



FOOD & CATERING

A SUSTAINABLE FUTURE

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WELCOME



It gives me great pleasure to introduce Greenville's initial contribution to the conversation taking place around the Climate Emergency. Our paper, A Sustainable Future – Food and Catering is the first in a series of Greenville publications which we hope will

achieve the twin objectives of informing the various market players about the many issues involved, as well as providing a pathway towards decision making in the various procurement categories during 2020/2021 and beyond!

As procurement professionals we will focus our energies mainly on green public procurement in support of the Government's Climate Action Plan 2019. Our first paper is just one facet of our long-term goal in this regard and the topic of food couldn't be more relevant to the debate taking place.

At Greenville we also take our social responsibility seriously, and are determined to play our part in supporting initiatives to reverse the negative impacts of climate change. We are delighted to support the Edible Landscape Project CLG (www.ediblelandscape.ie) whose goal is to teach communities how to grow and consume food in an environmentally sustainable way, creating more resilient local communities.

We are proud to play a small part in tackling this generational challenge through our research, training and consultancy offerings and look forward to doing our part and supporting our clients to effect changes in procurement practices which deliver real impact.

Best wishes,

A handwritten signature in black ink that reads "Jeane".

Jeanne Copeland
CEO Greenville Procurement Partners

PURPOSE OF THIS PAPER

This is the first in a series of white papers from Greenville Procurement Partners. The paper sets out to provide the reader with insights on the relevant macro socio-economic and environmental considerations aimed at promoting a greater understanding of the components underpinning effective green procurement.

ABOUT THE AUTHOR

A Sustainable Future - Food & Catering was prepared for Greenville Procurement Services by David Whelan. David has over twenty years experience across a number of industries, including electronics, semiconductor capital equipment, mechanical services and management consultancy. David holds a Diploma in Mechanical Engineering from Technological University Dublin, a Bachelor of Science in Mechanical Engineering from Trinity College Dublin, and an MBA from University College Dublin.



EXECUTIVE SUMMARY

Of the top 20 solutions to global warming¹ eight are directly related to the way we produce and consume our food. It is essential therefore that we find a balance between the demands for food products and services, and the need to meet the combined challenges of global warming and environmental destruction.

Public sector organisations have a significant role to play in helping change the conversation on food and its relationship to the ever increasing environmental and climate crisis. The publication of Ireland's Climate Action Plan² in 2019 sets out a roadmap for Ireland to 2030 and beyond, with measures to cut our non-ETS (non-Emissions Trading Scheme) sector greenhouse gas emissions by 30% relative to 2005 levels.

According to the Climate Action Plan, one of the key measures which will help create a framework across the entire public sector and beyond to support change will include a consistent development of a Green Procurement Strategy. The National Framework for Sustainable Development in Ireland – Our Sustainable Future³, has established a clear vision for Green Public Procurement (GPP) in future national governance arrangements.

There is also a commitment within the Climate Action Plan to meet the ambitious EU goal to achieve net-carbon zero by 2050. This will require mitigation and abatement measures coupled with more robust policy levers, including carbon taxes, investment in innovative technology, and the promotion of sustainable development

across the economy, from construction to energy and of course, agriculture.

"[This] is our new growth strategy, for a growth that gives back more than it takes away. It shows how to transform our way of living and working, of producing and consuming, so that we live healthier [lives] and make our businesses innovate. We will help our economy to be a global leader by moving first and moving fast."

EC President Ursula Von der Leyen on a European Green Deal which aims for Europe to be net-zero carbon by 2050 and halving emissions by 2030.

Diversification within agriculture, more sustainable and less carbon intensive farming practices, an increase in organic production, and protection and enhancement of biodiversity are all important strategies for change which will need to be supported by robust legislation and regulation, and by the actions of public sector organisations.

The discussion on climate measures and green public procurement cannot therefore be held in isolation to each other, as both are inextricably connected. This is even more so the case when it comes to the subject of food, and how it is procured within the public sector.

Part of the transition to a net-zero carbon economy is the opportunity to build **Capacity, Reputation, and Resilience** into everything we do. From a public sector procurement perspective for Food & Catering Services, green procurement can support this strategy in several different ways, including;

- supporting SME's within the food sector to foster ambitious environmental measures in their product and service offering, to enable those businesses to compete in the marketplace
- providing clear and timely communication to the marketplace so that suppliers have an opportunity to respond and develop solutions
- allowing a reassessment of how costs are viewed in the overall lifecycle of a product or service
- creating support systems for organic food (chemical-free) producers whose environmental impact is, by definition, lower than conventionally produced foodstuffs
- creating the environment for discussion on the revaluation of food in favour of more sustainable and cost effective alternatives
- putting people at the centre of decisions on what goods and services are procured
- committing to, and prioritising low-carbon solutions in the food & catering service sector, to provide opportunities to both save on costs and uphold high environmental standards

The use of GPP criteria, including pre-procurement market engagement, can facilitate **Capacity Building** by helping to prepare businesses for public sector tender requirements, and enhanced levels of environmental performance. It provides an opportunity to transfer knowledge across the value chain by educating current and potential suppliers on changes in legislation, standards, labelling requirements, and ambitions. The EU Climate Action Plan sets out a goal of Net Carbon Zero Emissions by 2050. This acts as a signal to the marketplace of intent and provides a window of opportunity for industry to prepare and respond.

