. FEED YOUR PLANTS

Breadcrumbs can add moisture and nutrients to potting or garden soil. Dry stale bread in the oven, grind to create fine breadcrumbs, then mix into soil.



10. TREAT YOUR DOG

Make fido some snacks by mixing 1/2 cup flour, 2/3 cup water, and 6 Tbsp. oil. Roll out, cut out shapes with a cookie cutter, and place on a parchment-lined cookie sheet. Bake in a 350°F oven for 35 to 40 minutes.



Use bread heels as burger buns, turn them inside out to make grilled cheese, toss one in your brown sugar container or cookie jar to keep everything soft, or save them in the freezer to make breadcrumbs.



HOW TO STORE BREAD

Bread will actually go stale more quickly in the refrigerator. Here's how to make it last:



FRESH-BAKED BREAD:

Wrap in a cloth napkin or towel then store in paper bag on the counter or in a breadbox. If you won't use it all in 2-3 days, freeze a portion in an airtight plastic bag for up to 6 months.



PRE-SLICED BREAD:

IN THE UNITED STATES, 40% OF OUR FOOD NEVER MAKES IT TO THE TABLE. SUSTAINABLE AMERICA IS COMMITTED TO CUTTING FOOD WASTE IN HALF BY 2035.

SUSTAINABLEAMERICA.ORG



Training, education and communication to reduce food waste in the food service industry - LIFE17 GIE/IT/000579 Life FOSTER

