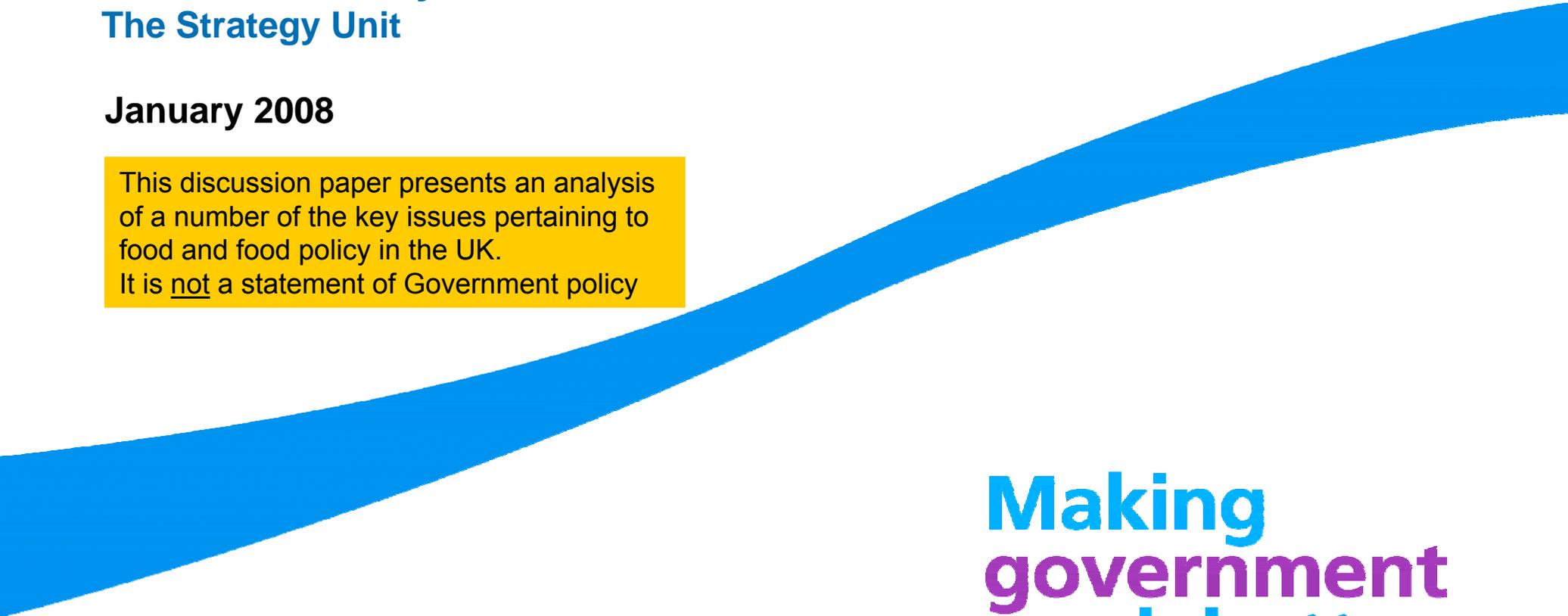


Food: an analysis of the issues

The Strategy Unit

January 2008

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



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Introductory note and invitation to comment

- This paper is a product of a Strategy Unit project that is examining 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 will be tested and developed in later project phases including consultations with key stakeholders
- Comments on, or contributions to, the analysis should be sent to the Strategy Unit by email to foodproject@cabinet-office.x.gsi.gov.uk or by post to Food Project, Strategy Unit, Cabinet Office, Room 4.6, Admiralty Arch, The Mall, London, SW1A 2WH

This analytical paper is a discussion document and not a statement of government policy

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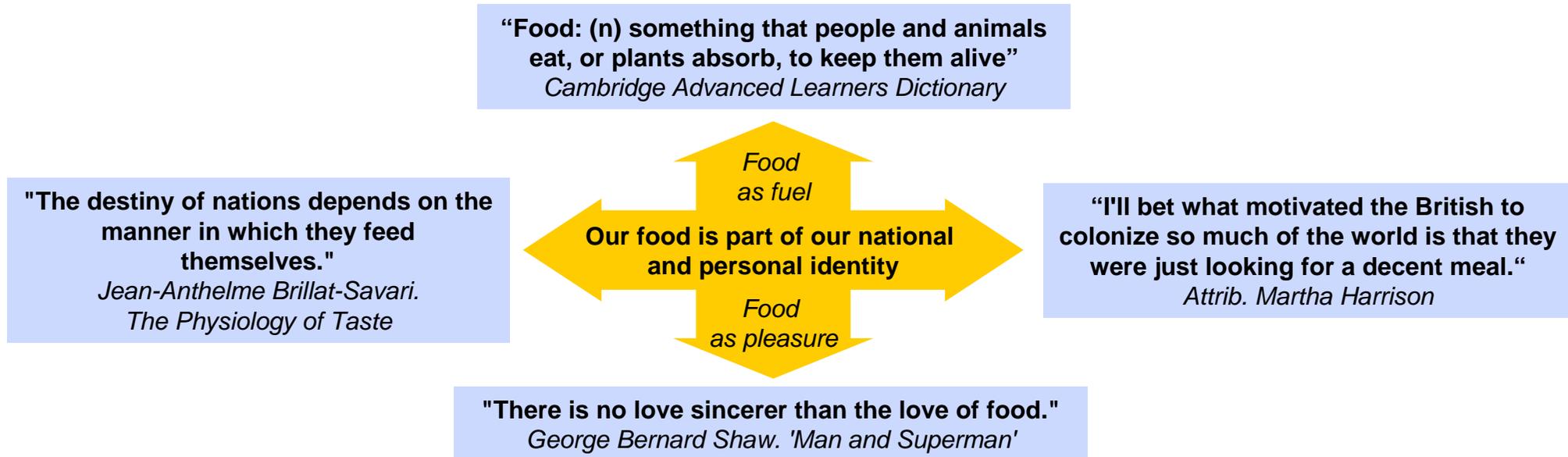
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The analysis in this paper reveals a changing food culture in Britain that reflects today's lifestyles and the interests of a more affluent society

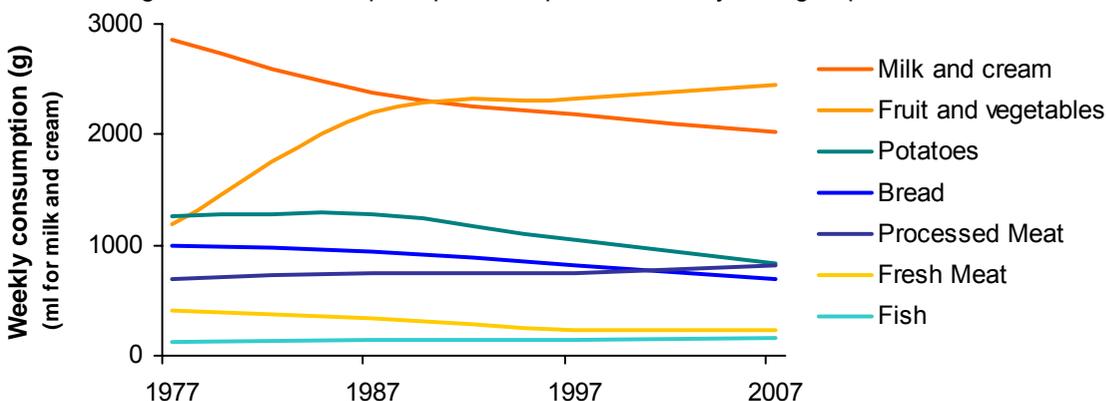


- Changes in British society are revealed by the evolution of our food and food culture. In recent times, we have seen:
 - A fragmenting market of more diverse, sophisticated and (on average) affluent consumers
 - Lifestyle choices reflected: in a desire for convenience in how people shop, cook and eat; 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

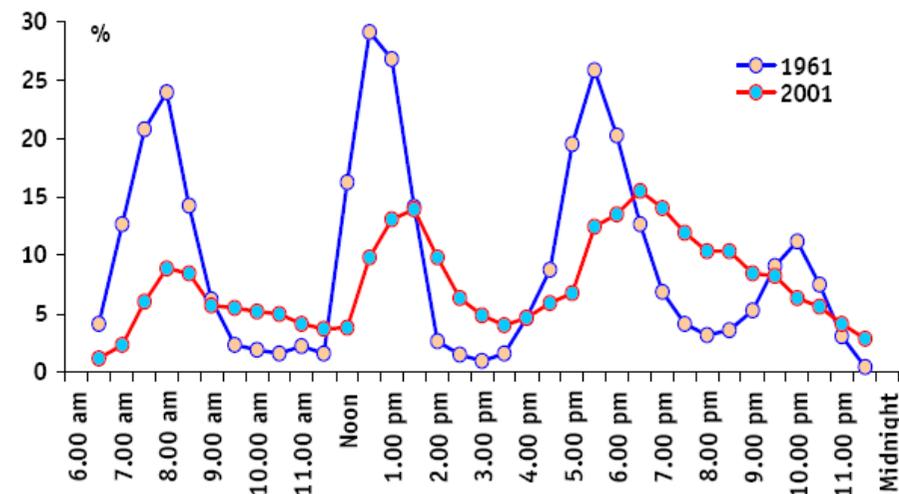
The composition of the British diet is changing; consumption of milk, fresh meat and potatoes has fallen over the past 30 years

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

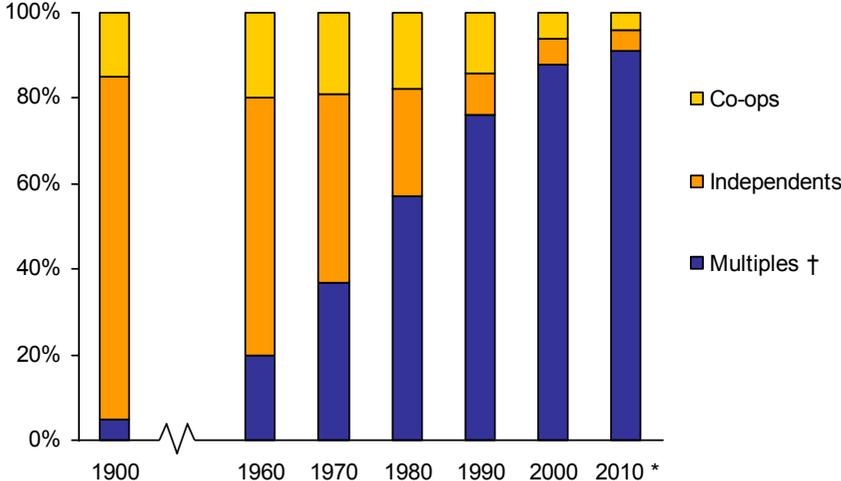


- Food has become more affordable and our food culture is becoming more aspirational
- Consumers are increasingly wanting food to be healthier, more convenient and more ethical as well as to taste good
- There is a gap between what people do and what they say. The intention-action gap is manifest in 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 £162 billion/yr UK food and drink chain encompasses several major service industries, the UK's largest manufacturing sector, UK farming and UK fishing

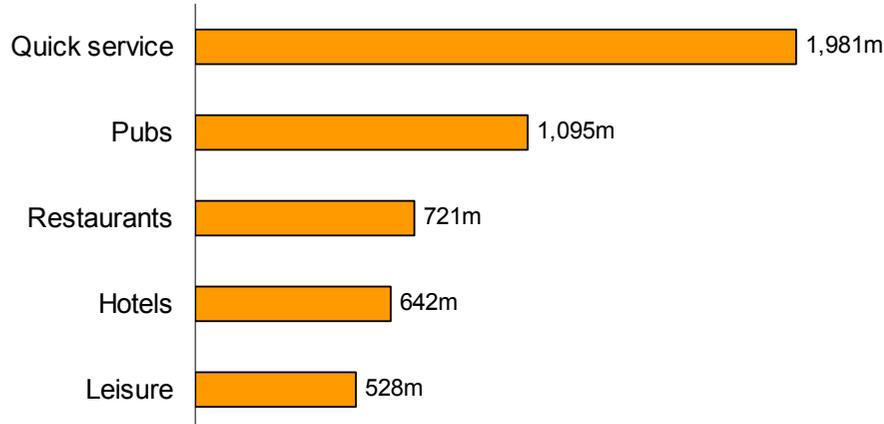
Grocery market consolidation is a long term phenomenon; 4 firms now account for around 75% of grocery sales