The public sector can lead on environmental issues to develop a **Reputation** for taking progressive measures. We have witnessed, in Ireland, how policy can change public perceptions (the smoking ban and plastic bag levy are but two recent examples). **Resilience** is a measure of how prepared we are as an economy, and as a society, to manage risk and opportunity. Climate change and food security are two significant near-term economic and environmental risks, and public sector preparedness in this area is vital.

This paper sets out to demystify some of the common misconceptions and concerns regarding GPP while helping the reader's understanding of the macro context; how Ireland fits into the European and global conversation on global warming and environmental protection.

What our paper shows is that Green Public Procurement (GPP) should be embraced as an opportunity by public sector bodies and private sector organizations who supply goods and services. GPP offers opportunities to differentiate and lead the way in an uncertain world, by moving first, and moving fast.

GLOBAL VIEW

By 2050 there will be approximately 9.1 billion people on the planet. The Organization for Economic Cooperation and Development (OECD)⁴ predicts that feeding a world population of 9.1 billion people in 2050 will require increasing overall food production by some 70 percent by 2050 from 2005 levels. A 70% increase in food production will require vastly more resources. But where will those resources come from?

As the middle class in the global east grows, so too does the demand for meat and dairy, resulting in more resource and carbon-intensive agriculture. India (with a population of circa 1.35 billion, a middle class close to 300 million and the world's fastest growing economy from 2014-2018) and China (with a population of circa 1.4 billion and the world's fastest growing middle class approx. 400 million in 2018) are demanding a more westernised diet. This is adding to the pressure on ecosystems and the supply chains that deliver products and services.

While European diets and policies are evolving slowly in response to environmental and ethical concerns (note the increased number, and variety of, vegetarian and vegan options now available in shops and restaurants as an example), the diet in India and China is becoming more carbon heavy. And while these emerging markets provide huge opportunities for food producers here in Ireland and abroad, they also pose a significant challenge for the natural environment.



CO2 emissions must be limited to 420 billion tonnes and approximately 720 billion tonnes of CO2 must be removed from the atmosphere to limit global warming to 1.5°C with 66% probability.⁵

Intergovernmental Panel on Climate Change, 2018

The globalised food supply system is also dependent on relatively benign weather systems. However, climate change makes global weather patterns less predictable, leaving seasonally-dependent crop production at greater risk, reducing crop yields, interrupting supply lines, and negatively influencing the markets and prices for goods and services. When significant weather events cause damage to property, risk premiums go up and the cost of doing business increases. In February, 2018 a snow-related weather event in Ireland caused severe disruption to national transportation routes, resulting in shortages in staple food products, such as bread and fresh fruit and vegetables. The event exposed the precariousness of the supply chain, our overwhelming dependency on imported goods, and the industrialised just-in-time food supply system.

The public sector is not immune from these risks. Getting to know the supply chain, from producers to consumers of products and services, is vitally important to understanding the implications for the planet and the ability to make a decision on one type of future, or another. Green procurement lowers such risks by encouraging more environmentally benign products and services, and by helping support innovation throughout the supply chain.

Temperature rises (1.1° centigrade above pre-industrial levels) in parallel with an increased global population (9.1 billion by 2050) across the socio-economic spectrum, and increased demand for sources of food and water, will put unknown pressures on our current systems of production and delivery. Ireland continues to experience urbanisation of its population from agricultural land no longer economically or environmentally sustainable. Tackling this complex matrix of challenges requires a multi-tiered and flexible approach which should include resilience building, system adaptation, and climate mitigation measures.





THE FOOD & CATERING SERVICES SECTOR

The total expenditure on food and catering services in Europe for the 28 Member States is 206.3 billion euro (2011 data from Eurostat)⁶. The sector (in total) includes 1.5 million enterprises, has a turnover of 354 billion euro, and employs 8 million people (2012 data from Eurostat).⁶

In Europe, as a percentage of total meals served, Business & Industry account for 17.8% of total spend, Education 31.4%, and Health & Welfare 42.7%. In the food and catering services sector, whether you are a supplier or purchaser of public sector products and services, you are faced with decisions on a daily, weekly, or monthly basis which have an environmental impact somewhere along an increasingly globalised and inter-connected supply chain.

There are projections for significant growth in the Agri-food export sector with Food Wise 2025 estimating that the market will reach **EUR 19 billion by 2025**⁷. Built into these ambitious growth figures is a recognition that this growth must be sustainable, and in line with the ambitions of both national, and EU climate action plans and supported by both government and the public sector organisations alike. The table below provides an overview of the Food & Catering Services sector.

Public Sectors where Food and Catering Services are commonly used:	Food Categories:	Catering Services (preparing, storing and delivering food to point of use):
<p>Schools</p> <p>Universities</p> <p>Hospitals</p> <p>Care Homes</p> <p>Canteens</p> <p>Prisons</p> <p>Armed Forces</p> <p>Events and conferences</p>	<p>Fruit</p> <p>Vegetables</p> <p>Oils</p> <p>Aquaculture</p> <p>Marine</p> <p>Meat and Dairy</p> <p>Drinks & Beverages</p> <p>Cereals, Nuts and Grains</p> <p>Composite Food Types (pre-packaged cooked, pre-packaged raw, tinned, processed)</p>	<p>Catering service: The preparation, storage and, where appropriate, delivery of food and drinks for consumption by the consumer/client/patient at the place of preparation, at a satellite unit or at the premises/venue of the client.</p> <p>Contract catering firm: A business engaged in (amongst other activities or services) providing a meals service (for example by running a staff restaurant or providing school meals) or providing drinks, snacks or vending.⁹</p> <p>Conventional kitchen: A kitchen (at the place of consumption) where all, or a significant part of, food is prepared from raw ingredients.</p> <p>Centralised production unit: Central kitchens or central food factories that send out completed dishes or pre-processed ingredients/meals to satellites. It can include both ready-prepared services and assembly serve services.</p> <p>Ready-prepared: Preparation on site or at a central facility of large batches of items for consumption that are then adequately stored frozen or chilled until serving.</p> <p>Assembly-serve: The food is delivered pre-processed and cooked. Then the food is reheated (if necessary) and assembled on site.</p>

