This discussion paper presents an analysis of a number of the key issues pertaining to food and food policy in the UK. It is not a statement of Government policy.
Introductory note

- This paper is a product of a Strategy Unit project that examined the trends shaping food consumption and production in the UK and their implications for society, the economy and the environment.

- It draws on extensive desk research and analysis as well as discussions within and outside Government; the analysis provided a resource for subsequent phases of the project, including consultations with key stakeholders.

- This August 2008 re-issue of the original January 2008 paper follows release of the project’s final report; it contains updates of some charts where new data have become available but is unchanged in structure.

- The final report of the project is available to download from the Strategy Unit website at www.cabinetoffice.gov.uk/strategy.

This analytical paper is a discussion document and not a statement of Government policy.
The analysis in this paper reveals a changing food culture in Britain that reflects today’s lifestyles and the interests of a more affluent society.

Changes in British society are revealed by the evolution of our food and food culture. In recent times, we have seen:

- A fragmenting market of more diverse, sophisticated and (on average) affluent consumers
- Lifestyle choices reflected: in a desire for convenience in how people shop, cook and eat; in eating out of the home more often; in increasing interest in the provenance and production of food; and in a widespread desire for healthier food options
- Globalisation of the cuisines and foods available reflecting the increasing diversity of the country, growing familiarity with foreign foods and openness to experimentation with new foods
Where, when and what people eat are changing, though on the latter good intentions are not always translated into action

Food has become more affordable and our food culture is becoming more aspirational
Consumers are increasingly wanting food to be healthier, more convenient and more ethical as well as to taste good
There is a gap between what people do and what they say. The intention-action gap is manifest in the positive attitudes to healthy eating and the environment not being matched by spending patterns
The gap is also evident in the rituals around food. People aspire to culturally desirable activities such as cooking a meal from basic ingredients and controlling children’s eating habits, but good intentions are not always put into practice

The composition of the British diet is changing; consumption of milk, fresh meat and potatoes has fallen over the past 30 years
Changes in total consumption per head per week in key food groups, 77-07¹

Meals are less bound to particular times - people are eating when and where it is convenient
% eating or drinking, in or out of home, by time of day, all days²

The £172 billion/yr UK food and drink chain encompasses several major service industries, the UK’s largest manufacturing sector, UK farming and UK fishing.

- The food and drink industry accounts for 7% of national output and provides 3.7m jobs, including a significant number of part-time jobs in retail and food services; spending on food alone is estimated to be worth £121 billion a year.
- Intense competition among a small number of supermarket firms creates forces that are transmitted down the grocery supply chain, including to an agriculture sector that is in the process of re-connecting to consumers and to markets as CAP reform continues.
- People are eating out in a wide range of places, from gourmet to take-away, supporting a vibrant food service sector.
- Public sector food services procurement in England and Wales is worth £2bn, providing over 1 billion meals a year.
- A small proportion of the UK’s food comes from the developing world but the livelihoods of a large number of people are dependent on that trade.

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Local, UK, EU and global markets shape the system that supplies our food

In a mature market, large retailers have looked to expand into convenience stores, non-food sales and overseas to maintain growth.

Vigorous competition among the supermarkets has seen their market share grow and their influence extend down the supply chain.

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Vigorous competition among the supermarkets has seen their market share grow and their influence extend down the supply chain.

CAP reform and high international commodity prices create opportunities for some farmers but problems for others, as the farming sector responds to the challenge of reconnecting to consumers.

With many EU fisheries over-exploited, imports and aquaculture are key to servicing demand.

Convenience stores have responded to pressure from large retailers by forming ‘symbol groups’, sharing common branding and economies of scale.

Buyer groups have also formed to increase buying power.

Manufacturers face challenges of maintaining international competitiveness and innovating for growth.
Growth in food imports is a consequence of consumer choice and of more integrated food markets, access to which keeps food available to consumers when UK supplies fail.

The high self-sufficiency rates of the 80s and 90s were an artefact of the CAP’s emphasis on output at that time.

There is a strong case that the UK’s self-sufficiency in food is a better indicator of producer competitiveness and consumer demand, e.g. for exotic food and year-round availability of seasonal produce, than of national food security.

Connection into international markets also helps to maintain continuity of supply when domestic output is interrupted.

But there is a legitimate public policy interest in the resilience of the logistic systems and infrastructure that support the UK’s food supply chain, and in good contingency planning.

Climate change is expected to impact on food production in the decades ahead via changes in temperature, rainfall and increased frequency of severe weather events; for instance models predict lower rainfall around the Mediterranean.

In value terms, self-sufficiency peaked in the early 90s and has since declined.

The share of UK food imports sourced from Europe has risen.

The UK’s largest trade gap in food commodities is in fruit and vegetables.

The share of UK food imports sourced from Europe has risen European Free Trade Agreement (EFTA) countries as % all UK food imports.
Global food markets have entered a period of higher prices and increased volatility after a decade or more of relative stability

Total agricultural output has grown faster than world population between 1960 and 2000
World agricultural production and population 1961-2005

Recent price changes have been largest in dairy, significant in cereals and oilseeds but meat commodities are little changed
FAO monthly price index data

Production of ethanol and biodiesel is projected to increase dramatically under current policies
Ethanol and biodiesel output, billion litres

- After a long period of declining real prices, key agricultural commodities prices increased markedly in 2006-7
- Contributory factors include higher energy costs, robust global demand for food and animal feed (especially in Asia), policy reforms (e.g. to the EU’s CAP, lowering stocks) and some poor harvests due to drought (e.g. in Australia)
- Higher food prices can affect general inflation in the UK, but have a greater impact on the urban poor in developing countries who spend a much larger share of their income on basic foodstuffs, prompting concern about social unrest
- Grain stocks are at historically low levels and though farmers are expected to respond to price signals by increasing output, commentators see the world entering a period of higher average prices and greater volatility in food markets
- The FAO, IMF and others have highlighted that wealthy nations’ biofuel policies are set to have impacts on arable farmers’ cropping decisions, on livestock farmers (via feed prices) and to result ultimately in higher food prices

Transport is the biggest user of energy in the food chain but farming, particularly livestock production, is the single largest source of greenhouse gas emissions and also of water pollution.

Research suggests transport is the largest single user of energy in the UK food chain. Energy use in the UK food chain, excluding packaging, catering and domestic cooking:

- Food & beverage industry: 27%
- Retailing: 17%
- Distribution centres: 1%
- Agriculture: 8%
- Food transport: 47%

The external costs to society of food transport extend well beyond the cost of its GHG emissions.

- Infrastructure: £0.9bn
- Accidents: £1.2bn
- Air quality, noise & climate change emissions: £0.74bn
- Congestion: £3bn

Most of the non-farm waste in the food chain appears at the point of consumption.

Non-agricultural waste arisings for England, million tonnes:

- 1.2 - Hotels & Restaurants
- 6.6 - Food Manufacture
- 0.4 - Retail (food only)
- 5.2 - Consumers (packaging)
- 6.7 - Consumers (food)

The food chain’s environmental impacts include nationally significant contributions to greenhouse gas emissions, the production of packaging and other waste, and habitat and biodiversity loss both here and abroad.

- Livestock production has a disproportionate impact on greenhouse gas emissions, land use and water pollution.
- Farming can have positive and negative impacts on the UK’s landscape and broader environment.
- Fish stocks continue to suffer from over-exploitation and poor fishing practices.
- Research on life cycle impacts of a range of food products shows that the argument that local food has less environmental impact is weak and that global sourcing can be better for some foods.

1: AEA Technology plc (2005), The Validity of Food Miles as an Indicator of Sustainable Development; 2: ibid, estimating costs at £5.9bn, or £5.5bn excluding CO2 eq; 3: All figures Defra/SU estimates, using statistics from EA/WRAP/ONS; 4: Manchester Business School (2006) The environmental impacts of food consumption and production.
The benefits to the UK of a healthier diet - in terms of health and well-being, national output and a lower burden on public services - are compelling

Lifestyle-related ill health is caused by a combination of factors that include smoking, exercise and - as this report explains - diet

- Diet influences risk of cancer and cardiovascular disease – saturated fat, salt, fruit and vegetable intake being key issues
- Studies have estimated that food-related ill health cost the NHS £6 billion each year (9% of its budget) and that malnutrition (mainly in the elderly) costs public services £7.3 billion
- Obesity, which is a risk factor in a number of serious health conditions, is projected to increase significantly in the years ahead – with impacts on health and well-being, NHS costs, state benefits and the economy
- Children are probably the most vulnerable and at highest risk of significant future diet-related ill health

Modelling suggests that a shift to the recommended balanced diet could yield significant health and economic benefits

Avoided premature mortality and quality adjusted life years gained, UK

<table>
<thead>
<tr>
<th>Diet Recommendation</th>
<th>Premature Mortality Avoided</th>
<th>Quality Adjusted Life Years Gained</th>
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<tbody>
<tr>
<td>Increase fruit and vegetable intake by 136g/day</td>
<td>42,000</td>
<td>411,000</td>
</tr>
<tr>
<td>Reduce daily salt intake from average 9g to 6g</td>
<td>20,000</td>
<td>170,000</td>
</tr>
<tr>
<td>Cut sat fat intake by 2.5% of energy</td>
<td>3,500</td>
<td>33,000</td>
</tr>
<tr>
<td>Cut added sugar intake by 1.75% of energy</td>
<td>3,500</td>
<td>49,000</td>
</tr>
</tbody>
</table>

Maintenance of food safety underpins public trust and confidence in the UK’s food – there is progress but more to do

In 2006, 600-700 people died as a direct result of something they ate – mostly due to food poisoning
Deaths directly attributable to food, UK, 2006¹

Campylobacter are the commonest cause of food poisoning but other bugs cause more deaths
Food-borne illness health risks – estimated number affected, UK, 2005²

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Estimated cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campylobacter spp.</td>
<td>295,500</td>
</tr>
<tr>
<td>E.coli O157</td>
<td>1,100</td>
</tr>
<tr>
<td>Listeria monocytogenes</td>
<td>400</td>
</tr>
<tr>
<td>Salmonellas, non-typhoidal</td>
<td>33,400</td>
</tr>
</tbody>
</table>

New cases of BSE have fallen from 37,000/yr at the peak of the epidemic to 67 in 2007
BSE confirmed cases³

Despite progress in tackling food-borne diseases, there are still thought to be hundreds of thousands of cases of food poisoning each year, and there is still significant microbiological contamination in the food system; the trend towards eating out could increase exposure because food poisoning events are commonly traced to catering establishments.

Contaminated food can present a risk to the consumer, and a complex and lengthening supply chain poses considerable challenges for traceability and monitoring, particularly of imports.

Diseases that potentially could spread from livestock to people (e.g. avian flu) are a matter of concern and require ongoing surveillance.

The analysis in this paper maps the key trends in the food system, the drivers behind them and the issues arising.

**Consumer Demand**
- Spending a smaller share of incomes on food
- Increasingly sophisticated purchasing
- Eating out more

**The UK Food Chain**
- Increasingly dominant retail sector
- Increasing variety of places to eat out
- Employment concentrated in retail and services rather than farming and fisheries

**Global Markets**
- Increasing commodity prices having the greatest impact on developing countries
- Population and income growth underpinning demand for food
- Biofuels manufacture set to take a rising share of US & EU grain output

**Health**
- Excessive fat, salt and added sugar in UK diets but not enough fruit and vegetables and oily fish
- Obesity increasing
- Emergence of diet-related ill health among children, e.g. diabetes

**Safety**
- Falling incidence of food borne illnesses
- More reported food allergies
- New challenges in a lengthening supply chain

**Security**
- Europe’s share of UK food imports rising
- Resilience of supply chains a key issue
- Greater risk of climate change impact on developing countries
- Fewer UK households are going hungry

**Environment**
- Food chain has a high share of UK greenhouse gas emissions
- Concentration of environmental impacts around livestock production
- Food travelling further
- Global fish stocks declining

**Executive Summary**
It shows that the sustenance, enjoyment, wealth and employment provided by our diet are accompanied by large environmental and health costs.

The current costs of diet-related ill health to the NHS and society at large are probably in excess of £10bn/yr\(^1\) and growing. We are foregoing the health benefits that come with reaching dietary targets for salt, sugar, fruit & veg, and saturated fat – to the tune of ~£20bn/yr\(^2\).

The external costs to the environment of UK food chain include damage due to greenhouse gas emissions (£2.9bn/yr\(^3\)) and cost attributable to food transport (£5.5bn/yr\(^4\)).

There is a number of areas where the current debate on food may need to be refocused or refined

- The **public health** and diet challenge is urgent, compelling, and goes beyond obesity
- The diet of the nation and our **food culture** should be considered in the round
- The full **climate-related impacts of farming**, and especially livestock and dairy, warrant much more attention – we need to look beyond CO₂
- The **food transport** debate should perhaps focus more on the domestic agenda, including efficiency and congestion
- OECD country policies on **biofuels** could have unintended consequences for food-importing developing countries and poor urban populations around the world by contributing to higher food prices
- Policies directed at food and diet need to recognise the scale and significance of **food services** and the growing propensity to eat food out of the home, alongside food bought for the home in supermarkets
- Resilience is a more productive focus for **food security** concerns than self-sufficiency
- The **external costs** of the food chain, in terms of the direct and indirect health and environment effects of current consumption patterns, are significant relative to the economic output of the UK food chain, and in absolute terms
Supporting citizens’ aspirations for better food could help to deliver much-needed, long term changes in the way that our food system operates for consumers and producers

- Price still matters to many, and prices can rise, but the typical UK consumer can today access a greater diversity of food more affordably than ever before
- Consumption of food has external costs:
  - To the UK and global environment from unsustainable resource use, pollution and greenhouse gas emissions associated with food production;
  - To health services and society in managing the consequences of poor diet
- And looking forward, we face twin threats:
  - That existing patterns of food production are not fit for a low-carbon, more resource-constrained future;
  - That existing patterns of food consumption will result in our society being loaded with a heavy burden of obesity and diet-related ill health
- Interest in these issues among many consumers is high and growing
- And there are opportunities to better join up responses to the different issues

Food has never been more affordable but affordability cannot be taken for granted

There is growing consumer interest in the quality of food, its provenance and its impacts on ourselves and on the planet

For our health, most of us do not need to eat more, but do need to eat better

There are gaps between how we act as consumers and think as citizens

The challenge ahead:
Are there things government can do to help close that gap and foster a system that delivers greater benefits with lower external costs to society and the environment?
Contents

Executive Summary

1: Introduction

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5: Food security

6: Food and the environment

7: Diet and health

8: Food safety
This paper is the scene-setting report for a cross-Whitehall Strategy Unit project on food and food policy

- The Prime Minister asked for an analysis of issues in food and food policy

- The work was led by the Strategy Unit, working with Defra, the Department of Health, the Food Standards Agency and other departments

- The project examined current and emerging trends in the production and consumption of food, the key drivers of those trends and the implications for the wider economy, society and the environment

- It considered the opportunities and challenges facing the food system, including issues such as diet's contribution to public health, food safety, changing consumer tastes and preferences, and environmental sustainability

- In the first instance, the focus of the work was analytical rather than policy focused but later phases explored the wider policy implications, including through continuing consultations with key stakeholders
The focus of the analysis is the consumption of food in the UK, and its production here and abroad

- The paper provides a description of the UK’s food market, setting out the key facts, trends and drivers to inform discussion in later stages of the project

- It is not intended to be a comprehensive inventory of all food matters of public, industry or government concern - in addressing such a large and complex area any such analysis has to be selective

- It draws on desk research and analysis as well as discussions within and outside Government, and will be tested and developed in further stakeholder consultations in later project phases

- The report takes a food-focused, UK-wide perspective; where data relate to part of the UK only, or include drink and other groceries as well as food, this should be clear from the text

- Our primary focus is food in the UK rather than the challenges of global hunger and malnutrition

- This paper does not discuss matters of governance or public policy – these are explored in later work
This paper seeks to explain the dynamics within individual parts of the food system and to identify tensions, common themes and implications for future work.