UK market share, by value, 1900-2010¹



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

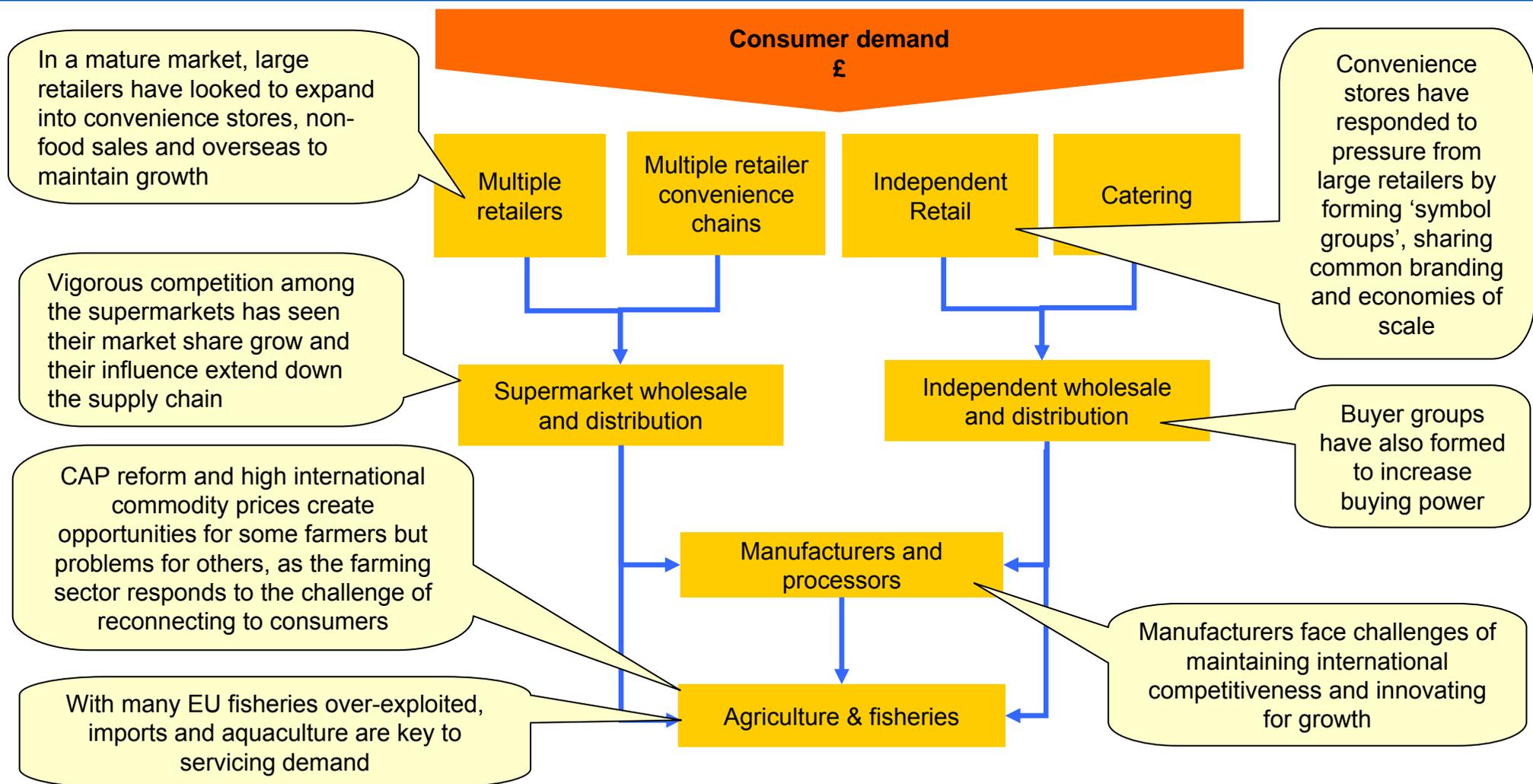
Estimated number of meals served, UK, 2004²



- 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 year³
- 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 continues⁴
- 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 alone is worth £2bn and provides over 1 billion meals a year⁵
- 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 trade⁶

1: IGD, Grocery Retailing 2004 – N.B. *2010 is IGD estimate. †'Multiples' category includes symbol-group convenience stores, * forecast ; 2: Horizons for Success; 3: ONS (2007) *Consumer Trends* / Defra communication; 4: Curry Commission(2002) / Defra; 5: NAO (2006) *Smarter food procurement in the public sector*; 6: NRI (2006). *The production of fresh produce in Africa for export to the United Kingdom*

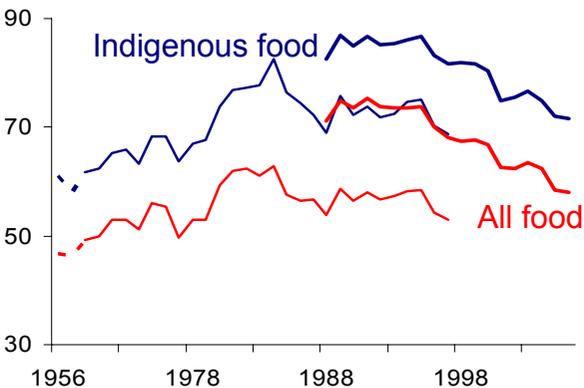
Local, UK, EU and global markets shape the system that supplies our food



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

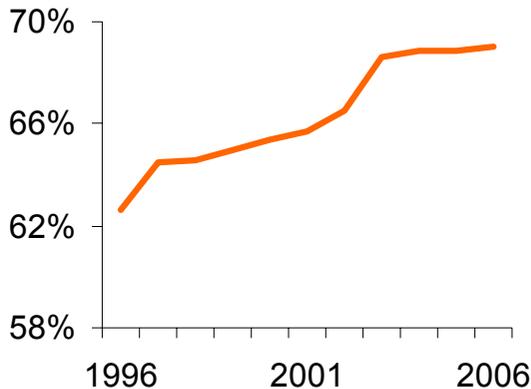
In value terms, UK self-sufficiency peaked in the early 90s and then declined

UK self-sufficiency in food, old and new data series, %¹



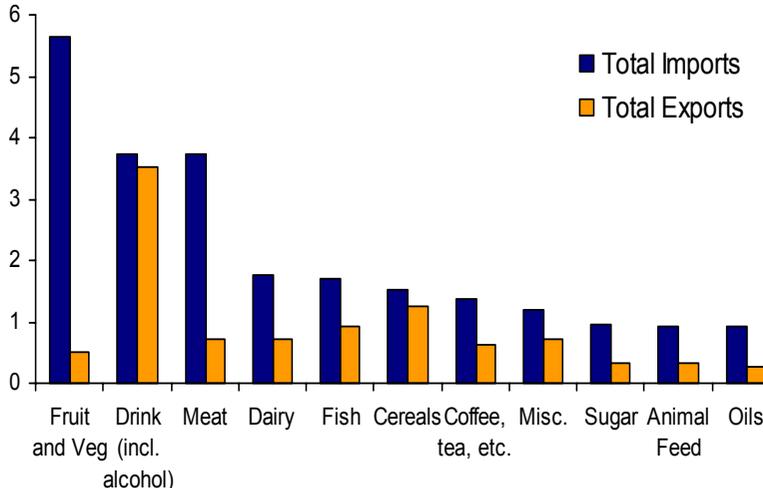
The share of UK food imports sourced from Europe has risen

European Free Trade Agreement (EFTA) countries as % all UK food imports²



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

UK trade by food group, £bn at current prices, 2005³



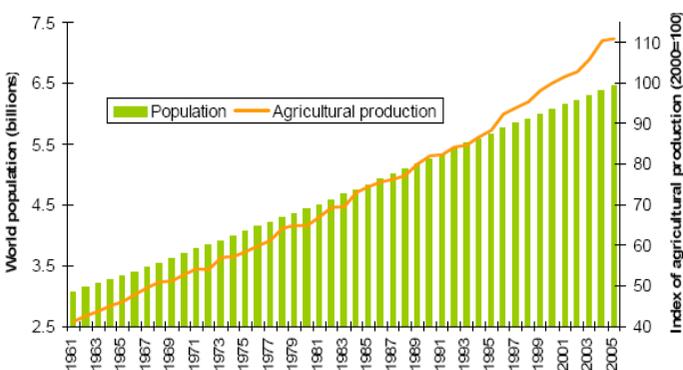
- The high self-sufficiency rates of the 80s and 90s were an artefact of the CAP's emphasis on output at that time
- There is a strong case that the UK's self-sufficiency in food is a better indicator of producer competitiveness and consumer demand, e.g. for exotic food and year-round availability of 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

1: Defra. Treatment of imports/exports was adjusted in 1998, hence shift in data series. Chart shows market value not volumes or calorific value; 2: Defra / UK Tradestat. EFTA is EU plus Switzerland, Norway, Iceland, Liechtenstein; analysis based on traded value of imports rather than unprocessed farm-gate value; 3: Defra (2007) *Food Statistics Pocketbook*

There is a broad consensus that global food markets are in transition to a period of higher prices and increased volatility after a decade or more of relative stability

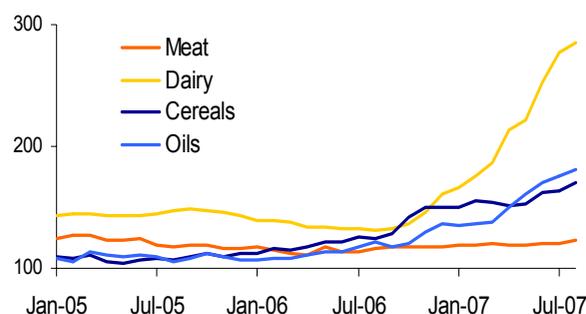
Total agricultural output has grown faster than world population

World agricultural production and population 1961-2005¹



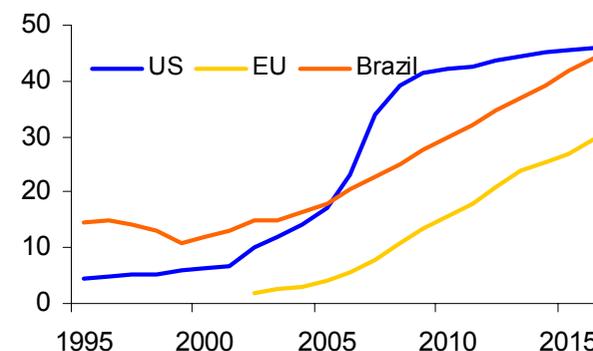
Recent price changes have been largest in dairy, significant in cereals and oilseeds but meat commodities are little changed

FAO monthly price index data²



Production of ethanol and bio-diesel is projected to increase dramatically under current policies

Ethanol and biodiesel output, billion litres³

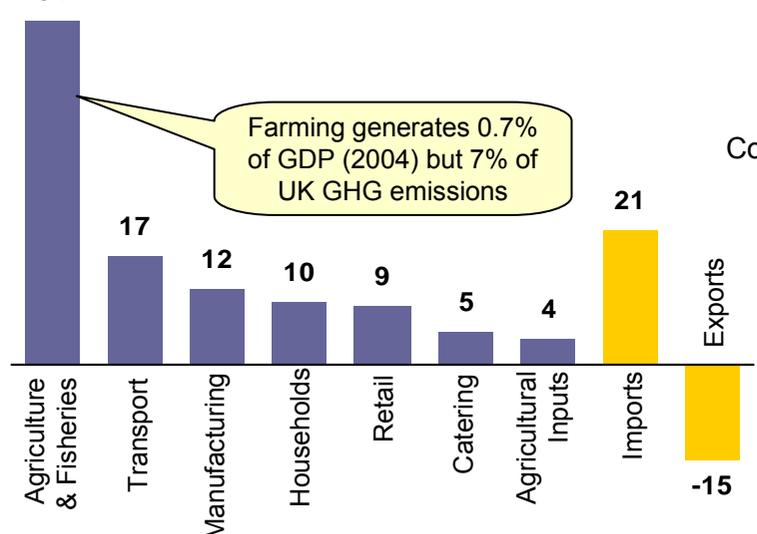


- After a long period of declining real prices, key agricultural commodities prices increased markedly in 2006-7
- Contributory factors include higher energy costs, robust global demand for food and animal feed (especially in Asia), policy reforms (e.g. to the EU's CAP, lowering stocks) and some poor 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