Source: COMMISSION STAFF WORKING DOCUMENT EU green public procurement criteria for food, catering services and vending machines, Brussels, 27.9.2019 SWD (2019)



The Green Tenders Action Plan⁸ has set a target for 50% of procurement, both by number of contracts and value, to include at least core GPP criteria, whereby a contracting authority addresses key environmental impacts of each product or service in their tender documents. This is a positive step as it communicates to the market at the pre-procurement phase that certain basic environmental criteria must be met, allowing existing and potential suppliers and operators time to adapt and develop more innovative product and service offerings.



The EU GPP tools also provide guidance and support for purchasing staff on how to accurately verify information submitted by tenderers in response to environmental, specification and award criteria. This can include request for evidence that certain technical information (third-party labels, test reports etc.) or standards (ISO: 14001 etc.) has been met at various criteria stages of the procurement process from selection to contract award.



GREEN PUBLIC PROCUREMENT (GPP)

Green Public Procurement (GPP) is defined in the Commission's Communication "COM (2008) 400 - Public procurement for a better environment" as "...a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured".

The overall goal of GPP is to support public authorities and reduce socio-economic and environmental impacts, while improving levels of innovation and lowering total cost of ownership.

Life-cycle Costing (LCC) is a methodology for assessing the total costs of a product or service. **Life-cycle Analysis (LCA)** is a methodology for assessing the total environmental impact of a product or service over its entire life-cycle. LCC and LCA are core to GPP in the consideration of the total economic and environmental cost of a product or service from cradle to grave, or cradle to cradle.



Cradle to grave refers to a product's life cycle from its point of extraction to its point of disposal. Cradle to cradle refers to a product which is recycled or reused to make a new economically advantageous product.



There are other considerations that should be mentioned which have a direct effect on the Food & Catering Services sector, including;

Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009) require all major producers of food waste to place it into a dedicated bin and ensure that it is not mixed with other waste .

European Union (Packaging) Regulations 2014 (S.I. 282 of 2014) set requirements for packaging including its separation and recovery.

Hazard Analysis and Critical Control Point (HACCP) is a process control system that identifies where food safety hazards may occur in a food production process and puts controls into place. Its principles are reflected in the ISO 22000 standard on food safety management.

Regulation (EC) No 852 of 2004 on the hygiene of foodstuffs lays down general rules for food business operators on food hygiene, handling and storage and Regulation (EC) No 853 of 2004 lays down specific hygiene rules for food of animal origin, both processed and unprocessed. Animal welfare considerations are legally embedded in the food chain prior to the point of sale to retailers and caterers by S.I. 311 of 2010.

Regulations also apply for the protection of animals at the time of slaughter or killing, and the protection of animals during transport.

(Reference: Guidance for the Public Sector - Section 6. Proposed Irish GPP Criteria for Food and Catering Services – Environmental Protection Agency)⁹

LIFE-CYCLE COSTING (LCC)

For the food and catering service industry LCC may include production, transportation and storage, preparation and cooking, serving, and food waste disposal. The LCC also includes environmental externalities during its life cycle. LCC can be undertaken by procurement professionals to determine lowest overall cost given that quality and performance remain consistent across product or service categories and is an essential tool to understand cost considerations when helping to justify public spending on the most cost-effective solution over the long term.

Directive 2014/24/EU costs:

“- costs, borne by the contracting authority or other users, such as:

- i. Costs related to acquisition*
- ii. Costs of use, such as consumption of energy and other resources*
- iii. Maintenance costs*
- iv. End of life costs, such as collection and recycling cost*
- v. Costs imputed to environmental externalities linked to the product, service or works during its life cycle provided their monetary value can be determined and verified; such costs may include the cost of emissions of GHGs and of other pollutant emissions and other climate change mitigation costs.”*

There are three approaches to evaluating costs in a tender:

- 1. Lowest Price** - the most common form of evaluation
- 2. Total Cost of Ownership** borne by the contracting authority over the period of ownership - (i) to (iv) above - the most common LCC approach, though less commonly used in public sector procurement scenarios.
- 3. Life-cycle Costing** including externalities (i) to (v) above - rarely used in public sector procurement though it is bound to gain more traction once stricter environmental legislation is enacted.

Life-cycle costing allows public bodies to understand costs and benefits not only at investment level but also in relation to operational cost. For example the cost of organic produce is normally higher than conventional. Organic production (externalities) necessitates the building of soil fertility, higher standards of animal welfare, increased levels of biodiversity and other land use factors. Other operational considerations include segregation of organic produce from conventional produce at the point of service with resultant labour cost overheads. The Directive includes both direct and indirect costs in the LCC calculation, however perspective is important. LCC can be applied from both the user and/or societal perspective with vastly different results.

Each step in the simplified supply chain (Fig. 2) from point of extraction/harvest to disposal uses energy, and produces carbon or carbon equivalent gases. We can account for this carbon cost under the LCC approach.