- Changing patterns of food culture and consumer trends over time and across society are key to understanding the demand side of the food system.

- On the supply side, our aim is to explore how consumer demand has combined with market competition, technological change and globalisation to shape the food supply chain.

- We also examine the social, health and environmental issues raised by the consumption and production of food.

The report examines the trends and drivers that affect the consumption and production of the UK’s food, and the consequences of the food choices that we make – for ourselves, society, the economy and the environment.
Each of the chapters in this report covers a component of the food system or one of the major issues of interest.

The chapters that follow explore the trends and issues in different parts of the food system.
Part 2 – Consumer demand

Executive Summary

1: Introduction

2: Consumer demand

3: The UK food chain

4: Global markets

5: Food security

6: Food and the environment

7: Diet and health

8: Food safety

- The UK’s food culture is becoming more aspirational
- There is increasing demand for food to be healthier, more convenient and ethical as well as to taste good
- There is a gap between what people say and what they do. The intention-action gap is manifest in positive attitudes to healthy eating and the environment not being matched by spending patterns
- The gap is also evident in the rituals around food. People aspire to culturally desirable activities such as cooking a meal from basic ingredients and controlling children’s eating habits, but good intentions are not always put in to practice
Our choices about what and how we eat are everyday expressions of our wealth, our aspirations, our tastes and our politics

<table>
<thead>
<tr>
<th>Food as an economic choice</th>
<th>Food as an expression of identity</th>
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<tbody>
<tr>
<td>Food has become progressively more affordable, though this trend has been stalled by recent price rises. Some data suggest the UK consumers spend less on food than those in other major Europeans nations. In the past, this may have reflected the low cultural significance of food and diet or unwillingness to pay for better food, but this is changing. Food choices are always shaped by what people can afford, particularly for those on low incomes, but getting value for money is no longer about paying the lowest price regardless of quality. More people are prepared to pay a premium for better food whilst at the same time not putting up with poor quality, whatever the price.</td>
<td>Our food reflects our identity. The food industry meets our aspirations for indulgent eating as well as providing convenience and healthy options. There is growing enthusiasm for farmers’ or traditional street markets, organic, local and seasonal food, and assured provenance from Britain, France and Italy for example. Enthusiasm for British food and cooking sits alongside our desire for foods and cuisines from around the globe, reflecting both a multi-cultural society and one in which travelling abroad has become commonplace.</td>
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<table>
<thead>
<tr>
<th>Food as political choice</th>
<th>Food as leisure and pleasure</th>
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<tbody>
<tr>
<td>The coverage given to food related issues in the news, in popular books, by NGO campaigns and increasingly in public policy, illustrates the growth of food politics. This is a politics where the votes are more often cast at the checkout than the ballot box. To buy fairtrade, local or free range is to make a statement of personal principles as well as a matter of taste, and it is a vote that can be registered each and every week.</td>
<td>A resurgence of interest in cooking at home is shown in the TV schedules, cookbook sales and consumer surveys. At the same time food, is a key part of our leisure time and we are eating out more often, and claiming to want to and be able to cook from scratch. It is no longer unfashionable to cook or want to learn how to cook. But this trend can be at odds with desires for convenience, or intentions to make ethical or healthy choices or indeed an ability to cook.</td>
</tr>
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</table>
UK consumers are spending a smaller proportion of their income on food than ever before and allocating a greater share of that outlay to eating out of the home.

UK spending on food has increased 5-fold in 30 years while national disposable income has increased 12-fold\(^1\)

Comparison of gross disposable income and expenditure on food, UK, current prices

So the average share of gross income spent on food is now lower than ever before

% Gross income spent on food in UK at 2005 prices (£)\(^1\)

The long term decline has been stalled by recent price rises

Consumers spend less of their income on eating in the home than they did over 40 years ago – but roughly the same on eating out

Consumer expenditure as proportion of household expenditure 1964-2006, %, 2003 prices\(^2\)

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Food has become steadily more affordable, though over the past year many food prices have increased

- Food has become more affordable and cheaper in comparison to other goods and services. Food prices have risen over recent years, but (until recently) at a rate far lower than the RPI. The incomes of the lowest quintile have grown faster than food price inflation.
- But the basket of food in the RPI rose in price by 6.9% from April 2007 to April 2008. The basket of good for low income households, which includes more bread and cereals and less fruit rose in price by 7.0%.

For low income households, spending on household food decreased nearly 3% between 2001 and 2005 but spending on eating out increased by 8%.

For high income households, spending on household food and on eating out both decreased slightly over the same period.

Real incomes for the poorest 20% rose relative to food prices between 1998 and 2005; food prices rose by less than prices of other goods
Index of income and prices, 1998 = 100

![Graph showing index of income and prices]

More recently the CPI basket of food prices has risen, putting upward pressure on overall inflation in the economy
Changes in Consumer Price Index (CPI) (2005=100)

![Graph showing changes in CPI]

We spend most of our food budget on food for the home and are putting more pre-prepared foods in our shopping baskets than 30 years ago

Over a third of the weekly household food budget is spent on meat and dairy products
Breakdown of the weekly food budget, %

- Meat: 23%
- Milk, cheese and eggs: 12%
- Other food and drink: 18%
- Bread, flour, cereals, cakes, and biscuits: 19%
- Fruit and vegetables (fresh and processed): 18%
- Fish: 5%
- Potatoes (fresh and processed): 5%

Consumption of milk, fresh meat and potatoes has fallen over the past 30 years
Changes in total consumption of key food groups over the last 30 years

The British are eating more pre-prepared foods, such as ready meals and shop-bought pizzas
Consumption of processed foods, 1977-2007, grams per week per person

Price still matters, but consumers have become more sophisticated and diverse in their food interests

Industry insiders see health and wellbeing, convenience and quality as the key consumer trends shaping the market, and price as the least significant.\(^1\)
Survey of 77 industry executives - % identifying key trends

<table>
<thead>
<tr>
<th>Factor</th>
<th>2000</th>
<th>2002</th>
<th>2004</th>
<th>2005</th>
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<tbody>
<tr>
<td>Price led</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiential</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brand led</td>
<td>14%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic</td>
<td>16%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ethical</td>
<td>26%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Snacking</td>
<td>26%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshness</td>
<td>26%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating out</td>
<td>28%</td>
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<tr>
<td>Indulgence</td>
<td>30%</td>
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<td></td>
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<tr>
<td>More informed</td>
<td>39%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authenticity</td>
<td>39%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>40%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenience</td>
<td>42%</td>
<td></td>
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<tr>
<td>Health</td>
<td>77%</td>
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Younger shoppers, those with larger households, those in social classes D and E are more price conscious.

A range of factors determine peoples’ food choices, with price still considered important.
% Agreeing factors that are ‘very important’ or ‘somewhat important’\(^2\)

<table>
<thead>
<tr>
<th>Factor</th>
<th>2000</th>
<th>2002</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taste/Flavour</td>
<td>98%</td>
<td>94%</td>
<td>93%</td>
<td>92%</td>
</tr>
<tr>
<td>Price</td>
<td></td>
<td></td>
<td></td>
<td>82%</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
<td></td>
<td>74%</td>
</tr>
<tr>
<td>Nutrition</td>
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<tr>
<td>Trusted brand</td>
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<tr>
<td>Ease of preparation</td>
<td></td>
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Shoppers’ choices are not necessarily “value-consistent” as trade-offs are made between convenience, ethics, price, etc.

% Agreeing with the statement “I look for the lowest possible prices when I go shopping” \(^3\)

More people are now prepared to pay a premium for quality, provenance, production values and brand

- The supply of and demand for premium products is increasing. Such ‘premiumisation’ allows manufacturers and retailers to differentiate their products and it leads to more varieties of the same commodity or product in the marketplace

- Product lines differentiated by quality (economy, standard, best etc.) help to maximise revenue from consumers on a range of incomes

- 27% of consumers in one survey said that if they had more money they would trade up to better quality items or spend it on treats\(^1\) and research suggests that women, those in AB social group and those between 45-64 are more likely to demand premium product lines\(^1,2\)

- The confidence inspired by premium products is a key motivator for purchasing, along with the notion of higher quality – that premium products will deliver something better than the mainstream\(^3\)

<table>
<thead>
<tr>
<th>Better quality, brand names and free range are key premium attributes but local and fair trade are increasing in importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of those surveyed prepared to pay a premium for the following characteristics(^2)</td>
</tr>
<tr>
<td>Produce from a certain country</td>
</tr>
<tr>
<td>Own Brand</td>
</tr>
<tr>
<td>Fair trade</td>
</tr>
<tr>
<td>Local</td>
</tr>
<tr>
<td>Organic</td>
</tr>
<tr>
<td>Free Range</td>
</tr>
<tr>
<td>Brand</td>
</tr>
<tr>
<td>Quality ingredients</td>
</tr>
</tbody>
</table>

More consumers want to know where their food is from, with local food in higher demand than ever before

- It is difficult to estimate the size of the ‘local’ food market as there is no agreed UK or EU definition for the term
- One survey estimated the turnover of the UK regional food sector at £5bn. It also noted that the sector grew by 30% between 2003 and 2006 and now accounts for 7% of total turnover of food and drink manufacturing in England
- 71% of respondents in one survey said they would rather buy products that were grown or produced locally
- Motives are mixed – but perhaps more about solidarity with local producers than cutting carbon emissions

The farmers’ markets trade association defines local as a geographic boundary, often a 30 to 50 mile radius

In one recent survey 40% of respondents saw ‘local’ as food from within a 10 miles radius of their home

Definition of ‘local’ that best fits respondents’ understanding of the term ‘local food’ (%)

- My county: 20%
- My or neighbouring county: 15%
- Within a 10 mile radius: 40%
- Other or don’t know: 5%
- My region: 20%

The importance of ‘Country of Origin’ labelling is increasing for products such as meat, fruit, vegetable, fish and cheese

Importance of Country of Origin, %

<table>
<thead>
<tr>
<th>Importance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very important</td>
<td>25%</td>
</tr>
<tr>
<td>Quite important</td>
<td>29%</td>
</tr>
<tr>
<td>Not important</td>
<td>27%</td>
</tr>
<tr>
<td>Not important at all</td>
<td>19%</td>
</tr>
</tbody>
</table>

Older people and AB social groups are more likely to want to know country of origin

Reasons for knowing country of origin are: to buy from a specific area (32%), supporting UK food (16%) or local food (14%)

There is a resurgence of interest in seasonal food, with two-thirds of people now taking steps to buy seasonally

The same survey found that the main reason for buying local food was to support local businesses

Reasons why it is important to buy local food (%)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports local businesses</td>
<td>57%</td>
</tr>
<tr>
<td>Supports local economy</td>
<td>51%</td>
</tr>
<tr>
<td>I know where the producers are</td>
<td>18%</td>
</tr>
<tr>
<td>Fewer air miles</td>
<td>12%</td>
</tr>
<tr>
<td>Produce is fresher</td>
<td>11%</td>
</tr>
</tbody>
</table>

The increasing demand for ethically produced foods is illustrated by the market success of fairly traded and ‘free range’ products

Sales of ‘ethical food’, including organic, Fairtrade, free range and Freedom Foods (a RSPCA assurance scheme for high animal welfare standards) are increasing but still only account for 5% of the typical shopping basket

Ethical food retail sales, UK, 1999-2005

- The main reason for buying ethical food products is to ‘make a difference’
  - % Agreeing with the following statements, 2006, 2
    - Important to make a difference: 32%
    - To support a sustainable future: 16%
    - I just happen to like that product: 16%
    - Better quality than standard products: 14%
    - It makes me feel good about myself: 12%

- But in this survey 51% also thought ‘ethical’ products were too expensive

- Ethical consumerism is growing and consumers are now more aware of issues around food production (often highlighted by media attention). Food choices are key to individual expression of political and altruistic choices
- People buy ethically sourced products to meet health, sustainability and quality needs. Everyday food purchases are now more likely to chosen on ethical grounds, and people are more likely to make ethical choices about food rather than clothing or other household goods
- Fairtrade is a scheme that enables registered producers to receive a minimum price for their products that covers the cost of production plus a premium that is invested in the local community; in recent research 18% of shoppers considered Fairtrade to be an attribute of a premium good and 11% were willing to pay more for products that are Fairtrade

Consumers are increasingly concerned about environmental issues relating to food, particularly packaging

Although climate change remains the top environmental concern for consumers, packaging waste is rising up the agenda

Environmental issues that concern people the most, %, 2007

<table>
<thead>
<tr>
<th>Issue</th>
<th>February 2007</th>
<th>July 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate change</td>
<td>43%</td>
<td>33%</td>
</tr>
<tr>
<td>Packaging waste</td>
<td>30%</td>
<td>22%</td>
</tr>
<tr>
<td>Pollution</td>
<td>15%</td>
<td>17%</td>
</tr>
<tr>
<td>Pesticides</td>
<td>7%</td>
<td>5%</td>
</tr>
<tr>
<td>Food miles</td>
<td>3%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Consumers are prepared to give up packaging to be kinder to the environment, but still value the protection and hygiene that packaging provides

Aspects of packaging that people would be prepared to give up if that meant it would benefit the environment, July 2007

- 69% of consumers would give up appearance
- 56% would give up convenience
- 49% would give up storage
- 47% would give up transport at home
- 29% would give up information
- 28% would give up preserving
- 21% would give up hygiene
- 18% would give up protection
- 5% would give up none of these

- Domestic recycling rates have increased from 11% in 2003 to 27% in 2006 and consumers are becoming more aware of the packaging around the products they buy
- In one recent survey, 62% of those questioned wanted retailers to reduce packaging and 67% wanted them to use more recyclable packaging
- In another 2007 survey:
  - 94% of people said they regularly recycle paper, 85% glass and 81% cans; only 3% claimed not recycle anything
  - 65% of consumers said they would switch to another brand if the alternative had less packaging or if the packaging was recyclable

Organic food illustrates the complex mix of beliefs, access and availability issues that shape food choices today

20% of consumers in one survey thought organic food was healthier and safer
% agreeing with statement, 2006

- Helps the environment
  - 15% buys organic
  - 1% never buys organic
- Tastes better
  - 17% buys organic
- Healthier
  - 20% buys organic
- Safer
  - 20% buys organic

20% of consumers in one survey thought organic food was healthier and safer
% agreeing with statement, 2006

- It's too expensive
  - 34% never buys organic
  - 55% buys organic
- I'd buy more if it was cheaper
  - 15% never buys organic
  - 49% buys organic

In various surveys, personal health is a strong motivating factor for purchasing organic food, but altruistic motives, such as concerns for the environment and animal welfare, are becoming more important.

One survey found that the perception that organic food is better for the environment than non-organic food has increased in recent years.

Scientific evidence differs on whether organic food has higher levels of nutrients and antioxidants, and whether it offers health and environmental benefits.