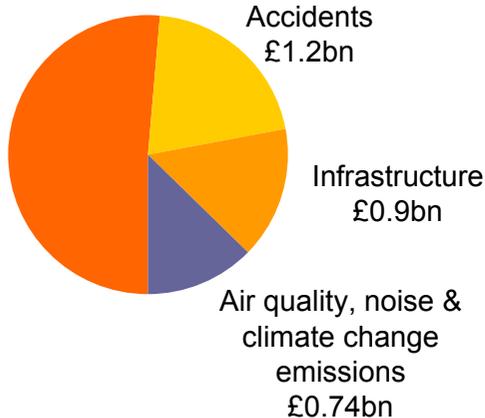
The food chain contributes 18% of total UK greenhouse gas emissions – some 116 Mt CO₂ equivalent

Estimated food chain emissions, Mt CO₂ equivalent¹



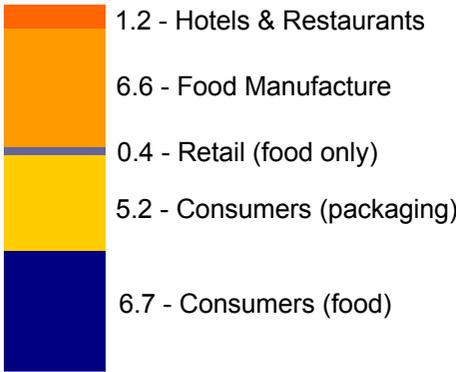
The biggest external cost of food transport is congestion not greenhouse gas emissions

Transport costs associated with food, billion²



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

Non-agricultural waste arisings for England, million tonnes³

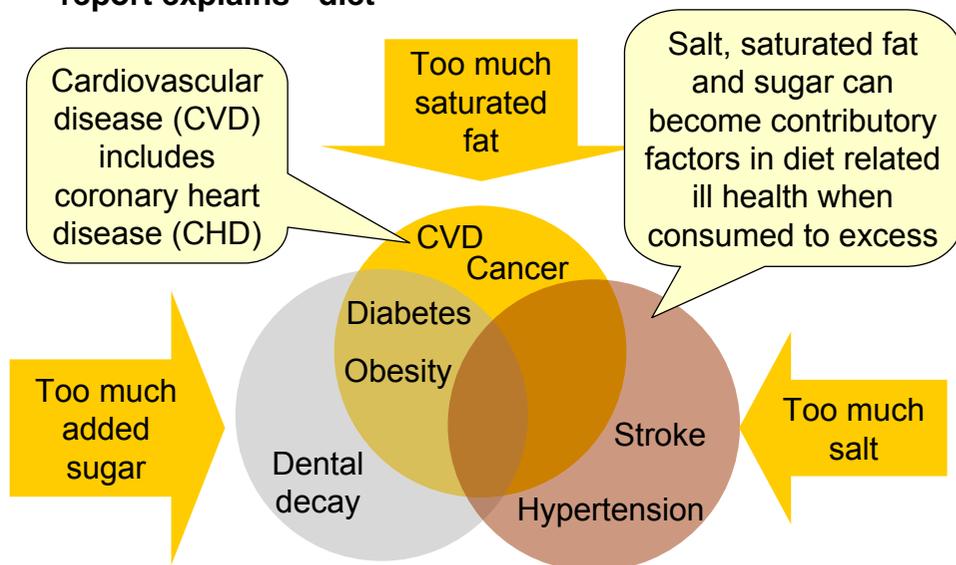


- The food chain’s environmental impacts include nationally significant contributions to greenhouse gas emissions, the production of packaging and other waste, and habitat and biodiversity loss both here and abroad
- Livestock production has a disproportionate impact on greenhouse gas emissions, land 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 foods⁴

1: All figures Defra/SU estimates, using statistics from EA/WRAP/ONS; 2: AEA Technology (2005), *The validity of food miles as an indicator of sustainable development*, 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



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, UK¹

	Premature mortality avoided	Quality adjusted life years gained)
Increase fruit and vegetable intake by 136g/day	42,000	411,000
Reduce daily salt intake from average 9g to 6g	20,000	170,000
Cut sat fat intake by 2.5% of energy	3,500	33,000
Cut added sugar intake by 1.75% of energy	3,500	49,000

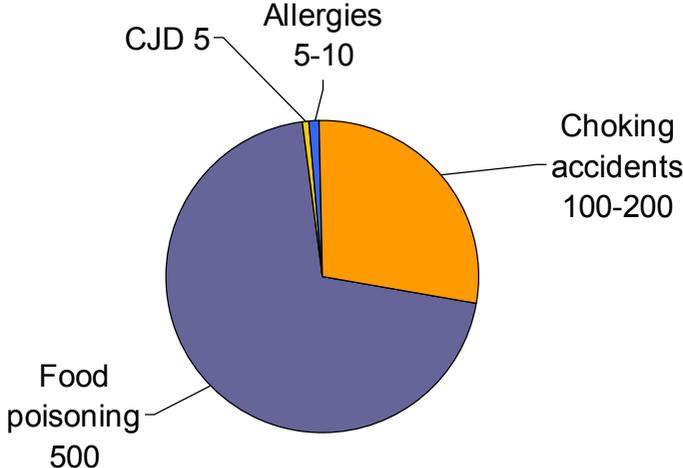
- Diet influences risk of cancer and cardiovascular disease – saturated fat, salt, fruit and vegetable intake being key issues
- Studies have estimated that food-related ill health cost the NHS £6 billion in 2002² (9% of its budget) and that malnutrition (mainly in the elderly) costs public services £7.3 billion³
- 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

1: Ofcom (2006) *Annex 7- Impact Assessment Consultation on Television Advertising of Food and Drink to Children*. Joint FSA/DoH analysis; 2: Rayner et al (2005), *The burden of ill health in the UK*, BMJ; 3: The British Association for Paternal Enteral Nutrition (BAPEN) (2005) *New Health Economic Report*

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



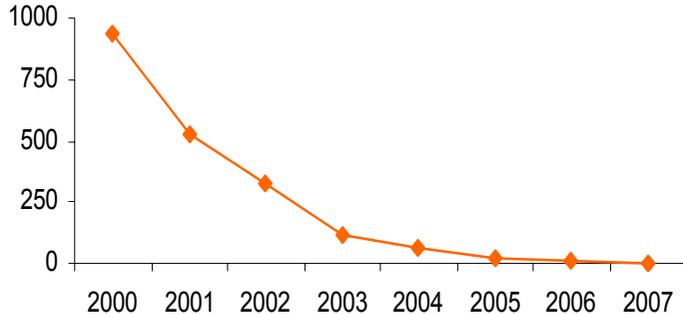
Campylobacter are the commonest cause of food poisoning but other bugs cause more deaths

Food-borne illness health risks - number affected, UK, 2005²

	All cases
<i>Campylobacter</i> spp.	295,500
<i>E.coli</i> O157	1,100
<i>Listeria monocytogenes</i>	400
<i>Salmonellas</i> , non-typhoidal	33,400

New cases of BSE have fallen from 37,000/yr at the peak of the epidemic to 15 in 2006