If we were to examine the constituent ingredients in a ham salad sandwich (bread, butter, ham, lettuce, salt, tomato, mayonnaise, onion) as an example, we would cost each step in the process (based on its Greenhouse Gas (GHG) emissions (cost of energy or carbon) or some other factor (cost of disposal, delivery or storage cost), from inside, or outside the farm gate (dependent on what boundary conditions are set) to determine costs which will arise over the lifetime of the final product.

If, for the sake of this example, we set our boundary conditions at the farm gate, in other words, we negate all costs of production up to that point (i.e. the growing of the salad, the feeding of the pig, production of the butter and mayonnaise, salt and bread, the operation of machinery, or the farm labourer's time etc.) then following the schematic in Fig. 2 our cost calculation would include transport, processing, assembly/packaging, storage, costs of un-packaging/serving/consumption, and disposal. Within this bundle of processes there are opportunities to include/exclude (in other



FIG. 2

words, to treat a process as an externality). It is quickly apparent how complex the calculation can become dependent on the detail required.

The table below summarizes key environmental considerations during product life-cycle and their treatment under the EU GPP approach. Using the EU GPP approach offers opportunities to minimise environmental impacts.

KEY ENVIRONMENTAL IMPACTS DURING PRODUCT LIFE CYCLE	EU GPP APPROACH
<ul style="list-style-type: none"> • Energy used in farming, agricultural activities, food processing and facilities • Land use and land-use change (e.g. destruction of natural habitats, particularly forests and related CO₂ emissions associated with the production of feed, crops, fruits, vegetable fats, etc.) • Depletion of fish stocks and reduction of biodiversity • Production and use of fertilisers and pesticides • Water use and water pollution • Emissions of pollutants such as methane or nitrates from farming and agricultural activities • Disposal of waste 	<p>Selected approaches to minimise key environmental impacts during life cycle</p> <ul style="list-style-type: none"> • Organic food products • More environmentally responsible marine and aquaculture food products • Increased offer of plant-based menus • More environmentally responsible vegetable fats • Food and beverage waste prevention • Other waste: prevention, sorting and disposal • Energy and water consumption in kitchen

The order of impacts does not necessarily reflect their magnitude.

Source: European Commission (2019) GPP Criteria for Food, Catering Services and Vending Machines, Available at: <http://ec.europa.eu/environment/gpp>

LIFE-CYCLE ANALYSIS/ASSESSMENT (LCA):

Life-cycle Analysis is a methodology for assessing the total environmental impact of a product or service over its lifecycle. Life-cycle Analysis requires more specialist understanding as there is a requirement to analyse energy use at various stages of the process. Information from the LCA can

support GPP, however, it is important to understand that LCA is a *decision supporting tool* and ultimately it is not a *decision making tool*. The EU GPP criteria are based upon LCA studies for each of the covered product and service groups. These criteria have been adapted for the Irish market in EPA guidance.

A BRIEF NOTE ON TERMINOLOGY:

- Carbon dioxide (CO₂) emissions result from the burning of fossil fuels. Carbon dioxide is one of the primary causes of human-induced global warming. The amount of carbon dioxide emitted is normally expressed as **gCO₂** (grams CO₂)

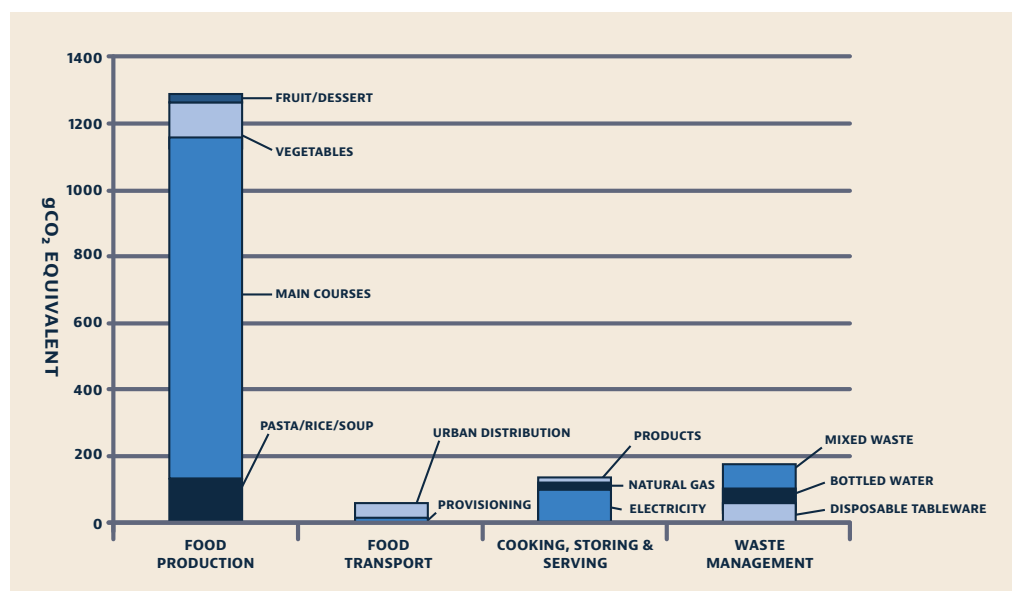
- The Organisation for Economic Co-operation and Development (OECD) defines **CO₂eq** as:

"Carbon dioxide equivalent is a measure used to compare the emissions from various greenhouse gases based upon their global warming potential. For example, the global warming potential for methane over 100 years is 21. This means that emissions of one million metric tons of methane is equivalent to emissions of 21 million metric tons of carbon dioxide."