Research suggests consumers of organic food have more complex belief structures than other shoppers; the latter tend to see organic food as too expensive and prefer to save resources for other things.

Belief structure for organic consumers in Britain

- Associates organic food with:
  - Naturalness
  - No Pesticides
  - Better taste and quality
  - Health
  - Long life
  - Good for children
  - Family welfare
  - Value for money
  - Enjoyment

Consumers are becoming more health conscious and demanding healthier food, for which some are also prepared to pay more

Many people agree strongly with statements about the importance of healthy eating, healthy eating on a budget and parental strictness over children eating healthily

1. % slightly or strongly agreeing with the following statements, 2007

- Eating healthily is very important to me: 87%
- Parents should be strict with children and make them eat healthily: 86%
- Even if you are on limited budget you can still eat healthily: 87%
- I'll make time so I can cook proper meals: 76%
- I really enjoy cooking: 67%
- I would like to have more information about the food that I buy: 55%

People avoid foods for many reasons – allergies, religion, weight loss, and medical reasons. For medical reasons, people principally avoid fat, sugar and salt

2. % claiming to be trying to reduce their consumption, 2007

- Food containing fat (e.g. fried foods, crisps, butter, mayonnaise): 20%
- Food containing sugar (e.g. biscuits, sweets, chocolate): 24%
- Salt (either in food product, added in cooking or added at the table): 13%
- Drinks containing sugar, e.g. in tea/coffee: 33%
- Drinks containing added sugar: 9%
- Ready meals: 12%
- Foods high in additives, preservatives or e-numbers: 8%

16-25 year-olds were less likely than all other age groups to be trying to reduce or avoid fatty foods or salt

- People increasingly want to eat more healthy, natural products and consume less fat, and fewer artificial ingredients and preservatives
- One recent survey found 36% of shoppers were willing to pay extra for healthier products. 17% considered premium products to be those which have added health benefits

There is a greater demand for dietary supplements as well as for foods that deliver specific health benefits

- ‘Functional foods’ – such as pro-biotic yogurts, and breads, milk and spreads fortified with omega-3 fatty acids – claim to have health-promoting benefits and/or disease-preventing properties over and above their usual nutritional value
- Products variously claim to benefit a range of conditions affecting functioning of the gut, heart, the immune system and bones as well as weight control
- 65% of consumers in one survey believed that certain foods have health benefits that go beyond basic nutrition, like a medicine, but fewer believed they can treat or cure a condition
- Products with weight control benefits are expected to gain ground as obesity rates increase

The functional foods market is currently worth £1.7bn¹

Estimated and forecast market for UK functional food and beverage products 2000-2007, sales

Sales of dietary supplements are growing while the market for vitamins is in gradual decline²

Sales of vitamins and supplements 2002-2006, retail value £m

Attitudes to healthy eating are reasonably consistent across society, but a significant minority are not taking on board the messages on dietary health.

Attitudes to healthy eating are broadly similar regardless of social class and income

<table>
<thead>
<tr>
<th>Statement</th>
<th>All</th>
<th>DE Social Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid eating fat for medical reasons</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>You can eat healthily on a budget</td>
<td>54%</td>
<td></td>
</tr>
<tr>
<td>Hard to tell if food is healthy from the label</td>
<td>18%</td>
<td>16%</td>
</tr>
<tr>
<td>Eating healthily is important to me</td>
<td>89%</td>
<td>85%</td>
</tr>
</tbody>
</table>

But there may be some gaps in knowledge. In one recent survey fewer people in DE social class knew how many portions of fruit and vegetables they were meant to eat a day

| Social class | AB 85% | DE 63% |

About a third of consumers in another survey ‘didn’t care’ about health issues

% Based on cluster analysis of responses to a range of questions on food, diet and health, 2006

- This group’s only gesture towards healthiness is eating more fruit and vegetables
- Tend to purchase healthy or ‘low in’ food
- Those that claimed not to care about diet and health tended to:
  - Be men aged 15-24 and 55+
  - Belong to socio-economic groups D and E
  - To be out of work, single or widowed
  - Watch a lot of television

We are getting closer to the ‘5-a-day’ target for the fruit and vegetables which are essential for good health

Average household purchases of fruit and vegetables reached 4 portions a day in 2005-6 (the recommended level is at least 5) but other sources suggest that actual consumption may be much lower than this. Purchases, approximate portions/day

- In a recent FSA survey 71% of people were aware they should eat at least 5 portions of fruit and vegetables a day, and 55% claimed to eat at least 5 – demonstrating the gap between knowledge and action
- One study suggested that cost, lack of willpower, time and family influences are the biggest barriers to increasing the amount of fruit and vegetables eaten

40% say they snack between meals, and of those, 41% claim to snack on fresh fruit or vegetables

Foods eaten between meals, 2007

- Fresh fruit, vegetables: 41%
- Biscuits, cakes, bakery products: 28%
- Crisps, savoury snacks: 20%
- Chocolate bars, confectionery: 20%
- Bread, toast, sandwiches: 11%
- Nuts, Muesli bars, dried fruit: 9%
- Yogurts: 5%

Other countries recommend consumption of more than 5 portions of fruit and vegetables a day: 6 in Denmark, 5-10 in Canada, 10 in France, and 5 portions of vegetables plus 2 portions of fruit in Australia

As well as looking for healthier options, people also want to indulge in food, particularly for reward, special occasions and at the weekend

- One survey found that the majority of UK adults (55%) feel under time pressure on a regular basis – the figure rising to nearly 70% for those with families. The study also found a correlation between people who felt time pressured and an increased consumption of takeaway foods.

- Eating out of home during the week is a key way to ‘indulge’ in food because it avoids shopping, cooking and tidying up. Shoppers in DE social groups and those with children are least likely to do this.

- It is hard to assess the market for indulgent foods because people will consider different products as indulgences, depending on their needs and tastes. Often the occasion matters more than physiological needs. However, traditional snacks such as pizza, confectionary and crisps are increasingly eaten as treats.

### As more people feel under time pressure there has been a rise in the number of takeaway and home-delivered meals

% change in number of meals served 2002 – 2005

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2005</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating on the premises</td>
<td>47%</td>
<td>44%</td>
<td>-3%</td>
</tr>
<tr>
<td>Takeaway</td>
<td>0.40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivered</td>
<td>27%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### The most important opportunity for indulgence in food is a social occasion, followed by treats and rewards, then at weekends

% agreeing with occasion to indulge in food, 2006

<table>
<thead>
<tr>
<th></th>
<th>Weekends</th>
<th>Treat and reward</th>
<th>On social occasions</th>
</tr>
</thead>
<tbody>
<tr>
<td>At weekends</td>
<td>47%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treat and reward</td>
<td></td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>On social occasions</td>
<td></td>
<td></td>
<td>70%</td>
</tr>
</tbody>
</table>

More people are cooking from scratch, eat better food and have meals together but sales of premium and healthy ready meals are increasing

The number of people claiming to ‘cook from scratch’ every day is increasing

% claiming to cook from scratch every day

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>48%</td>
<td>51%</td>
<td>54%</td>
<td>63%</td>
</tr>
</tbody>
</table>

- Women, those aged over 50, in the AB social group and those not working are most likely to claim that they cook every day
- The survey results may be explained by people under-estimating the number of pre-prepared ingredients used; they may only partly cook with fresh ingredients. Fewer than 10% say they eat completely prepared food once a day
- Though 77% of total savoury food is pre-assembled, homemade and part-homemade foods are (14% of total market) are driving growth

Making time for cooking proper meals, enjoying cooking and the relative cheapness of cooking healthily are all rated highly

- Eating healthily is very important to me: 89%
- If you are on a limited budget you can still eat healthily: 88%
- I'll make time to cook proper meals: 88%
- I really enjoy cooking: 66%
- It’s really difficult to find healthy alternatives that taste nice: 30%
- Convenience food is not that bad for you: 25%

We are buying more healthy and premium quality ready meals

% change in share of chilled ready meals market, 2004-2005

- Healthy or balanced: 54%
- Premium quality: 27%
- Standard quality: 2%
- "Value" or "basic" quality meals: -33%

Eating is becoming a more public than private phenomenon with more people spending time eating out than at home

- Eating patterns are shaped by our cultural attitudes towards food, the rituals around meal times and social relationships. The popularity of convenience food, snacking and eating out have led to concerns about the demise of the ‘family meal’ as well as a decline in knowledge and skills about food.

- There is no firm evidence to suggest that the family meal is in decline. One study found the individualisation of meal consumption is often over-stated, with the majority of family meals still eaten together and increasingly, in the dining room and in the kitchen\(^1,2\). The study also found that even in single-person households, eating remains a social activity with young single people tending to invite people to dinner more often than their married counterparts.

- Data from time diaries show that eating patterns have moved towards eating quick meals outside the home more frequently, with 55% of meals eaten out taking 30 minutes or less in 2000, compared to 22% in 1975, alongside an overall increase in the time spent eating outside the home.

Overall we are spending less of our time eating at home and more time eating out

Minutes spent on each activity per day\(^3\)

<table>
<thead>
<tr>
<th>Activity</th>
<th>1975</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food preparation</td>
<td>57</td>
<td>41</td>
</tr>
<tr>
<td>At home</td>
<td>71</td>
<td>56</td>
</tr>
<tr>
<td>Entertaining</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>Eating out</td>
<td>11</td>
<td>25</td>
</tr>
</tbody>
</table>

Although people are spending less time eating at home, meals still take around the same time to eat.

Only 18% of meals eaten out took over an hour in 2000 compared to 54% in 1975.

Meals are no longer bound to particular times - people are eating when and where it is convenient

When people are eating out, they are seeking and being offered a wider choice of food, but are eating meals with a lower nutritional value than those eaten at home.

- An average £11.41 per person per week is spent on eating out; consumer expenditure on eating out hit £27.6 billion in 2005, a real-term growth of 29% in 10 years.
- Consumers are demanding a wider range of international choices when they eat out, along with more fresh, local and seasonal ingredients.
- Mid-market establishments have been offering healthier dishes and integrating nutritional food labelling onto their menus.
- But food eaten out tends to be higher in added sugars, and slightly higher in fat content.
- Given our tendency to eat out more frequently this suggests that we are eating nutritionally poorer meals more regularly.

### People are eating more fruit and vegetables when eating out. Oriental cuisine continues to gain popularity, but more traditional foods such as potatoes and fish are declining

<table>
<thead>
<tr>
<th>Food Type</th>
<th>% Change 2001/02 - 2005/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh and processed fruit</td>
<td>48%</td>
</tr>
<tr>
<td>Indian, Chinese or Thai food</td>
<td>36%</td>
</tr>
<tr>
<td>Vegetables and salad</td>
<td>2%</td>
</tr>
<tr>
<td>Fish and fish products</td>
<td>-2%</td>
</tr>
<tr>
<td>Sandwiches</td>
<td>-4%</td>
</tr>
<tr>
<td>Cheese or egg dishes, pizza</td>
<td>-8%</td>
</tr>
<tr>
<td>Meat and meat products</td>
<td>-8%</td>
</tr>
<tr>
<td>Ice cream, desserts and cakes</td>
<td>-9%</td>
</tr>
<tr>
<td>Fresh and processed potatoes</td>
<td>-16%</td>
</tr>
</tbody>
</table>

Contributing to this is a large increase in consumption of free school fruit, albeit from a low level in 2001-02. Substantial increases were also seen in consumption of dried fruit, and prepared fruit salads.

Consumers are demanding a wider variety of cuisines from the catering sector, and have become more flexible in their eating out habits...

- Consumers now expect a range of international choices in the high street - from long-established Indian and Chinese restaurants to emerging cuisines such as Thai, Mexican, Japanese and Moroccan
- A more relaxed attitude to eating has produced a 'casual dining' trend, where varied and high standard cuisines are offered in pubs, licensed cafes and coffee shops
- Rising obesity levels, fad diets and knowledge of food issues more generally have made consumers more aware of the nutritional content of menus and fuelled demand for more fresh, local and seasonal produce

Pub catering captures nearly a quarter of value of the eating out market; the sector has rejuvenated over the last 10 years with more pubs experimenting with restaurant services

The UK eating out market, distribution by sales value, 2005

Sales of sushi – an alternative to the traditional lunchtime sandwich – increased by 30% from 2005 to 2006

Tapas are more popular than before. People have tried them on holiday and now have them as a small meal or light snack

Thai food has the largest share of the emerging market, but growth is higher for Japanese, Cajun and Caribbean foods. Consumers have become more adventurous in the foods and recipes that they are prepared to try.

- **Consumer tastes have become more cosmopolitan and demand for a wider range of ethnic cuisines has grown, especially among younger people who tend to be more adventurous in their cooking. Consumers are travelling and eating out more, and wanting to introduce more exotic flavours into home cooking.**
- **There is a growing interest in preparing ethnic cuisines from scratch, rather than buying a prepared ready-meal.**
- **Supermarkets are responding to this trend by expanding the range of ethnic foods available, and are also engaging with ethnic groups e.g. the Jewish community after Passover, Hindu after Diwali and Muslim customers after Ramadan/Eid.** This trend broadens the range of foods available to mainstream shoppers and fuels further diversification in the food people buy.

The ethnic food market is estimated to be worth £1.1bn per year. Retail sales of emerging ethnic foods, 2002-06, £m

<table>
<thead>
<tr>
<th>Type</th>
<th>2002</th>
<th>2004</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thai</td>
<td>42</td>
<td>51</td>
<td>61</td>
</tr>
<tr>
<td>Cajun/Caribbean</td>
<td>1</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Other*</td>
<td>1</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Southeast Asian</td>
<td>1</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Japanese</td>
<td>1</td>
<td>7</td>
<td>2</td>
</tr>
</tbody>
</table>

* Including Middle Eastern, African, Korean and South American cuisines

Consumers have become more adventurous in the foods and recipes that they are prepared to try

<table>
<thead>
<tr>
<th>Statement</th>
<th>2002</th>
<th>2004</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like to try new food products</td>
<td></td>
<td></td>
<td>51%</td>
</tr>
<tr>
<td>I like to try new recipes</td>
<td></td>
<td></td>
<td>59%</td>
</tr>
<tr>
<td>I enjoy eating foreign food</td>
<td></td>
<td></td>
<td>61%</td>
</tr>
<tr>
<td>I like foreign foods</td>
<td></td>
<td></td>
<td>70%</td>
</tr>
</tbody>
</table>

Food has become a cultural and leisure pursuit. Perhaps because of this, the kinds of food knowledge and skills people have are changing.

- Consumers are showing an increasing interest in good food, and in managing their diet to improve their health and maximise their enjoyment from eating.  

- Food programmes on television are no longer confined to the informative; prime-time slots are now given to food/cooking reality shows and programmes such as Gordon Ramsay’s F-word regularly attract around 4 million viewers per week.

- Average net circulation of women’s interest magazines, specifically cooking and kitchen, increased by 96% between 2004 and 2006, and in 2006, UK consumers spent £66 million on food and drink books.

Growth in retail sales of food and drink books by value and volume between 2001 and 2006, UK:

- Food knowledge is seen as separate to having an interest in food as a leisure or cultural activity, whether it means cooking for enjoyment, reading about food or watching cookery programmes.

- Anecdotal and qualitative information suggests that food skills are in transition rather than in decline – that there is a shift in the pattern and kind of skills required to get food onto plates.