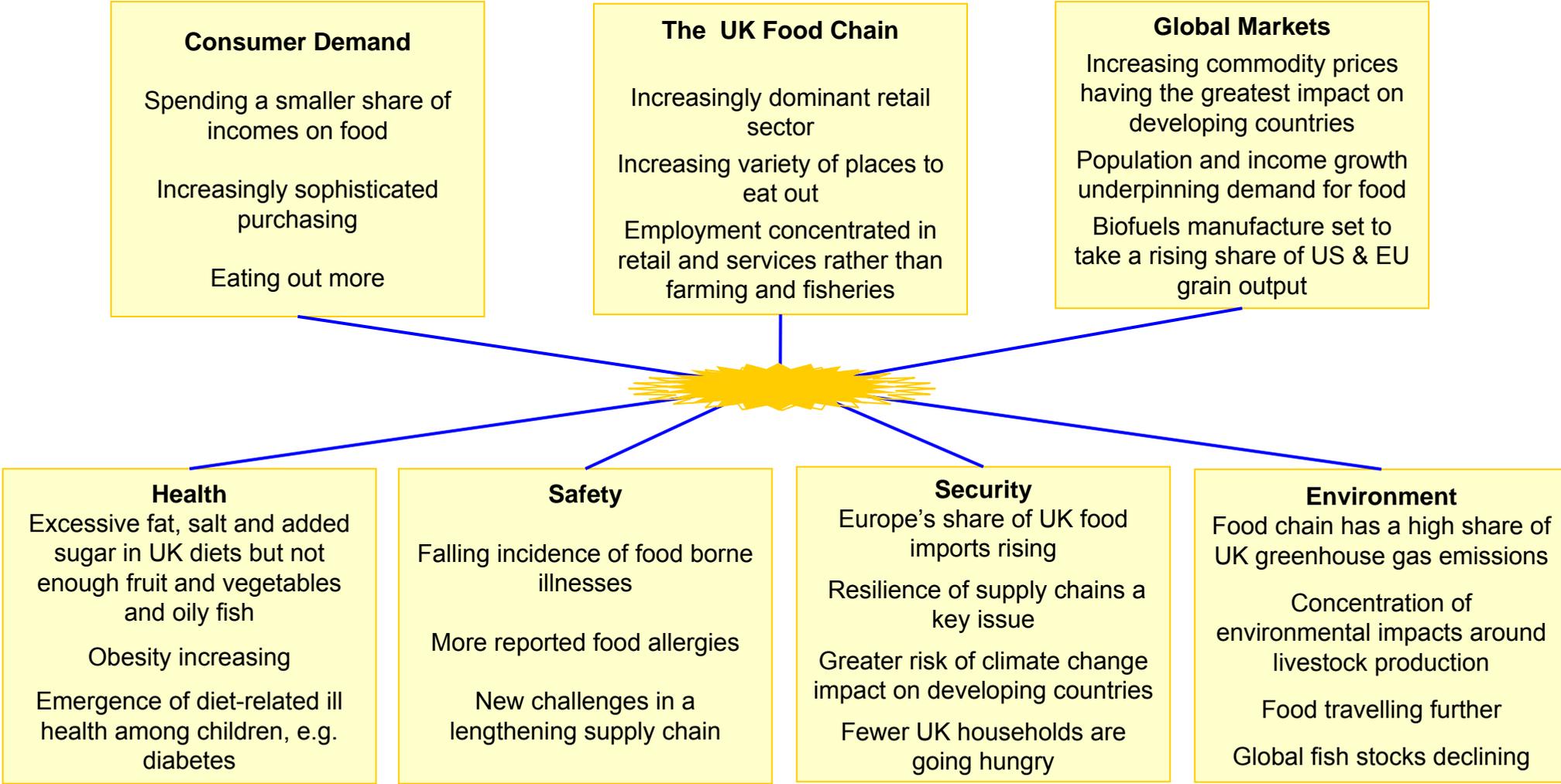
BSE confirmed cases, UK³



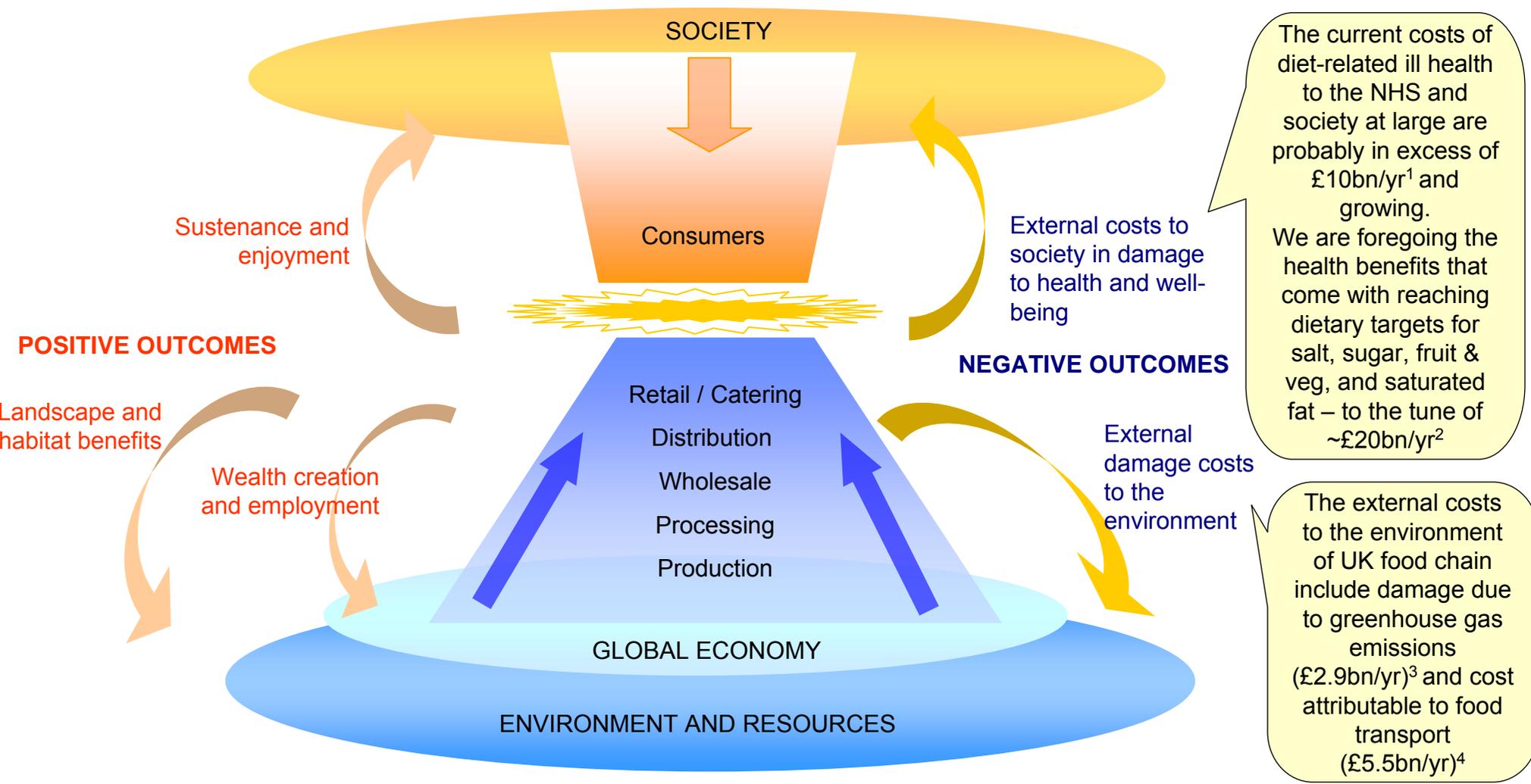
- Despite progress in tackling food-borne diseases there are more than 300,000 reported cases of food poisoning each year and there is still significant microbiological contamination in the food system; the trend towards eating out could increase exposure because food poisoning events are commonly traced 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

1: FSA (2006/07) Annual Report of the Chief Scientist with choking statistics amended by Mortality Statistics Series DH2 No 32; 2: FSA (12/10/06) Board paper: Final Report on delivery of the 2001/6 target and report on progress to deliver the 2005/10 Campylobacter target; 3: Defra

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



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/yr¹ 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/yr²

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

1: See page 109, sources include Rayner et al (2006), BAPEN (2006); 2: Ofcom (2006) *Annexe 7- Impact Assessment Consultation on Television Advertising of Food and Drink to Children*. Joint FSA/DoH analysis, benefits estimated at £19.9bn/yr; 3: Defra/SU, SPC at £25.4 / t CO₂ eq at 2006 prices 4: AEA (2005). *The validity of food miles as an indicator of sustainable development* estimating costs at £5.9bn, or £5.5bn excluding CO₂ eq

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?

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

- The Prime Minister has asked for an analysis of issues in food and food policy
- The work is being led by the Strategy Unit, working with Defra, the Department of Health, the Food Standards Agency and other departments
- The project is examining 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 will consider 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 is analytical rather than policy focused but it is expected that later phases will draw out wider policy implications, including through continuing consultations with key stakeholders

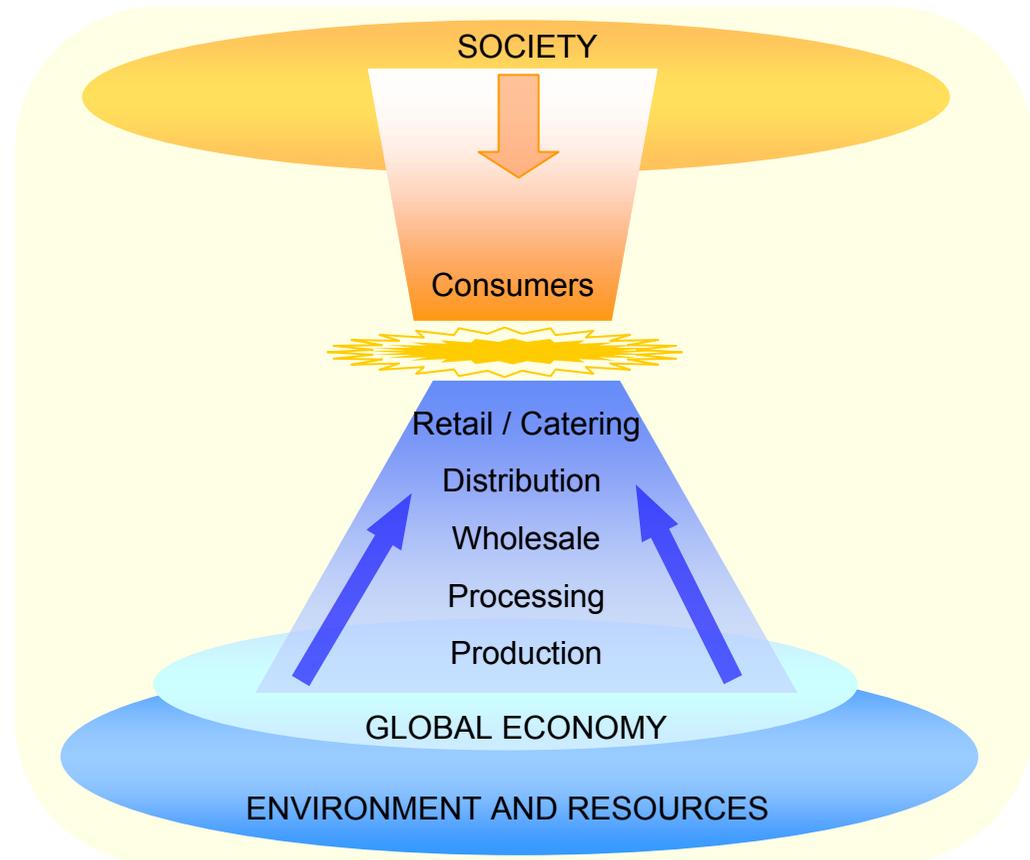
The focus of the analysis is the consumption of food in the UK, and its production here and abroad

- 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 will be 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

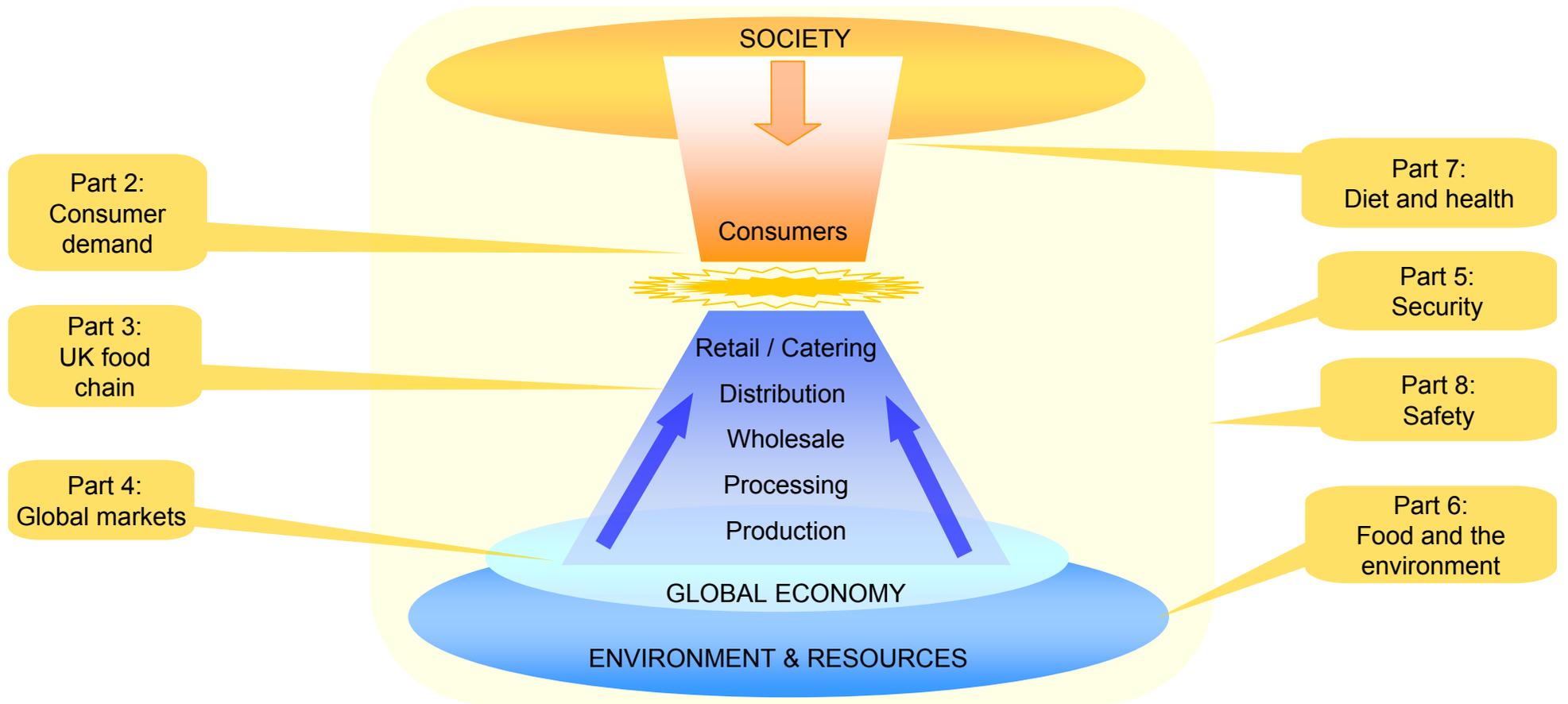
The report examines the trends and drivers that affect the consumption and production of the UK's food, and the consequences of the food choices that we make – for ourselves, society, the economy and the environment

- 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



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.



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- Food has become more affordable and 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

Food as an economic choice

Food has never been more affordable. Some data suggest the UK consumers spend less on food than those in other major European 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.

Food as an expression of identity

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.

Food as political choice

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.

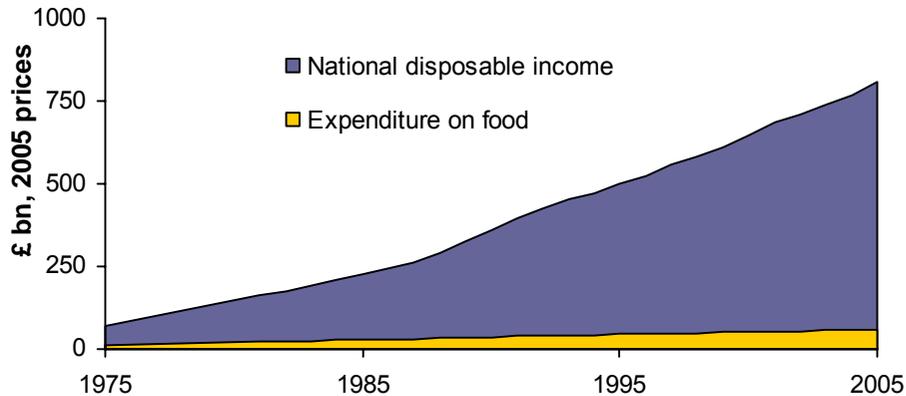
Food as leisure and pleasure

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.