LCA in Practice:

City of Turin (Italy) School District Catering Service¹¹

School catering represents a significant part of the procurement budget for the City of Turin. Approximately 8 million meals are delivered annually, with a total value of approximately EUR 40 million annually. The study determined that production of ingredients was the most significant contributor to the carbon footprint of the process.



BREAKDOWN OF CARBON FOOTPRINT IN THE FOUR LCA AREAS

- Food production – 78% of the carbon footprint
- Food Transport/Logistics - 3%
- Food handling/Storage - 8%
- Waste - 11%
- Electricity consumption in the cooking facilities and school canteens - 6%

MAIN COURSE	STANDARD MENU		NO MEAT MENU		NO MEAT OR FISH	
	gCO ₂ eq	% REDUCTION	gCO ₂ eq	% REDUCTION	gCO ₂ eq	% REDUCTION
CONVENTIONAL	1026.72	-	693.35	- 32%	468.80	- 54%
50% ORGANIC	981.04	- 4%	670.82	- 35%	438.33	- 57%
100% ORGANIC	935.35	- 9%	648.28	- 37%	407.85	- 60%

An interesting conclusion drawn was the impact of conventionally grown versus organically grown food, and the reduction of meat consumption as being *significant factors* in lowering the carbon footprint of the catered meals. There is a significant difference in gCO₂eq when a ‘Standard menu’ is changed to a ‘No meat menu’, and a ‘100% organic, No meat, No fish menu’. This resulted in a **60% reduction in gCO₂eq** emissions whilst a change in food production practices resulted in **11% reduction** in food waste.

When it comes to food, a perception of higher upfront and operational costs, legalities, and a limited knowledge of alternatives can act as a barrier to more innovative measures and greener solutions. However, in the Rotherham Hospital example described further on we will read that the setting of ambitious environmental targets from the outset can have benefits for both the consumer and supplier.



A life-cycle analysis study undertaken by the University of Manchester¹² in 2017 examined 40 different sandwich types, recipes and combinations using life-cycle analysis. The study found that the highest carbon footprints were for sandwiches containing *pork meat*, and those containing *cheese or prawns*, with the most carbon intensive option being the *ready-made all-day breakfast sandwich with egg, bacon and sausage*. A typical breakfast sandwich generated 1441 grams of gCO₂eq or the equivalent of driving a car 20km. In the analysis agricultural production and processing accounted for 37-67% of the energy used across the sandwich types studied.

GPP in Practice:

Rotherham NHS Foundation Trust (UK) Catering Contract¹³

Rotherham Hospital is a 500 bed hospital in the north of England run by Rotherham NHS Foundation Trust (a Foundation Trust is a semi-autonomous unit within the National Health Service (NHS)), serving the greater Rotherham area, encapsulating a population of approximately 252,000 people.

Rotherham Hospital is a participant of the EU-funded **EcoQUIP** initiative whose mission is to improve the efficiency, quality and environmental sustainability of healthcare through innovation procurement, and the Trust is signatory to the **Down to Zero Initiative** and the **Towards Zero Carbon Catering Procurement Compact**.

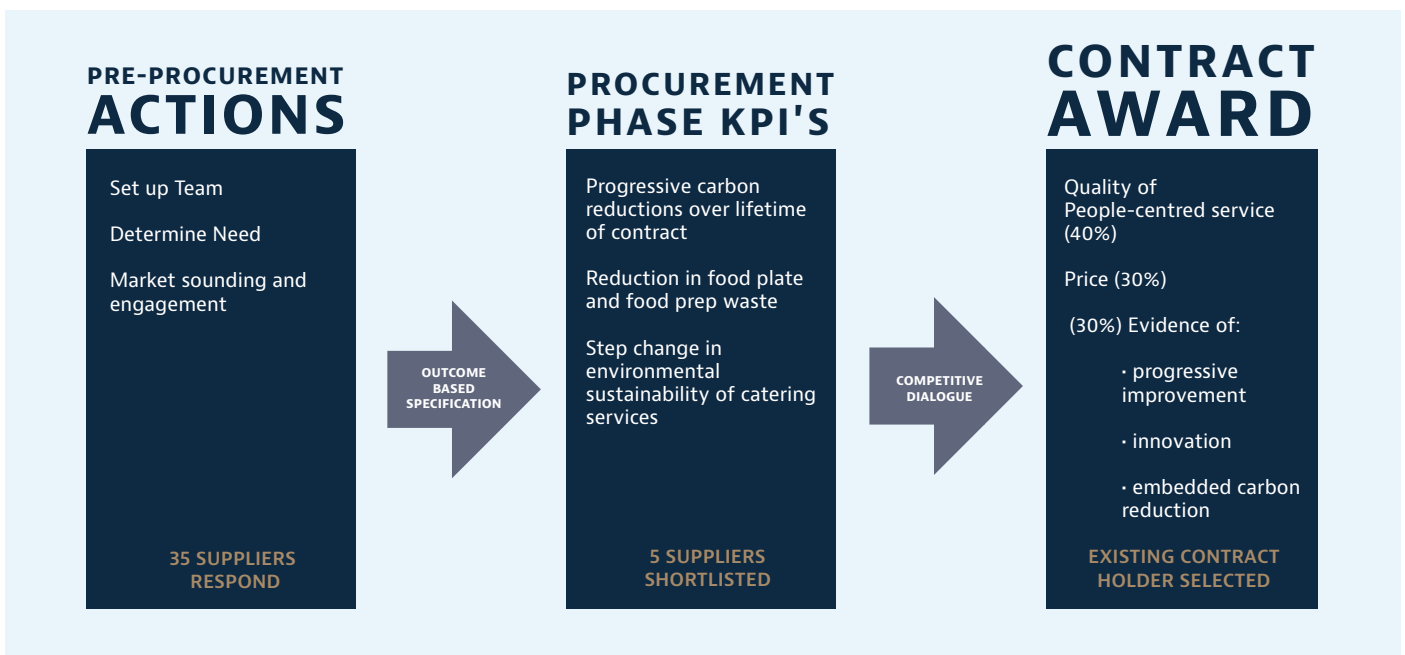
Rotherham NHS Foundation Trust required a *people-centred, low carbon healthcare catering solution* as part of a new five year catering contract, which was set to replace the existing fifteen year catering contract, which was about to expire. One of the goals set by the project sponsors was to adopt a progressive and pro-innovation approach outlined in the **Forward Commitment Procurement** model - it was conceived