- Culinary skills and knowledge about the food we cook matter primarily because of the link between diet and health – greater food knowledge is significantly associated with healthier eating. But importantly, greater food knowledge is not just about being able to cook from scratch – it includes knowledge of ingredients, food preparation, taste and the benefits to health.

- So as the requirements for food skills change, watching a cookery programme whilst eating a healthy ready meal is not a contradiction.

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Executive Summary

1: Introduction

2: Consumer demand

3: The UK food chain

4: Global markets

5: Food security

6: Food and the environment

7: Diet and health

8: Food safety

- £172bn is spent annually on food, soft drinks and alcohol, split almost equally between eating out and at home. The food industry accounts for 7% of national output and provides 3.7m jobs
- In the grocery sector, intense competition between a small number of supermarket firms affects the whole supply chain
- Consumers are eating out in a wide range of places, from gourmet to take-away
- Public sector food procurement in England and Wales alone is worth £2bn and provides over 1 billion meals a year
- Food manufacturers have rationalised to maintain profitability
- Agriculture continues to be shaped by the CAP, while farmers’ share of retail prices is a continuing point of contention
- A small proportion of the UK’s food comes from the developing world but this trade supports a large number of people
- The UK fishing fleet and fish stocks have declined, leading to increased reliance on imports and farmed fish
- The food chain as a whole is a significant employer of migrant and part-time labour
UK consumers’ and institutions’ £172 billion annual spend on food and drink is serviced by a major industry that accounts for 7% of national output and provides 3.7 million jobs\(^1\)

In revenue terms, the catering sector is similar in scale to the grocery market, though the actual quantity of food sold is smaller.

- 55,540 grocery retailers service the UK’s demand for food and drink through nearly 103,000 outlets\(^1\)
- Two-thirds of food bought from retailers is sold through supermarkets\(^2\)
- There are 1,169 street markets in the UK, with over 150,000 retail stalls available. £1.1bn is spent there per year- but only 75% of stalls are occupied. No figures are available on how much money is spent on food at street markets\(^3\)
- There are 550 farmers markets and 4,000 farm shops in the UK. Turnover from direct selling by farmers through these methods, pick-your-own and box schemes are thought to be worth £2bn per year\(^4\)
- Nearly 117,000 businesses service our demand for food ‘out of the home’ in around 263,000 outlets
- For the leisure market there are more than 50,000 pubs and 26,000 restaurants, about 30,000 quick service restaurants and 46,000 hotels
- There are more than 66,000 outlets in the educational and health sectors, and 21,000 staff canteens\(^5\)
- The public sector spends about £2 billion a year on food procurement
- On average, spend per meal on food for hospital patients is 87p; in the Forces it is 70p; in prisons it is 62p; and in schools it varies from 37p to 85p\(^6\)

In the grocery sector, competition for the opportunity to fill the consumer’s shopping basket has been intense

- In an increasingly mature market with prices falling (until recently) and labour costs rising, competition across the industry has been fierce and the whole food chain squeezed to extract efficiency savings and maintain profits
- Competitive pressure has encouraged consolidation across the sector as firms seek economies of scale and critical mass
- There has also been a huge proliferation of products on offer through the supermarkets and the emergence of product groups tuned to particular market segments – healthier, premium, ‘free from’, organic, kids, value, etc.

In the 10 years to spring 2007, food price inflation had been half that of general inflation
Retail price changes, 01/98 – 04/07, %

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>14.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veg, potatoes</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food: all items</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk, cheese, eggs</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RPI: all items</td>
<td>28.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There has been a rapid increase in the number of food and non-food products that supermarkets offer to the consumer
Average no. of product lines, including non-food products, of big 4 supermarkets

<table>
<thead>
<tr>
<th>Year</th>
<th>2000-01</th>
<th>2001-02</th>
<th>2002-03</th>
<th>2003-04</th>
<th>2004-05</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>15000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001-02</td>
<td>30000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002-03</td>
<td>45000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are 1.2 million jobs in food retail
Food chain employees, million, GB basis Q4 2006

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employees (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-residential catering</td>
<td>1.4</td>
</tr>
<tr>
<td>Retailing</td>
<td>1.2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.4</td>
</tr>
<tr>
<td>Wholesaling</td>
<td>0.2</td>
</tr>
<tr>
<td>Farming &amp; fisheries</td>
<td>0.5</td>
</tr>
</tbody>
</table>

The different parts of the supply chain are subject to a common set of dynamics – competition, supply chain pressures and the need to respond to consumer demand.

In a mature market, large retailers have looked to expand into convenience stores, non-food sales and overseas to maintain growth.

Vigorous competition among the supermarkets has seen their market share grow and their influence extend down the supply chain.

CAP reform and high international commodity prices create opportunities for some farmers but problems for others, as the farming sector responds to the challenge of reconnecting to consumers.

With many EU fisheries over-exploited, imports and aquaculture are key to servicing demand.

Convenience stores have responded to pressure from large retailers by forming ‘symbol groups’, sharing common branding and economies of scale.

Buyer groups have also formed to increase buying power.

Manufacturers face challenges of maintaining international competitiveness and innovating for growth.

Supermarket wholesale and distribution

Independent wholesale and distribution

Manufacturers and processors

Agriculture & fisheries
A small number of supermarket chains now provide the primary interface between 60 million consumers and the industry that produces their food

- Over time, and with consolidation, power in the food supply chain has shifted towards the small number of major retailers that now account for an estimated two-thirds of all food sales.

- Research indicates that grocery retailers have, over a number of years, sought to reduce costs by reducing the number of suppliers of many categories of fresh produce. This has encouraged consolidation among intermediaries, notably in food processing, but less so in food manufacturing.

- As supermarkets compete to lower prices, ensure 24/7 availability of products on the shelves, streamline distribution systems and allocate space among competing products this power has a major effect on the supply chain.

![Market share has consolidated in fewer, larger food retail companies – four firms now account for 75% of total grocery sales (food, drink and household goods)

UK grocery market share - includes all expenditure through main store tills (excludes petrol & instore concessions), 12 weeks to 15 June 08, %]

![Of the big firms, Tesco has seen the biggest rise in overall grocery market share in the past 5 years

Market share of non-convenience grocery sector, 2002-2007, %]

The UK grocery market is rather more concentrated than most in the EU, but the ‘expansion of the multiples’ is a long term trend

The UK grocery market is relatively highly concentrated compared with its European neighbours

Market concentration of 5 largest retailers in European grocery markets, %, 2004

- The development of the grocery market in individual countries is shaped by a range of factors that include the planning regime and the impact of different consumer demands
- The process started in the UK in the 19th century when national branding and economies of scale were facilitated by rising incomes, urbanisation and technological advances
- During the 20th century, these trends increased and successful grocery chains – notably Tesco and Sainsbury’s – took advantage and expanded
- From the 1950s self-service and later out-of-town stores fundamentally changed the grocery market, the latter enabled by rapid growth in ownership of cars, fridges and freezers - allowing bulk-buying and less frequent trips

1: IGD (2005) European Grocery Retailing ; 2: IGD, Grocery Retailing 2004 – N.B. *2010 is IGD estimate. †'Multiples' category includes symbol-group convenience stores. Market definition here is different to TNS data on previous slide, so not directly comparable
The extent and impacts of competition, and use of power within the supply chain, are issues of ongoing debate in the sector and, periodically, matters of regulator inquiry.

- Concern about the potential for features of the market to distort competition prompted the Office of Fair Trading to ask the Competition Commission to investigate the groceries market in 2000 and again in 2006.
- The Competition Commission published its preliminary report in October 2007 and its findings included:
  - A lack of competition in certain local markets disadvantages consumers locally and nationally.
  - Concern about the ability of grocery retailers to transfer excessive risk and costs to suppliers.
  - Tesco is not in such a strong position that other retailers cannot compete.
  - The big 4 retailers own a significant number of landbank sites and control further sites; in 10% of cases this is constraining competitors’ market entry.
- In its final report the Commission proposed remedies that include the introduction of a competition test to the planning system for all new large grocery store developments, and a new Groceries Supply Code of Practice applying to all retailers with UK groceries turnover of over £1 billion per year.

The promotion of ‘own brand’ products has been a key part of retailers’ strategies to build margins and promote their brand.

Only in Switzerland do ‘own brand’ products have a higher market share. % own brand sales in major retailers across Europe.

Own label goods are less profitable for manufacturers. Profit margins (%) on branded and own label goods, for food manufacturers with sales of over £500m.

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1. IGD / ACNielsen (2005); 2. Grocer/ OC&C Index 2006, taken from Defra (2007) UK Food and Drink Manufacturing, An Economic Analysis; 3. Competition Commission (2008) The Supply of Groceries in the UK Market Investigation, competition test would as proposed would apply to stores that have, or will have post-development, over 1,000m² net sales area.
Consumers eat away from their homes in a wide variety of situations, with the catering industry providing a spectrum of outlets from gourmet to take-away

Almost 2 billion meals a year are served in quick service restaurants, reflecting demand for convenience

<table>
<thead>
<tr>
<th>Service</th>
<th>Number of Meals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick service</td>
<td>1,981m</td>
</tr>
<tr>
<td>Pubs</td>
<td>1,095m</td>
</tr>
<tr>
<td>Restaurants</td>
<td>721m</td>
</tr>
<tr>
<td>Hotels</td>
<td>642m</td>
</tr>
<tr>
<td>Leisure</td>
<td>528m</td>
</tr>
</tbody>
</table>

The UK restaurant sector has seen strong net growth in business formation over the past 10 years

<table>
<thead>
<tr>
<th>Year</th>
<th>Net VAT registrations, restaurants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>-1500</td>
</tr>
<tr>
<td>1996</td>
<td>0</td>
</tr>
<tr>
<td>1998</td>
<td>1500</td>
</tr>
<tr>
<td>2000</td>
<td>3000</td>
</tr>
<tr>
<td>2002</td>
<td>4500</td>
</tr>
<tr>
<td>2004</td>
<td>6000</td>
</tr>
</tbody>
</table>

- The ‘food service’ sector is the part of the economy engaged in the provision of meals outside the home and captures about a third of consumer expenditure on food and non-alcoholic drinks and provides 1 in 6 meals
- It is a highly diverse sector and employs 1.5m people – more than any other part of the food chain
- The distinction between retail and food service is becoming blurred; by its very nature this is difficult to quantify but is illustrated by:
  - The range of retail outlets offering food (e.g. sandwiches) virtually indistinguishable from that of takeaways is growing
  - Retailers increasingly supplying food service style products for consumption in the home – e.g. branded pizzas, hot cooked meals
  - Some retail outlets now offering take-away or sit-down food service

There were 26,700 restaurants in the UK in 2006, compared to 25,832 in 2001; 26% are in London

Public sector food service procurement is worth £2bn in England and Wales alone, providing over 1 billion meals a year - but evidence suggests the system’s efficiency could be improved

- The market for eating out can be split between “cost” and “for profit” sectors – the former being staff-only canteens and public service food (e.g. schools, prisons), the latter ranging from takeaways to sit-down fine dining
- The vast majority of public sector food procurement is by the NHS, schools, prisons and the armed forces
- Approaches to procurement are split between in-house and outsourced providers, and vary widely in scale – from schools managing budgets of under £10,000, to the Forces’ contract with Purple Food Services⁴, which is worth £300m over 5 years
- A recent NAO report² found the sector could make £224m in efficiency savings each year by 2010-2011 through a number of measures, including £80m by improving fragmented purchasing and £40m through reducing wide price differences paid by public sector organisations for the same goods

Many wholesalers have been faced with a simple choice: consolidate, adapt or go out of business

- The customer base for wholesalers has shrunk as supermarkets have gained market share

- This has pushed non-specialist wholesalers, in particular, towards consolidation:
  - the number of specialists declined by 36% from 1995 to 2006, while the number of non-specialists fell by just 7% during the same period
  - 7 firms now control two-thirds of the non-specialist market

- Specialist food wholesalers are more involved with premium produce, which has grown more quickly than standard lines

- There has been a clear move towards deliveries from cash and carry, as firms seek to offer greater convenience to the remaining customer base: symbol groups, forecourt chains and foodservice outlets

Specialist wholesalers have grown faster than non-specialists

![Graph showing output by wholesaler type](chart.png)

Wholesalers’ business model has adjusted to a changing market

![Graph showing cash & carry and delivered wholesale services](chart2.png)

1 & 2: Defra (2007) *Food Wholesaling in the UK*; N.B. Output as measured by Gross Value Added
Food manufacturers have rationalised, shed workers and improved productivity, whilst maintaining profitability

- Food manufacturing accounts for 17% of the UK manufacturing sector by turnover- its largest single sector
- An estimated 75% of food manufacturers’ sales go to retailers (some via wholesalers), compared with 10% to caterers and 15% in exports, so manufacturers are subject to strong competitive forces
- Larger manufacturing firms tend to have larger margins than smaller ones
- The largest 3.8% of firms generated 76.5% of output from the food manufacturing sector in 2004

Food and soft drink manufacturers contribute £18bn gross-value added to the economy

Gross-value added in food manufacturing has grown fastest in confectionery, fruit & veg, bread, biscuits and cakes

Food manufacturers gross-value added, GVA by commodity £m\(^1\)

- Oils and fats
- Fish processing
- Animal feed
- Grain milling and starch
- Dairy products
- Soft drinks and mineral waters
- Fruit and vegetable processing
- Confectionery
- Other food products
- Meat processing
- Bread, biscuits and cakes

By value the UK is a net importer in each broad category of food, with the biggest trade gap in fruit and vegetables

Sectors challenged by the trend for healthier eating include those with the highest value added

- Food manufacturers based in the UK include major international companies such as Unilever and Nestlé, managing large portfolios of household brands and exporting around the world
- Gross-value added (GVA) from the food and soft drinks industry increased by 20% from 2000 to 2005, with the biggest rise in the bread, biscuits and cakes group
- Food exports from the UK are worth around £6.5bn – with cereals and fish making the largest contribution
- But food imports are worth almost £20bn, vegetables and fruit being the largest category

In agriculture, the Common Agricultural Policy is undergoing change but there is much further to go

The CAP supports EU agriculture through direct support from taxpayers and via higher prices paid by consumers

CAP transfers to EU agriculture, £ billion

<table>
<thead>
<tr>
<th>Year</th>
<th>£bn</th>
<th>Net transfers from taxpayers</th>
<th>Transfers from consumers</th>
<th>% from consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>80</td>
<td>60</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>1995</td>
<td>60</td>
<td>40</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>2000</td>
<td>40</td>
<td>20</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>2005</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

UK and world food prices have been converging for several years but differentials remain, particularly on meat and sugar

UK price as % world price

- UK farming still receives about £3 billion a year in direct subsidies, compared to Defra’s estimate of total income from farming (TIFF) of £2.7 billion
- Direct payments to EU farmers under the CAP are now much more decoupled from production
- In 2006 the CAP cost the average EU household of four £557, of which £264 was paid through higher consumer prices and the remainder via taxes
- The next milestones in the CAP reform process are the 2008 Health Check and the 2013 Budget Review

Farmers’ share of retail prices is a continuing point of contention

- Farmgate prices have been one of the key battlegrounds in the political debates about power in the food supply chain. The decline in farmgate share has reflected the falling (real) value of commodity prices.
- As more food is subject to ‘value-added processing’ (anything from pre-prepared vegetables to ready meals) and the supply chain responds to labour, regulatory and others costs, it might be expected that farmers’ share of the retail basket will shrink.
- Some farmers are circumventing the retail food chain by supplying farmers’ markets, the restaurant wholesale market or by exporting.