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

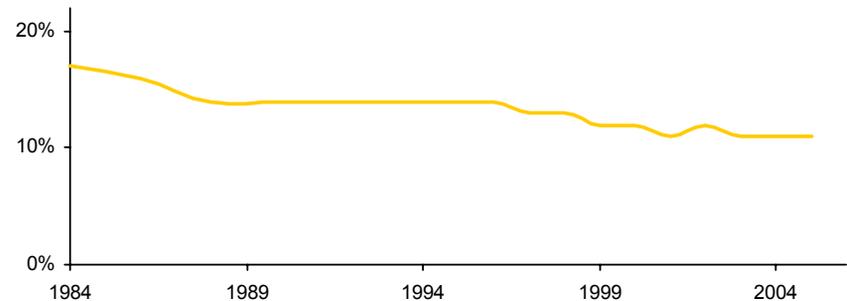
UK spending on food has increased 5-fold in 30 years while national disposable income has increased 12-fold¹

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



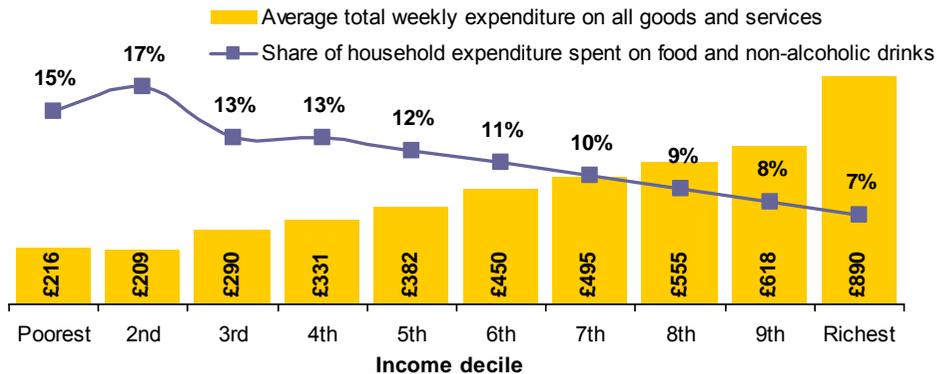
So the average share of gross income spent on food is now lower than ever before

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



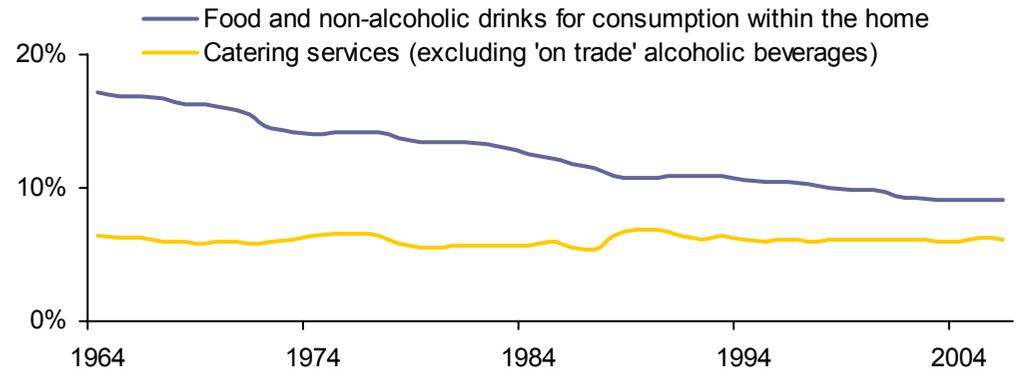
The poor allocate a higher share of total household expenditure to food than the rich

Average total weekly household expenditure (£) and proportion spent on food (%) by income decile, 2005-06 (equivalised)²



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 prices³



1: ONS Household sector: Use of Disposable Income Account, ONS (2007) Consumer trends 2007; 2: ONS (2007) Family Spending 2006, Defra (2007) Family Food in 2005-06 (datasets); 3: ONS (2007) Consumer Trends

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

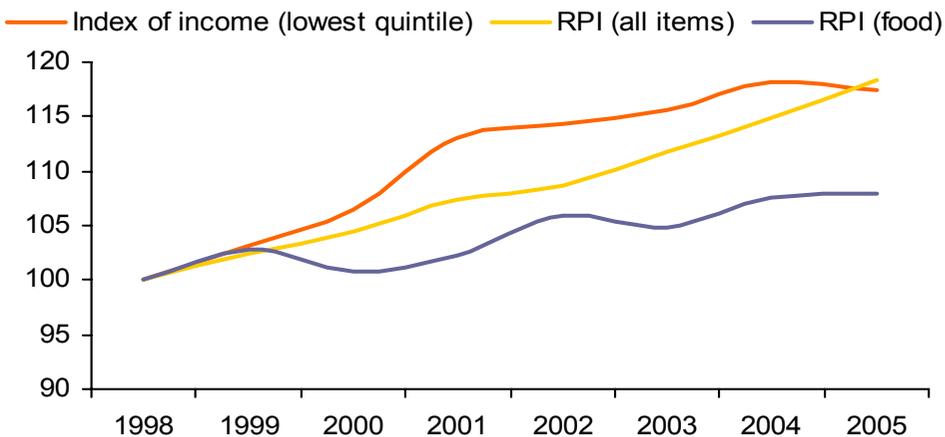
- Food has become more affordable and cheaper in comparison to other goods and services. Food prices have risen over recent years, but (until recently) at a rate far lower than the RPI. The incomes of the lowest quintile have grown faster than food price inflation.
- Poor households spend little on the sorts of food that have gone up most in price over the past decade. The biggest price rises since 1998 have been for lamb, some fruit and vegetables, ham, back bacon and white bread. The only products on which the poorest quintile spent more than 1% of their food budget are white sliced bread, bacon and ham.

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 slightly² over the same period

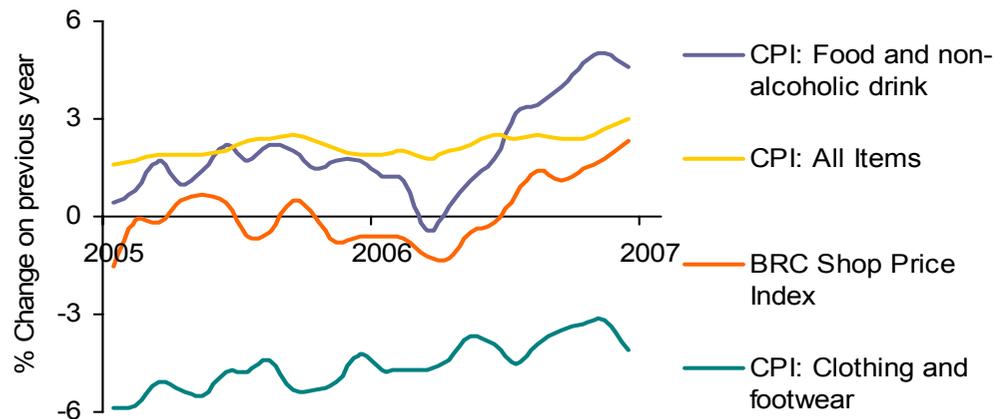
Real incomes for the poorest 20% have risen relative to food prices since 1998; food prices have risen less than prices of other goods

Index of income and prices, 1998 = 100¹



Over the past year the CPI basket of food prices has risen, putting upward pressure on overall inflation in the economy

Changes in Consumer Price Index (CPI), and British Retail Consortium (BRC) Shop Price Index 2005-2007³

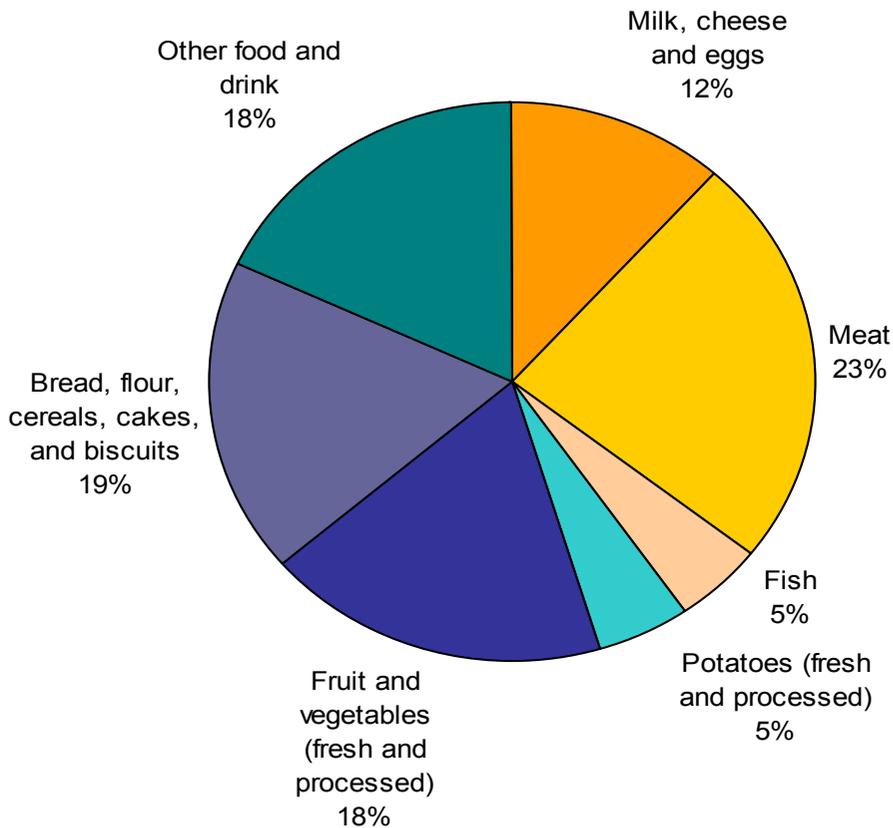


1: Defra (2007) *Family Food in 2005-06*; 2: DWP (2007) Households Below Average Income (HBAI) survey and Defra (2007) Low income households' Household Reference Person (HRP) have incomes in the lowest quintile; the reverse applies to high income households; 3: Nielsen (2007) *State of the Nation*

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

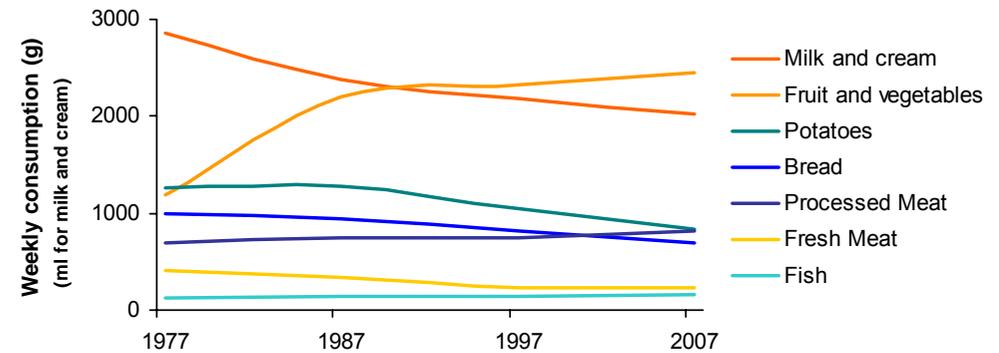
Over a third of the weekly household food budget is spent on meat and dairy products

Breakdown of the weekly food budget, %¹



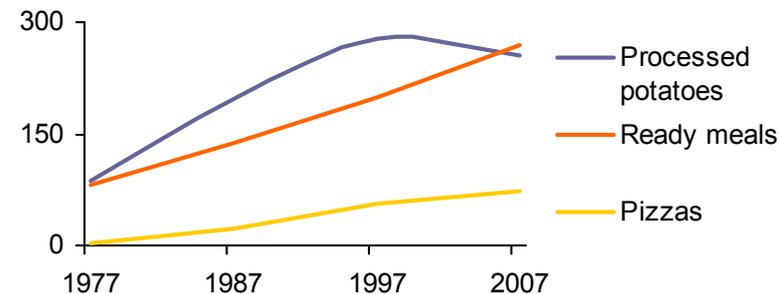
Consumption of milk, fresh meat and potatoes has fallen over the past 30 years

Changes in total consumption of key food groups over the last 30 years¹



The British are eating more pre-prepared foods, such as ready meals and shop-bought pizzas

Changes in total consumption of processed foods over the last 30 years Grams per week²