and developed by the UK Government's Environmental Innovation Advisory Group to address market pull for environmental innovations and products. The Rotherham Hospital project highlights the other benefits of GPP. Apart from savings on energy there was also an overall improvement in quality and level of service from the winning supplier. By setting ambitious targets which were aligned with the Trust's goals for a more people centred and low carbon solution, the supplier who was awarded the contract continued to innovate in practice and service.

A WINNING FORMULA CONSISTED OF:

- Cross-departmental collaboration from project start
- Transfer of accurate information to all stakeholders in a timely manner
- Internal ownership of process and solution

GPP in Practice: Rotherham NHS Foundation Trust



GPP: Examining Opportunities in the Health Sector

The Rotunda Hospital Dublin



The Rotunda Hospital Dublin example could serve as a useful case study in how GPP measures could be rolled out across the Health Service Executive (HSE), and public sector organisations, by connecting improved health and wellness outcomes with cost saving and environmental benefits.

The Rotunda Hospital in Dublin is trying to change the perception around hospital food (Irish Times, December 9th, 2019). Locating satellite kitchens close to wards and using fresh ingredients on its menus has resulted in rave reviews from patients. A menu planning system and a highly trained team of chefs and caterers has meant various dietary requests can be met, healthy ingredients can be used, and food waste is being reduced. The article also mentions how the hospital has two or more meat-free days, which has helped reduce costs. It's a team effort from front line staff to back of house kitchen and catering, to the people who procure the food items, and the executive-level who empowered the change in the first place, but it serves as an example of systems thinking to effect positive system change.

Environmental benefits, with the exception of the reduction in food waste, are tangential to this example, and were not cited as being a primary rationale for process improvement. However, it is useful to note the similarities in the two examples – both hospitals strove to be more people centric, to lower cost, and to improve their environment. It would be interesting to know if the increased emphasis on fresh ingredients versus pre-packaged/prepared could have additional benefits, including; reduced energy use, reduced packaging waste, and/or an overall reduction in carbon footprint across the entire process.

We've read in the Rotunda example that an introduction of meat-free days has resulted in a reduction in costs. We could extrapolate that this also results in a reduction in environmental footprint. It could also be argued that healthier outcomes for patients and staff provide societal benefits.

As we've seen from the examples in this paper, meat ingredients contribute significantly more to GHG emissions than their non-meat equivalents. Limiting these ingredients, meat-free Mondays or dairy-free menu items for example, can save on energy use, environmental impact and also on costs over the lifetime of the product or service.



**THE FUTURE OF FOOD &
CATERING SERVICES**

CHALLENGES FOR THE FOOD & CATERING SERVICES SECTOR: GLOBAL

Emissions inside the farm gate, added to agricultural-land expansion to support the global food system, account for 16-27% of global GHGs. Emissions outside the farm gate account for 5-10% of total emissions.¹⁵

Across the food processing sector there are significant challenges. The default system of food production is resource intensive, and a large contributor to GHG emissions and water pollution, conventional (use of pesticides, herbicides, fungicides and fertilisers), and heavily processed (production of chemicals and mechanisation which requires energy inputs).

Conventional food production (especially meat and dairy) also uses significant amounts

of land and water, resulting in the destruction of natural habitats, forests and ecosystems.

In animal husbandry and aquaculture the use of antibiotics has become common place, with resulting impacts on the food chain. Meat processing is heavily resource intensive, inefficient and extremely damaging for the environment.

As we have seen from the City of Turin example, procurement choices can have a significant impact on the environment, from carbon footprint to energy and beyond, and can also have an impact on local livelihoods. Procurement of local, organic fruits and vegetables has a big impact on gCO₂e emissions levels.

The globalised food system is dependent on significant land and water use, and the environmental impact on both land and water is significantly increased through:

Use of pesticides, herbicides, fungicides, and chemical fertilisers (NPK- Nitrogen, Phosphorus, and Potassium) contribute to carbon emissions because they are derived from and/or use fossil fuels in production

Degradation and demineralisation of soil – soil is eroding at 20-100 times the rate that new soil is forming. Soil is a carbon sink, which means it can draw down carbon from the atmosphere.

The amount and type of waste produced (we currently waste, or lose due to spoilage, over one third of the food we produce - 1.3 billion tonnes of food is lost or wasted every year - contributing 8-10% of GHG emissions from 2010-16 as it decomposes).

Food, and its associated production, processing, transportation and storage activities account for 21-37% of global GHG emissions.





Public sector food and catering services will need to respond quickly to changing consumer behaviour and societal demands around environmental and health matters.