1: Defra; 2: Milk Development Council / DairyCo, direct communication; 3: FARMA direct communication
But the diversity of business models in today’s farming industry makes it more difficult than ever to generalise about incomes and outlook for the industry.

Modern farming comprises a wide variety of business models, from outsourced contracting of arable cropping to the large number of small farms run on a hobby basis.

60,000 farms in England occupy a farmer for at least half of their time. This is around half of all farms – but they account for 90% of land area farmed and 96% of agricultural production.

Aggregate farm income statistics mask variations in farm profitability, but do suggest farmers’ incomes are more diversified than in the past, with many less dependent on agriculture.

As the process of reconnecting with the market continues, the outlook for different farming sectors varies – prospects for arable farming are strong, whereas more difficult times have been predicted for parts of the livestock sector due to higher energy costs, higher feed costs and the removal of headage payments.

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A small proportion of our food comes from the developing world but that trade supports large numbers of workers and their dependents in those countries.

Most of the UK’s food comes from the UK or Europe\(^1\)

<table>
<thead>
<tr>
<th>Origin</th>
<th>% Share of Total UK Fruit and Veg Imports, 1997-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>49%</td>
</tr>
<tr>
<td>EFTA</td>
<td>29%</td>
</tr>
<tr>
<td>Africa</td>
<td>6%</td>
</tr>
<tr>
<td>Asia</td>
<td>5%</td>
</tr>
<tr>
<td>N.America</td>
<td>5%</td>
</tr>
<tr>
<td>S.America</td>
<td>4%</td>
</tr>
<tr>
<td>Other</td>
<td>3%</td>
</tr>
</tbody>
</table>

There has been a modest increase in Africa’s share of UK fruit and vegetable imports since 1997\(^2\)

<table>
<thead>
<tr>
<th>Year</th>
<th>% Share of Total UK Fruit and Veg Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>8</td>
</tr>
<tr>
<td>1999</td>
<td>10</td>
</tr>
<tr>
<td>2001</td>
<td>12</td>
</tr>
<tr>
<td>2003</td>
<td>16</td>
</tr>
<tr>
<td>2005</td>
<td>16</td>
</tr>
</tbody>
</table>

- Total exports of fruit and vegetables from Africa to the UK were valued at £495m in 2005, 47% of which came from South Africa\(^2\).
- £105m of vegetables and £89m of fruit were exported to the UK from sub-Saharan Africa in 2005, supporting 715,000 growers and dependents\(^3\).
- Higher standards set by retailers could be a threat to African farmers’ sales in the short to medium term, a key trend given that 68% of exports are to retailers\(^3\).
- 13% of the UK’s fish imports also come from Africa; but little meat or dairy produce is imported from the continent due to strict EC rules on veterinary authority competence\(^4\).

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The UK fishing fleet and the stocks available to it have declined, leading to increased reliance on imports and farmed fish

The quantity of fish landed has fallen but the retail value has begun to increase
Quantity and value of fish landed since 1998

- UK seafood-related sectors are estimated to be worth £4.3 billion – 0.48% of GDP – and support 138,000 jobs
- The UK fleet has declined since 1997 from 8,458 to 6,752 vessels but still generates £305m output (gross value-added); Britain exports £0.9bn of fish a year but imports £1.7bn
- By quantity our main imports include cod (which has been over-fished in EU waters), tuna and haddock; while our main exports by tonnes are mackerel, herring and salmon. But this masks significant growth in value of nephrops
- There are over 1,000 fish and shellfish farming businesses in the UK, directly employing more than 3,000 people. 90% of the aquaculture industry is in Scotland. About 135,000t of fish is produced, over 95% of which is salmon
- Fish processing is mostly separate from other parts of the food processing sector. It provides 22,700 FTE jobs, mainly in Grampian and Humberside

Continued advances in applied genetics seem set to generate new products - and choices about whether we adopt them.

Soybean and maize are the most significant plants in a global biotech crop market worth $6.15bn in 2006.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Goal/benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>Reduce allergenicity</td>
</tr>
<tr>
<td></td>
<td>Reduce plant fungal infections</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>Increase anti-oxidant properties</td>
</tr>
<tr>
<td></td>
<td>Control ripening to reduce spoilage in transit</td>
</tr>
<tr>
<td>Potatoes</td>
<td>Reduce fat absorption during frying</td>
</tr>
<tr>
<td></td>
<td>Reduce damage from fungal pathogens</td>
</tr>
</tbody>
</table>

Further advances in science and technology are likely to impact on food production, potentially increasing yields and making food healthier and more environmentally sustainable.

Genetic modification technologies are being adopted across the world and seem set to provide part of the productivity solution for many countries, though no GM crop has all the approvals needed for commercial cultivation in the UK.

Public trust in the new technologies is a key issue, as illustrated by the GM debate in Europe.

Continued challenge can be expected—such as whether to label foods containing products from cloned animals, and how to regulate risks arising along complex global supply chains when rules vary among regions.

We are only at the very early stages of understanding the potential applications of nanotechnology in the food chain, and how best to manage any risks arising.

- Nanotechnology is the science and technology of devices and materials, such as electronic circuits or drug delivery systems, constructed on extremely small scales, as small as individual atoms and molecules.
- The UK has a world-class reputation for nanotechnology research with nanotech projects underway in over 35 UK universities.
- Nanotechnology has the potential to reduce food-borne disease, pesticide use on crops, antibiotics use in livestock and improve supply-chain efficiency\(^1\).
- Nanoproducts in food could improve health, through facilitating the uptake of nutrients for example, but they could be controversial.
- Inedible nanoproducts, such as food packaging, are likely to be less contentious and are forecast to grow rapidly\(^2\).
- Nanotechnology raises new challenges for regulators and industry in evaluating risks and winning public acceptance. A new industry code of practice is being developed. EU advisers have called for new risk assessment methods for nanoparticles\(^3\).

**Application of nanotechnology in the food sector**

A German research team has demonstrated a nanotechnology that could cut residual food waste by half. A nanoparticle-based coating stops food sticking to the sides of the container.

Researchers at Yale have found that carbon nanotubes have a powerful antimicrobial activity, pointing the way to anti-microbial packaging that improves food safety and extends product life\(^5\).

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Part 4 – UK food and global markets

Executive Summary

1: Introduction

2: Changing consumer demand

3: The UK food chain

4: Global markets

5: Food security

6: Food and the environment

7: Diet and health

8: Food safety

- The UK food chain is increasingly connected to global markets that are moving into a period of flux and experiencing higher prices - caused by a variety of demand and supply side factors
- Global agricultural commodity prices are being supported by robust demand driven by population and income growth, particularly in the developing world
- The supply side is experiencing structural changes in commodity stocks, rising transport and energy costs and some poor harvests in key regions
- Biofuel policies are creating a growing, inelastic source of demand for grain and oilseeds
- Farmers can be expected to respond to higher prices by raising output. In the UK, high feed prices squeeze livestock and dairy farmers’ margins and add to manufacturers’ cost pressures, but impacts on consumers are diluted in the supply chain
- The global food price rises have a much greater impact on developing countries, especially their urban poor
The UK food chain is increasingly connected to global markets that are moving out of a period in which supply has exceeded demand and prices have been relatively stable.

Global hunger is not due to an overall shortage of food, it is an issue of food distribution, poverty, instability and maladministration - 850 million people in the world are undernourished but 2 billion are overweight.

For the last 20 years food markets have been remarkably stable, thanks to moderate energy costs and steady increases in agricultural productivity.

CAP reform and tariff adjustments are slowly reconnecting the UK food chain to world markets.

These markets are now in flux and experiencing higher prices caused by a variety of demand and supply side factors

Agricultural commodity prices have risen strongly in the last couple of years, as have energy and industrial commodities
CRB-Reuters 1997 indices, 1985-2008

Recent price changes have been largest in dairy, significant in cereals (especially wheat) and oilseeds but meat commodities are little changed

- Prices of agricultural commodities have increased significantly on international markets in the last 2 years
- These changes and other trends such as the deteriorating state of the global environment, soils and fish stocks, have prompted commentators to announce the ‘end of cheap food’ and the beginning of a new era of higher prices, increased volatility and relative scarcity in international food markets
- The true picture is more complex: a variety of demand and supply side factors – including higher energy and transport costs – have come together to create recent price spikes, though prices seem unlikely to return to their previous lows in the next few years

Global agricultural commodity prices are being supported by robust demand driven by population and income growth, particularly in the developing world.

Global trade is rising but a still small share of output—most food is eaten where it is produced.


Cereal production in 2007 is estimated at 2101 Mt, world trade at 252 Mt.

Rising incomes will prompt increases in demand for meat and dairy, affecting grain as well as livestock markets.

FAO projections see food consumption in developing countries catching up with the OECD and so driving global demand.

Per capita food consumption, kcal/person/day, to 2050:

FAO projections see food consumption in developing countries catching up with the OECD and so driving global demand.

The growth rate of global cereal demand has long been declining but demand in 2030 will be 52% above the 1999 level – an extra billion tonnes to grow and harvest.

The 4 billion gap between high and low scenarios in 2050 is 60% of today’s population.

The supply side is currently experiencing structural changes in commodity stocks, rising transport and energy costs and some poor harvests in key regions.

- Markets are seeing price and stock adjustments, partly due to agricultural policy reforms (e.g. EU intervention stock cuts have affected total global grain reserves).
- Higher oil prices make for higher food prices – through input costs such as fuel and fertiliser.
- With global markets currently tighter, poor weather in key regions can quickly raise prices, as in 2006 when:
  - Drought caused a 50% cut in Australia’s wheat harvest, cutting exports
  - China had a poor soya harvest, triggering imports

Biofuel policies are creating a growing, inelastic source of demand for grain and oilseeds that will further tighten the global balance of supply and demand.

- The US and EU, both large grain exporters, have adopted policies mandating and incentivising use of bio-fuels.
- Local maize, wheat and oilseeds production in the US and EU is being diverted into biofuel manufacture; tariff barriers restrain imports of biofuels from developing countries.
- The FAO, OECD and IMF have noted the impact on stocks of cereals, on arable farmers’ cropping decisions, on livestock farmers around the world (via feed prices), and on food prices.
- If the policies are maintained:
  - future on-farm productivity gains will be shared between food and fuel and the aggregate level of agricultural inputs (land, capital, labour) and output will need to be higher than would otherwise be the case
  - a range of direct and indirect price effects can be expected across the system, and grain prices will become more closely linked to oil prices.

Cereal farmers are responding to higher prices by raising output

- World farmers are responding to the stimulus of higher prices, e.g.:
  - US farmers planted more maize in 2007 than in any year since 1944; acreages are again high in 2008\(^1\)
  - FAO forecasts a new record world cereal harvest in 2008, on the back of a 2007 harvest that was 4.6% higher than the previous year\(^2\)
- There is also response from policy-makers:
  - the EU has withdrawn its 10% ‘Set-Aside’ policy in response to higher grain prices, bringing more arable land back into production
  - China has banned use of food crops for biofuel production
- As the distortions to global markets caused by disposal of EU surpluses are corrected, new opportunities will emerge, especially for farmers in emerging economies
- In the longer term tariff reduction should facilitate greater concentration of production in areas with a comparative advantage: e.g. wheat in the EU, maize in the US, soya and beef in Brazil

The USA accounts for 35% of world exports of cereals, 42% of oilseeds and 22% of meat

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In the UK high feed prices squeeze livestock and dairy farmers’ margins and add to manufacturers’ cost pressures, but impacts on consumers are diluted in the supply chain

- There has been extensive media coverage of changes in bread, milk and other food prices, and the impacts on UK livestock farmers of higher input prices
- The impact on UK consumers of higher world prices for basic foods is moderated by:
  - dilution in the supply chain
  - low relative spending on food; and
  - EU prices for some goods already being comparatively high.
- UK arable farmers benefit from record prices but dairy and intensive livestock farmers are exposed through:
  - Higher costs for animal feed and energy
  - Limited pricing power in end markets

Food price increases have gradually fed through from international markets to consumers across the EU

% Increase in CPI (food only), selected EU member states, 12 months to June 2008

<table>
<thead>
<tr>
<th>Country</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portugal</td>
<td>3.8</td>
</tr>
<tr>
<td>Italy</td>
<td>5.8</td>
</tr>
<tr>
<td>France</td>
<td>6.0</td>
</tr>
<tr>
<td>Netherlands</td>
<td>6.3</td>
</tr>
<tr>
<td>Germany</td>
<td>6.4</td>
</tr>
<tr>
<td>Poland</td>
<td>6.6</td>
</tr>
<tr>
<td>Spain</td>
<td>6.7</td>
</tr>
<tr>
<td>Greece</td>
<td>6.8</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>7.8</td>
</tr>
<tr>
<td>Sweden</td>
<td>7.9</td>
</tr>
<tr>
<td>Ireland</td>
<td>7.9</td>
</tr>
<tr>
<td>Denmark</td>
<td>8.1</td>
</tr>
<tr>
<td>Slovakia</td>
<td>8.4</td>
</tr>
<tr>
<td>Finland</td>
<td>9.5</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>10.7</td>
</tr>
<tr>
<td>Romania</td>
<td>12.1</td>
</tr>
<tr>
<td>Hungary</td>
<td>14.0</td>
</tr>
<tr>
<td>Estonia</td>
<td>18.8</td>
</tr>
</tbody>
</table>

EU average: 7.3%

The global food price rises have a much greater impact on developing countries, especially their urban poor

- The urban poor in the developing world spend a high share of their income on food – up to 65%
- In late 2007 the FAO estimated that the cost of the food import basket for the least developed countries had risen 90% since 2000, but just 22% in developed countries
- In mid 2008 the FAO forecast that the food import bill for least developed and low income food deficient countries would rise a further 37%-40% in 2008 and have quadrupled since 2000

Food price inflation is a key concern in urbanising developing countries

- Over the past year increases in the price of staple foods has caused concern and in some cases threatened social unrest in several economies:
  - ‘Tortilla riots’ in Mexico were triggered by large increases in the cost of the maize flour that is the staple food
  - Pork price hikes in China caused by growing demand, higher feed prices and the impact of pig disease on supply pushed up inflation and prompted the government to impose price controls
  - India imposed a ban on wheat exports to protect domestic food supplies

There is potential for unrest in the developed world too. In Italy there were protests against the increased price of pasta, as the high price of wheat was passed on to consumers by manufacturers

### The cereal import bill of low income food deficient countries rose US$14bn in 5 years, 96% of it paid by African and Asian countries

Cereal imports, US$ billion by region, 2006 estimate, 2007 forecast

<table>
<thead>
<tr>
<th>Region</th>
<th>02-03</th>
<th>03-04</th>
<th>04-05</th>
<th>05-06</th>
<th>06-07 (e)</th>
<th>07-08 (f)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>4.5</td>
<td>5.5</td>
<td>6.5</td>
<td>8.5</td>
<td>10.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Asia</td>
<td>3.5</td>
<td>4.5</td>
<td>5.5</td>
<td>7.5</td>
<td>9.5</td>
<td>11.5</td>
</tr>
<tr>
<td>Latin America and Caribbean</td>
<td>1.5</td>
<td>2.5</td>
<td>3.5</td>
<td>5.5</td>
<td>7.5</td>
<td>10.5</td>
</tr>
<tr>
<td>Oceania</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Europe</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Part 5 – Food security