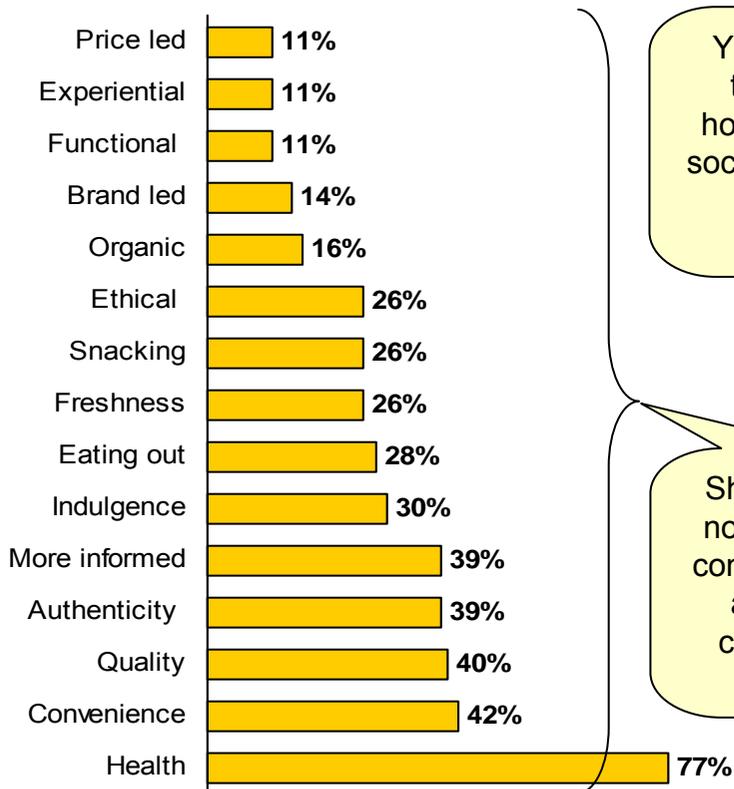
Consumption of ready meals has trebled since 1997

1: Defra (2007) *Family Food in 2005-06* 2: Ibid

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 significant¹

Survey of 77 Industry Executives - % identifying key trends

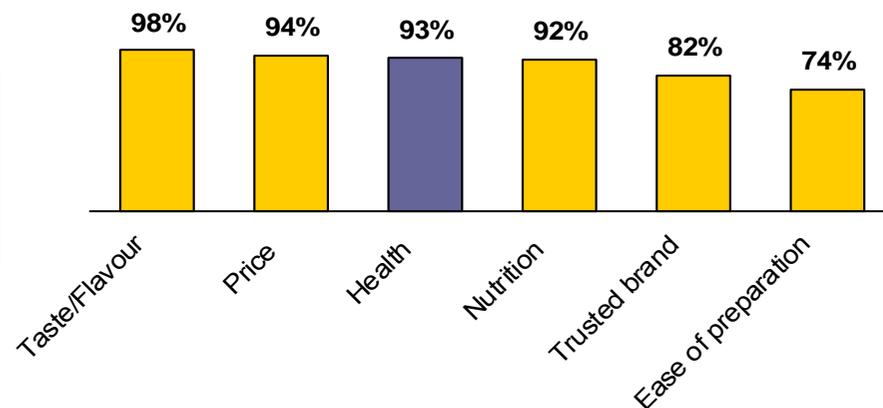


Younger shoppers, those with larger households, those in social classes D and E are more price conscious

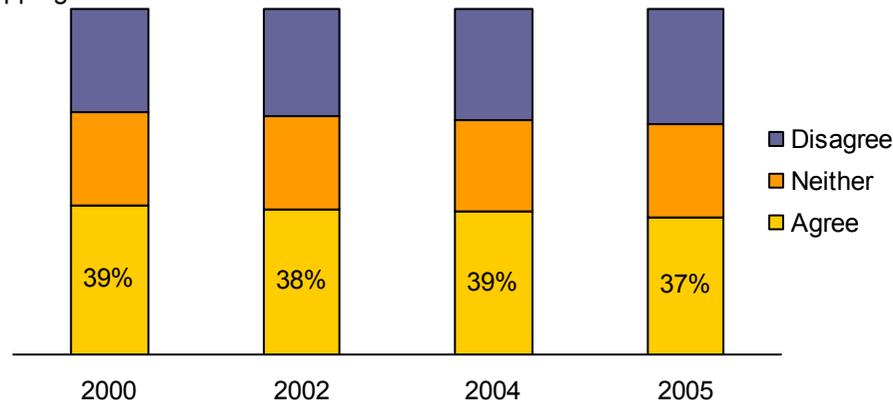
Shoppers' choices are not necessarily "value-consistent" as trade-offs are made between convenience, ethics, price, etc.

A range of factors determine peoples' food choices, with price still considered important

% Agreeing factors that are 'very important' or 'somewhat important'²



% agreeing with the statement "I look for the lowest possible prices when I go shopping"³



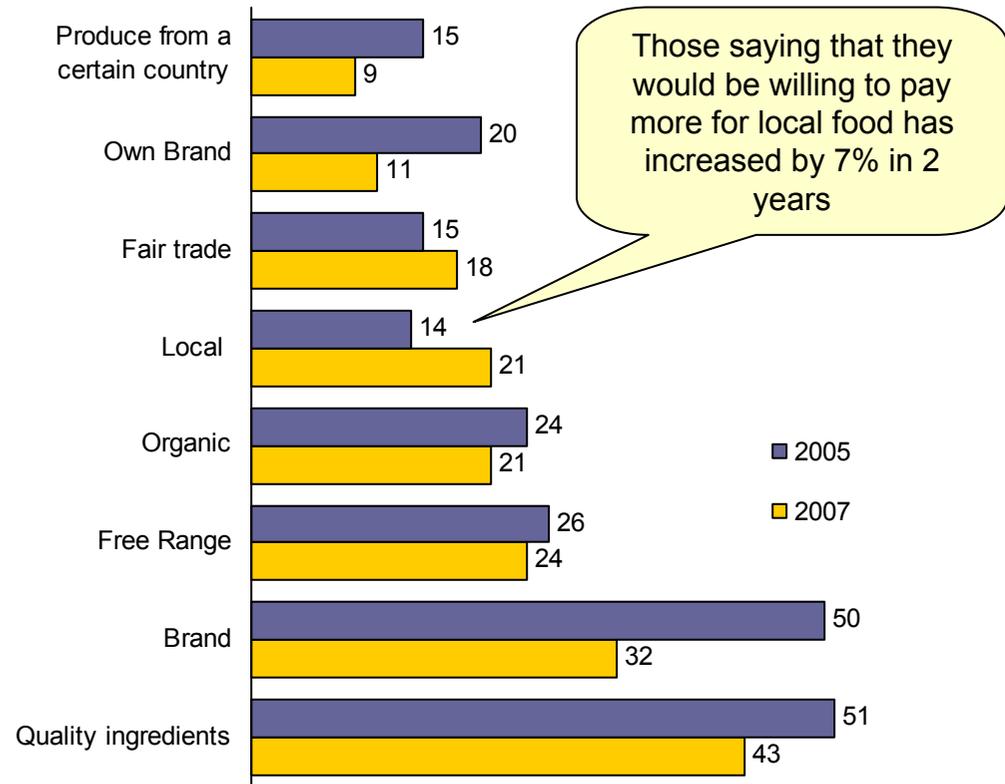
1: Deloitte (2007) *An Appetite for Change*; 2: Nielsen Global Consumer Survey (October 2006) *UK results*; 3: Mintel (2006) *Cheapest on Display Goods*

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 treats¹ 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 mainstream³

Better quality, brand names and free range are key premium attributes but local and fair trade are increasing in importance

% of those surveyed prepared to pay premium for the following characteristics²



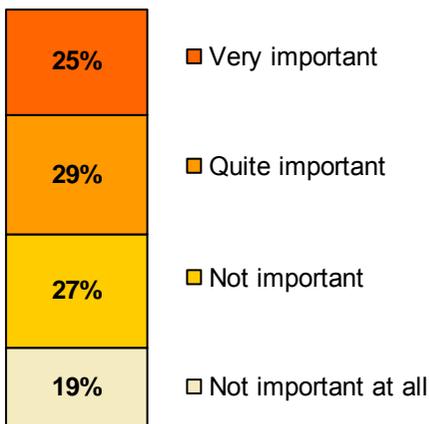
1: Mintel (2006) *Premium Goods Market Intelligence*; 2: IGD (2007) *Where next for Premium?*; 3: IGD (2005) *Premium Retailing Factsheet*;

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 England¹
- 71% of respondents in one survey said they would rather buy products that were grown or produced locally²
- Motives are mixed – but perhaps more about solidarity with local producers than cutting carbon emissions

The importance of 'Country of Origin' labelling is increasing for products such as meat, fruit, vegetable, fish and cheese³

Importance of Country of Origin, %



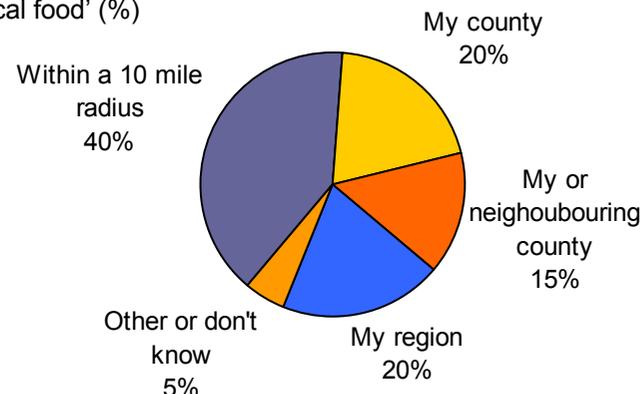
Older people and AB social groups are more likely to want to know country of origin

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 seasonally⁶

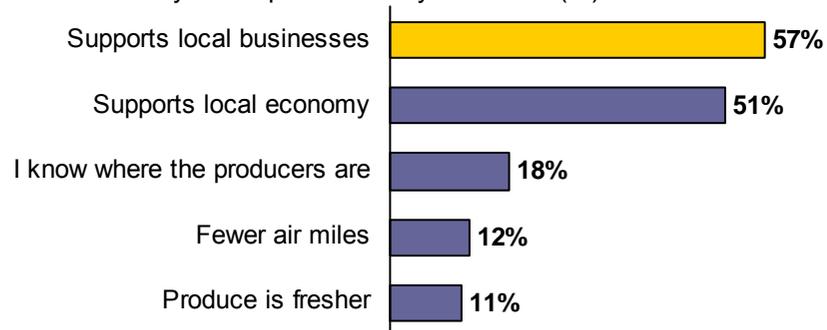
The farmers' markets trade association defines local as a geographic boundary, often a 30 to 50 mile radius⁴ In one recent survey 40% of respondents saw 'local' as food from within a 10 miles radius of their home⁵

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



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

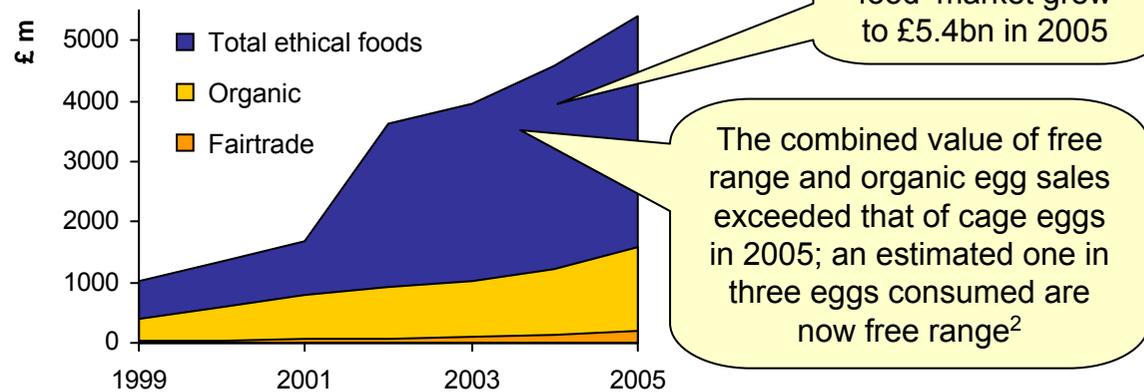
Reasons why it is important to buy local food (%)



The increasing demand for ethically produced foods is illustrated by the market success of Fairtrade and 'free range' products