CHALLENGES FOR THE FOOD & CATERING SERVICES SECTOR: IRELAND

According to a recent EPA report¹⁶, agriculture uses over 67% of the land area in Ireland. If we are to address the impacts our food choices have on the environment, then we must also address how it is produced. Green Public Procurement of food and catering services can influence the conversation. We've already read that agriculture accounts for up to 27% of global emissions. In Ireland this figure is much greater, at 34% of national emissions followed closely by transport and energy at 21% and 20% respectively.

Agricultural emissions are expected to grow to 38% by 2030. This is not an encouraging trend. If we are serious about addressing GHG emissions at a national level then we must tackle how food is grown, processed, consumed and disposed of. Common Agricultural Policy reform and a European vision for net zero carbon by 2050 are two policy levers which will not only have an impact across industry sectors, but also have an impact on how food is sourced, and will have an impact on the public procurement of food and catering services. The projected growth in emissions closely parallels the expectations of the national Food Wise 2025 growth projections for the food sector to **€19bn per annum** in value by 2025, representing an **85% increase from the**

current three-year average. This export growth will be driven chiefly by expansion in dairy, beef, seafood and consumer food and drinks exports.

Food Wise 2025 also recognises the three pillars of sustainability - social, economic and environmental – the Climate Action Plan 2019 outlines five possible strategies to curtail GHGs in Agriculture:

- Improve manure management and nitrogen efficiency
- Improve animal production efficiency
- Increase afforestation
- Set up advisory board as single point of contact for farmers
- Invest in R&D focused on low-carbon agriculture

Food Wise 2025 and Ireland's Climate Action Plan will need to step hand in hand with Green Public Procurement if GHG's are to be curtailed.

Public sector food and catering services will need to respond quickly to changing consumer behaviour and societal demands around environmental and health matters.

OPPORTUNITIES FOR THE FOOD AND CATERING SERVICES SECTOR

Climate change-related events have the potential to cause significant disruption to agricultural, food processing, and food delivery supply chains. A new paradigm will require innovative measures to diversify from beef and dairy as the primary exports and dietary options on menus throughout the public sector. To reduce lifecycle costs and GHG's there will need to be a reduction in the use of chemical inputs (NPK) and fossil fuel-based energy inputs in food production and processing. A more environmentally-friendly and resource-efficient approach to food production will have a domino effect throughout the supply chain. This will be enhanced by concentrated measures within the public sector (such as GPP) driven by other policy levers at the EU level. It is essential therefore that the public sector in Ireland lead the way in green procurement.

LOCAL (REDUCED FOOD MILES) & ORGANIC FOOD

A rising demand for healthy food and drink especially in the education and health sectors is helping to move markets towards more organic and environmentally-friendly products and services. Organic farmland in the EU-28 reached 12.7 million hectares in 2015. This represents 6.2% of the total agricultural land available and is increasing at a steady rate annually. In Europe there are 350,000 organic producers, 60,000 organic processors and 3,700 organic importers.¹⁷ Because organic food production is more sensitive to natural resource constraints this shift in consumer demand produces greater environmental and more ethically-focused production and processing, higher animal welfare standards, less pesticide use, better air, soil and water quality, and lower GHG emissions. Cost of production is still high, due to lower volumes, but this dynamic will change once economies of scale are reached. Evidence of a narrowing price gap between conventional and organic produce can already be seen in countries which have a higher market share of organic products (Germany as an example).

System change is required if we are to achieve our Net zero Carbon goal by 2050



HEALTH & DIET

From a dietary and environmental perspective we will need to embrace more plant-based foods, such as those based on grains, legumes, fruits and vegetables, nuts and seeds, and more sustainable, low-GHG emission animal products.

Integrating health policies with public procurement, for example through hospital food management systems, government institutions and schools is one possible intervention which could yield a longer-term shift in dietary profiles with a more sustainable environment as a result.

DIVERSIFICATION & SOIL HEALTH

We don't have to look too far back in Irish history to know that a reliance on one variety of potato crop combined with climatic events had catastrophic consequences. The future of food is *diversification* and a shift away from monoculture. This will involve innovation in, and education of, consumers and producers about alternative foods for a climate challenged world. Consumers, including public sector food and catering services, will need to understand the true cost of the food choices they make, and that those costs must include the costs of negative environmental and societal impact.

TECHNOLOGY & FOOD OF THE FUTURE

Food has become industrialised with the result that we are increasingly disconnected from its source. Seasonality is also no longer a problem for the globalised food system. With the pressure on western diets to shift towards less meat and dairy there has been a growing interest in meat-alternatives and plant-based food. Meat-alternatives are already available (Impossible Foods™, Beyond Meat™, Quorn™) but a question remains over whether some, or any of these alternatives will reach a mass-market audience in time to prevent runaway climate change.

With the alarming rate of soil depletion innovators are pushing the boundaries of science through the exploration of aeroponics, aquaponics, hydroponics, and genetic modification. Scientists are looking to seed the deserts using nanoparticles, and one company has recently launched a spray to replace plastic packaging on food to extend its shelf-life. Public procurement must be open to these *environmentally-friendly alternatives* in food supply systems, but new technologies must come with certain caveats - due diligence will be required.

From a catering perspective there will be an increased focus on the use of renewable energy systems to provide electricity for kitchen equipment, storage, lighting and air handling. New technologies, such as improved LED lighting and automatic temperature control systems will also drive down overheads while having less environmental impact.