Executive Summary

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- The term ‘food security’ is used in different ways but is essentially a matter of identifying, assessing and managing risks in food supply
- Self-sufficiency is not the same as food security; UK national self-sufficiency in food is falling but still high by historical standards
- Import growth is a consequence of consumer choice and competitive, more integrated food markets - access to which keeps food available to consumers when UK supplies are interrupted
- There is a legitimate public policy interest in the resilience of the logistic systems and infrastructure that support the UK’s food supply chain, and in good contingency planning
- And policies that maintain energy security will support the continuity of what is an energy-intensive food chain
- Climate change is expected to impact on global food production and prospects for productivity growth in the decades ahead via changes in temperature, rainfall and increased frequency of severe weather events
The term ‘food security’ is used in different ways but is essentially a matter of identifying, assessing and managing risks in food supply

- Food security was a key objective of post-war agricultural policy set out in the 1947 Agriculture Act
- In 2007 there is again discussion about threats to UK national food security, citing:
  - International factors: e.g. geopolitical tensions, international terrorism, energy politics and the effects of climate change
  - UK market factors: e.g. concentration of power in the supermarkets, declines in farm incomes, food safety scares and energy security
- Ensuring food security is essentially a matter of identifying, assessing and managing the risks to food supply
- Intervention may be required where markets fail to manage adequately

The multiple dimensions and interpretations of ‘food security’ can hinder discussion

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>Volume and reliability, provenance and diversity of supplies</td>
</tr>
<tr>
<td>Access</td>
<td>Affordability, physical accessibility</td>
</tr>
<tr>
<td>Affordability</td>
<td>Household food poverty and insecurity</td>
</tr>
<tr>
<td>Safety</td>
<td>Many recent crises relate to food safety; in the UK people are more likely to die of food poisoning than starvation</td>
</tr>
<tr>
<td>Resilience</td>
<td>Ability of the supply chain to withstand shocks and disruption</td>
</tr>
<tr>
<td>Confidence</td>
<td>Public confidence in the availability, safety and quality of food</td>
</tr>
</tbody>
</table>

1: Defra (2006) *Food Security and the UK: An Evidence and Analysis Paper*
Few people in the UK are hungry, but low income households are more at risk from food and nutritional insecurity

Among those who are experiencing food insecurity, lack of money is the reason most frequently given for having insufficient food:

<table>
<thead>
<tr>
<th>Percentage of respondents citing factor</th>
<th>16</th>
<th>14</th>
<th>8</th>
<th>98</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not enough money</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5% of those on low incomes report skipping meals for a whole day²

Those who are most food insecure worry about food running out, find that food runs out before they get more money and reduce portion size or skip meals

Women who are food insecure have been shown to have a less healthy diet than those who have enough to eat. The case is not proven for men, boys or girls

● Food security at household level means “access by all people at all times to enough food for an active and healthy life. Food security includes at a minimum the ready availability of nutritionally adequate and safe foods and an assured ability to acquire acceptable foods in socially acceptable ways”³

● The majority of low income households are achieving food security (the food they need) and nutritional security (the nutrients they need) but in a recent FSA survey 29% of low income households described themselves as food insecure; food insecurity is greatest for children living in single-parent households

● The idea of ‘food deserts’ – areas of relative exclusion where people experience physical and economic barriers to accessing fresh food – has attracted policymakers’ interest but research evidence on the actual scale of a food desert problem is very mixed⁴

● Food choices by low income households are determined by much more than the presence or absence of shops and food outlets in deprived areas⁵

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Food choices are conditioned by a wide variety of societal, physical, economic and behavioural factors.

Analysis of household food security needs to recognise the many factors that influence what food is consumed

WHO model of food choice

Social, economic & ‘environmental’ influences
- CAP, planning & transport
- Employment, social security
- Food prices, trade
- Retail, catering, adverts
- Education, mass media

Food availability
- Food grown and imported
- Food available in the shops
- Food eaten outside the home
- Land, tools and seed for home production

Food access
- Access to shops
- Time/ability to go shopping
- Cost and affordability of food
- Domestic storage/kitchen equipment

Food knowledge
- Skills in budgeting, shopping and cooking
- Nutrition education
- Breastfeeding support
- Food labelling

Personal choices
- Cultural beliefs, individual medical needs, family structure

Family practices
- Household food distribution to children, parents, grandparents

Needs and tastes
- Personal beliefs and convictions, likes and dislikes

Food obtained → Food consumed

Food security → Nutrition security

The fall in UK food self-sufficiency (the domestic production’s share of consumption) since the 1980s is sometimes used as evidence that UK food security is at increasing risk. However, the very high self-sufficiency of the 1980s and 1990s was unusual - an artefact of the Common Agricultural Policy and its emphasis on boosting food production.

In agriculture, as in manufacturing and tradable services, the UK’s comparative advantage on international markets is likely to lie in high value added products rather than commodities.

Europe is expected to provide most of our future food imports for the foreseeable future, at least until global trade talks yield large reductions in tariffs on agricultural goods and a more open international market.

Import growth is a consequence of consumer choice and of competitive, more integrated food markets - access to which keeps food available to consumers when UK supplies fail

- Contributors to recent import growth include:
  - Consumer purchases of more exotic foods
  - Demand for seasonal foods throughout the year
  - Adjustment to changes in agricultural policies and robust competition in both EU and international markets

- A diverse supply base, including access to imports, helps maintain continuity in the event of interruptions to UK supplies due to animal disease (e.g. BSE, FMD), extreme climatic events, etc.

- As a high income nation well connected to the global trade system, the UK is in a strong position to access supplies from other international markets, which are growing and ever more sophisticated.

- Some global trends, such as falls in stocks of food commodities, are less a consequence of supply instability than policy reform (e.g. in CAP, reducing EU ‘food mountains’) and better functioning markets

UK self-sufficiency varies greatly from commodity to commodity

Self-sufficiency ratios by commodity, 1980-2005

1: Defra (2005) Agriculture in the United Kingdom
There is a legitimate public interest in the resilience of the logistic system and infrastructure that support the UK’s food supply chain, and in good contingency planning

- The lean, low inventory, just-in-time logistics systems that supply the UK grocery sector are potentially vulnerable to direct or indirect disruption via, for instance:
  - Extreme weather events (e.g. major flooding)
  - IT system failures
  - Interruptions to fuel and other energy supplies
  - Failures in transport infrastructure: roads, and port and airport services
- The very efficiency of supply chains under normal circumstances increases their vulnerability under abnormal ones
- But the food industry has strong commercial incentives to manage and reduce the risks of supply interruption (including loss of UK farm output to disease, weather, etc.) to keep food on shop shelves and on menus
- Research points to the need for business and contingency planning, contingency governance arrangements and early warnings preparedness

Consolidation of manufacturing sites, fewer distribution centres, higher truck load factors, faster order/delivery times and ever lower stock levels make for an ever leaner food supply system

Average retailer stock levels in different food categories

Recent Defra research concluded that there is a need for proactive planning by government as well as industry if continuity of food supplies is to be maintained in a national emergency

And policies that maintain energy security will support the continuity of what is an energy-intensive food chain

- The modern food chain is highly dependent on energy, mostly (today) from fossil fuels – from the production of fertiliser through to food preparation
- The key vulnerabilities in the food system relate to interruption in energy supplies used:
  - in agricultural inputs;
  - in food processing and refrigeration;
  - in food transport;
  - in the management and retail of food
- Like other major energy-using countries, the UK is set to become more dependent on a small number of suppliers in less stable parts of the world - by 2020 the UK will be importing the majority of its gas and more than half its oil
- The shift from carbon-based energy sources that is required to tackle climate change is a major challenge to today’s food system

The UK will be importing around two thirds of its energy by 2020\(^1\)

1: BERR (2007) *Energy White Paper: meeting the energy challenge*
Climate change is expected to impact on global food production in the decades ahead via changes in temperature, rainfall and increased frequency of severe weather events.

- Studies of the impacts of climate change project potentially large negative impacts on developing regions:
  - More than 90% of climate model simulations predict lower rainfall in the sub-tropics
  - Sub-Saharan Africa and south Asia are likely to face the biggest food security challenges
- Small changes are projected for developed regions though a higher frequency of extreme events could cause large losses:
  - More extreme rainfall is very likely in areas that include northern Europe, whereas the Mediterranean basin is expected to be drier
- Temperature changes could see tropical diseases spread into new regions (e.g. bluetongue)
- The IPCC’s latest assessment finds climate change is likely to increase the number of people at risk of hunger but the impacts will be small compared to the positive impacts of socio-economic development over the same period, though there are many uncertainties

A taste of things to come? Impacts of the 2003 heatwave on agriculture in Europe

In 2003 Europe experienced a summer with temperatures up to 6°C above long term norms, and rainfall deficits of up to 300mm.

There were marked impacts on agriculture:
- In the Po Valley, Italy, maize yields dropped 30%
- In France maize yields fell 25% compared to the previous year and fruit harvests fell 25%
- Forage production fell on average by 30% in France

The (uninsured) economic losses for the EU agriculture sector were estimated at €13bn; losses in France alone measured at €4bn

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The need to reduce the carbon intensity of food production in a world of growing population, greater water scarcity, degrading soils and changing climate calls for a new Green Revolution

The amount of fresh water available for each person is expected to continue its decline – and water is often scarce in the places where it is needed

Actual and projected freshwater availability, cubic metres per head of total world population

- A key scientific challenge for the coming decades is to feed a growing world population by maintaining agricultural productivity growth in the face of:
  - Deteriorating conditions in many areas (changing water availability, soil degradation and salinisation, climate modification);
  - The need to reduce greenhouse gas emissions from agriculture as part of the effort to tackle climate change; and
  - A growing, and wealthier, world population

Part 6 – Food and the environment

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- The food chain’s environmental impacts include nationally significant contributions to UK greenhouse gas emissions, production of packaging and other waste, pollution of water, and habitat and biodiversity loss

- The real impact of food is in the growing and production of the goods, not their sale by the retailers or their consumption in households

- The food chain generates significant waste, much of which is avoidable

- Transport is the biggest user of energy in the food chain, but farming is the single biggest source of greenhouse emissions, and livestock has a disproportionately large impact on the environment

- The distance food is traveling is increasing, but the biggest external cost of food transport is congestion, not carbon

- And while most global fish stocks are being overexploited, the rate of decline in habitats and biodiversity on farmland seems to have stabilised
The most significant impacts on the environment from the food chain are from the growing and production of goods sold, not through retail operations or from householders.

### Food Production

- The biggest impact on the environment from the food chain is in the growing and production of food.
- Agricultural impacts are dependant on the type and location of production and impacts on the environment through greenhouse gas production, water pollution and changing land uses:
  - Rearing **livestock** creates significant water pollution and greenhouse gas emissions directly from animal production or indirectly through poor land use or inappropriate land clearance for pasture and feed production.
  - Growing **fruit and vegetables** has a lower impact, but uses significant energy, particularly for highly perishable products imported by air, or produce grown in greenhouses out of season.
- Food **processing and manufacturing** uses water, energy and creates waste.

### Food Retail Sector

- Impacts on the environment arising directly from retail operations are significant and include:
  - Store **size and location**, from large out of town to small convenience stores.
  - **Energy** efficiency of in-store refrigeration, lighting, heating and availability of recycling facilities.
  - Length of the **transport** distribution network, affecting congestion and air quality.
- Retail influence on the environmental impacts of food extend down the supply chain through:
  - **Editing consumer choice** through the type of products made available and where they are sourced from.
  - Setting **standards** attached to purchasing agreements, which may be both positive to the environment (farm standards) or negative (excessive packaging).

### Consumers and Households

- Impacts on the environment arising directly from consumer action include:
  - Emissions from **transport** from driving to the shops.
  - How food is **stored and prepared** in the house.
  - Whether the food is **eaten or wasted**, and whether food and packaging waste is composted or put in general waste.
- The indirect consequences of food purchasing are more profound and shaped by consumer choice:
  - Purchasing decisions around means of production (eg organic), source and seasonality (eg imported goods) and degree of **packaging**.
- The impacts of eating out of the home are difficult to measure, with the **catering and hospitality** sector using significant energy and water, and creating large amounts of waste.
The food chain generates large quantities of waste, much of which is avoidable

- The main sources of waste in the food chain are food and packaging
- For many foods packaging is necessary to prevent damage to the food, to prolong shelf life and for presentation, but its environmental and resource impact can often be reduced through re-engineering
- 6.5 million tonnes a year of waste - 10% of all UK industrial and commercial waste - comes from the food industry
- Plastic bags only account for 0.3% of domestic waste in the UK\(^2\) but are seen as a symbol of a ‘throwaway society’
- Climate change effects are difficult to estimate because the carbon benefits of recycling offset the negative impact of the waste, but waste from the food chain generates 3 million tonnes CO\(_2\) eq per year
- Manufacturers and retailers face tensions between ensuring food safety (e.g. via packaging or chilling) and reducing environmental impacts (e.g. packaging, energy use and greenhouse gas emissions)

Transport is the single biggest user of energy in the food chain, and results in nationally significant greenhouse gas emissions

Research suggests transport is the largest single user of energy in the UK food chain
Energy use in the UK food chain, excluding packaging, catering and domestic cooking

Latest estimates suggest transport in the UK food chain generates 19Mt CO₂ equivalent a year, with road freight being the largest contributor
Transport emissions due to the food chain, million tonnes CO₂ equivalent/yr

- Evidence of the environmental impacts that occur in the life cycles of a range of food products (fresh and processed goods, organic and conventionally grown produce, and locally and globally sourced foods) shows that the argument that local food has a smaller environmental impact is weak and that global sourcing can be better for some foods
- Our food is estimated to be travelling 23% more than three decades ago:
  - With the trend towards larger out of town food retail outlets, more people are driving further to buy their shopping for the home more regularly;
  - Goods are sourced from further afield as trade is liberalised and demand increases for overseas products;
  - As more processed and packaged becomes available, the number of links in the supply chain increases.

The amount of food travelling by air is increasing but the external social costs of food transport go far beyond CO₂

The biggest external cost of food transport is congestion

Transport costs associated with food, billion²

- Accidents £1.2bn
- Congestion £3bn
- Infrastructure £0.9bn
- Air quality, noise & climate change emissions £0.74bn

Food air freight is increasing, but only accounts for 0.1% of our food chain vehicle kilometres and 15% of the greenhouse gas emissions from food-related transport

Air freight, million vehicle kms¹

Goods imported by air tend to be high value perishable goods, primarily from North America and Kenya

The environmental impact of having fresh produce available all year round can vary hugely from season to season, and depends on the type of product, where and how it is produced, and length and type of storage

For example, evidence suggests that at some times during the year, transporting produce from other countries may have a lower impact than refrigerating produce grown in Britain, so an appropriate mixing of imports and locally sourced food to match the seasons could reduce overall impacts on the environment⁴

- The Food Industry Sustainability Strategy³ has set a target of a 20% reduction in these external costs by 2012 through:
  - fewer and more friendly ‘transport miles’;
  - optimisation of distribution centre location and size;
  - telematics and improving driver performance; and
  - new trailer designs

Farming is the largest single source of greenhouse gas emissions in the food chain, but only 10% of agriculture greenhouse gas emissions are CO₂.

The food chain contributes 18% of total UK greenhouse gas emissions – some 116 Mt CO₂ equivalent.