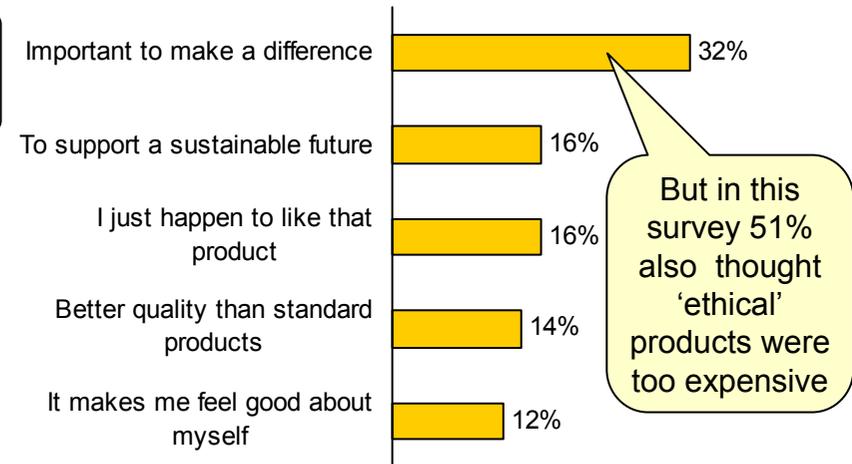
Sales of 'ethical food', including organic, Fairtrade, free range and freedom foods (an assurance scheme for high animal welfare standards) are increasing but still only account for 5% of the typical shopping basket

Ethical food retail sales, UK, 1999-2005¹



The main reason for buying ethical food products is to 'make a difference'

% agreeing with the following statements, 2006, ²



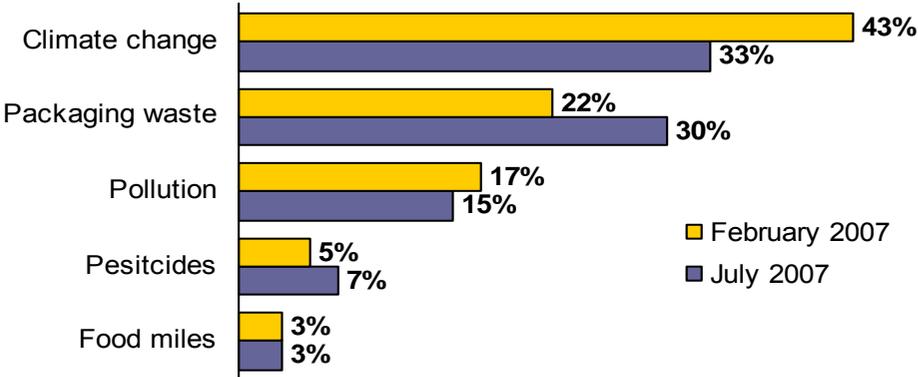
- Ethical consumerism is growing and consumers are now more aware of issues around food production (often highlighted by media attention). Food choices are key to individual expression of political and altruistic choices
- People buy ethically sourced products to meet health, sustainability and quality needs. Everyday food purchases are now more likely to be chosen on ethical grounds, and people are more likely to make ethical choices about food rather than clothing or other household goods³
- 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 community⁴; 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 Fairtrade⁵

1: Co-operative Bank (2006) *Ethical Consumerism*; 2: IGD (2006) *Ethical Consumerism*; 3: Ibid; 4: www.fairtrade.org.uk; 5: IGD (2007) *Where next for Premium?*

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

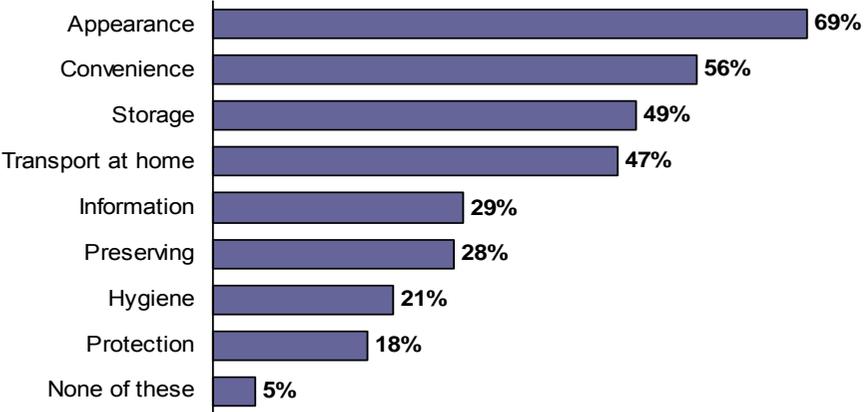
Although climate change remains the top environmental concern for consumers, packaging waste is rising up the agenda

Environmental issues that concern people the most, %, 2007 ¹



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 2007⁴



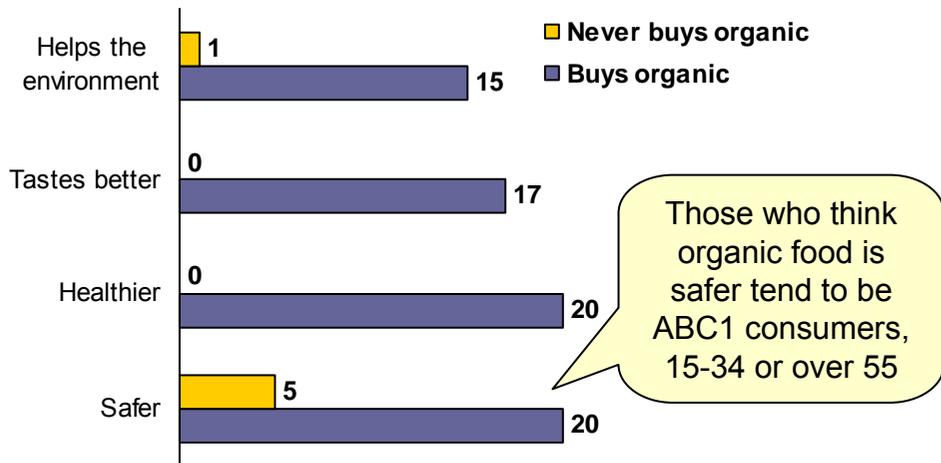
- Domestic recycling rates have increased from 11% in 2003 to 27% in 2006 and consumers are becoming more aware of the packaging around the products they buy²
- In one recent survey, 62% of those questioned wanted retailers to reduce packaging and 67% wanted them to use more recyclable packaging³
- In another 2007 survey⁴:
 - 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

1: Nielsen (2007) *State of the Nation*; 2: WRAP (2007) *The Guide to Evolving Packaging Design*; 3: Ipsos Mori (2007) (quoted in WRAP (2007)); 4: Nielsen Homescan Survey July (2007)

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

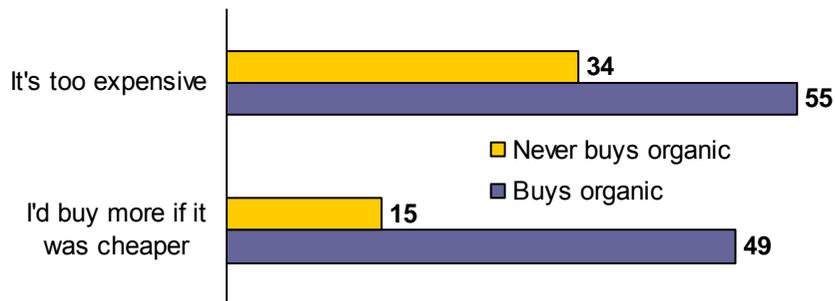
20% of consumers in one survey thought organic food was healthier and safer

% agreeing with statement, 2006 ¹



But many people think organic food is expensive and that they would buy more if it was cheaper

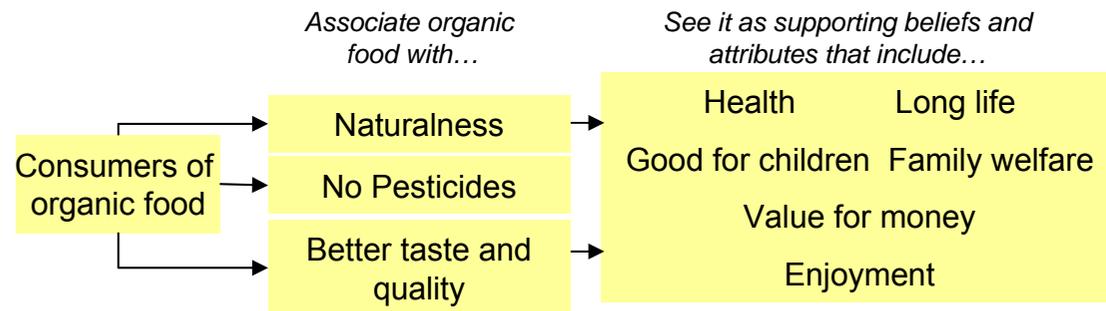
% agreeing with statement, 2006 ¹



- 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 important²
- One survey found that the perception that organic food is better for the environment than non-organic food has increased in recent years³
- 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

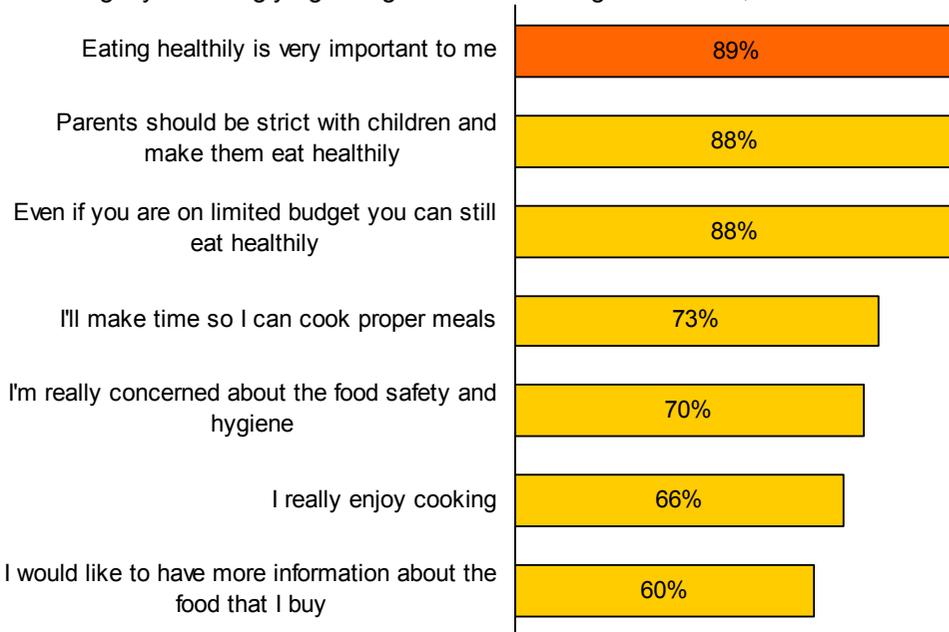
Belief structure for organic consumers in Britain⁴



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

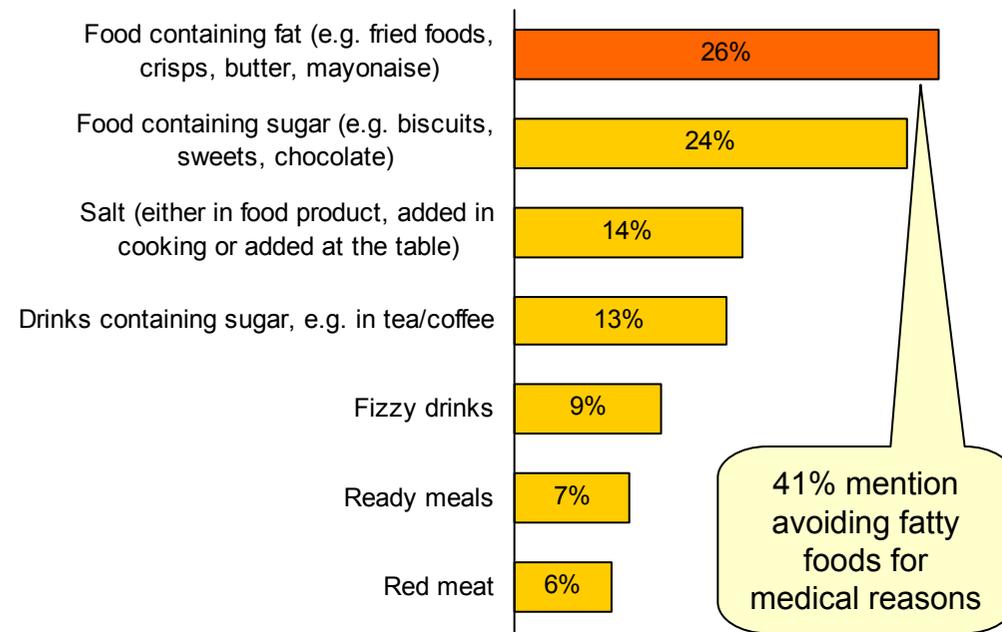
Many people agree strongly with statements about the importance of healthy eating, healthy eating on a budget and parental strictness over children eating healthily¹