There is a millennial angst that not enough is being done to combat climate change, as well as a genuine concern for animal welfare and environmental preservation, and this is being reflected in food choices in recent years. A recent vote by Dublin City University (DCU) students union in favour of removing meat from canteen menus is a case in point. The university currently has over 17,000 students¹⁸ and staff on campus. Food & Catering Services will need to rise to this new challenge. GPP can guide the transition.



RESOURCE MANAGEMENT

WATER

Reducing water consumption and wastewater is a key objective of EU GPP criteria-set for the Food & Catering Services sector.¹⁹ Simple measures such as turning off taps, plugging leaks, ensuring components are fitted properly can all save water and reduce costs.

ENERGY

Refrigeration, heating/cooling, lighting, air conditioning

The number one cause of global warming is refrigeration and air conditioning²⁰. Since the invention of refrigeration we have globalised our food supply, with the result that it is now possible to ship products thousands of kilometers without any deterioration in quality. This revolution in the way we handle food has come at a significant cost in terms of GHG's and the environment.

At the kitchen level, food which was normally harvested and consumed on the same day, can now be kept for much longer, reducing spoilage. Where possible, fresh daily produce could be encouraged, removing the need for cold storage. Good kitchen management standards and menu-planning can ensure that refrigeration, lighting or reheating/cooling can be minimised.



TRANSPORTATION

Minimising the number of miles a product needs to travel from source to point of consumption can have a significant impact on GHG emissions and reduce its carbon footprint. Localising food suppliers and increasing the number of seasonal and plant-based menu items can also help reduce environmental impact and costs (meat and processed products are normally transported separately to fruit and vegetable products and require cold storage vehicles).

WASTE MANAGEMENT

The government has introduced a Stop Food Waste²¹ (www.stopfoodwaste.ie) campaign to encourage individuals and consumers to think before binning. According to its website, global economic losses associated with food loss, excluding seafood, are estimated to reach **€550bn a year**. In Ireland we waste over 30% of the food that we produce or over one million tonnes of food annually. This produces a cost burden on systems, and society in general.

Menu-planning can have a significant impact (as we've seen in the Rotunda Hospital example). If food is wasted it is imperative that it is properly disposed of, and/or composted. Food waste in the general waste stream contributes to GHG emissions.

INNOVATION & SUSTAINABILITY

Innovation and sustainability go hand in hand. Opportunity exists within public sector organisations to drive for more sustainable products and services. If this ambition is passed down the supply chain it will require suppliers to be more innovative in the delivery of their products or services. The result of such innovation will reduce both economic and environmental costs. Technological advances will provide greater visibility along the supply chain, reducing costs and time, and highlighting environmental concerns.

“There may be no such thing as food that is socially just, environmentally beneficial and cheap. But everyone prefers to spend less. So how do we economise without compromise?”

Maybe the simplest answer is to eat whole unprocessed food, and don't waste it ...”



Can food be socially just and cheap?

The Guardian, December 2019



CONCLUSIONS

The scientific consensus is that we will face increasingly negative consequences from the combined pressures of climate change, environmental degradation, and a growing global population.

Public sector spend across the EU-28 of goods and services creates significant leverage to shift actors in the marketplace away from unsustainable practices. This is especially the case for food, where solutions are as simple as; putting more value on the food we consume, wasting less, reducing packaging, using more renewable sources of energy in production and processing, creating more opportunities for organic and sustainable producers, localising supplies to reduce risk and improve livelihoods, and embracing technology to reduce input costs and improve efficiencies.

As we have seen from the City of Turin and the Rotherham Hospital example, there are real and tangible benefits to adopting GPP in practice in the Food and Catering Services sector. But there has to be a willingness to set ambitious goals and bring all stakeholders along in the process.

Given the framework of GPP, and the ambitious carbon pledges agreed by European governments (the Climate Change Advisory Council in Ireland has recommended a carbon tax of EUR 80 per tonne from 2030²², and Ireland’s commitment to the EU goal of Net Carbon Zero by 2050), opportunities exist to leverage GPP to:

Reduce Greenhouse Gas (GHGs) emissions, by reducing energy use, most notably farm inputs including; a reduction in fertiliser, pesticide, herbicide and fungicide use. It also requires better management of waste inside the farm gate and an optimisation of biomass.

Influence local, regional and international markets to increase public sector category spend in more sustainable product and service areas.

Reduce Water Footprint across the supply chain, from inside the farm gate to catering services and waste management.

Reduce packaging (especially plastic packaging).

Reduce Food Miles (localisation and using seasonal produce).

Reduce Food Waste - Canteens across the public sector waste on average **55kg of food per employee per year, or 165 euros/employee²³**. We need to reduce this waste ultimately to zero. Examining food labelling, better food management practices, avoiding spoilage are three pathways to this goal.

Improving Food Security (embracing more local produce and biodiversity) and socio-economic conditions (placing a better value on food to enhance agricultural livelihoods).

Increase innovation and research into more sustainable production systems and technology.

There are several other levers which could influence the adoption of more sustainable food systems at public policy level. There is opportunity for greater adoption of LCC/LCA methodologies. This will necessitate an increase in the number of knowledge experts, from engineers to scientists to support procurement organizations and decision-makers. If we are to meet the goals set out in the government’s (Ireland) Climate Action Plan of 2019, and the wider UN Sustainable Development Goals²⁴, to reduce our carbon footprint across the entire lifecycle of products and services then we must be ready to meet the challenge and think outside the box.



Change is already here. Public and private sector organizations must embrace this change, move first and move fast, or be willing to accept being left behind.

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