Estimated food chain emissions, million tonnes CO₂ equivalent¹

- Agriculture & Fisheries: 54
- Transport: 17
- Manufacturing: 12
- Households: 10
- Retail: 9
- Catering: 5
- Agricultural Inputs: 4
- Imports: 21
- Exports: -15

Farming generates 0.7% of GDP (2004) but 7% of UK GHG emissions.

Emissions from agriculture are dropping but methane and nitrous oxide present a major challenge for the future.

Agriculture emissions, million tonnes CO₂ equivalent²

- Carbon Dioxide
- Methane
- Nitrous Oxide

A disproportionate amount of CO₂ emissions are from fossil fuels burned to supply energy used in ‘protected horticulture’ - tomatoes, cucumbers, peppers etc. that are grown in glasshouses to be available all year round.

Nitrous oxide is emitted from the soil during the breakdown of organic matter and nitrogen fertilisers.

- The food chain’s contribution to UK greenhouse gas emissions (equivalent to 18%) is larger than its contribution to energy use (8%) due to methane and nitrous oxide emissions from agriculture.
- The external cost of these emissions is estimated at £2.9bn³.
- While methane emissions across the UK have dropped by 52% since 1990, they have only fallen by 15% in agriculture, which now accounts for 37% of all UK methane emissions.

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In the UK, the livestock industry accounts for the greatest share of agriculture’s impacts on the environment

Most of the UK’s agricultural land supports livestock production – providing grazing and feed crops
Agricultural land area by type

- Crops, bare fallow, set-aside: 27%
- Improved grassland: 38%
- Rough grazing: 30%
- Other land: 5%
- 50% of UK cereal crop goes to animal feed

In the UK, the amount of land available for agricultural production has decreased by only 3% over the last 25 years

Livestock numbers are in decline
Livestock on agricultural holdings in England and Wales, millions, 1983 to 2006

- Between 1983 and 2006, the number of cattle and calves fell 22%, and the pig population shrank by 39%

- Livestock production accounts for 76% of all nitrogen applied to farmland, and 60% of nitrates entering water bodies are attributable to farming

- But livestock can bring significant benefits to the UK’s landscape and biodiversity through helping to manage the land by appropriate grazing practices

- For some land where arable crops are not appropriate, livestock farming is an option which also has potential for net environmental gains through managing the landscape and protecting biodiversity

Globally, livestock has a disproportionately large impact on the environment and on resource use

- At a global level, it is estimated that livestock account for:
  - 18% of greenhouse gas emissions (including the emissions across the commodity chain): of which deforestation accounts for 35%; manure 31%; enteric fermentation 25%; and feed production around 7%
  - 8% of global human water use, 90% of which is for feed production
- Livestock can consume more human-edible protein than they eventually yield – modern production systems often use large quantities of protein-rich animal feed
- Livestock farming directly causes soil erosion, water pollution and significant methane production
- And it has indirect global impacts through the production of animal feed from fisheries and crops, depleting marine resources and causing deforestation, water pollution and pesticide use

Most global fish stocks have been overexploited, but there are some examples of how better management practices can deliver sustainable supplies

While the FAO estimate that 75% of the world’s fisheries are classified as fully exploited, overexploited or significantly depleted, others report a much greater problem.

Exploitation status of marine stocks 1950 to 2003, %

- **In 2002, 50% of the UK catch (by value) came from stocks that were in borderline or unsustainable condition.**
- **Current fishing practice has significant incidental damage costs:**
  - It is estimated that 1.3 million tonnes of fish caught in the North East Atlantic each year are discarded for being too small or the wrong species and the European fisheries discard rate is estimated at 20-60%;
  - Trawling can be very destructive; it is estimated that in the North Sea, beam trawl fleets reduces total biomass on the seafloor by 39%.
- **Aquaculture can also have significant impacts:**
  - Disease, escaped fish, increased concentrations of nutrients, medicines and other chemicals all impact on local environments; while globally it relies heavily on industrial fishing to supply the large quantities of fishmeal and oil used for feed, though Scottish salmon aquaculture uses mainly wild fish for feed.

A number of fisheries sustainability certification schemes are in place. The highest profile scheme in the UK is the **Marine Stewardship Council** standard, an internationally recognised set of environmental principles for measuring fisheries management and sustainability.

The National Consumer Council recently rated the availability and promotion of sustainably sourced fish (including the MSC certification) in supermarkets, concluding that there has been some improvement in availability of MSC certified products, but little improvement in their promotion.

The changes are in large part due to changes in supermarkets' purchasing policies, but also due to a recent step by the MSC to increase the number of products and suppliers, and a shift in one large UK based manufacturer towards increasing the amount of MSC certified products it supplies.

The post-war intensification of food production saw a loss of habitat and biodiversity that is slowly being halted and, in some cases, reversed.

With the reforms to the Common Agricultural Policy, payments to farmers are increasingly geared to rewarding good environmental stewardship.

Intensive agriculture can have negative impacts on biodiversity, but land management for agriculture also sustains habitats that protect biodiversity and landscapes.

The value of a managed countryside to tourism was evident from the 2001 FMD outbreak when it was estimated that the UK tourism sector lost between £2.7bn and £3.2bn of value added in 2001, exceeding the damages to the agricultural sector.

Since the 2005 reforms of the Common Agricultural Policy, the amount of land funded under environmental management schemes has dramatically increased.

Populations of farmland birds, which have halved since the late 70s, have now stabilised.

UK farmland bird index 1970 to 2004, 1970=100

Since the 2005 reforms of the Common Agricultural Policy, the amount of land funded under environmental management schemes has dramatically increased.

Hectares of farmland under environmental management scheme agreements in England

These agreements aim to provide benefits to heritage, landscape, biodiversity and water quality.

1: Defra (2007) CAP Observatory Indicators
1: Cabinet Office (2002) Foot and Mouth Disease: Lessons Learned Inquiry
Our current dietary habits increase the risk of becoming obese and developing life-threatening diseases, such as cardiovascular disease and cancer.

The average British adult eats too much salt, saturated fat and added sugars; but not enough fruit, vegetables, wholegrains or oily fish.

The dietary problems of low income households are similar to those of the general population although other lifestyle factors such as smoking and drinking and inactivity, put them at increased risk of premature death.

Almost 70,000 premature deaths could potentially be prevented each year if UK diets matched nutritional guidelines, more than 10% of current annual mortality.

Children’s diets are proportionally worse than adults and the future of children’s health, is of particular concern. Other vulnerable groups include young women of childbearing age and the elderly.

The social and economic costs of diet-related disease are increasing.
Our diet impacts on our health, and a poor diet increases the risk of life-threatening diseases.

Lifestyle-related ill health is caused by a combination of factors:

<table>
<thead>
<tr>
<th>Too much</th>
<th>Too little</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturated Fat</td>
<td>Fruit</td>
</tr>
<tr>
<td>Salt</td>
<td>Vegetables</td>
</tr>
<tr>
<td>Sugar</td>
<td>Oily fish</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Physical activity</td>
</tr>
</tbody>
</table>

- Diet is heavily implicated in the incidence of the largest causes of premature death in Britain.
- For example, being obese substantially increases the risk of cardiovascular disease, diabetes and cancer.
- A third of cardiovascular cases and a quarter of cancer deaths are thought to be diet related.

Calorie intake is lower than 30 years ago but energy expenditure is still insufficient to keep the diet in balance for many.

The relationships between diet and health are complex. Specific aspects of our diet and our lifestyles appear to put our health at greater risk:

- Cardiovascular disease (CVD) includes coronary heart disease (CHD).
- Too much saturated fat.
- Salt, saturated fat and sugar can become contributory factors in diet-related ill health when consumed to excess.
- Too much added sugar.
- Too much salt.

References:
The diet of the average British adult contains too much salt, saturated fat and added sugars

Salt intakes are high with men consuming almost double the official health target\(^1\)

Salt intake per day, g

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>6g</td>
<td></td>
</tr>
</tbody>
</table>

- 75% of the salt we are eating is coming from our consumption of processed foods\(^2\)

Too much of our energy comes from added sugar e.g. not sugars found in fruit, vegetables and milk\(^5,6\)

Added sugar as % of energy intake

<table>
<thead>
<tr>
<th></th>
<th>Men - low income</th>
<th>Women - low income</th>
<th>Men - General Popn</th>
<th>Women - General Popn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On average our intake of saturated fat is 20-25% higher than recommended intakes\(^3,4\)

Saturated fat intake, % of food energy

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>11%</td>
<td></td>
</tr>
</tbody>
</table>

- Average population trans fats intakes have been updated as part of a review into UK trans fat intakes and are now lower than the official UK recommendations of not more than 2% of total energy intake\(^7\)
- Average trans fat intakes have reduced from 1.2% to 1% for adults
- It is possible that some individuals could be consuming higher amounts, depending on the balance of foods in their diets

---

We are eating fewer fruit and vegetables, and less oily fish, than recommended

In a 2001 national dietary survey 13% of men and 15% of women ate 5 or more portions of fruit and vegetables a day in the survey period; 21% of men and 15% of women ate no fruit at all and 19-24 years ate the least.

But the Health Survey for England found 26% of men and 30% of women were achieving the 5-a-day target in 2005.

Adults with children consumed more fruit and vegetables than those without children.

Average consumption of oily fish is under a portion per week, up from ¼ portion per week in 1986/87; younger adults are eating less fish than older adults.

Only 3% of children and 15% of adults from a low income background reported eating oily fish.

Advice to eat more oily fish raises the question of whether there is a conflict with advice on environmental sustainability.

1: FSA (2007) LIDNS; 2: Health Survey for England (2005); 3: FSA (2001) NDNS 2001; 4: LIDNS dietary surveys are based on actual food diaries recording what people eat as opposed to what they purchased, Health Survey for England is a questionnaire response; results may not therefore be fully comparable.
The diet of the average child in the UK is much like a typical adult’s diet but is proportionally even higher in sugars and saturated fat.

**Children are eating too much saturated fat…**

Saturated fat as % of energy intake

<table>
<thead>
<tr>
<th>Boys - Low Income</th>
<th>Girls - Low Income</th>
<th>Boys - General Popn</th>
<th>Girls - General Popn</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>

**Boys from low income families have the highest added sugar intake**

**…and their added sugars intake is very high**

Added sugar (non milk) as % of energy intake

<table>
<thead>
<tr>
<th>Boys - Low Income</th>
<th>Girls - Low Income</th>
<th>Boys - General Popn</th>
<th>Girls - General Popn</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>

**Children from a low income background get even more of their sugar from soft drinks**

Source of added sugars in diet for children aged 2-18 years old in low income households, %

<table>
<thead>
<tr>
<th>Soft drinks (not fruit juice)</th>
<th>Breakfast cereals (incl high fibre)</th>
<th>Biscuits, buns, cakes &amp; pastries</th>
<th>Confectionery (incl. chocolate)</th>
<th>Table sugar</th>
<th>Other</th>
</tr>
</thead>
</table>
| 7. Diet and health

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There is some evidence that intakes of important vitamins and minerals are lower than is good for health

Older children are consuming less calcium than recommended; dietary surveys show that as children get older their consumption of soft drinks increases and this is likely to be replacing milk and milk products

Reference nutrient intake (RNI) and surveyed intake, boys, mg/day

<table>
<thead>
<tr>
<th>Age Group</th>
<th>4-6</th>
<th>7-10</th>
<th>11-14</th>
<th>15-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNI for Calcium (mg/day)</td>
<td>400</td>
<td>800</td>
<td>1200</td>
<td>1600</td>
</tr>
<tr>
<td>Mean intake</td>
<td>300</td>
<td>600</td>
<td>900</td>
<td>1200</td>
</tr>
</tbody>
</table>

Young women are more likely to have low micronutrient intakes

Mean intake of selected micronutrients as % of Reference Nutrient Intake (RNI)

- 19-24 years
- 25-34 years
- 35-49 years
- 50-64 years

- There is some evidence of low levels of vitamin D and iron amongst older children, younger adults and older people living in institutions, and infants of UK South Asian and Afro-Caribbean groups

- One survey found 14% of men and 15% of women had low vitamin D levels

- Deficiencies in vitamin D can result in rickets in children and osteoporosis in the elderly

- Low iron levels can affect energy levels, lethargy and lead to anaemia. Women need almost twice as much as men. The main iron sources in women’s diets are meat and fortified breakfast cereals

- 50% of some age groups have iron intakes below the lower reference nutrient intakes

1: FSA (2007) Scientific Advisory Committee on Nutrition (SACN) Salt and Health Report; 2: FSA (2000) NDNS data; 3: RNI is an estimate of the amount of a vitamin or mineral that should meet the needs (97.5%) of most of the group to which they apply, it is not a minimum target (British Nutrition Foundation (2007) Nutrient Requirements and Recommendations)
A balanced diet can play an important role in the prevention of cardiovascular disease, the single most common cause of death.

Deaths from coronary heart disease (CHD) and stroke have dropped by 44% in last ten years among the under 65s but incidence remains high²

Death rates from cardiovascular disease have fallen greatly since the early 1980s with 40% of this gain due to better medical treatments, 60% to healthier lifestyles and a reduction in risk factors, principally smoking, but also better diets³

There are differences in diet-related disease in different ethnic groups. The risk of stroke is around 50% higher in south Asian and black Caribbean men and women than the general population⁴

High blood pressure (hypertension) increases the risk of CHD and stroke, with 34% men and 30% women in England affected. Although there is no single cause, a range of lifestyle factors e.g. being overweight, too much salt, alcohol, and not taking enough exercise, can all contribute to increasing the chances of hypertension⁵

2.6 million bed days a year in acute hospitals are given over to care of stroke patients⁶

There is evidence that diets rich in fruit and vegetables are associated with lower rates of cardiovascular disease⁷

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There is a growing body of evidence which suggests that diet affects an individual’s risk of contracting cancer.

The risk of certain types of cancer is linked to diet and, research suggests, highly preventable. The ‘standard’ estimate that 30% of all cancers are diet related stems from a US study 25 years ago. The World Health Organisation estimates that cancer causes 33% of all deaths. A World Cancer Research Fund (WCRF) report predicts that globally over the next 20 years cancer cases will double. There is a growing body of evidence, e.g. the WCRF review, showing the link between obesity and cancer. There is some evidence that the incidence of some cancers is decreasing in high-income counties, with stomach cancer decreasing worldwide. Obese people are more likely to suffer from colorectal, oesophageal, kidney and gallbladder cancer and also breast and uterine cancer for women.

Bowel cancer is the most common diet-related cancer in the UK. Instances of diet-related cancers in the UK, 2003:

- The risk of colorectal (bowel) cancer:
  - Is increased among adults who eat more red meat (more than 300g a week) and, particularly a diet high in processed meats.
  - Is reduced by a diet high in fibre or fresh fruit and vegetables.

An estimated 70,000 premature deaths in the UK could be prevented each year if UK diets matched nutritional guidelines – more than 10% of current annual mortality

- There can be few areas of public policy where the positive benefits to lives, health and well-being are potentially as dramatic as they could be in diet and nutrition
- The potential benefits of changes to diets are huge, as are the issues to be tackled in effecting and sustaining long term change

<table>
<thead>
<tr>
<th>The challenge</th>
<th>The prize¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deaths avoided each year</td>
</tr>
<tr>
<td>Increase fruit &amp; vegetable intake to 5 a day</td>
<td>42,200</td>
</tr>
<tr>
<td>Reduce daily salt intake from average 9g to 6g</td>
<td>20,200</td>
</tr>
<tr>
<td>Cut saturated fat intake by 2.3% of energy</td>
<td>3,500</td>
</tr>
<tr>
<td>Cut added sugar intake by 1.75% of energy</td>
<td>3,500</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>69,400</strong></td>
</tr>
</tbody>
</table>

For context, this is equivalent to about 12% of the ~582,500 deaths in the UK in 2005

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1: Ofcom (2006) Annexe 7- Impact Assessment Consultation on Television Advertising of Food and Drink to Children. Joint FSA/DoH analysis extrapolated for the Strategy Unit (unpublished); benefits of the 5-a-day based on 136g increment in consumption – the gap between estimated intake (Health Survey for England baseline) and target based on standard portion size
A recent Foresight report projected that more than half of UK adults could be obese by 2050

Foresight analysis predicts a huge increase in the prevalence of obesity by 2050
% of UK projected to be obese (BMI ≥ 30kg/m2)^1

Obesity rates are highest among those in their 50s and 60s
% men and women obese in 2007^1

- Obesity has trebled in 20 years; nearly a quarter of adults and about 10% of children are obese in England today
- Many sections of society are overweight but people in the lowest social classes are particularly susceptible to becoming obese, the social class divide is particularly marked in women
- Foresight projections show radical increases in the years ahead, with:
  - 40% of Britons being obese by 2025 and 60% by 2050; and
  - 70% of girls and 55% of boys overweight or obese by 2050

---

Obesity is exacting a heavy and growing toll on the nation’s health

- We live in an obesogenic environment, eating more energy rich food and exercising less
- Being overweight or obese:
  - increases the risk of diabetes;
  - increases the risk of cancers and CVD;
  - increases the risk of other conditions including arthritis and infertility;
  - impairs well-being and quality of life
- The evidence that obesity and weight gain increases cancer risk has increased considerably since the mid 1990s
- The prevalence of diabetes is expected to increase by 15% between 2001 and 2010. 6% of this is due to the aging population but 9% will be down to increasing obesity in the general population
- Diabetes is estimated currently to account for 5% overall NHS expenditure or 9% of hospital costs
- Looking at Body Mass Index effects only, by 2050 stroke could increase 30%, CHD 20% and type 2 diabetes 70%"}


Obesity is associated with increased risk of serious medical conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type 2 Diabetes</strong></td>
<td>The obese face 20-fold increase in risk of Type 2 diabetes</td>
</tr>
<tr>
<td></td>
<td>90% of Type 2 diabetics have a Body Mass Index of &gt;23kg/m²</td>
</tr>
<tr>
<td><strong>Hypertension</strong></td>
<td>5x risk in obesity</td>
</tr>
<tr>
<td></td>
<td>66% of hypertension is linked to excess weight</td>
</tr>
<tr>
<td><strong>Coronary Heart Disease &amp; stroke</strong></td>
<td>2.4x increase in risk for obese women, 2x increase for obese men under 50</td>
</tr>
<tr>
<td></td>
<td>Obesity contributes to cardiac failure in &gt;10% of patients</td>
</tr>
<tr>
<td><strong>Cancer</strong></td>
<td>10% of cancer deaths among non-smokers are related to obesity</td>
</tr>
</tbody>
</table>

7. Diet and health
# Children’s diets are generating specific health problems and areas of concern

<table>
<thead>
<tr>
<th>Rise in obesity and Type 2 diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Type 2 diabetes is now being seen in children as young as 7 years old¹</td>
</tr>
<tr>
<td>25% of 11 – 15 year olds are classed as obese²</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increasing concern over additives in food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some people can react to certain additives. People who react may have asthma or other allergies</td>
</tr>
<tr>
<td>One recent study suggests that certain mixtures of food colours together with the preservative sodium benzoate are associated with an increase in hyperactivity in some children³</td>
</tr>
<tr>
<td>An FSA review concluded there was insufficient evidence on the effects of omega 3 on learning ability for the general population, but some evidence of benefits to children with learning difficulties⁴</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Persistence of vitamin/dietary deficiencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 million people in the UK have a food allergy – 1-2% of adults and 5-8% of children⁵</td>
</tr>
<tr>
<td>1 in 55 children have peanut allergy⁶</td>
</tr>
<tr>
<td>Anorexia affects 1 in 250 girls and up to 50% of those with anorexia are aged between 13 and 19⁷</td>
</tr>
<tr>
<td>It is thought that between 1 and 3% of young women are bulimic at any one time⁸</td>
</tr>
</tbody>
</table>

| Allergies & intolerances are more common in children than adults; and rising |

Evidence shows that breast feeding is the best start in terms of a baby’s health
Incidence of breastfeeding standardised by the composition of the sample by country, 1990-2005

Despite an increase since 1985, UK breastfeeding initiation rates are still among the lowest in Europe

Weaning
The Department of Health recommends introduction of solids at around six months of age and mothers are now on average introducing solid foods later. Only 51% of mothers have introduced solids by 4 months in 2005 compared to 85% in 2000, although only 2% had delayed the introduction of solids until six months.

Proportion of mothers introducing solids during different age periods by survey year (1990 & 1995 Great Britain; 2000 & 2005 United Kingdom)

- There are variations in infant feeding practices by socio-demographic characteristics of the mother
- Younger mothers, mothers from lower socio-economic groups and mothers with lower educational levels appear to be least likely to start and continue breastfeeding, and are more likely to introduce solids, follow-on formula and additional drinks earlier

While older people appear to eat marginally better than the general population, the elderly are particularly at risk of malnutrition both at home and during stays in hospital.

There is some evidence that older people have a slightly better diet:

- Older people consume marginally more fruit and vegetables and slightly less red meat than the average. However oily fish consumption remains low and there is still too much added sugar, saturated fat, salt and alcohol.
- Women aged 50 to 64, when compared with men and other age groups, come closest to meeting dietary recommendations and consume the least fat and added sugar.
- Osteoporosis can be a health issue later in life and predominantly has been seen as a female issue however 1 in 10 men over 50 experience osteoporotic fractures².
- Over consumption of foods or supplements high in vitamin A is associated with an increased propensity for bone fractures and lower bone mineral density.

Malnutrition affects up to 14% of the over-65s¹:

- Four out of ten older people (over 65) admitted to hospital are already malnourished.
- Patients over the age of 80 admitted to hospital have a five times higher prevalence of malnutrition than those under the age of 50.
- Malnourished patients stay in hospital for much longer, are more likely to develop complications during surgery, require more medications and have a higher mortality rate.
- There is recognition of a high prevalence of low vitamin D status, particularly those living in institutions. A daily vitamin D supplement has been recommended for certain groups, including those living in institutions, but it is not universally implemented.

There are differences between the health outcomes for some ethnic minorities and those of the general population.

- Diabetes is almost four times as prevalent in Bangladeshi men, and three times as prevalent in Pakistani men when compared with the general population.
- Black Caribbean, Black African and Bangladeshi women are significantly more likely to have high blood pressure.
- A black person is twice as likely to have a stroke as a white person.
- The South Asian and African Caribbean population are also 3-5 times more likely to suffer chronic kidney failure than the white population.

For men, prevalence of obesity is greatest among the Bangladeshi population, with a large increase expected amongst Pakistanis by 2050. Obesity levels amongst Black Caribbean and Bangladeshi men are predicted to decline.

For women, obesity is expected to increase dramatically amongst the Black African and Pakistani populations, but rates are predicted to decline for Black Caribbeans.

Ethnic diets can have a major impact on people’s health, but other cultural and lifestyle factors also affect health outcomes.

Traditional ethnic diets are healthier in terms of being low fat and high in fruit and vegetables, but are also higher in salt. 

- The traditional diets of Black Caribbean, Indian, Pakistani and Bangladeshi communities are nearer the recommended daily fat intake than those of the general population.
- Between 82% and 89% of men from minority ethnic groups register as having a low fat score, compared to the general population average of 72%. Similar trends exist in the diets of ethnic women.

Portions of fruit and vegetables consumed a day

- Ethnic groups are more likely to eat more portions of fruit and vegetable a day than the general population.

% population who add salt during cooking

- But they are also much more likely to add salt to cooked food, placing them at risk of hypertension.

- Whilst physical inactivity, smoking, alcohol and genetics impact upon health, food is a lifestyle factor that also shapes health outcomes.
- Minority ethnic groups are diverse and heterogeneous, with different cultural lifestyles within groups.

1: Department of Health (2004) Health Survey for England; 2: Fat scores are based on frequency of consumption and fat content of a standard portion size – low fat intake constitutes 83g or less per day.
Diet-related ill health is placing a significant burden on the NHS, care services and the economy at large – and the cost is projected to grow substantially in the years ahead

**Obesity’s impact on public services and economic productivity seems set to soar**

- The cost of people being obese and overweight in England was estimated at nearly £7bn in 2002, including direct treatment costs (2.3%-2.6% of the NHS bill), state benefits and loss of earnings and productivity (including 45,000 lost working years)\(^1\)

- Welfare payments for the obese have recently been estimated at £1bn-£6bn/year, excluding social care\(^2\)

- Foresight’s projections for the prevalence of obesity in the UK imply a significant real term increase in obesity-related health costs in the decades ahead\(^3\)

- We have found no aggregate, coherent estimate of the total cost of diet-related ill health in the UK but the various snap-shots available suggest that the cost burden of diet is considerable:
  - DH has estimated if our diet matched the national nutritional guidelines the health benefits would be £19.9 billion each year in quality-adjusted life years;\(^4\)
  - One study estimated that food-related ill health costs the NHS £6bn in 2002 – 9% of NHS costs, which pro rata in 2007 would be £7.7bn\(^5\)
  - Another study estimated that malnutrition costs public services at least £7.3 bn (including hospital treatment costs of £3.8bn and long-term care of £2.6bn)\(^6\)

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Part 8 – Food safety

Executive Summary

1: Introduction

2: Changing consumer demand

3: The UK food chain

4: Global markets

5: Food security

6: Food and the environment

7: Diet and health

8: Food safety

- Public trust and confidence in the food system rests on the safety of food supplies

- There are thought to be hundreds of thousands of food poisonings each year, most of which go unreported

- Contaminated food can present a risk to the consumer, with the complex and lengthening supply chain posing considerable challenges for traceability

- Given that most food alerts come from imported food, there are real challenges about monitoring the safety and traceability of imports

- Public concern about key elements of food safety has decreased in the past 6 years while confidence in institutions protecting the public’s health has increased
Total incidence of food-borne illnesses in the UK fell almost 20% between 2000 and 2005 but there is still much to be done.

In 2006 close to 700 people died as a direct result of something they ate – mostly due to food poisoning. Deaths directly attributable to food, 2006¹

Campylobacter are the commonest cause of food poisoning and hospitalisation but other bugs cause more deaths. Food-borne illness health risks – estimated number affected and severity, 2005¹

<table>
<thead>
<tr>
<th>Pathogens</th>
<th>Deaths</th>
<th>Hospitalisations</th>
<th>Estimated cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campylobacter spp.</td>
<td>70</td>
<td>13,930</td>
<td>295,500</td>
</tr>
<tr>
<td><em>E. coli</em> O157</td>
<td>20</td>
<td>400</td>
<td>1,100</td>
</tr>
<tr>
<td><em>Listeria monocytogenes</em></td>
<td>130</td>
<td>380</td>
<td>400</td>
</tr>
<tr>
<td>Salmonellas, non-typhoidal</td>
<td>100</td>
<td>1220</td>
<td>33,400</td>
</tr>
</tbody>
</table>

- Most food poisoning is due to microbiological contamination of food and though it is less of a problem than in past it is still a significant issue - costing an estimated £1.7bn in 2000 for the UK in NHS costs, costs to individuals and loss of earnings¹
- Progress is being made – a 19.2% cut in food-borne diseases between 2000 and 2005 saw 1.5 million cases avoided, 38,000 hospital bed days saved and £750m in benefits to society over the 5 year period¹
- One of the most effective ways of cutting food poisoning is to reduce contamination of meat and eggs in the food supply chain – on-farm, in slaughterhouses; and hence in retail and distribution and in the home
- Action taken by industry has reduced the level of *Salmonella* contamination of chicken from 37% in 1993/94 to less than 6% in 2001

Contaminated food can present a risk to the consumer, with the complex and lengthening supply chain posing considerable challenges for traceability.

- Risks to food safety can shift as a result of changes at any point in the food chain – from farming practice (as in BSE, right) to home cooking knowledge.
- The dominance of supermarket food sales means that risk management and product traceability by retailer chains has had a major impact on positive risk management in the food chain.
- Changes in the types of food we buy can affect the risks – such as the current trend away from frozen and canned towards fresh and chilled foods and eating out.

Contamination incidents investigated by the FSA by type
Categories of Incidents in 2006

<table>
<thead>
<tr>
<th>Category</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergen</td>
<td>4%</td>
</tr>
<tr>
<td>Physical contamination (e.g. pieces of glass)</td>
<td>10%</td>
</tr>
<tr>
<td>Microbiological contamination</td>
<td>11%</td>
</tr>
<tr>
<td>Natural chemical contamination (e.g. toxins)</td>
<td>13%</td>
</tr>
<tr>
<td>Environmental contamination (e.g. spills/leaks)</td>
<td>28%</td>
</tr>
<tr>
<td>Others</td>
<td>34%</td>
</tr>
</tbody>
</table>

BSE is a cattle disease first defined in 1986. Use of infectious meat and bone meal in cattle feed caused an epidemic that peaked in 1992. Materials that might harbour BSE were banned from animal feed and many cattle slaughtered.

New cases in cattle are now rare. Consumption of BSE-infected material has been linked to variant Creutzfeldt-Jakob disease in humans, a fatal degenerative brain disease.

New cases of BSE have fallen from 37,000/yr at the peak of the epidemic to 67 in 2007.

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Most UK food alerts are caused by imported food, for which monitoring and traceability are key challenges

- Nearly 14 million tonnes of food and feed entered the UK last year from non-EU countries\(^1\)
- In 2005/6 1,082 commercial consignments were rejected on food safety grounds out of the 327,534 that entered UK ports
- In 2006 imported foods accounted for 80% of the food alerts the UK submitted to the EU\(^2\), and 9 of the top 10 source countries are outside the EU
- Recent issues include melamine in feed from China, dioxins in guar gum from India and GM rice from the USA

The Sudan I case illustrated how a contaminated ingredient can find its way into many different food products

In 2006 a large recall of 600 products was instigated after chilli powder imported from India was found to contain the banned dye Sudan I, a known carcinogen. The cost to business of the recall has been estimated at £100m\(^3\)
Public concern about key elements of food safety has decreased in the past 6 years while confidence in institutions protecting their health has increased

Public concern with a range of issues, from pesticides, allergies to BSE and GM foods, has declined since 2001
% mentioning concern with the issue, selected issues¹

- 70% of the public surveyed are very or fairly concerned with food safety issues in general, a level which has remained stable over the last 7 years. But concern about many specific issues, like BSE or pesticides, has declined over the same period. The proportion of the public who are confident about institutions protecting health in relation to food safety has risen over the same period, from 48% to 63%
- But consumer groups are seen as the most reliable sources of information on healthy eating, while television and magazines are the main sources of information
- Institutional reform by Government and industry-led initiatives such as assurance schemes have helped to restore consumer trust in food