% slightly or strongly agreeing with the following statements, 2007



People avoid foods for many reasons – allergies, religion, weight loss, and medical reasons. For medical reasons, people principally avoid fat, sugar and salt¹

% claiming to be trying to reduce their consumption, 2007



- People increasingly want to eat more healthy, natural products and consume less fat, and fewer artificial ingredients and preservatives²
- 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 benefits³

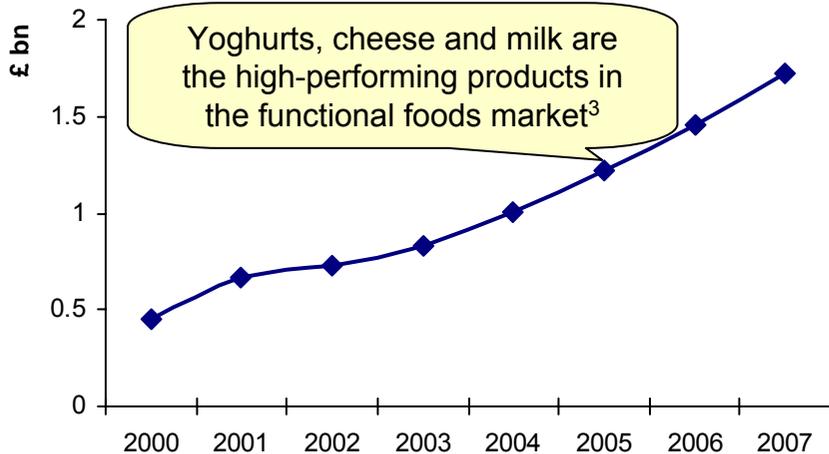
1. FSA (2007) *Consumer Attitudes to Food Standards* 2. Nielsen Homescan Survey (February 2005 and 2007) 3. IGD (2007) *What next for Premium?*

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

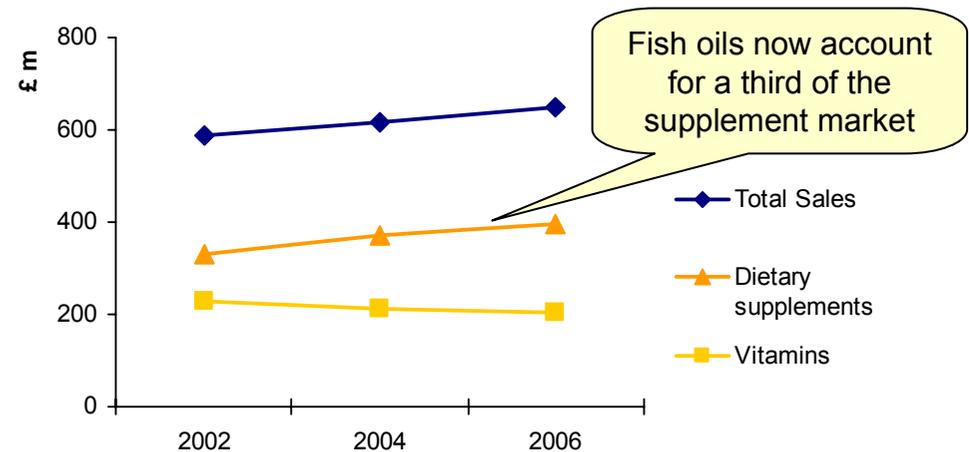
The functional foods market is currently worth £1.7bn¹

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

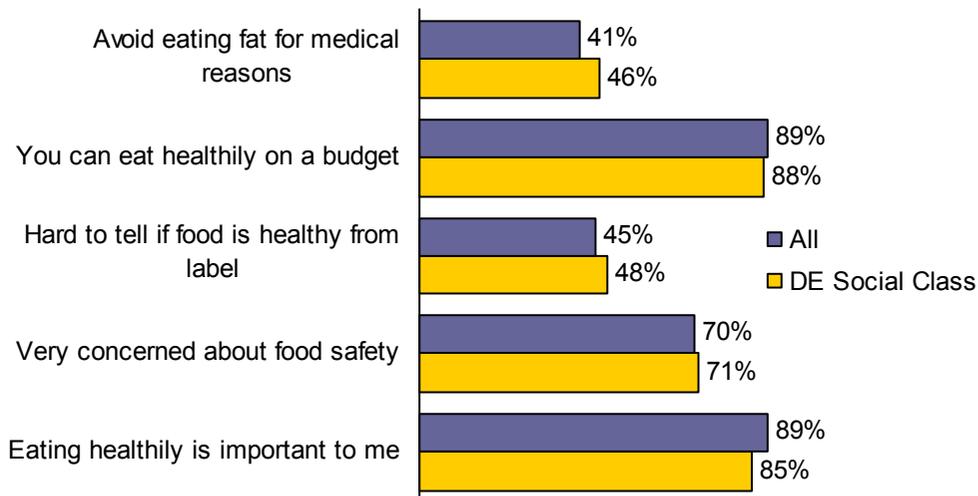
Sales of vitamins and supplements 2002-2006, retail value £m



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

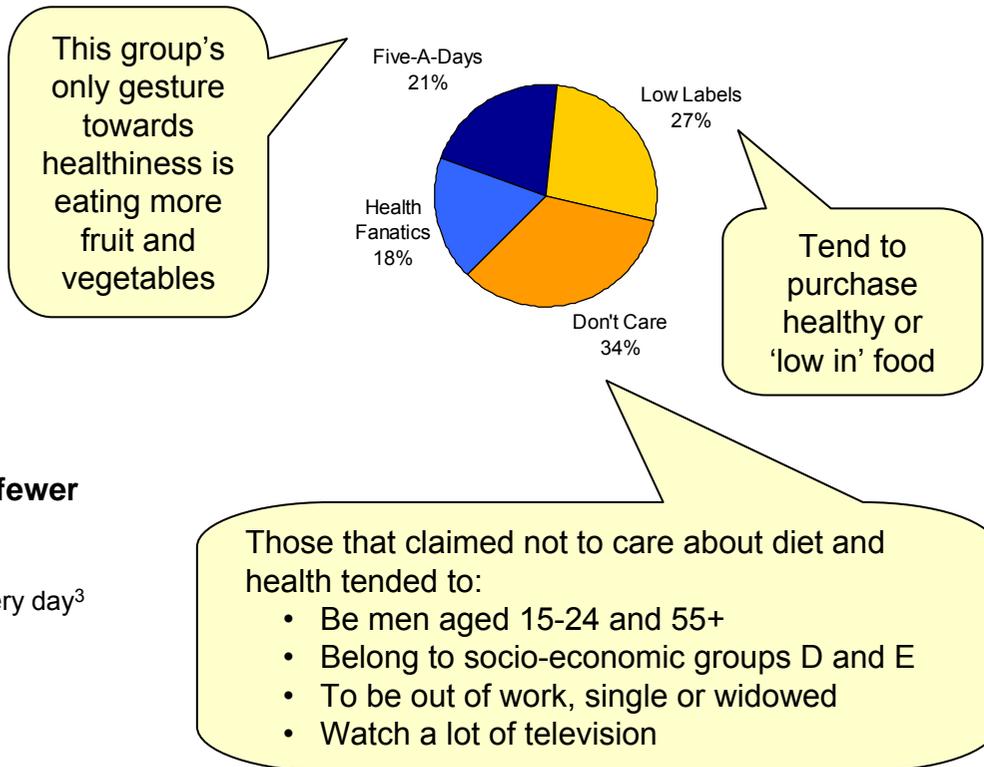
Attitudes to healthy eating are broadly similar regardless of social class and income

% agreeing with the following statements, 2007¹



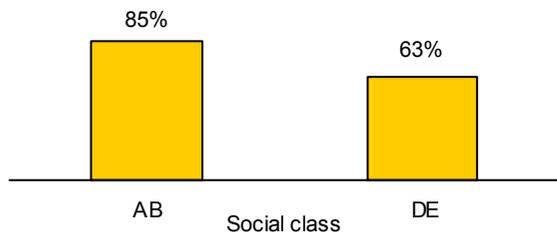
About a third of consumers in another survey 'didn't care' about health issues

% based on cluster analysis of responses to a range of questions on food, diet and health, 2006²



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

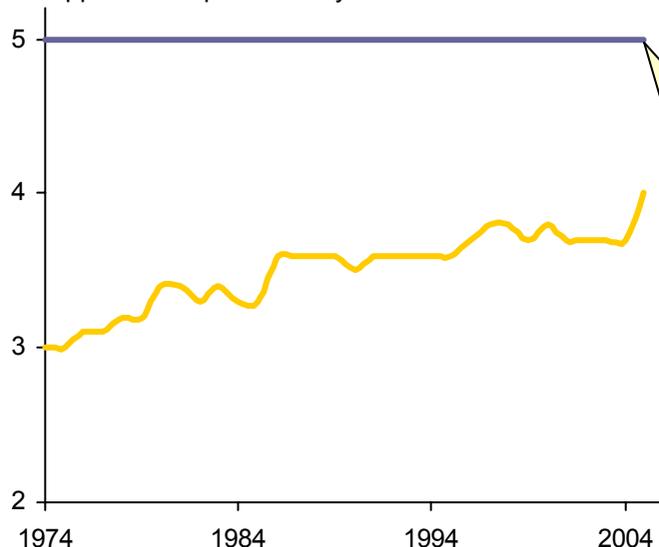
% correctly identifying how many portions of fruit and vegetables they should eat every day³



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

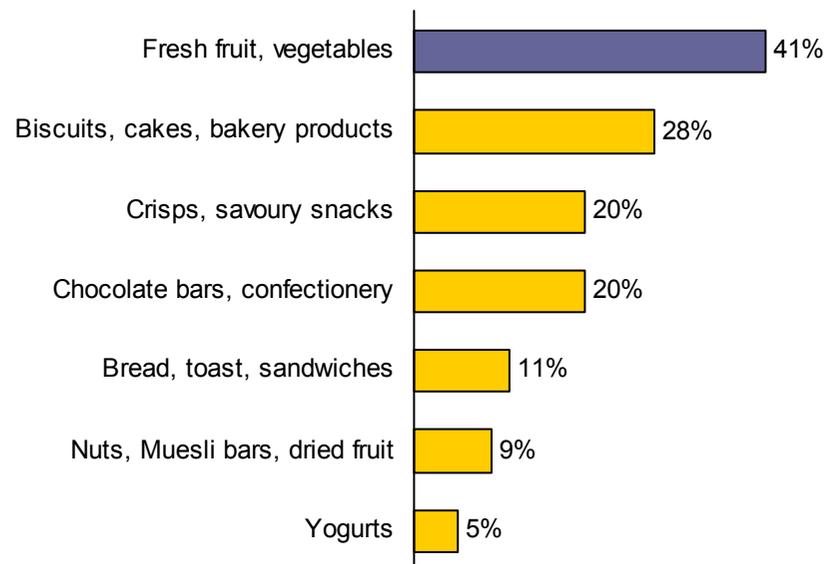
Approximate portions/day¹



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 Australia⁵

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

Foods eaten between meals, 2007²



- 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 5² – 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 eaten³

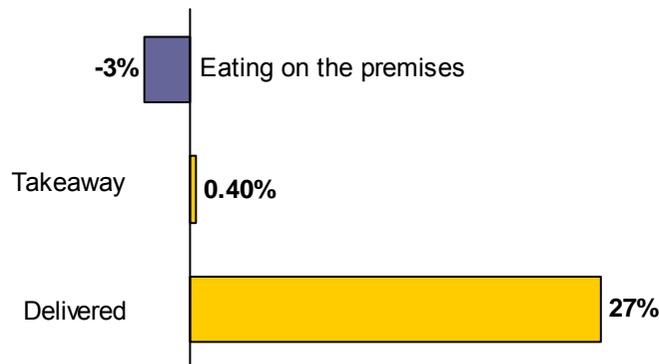
1: ONS/Defra (2007) *Family Food in 2005-6*, data from FSA research are shown on page 95; 2: FSA (2007) *Consumer Attitudes to Food Standards*; 3: David N Cox et al, (1996) *Vegetables and Fruit: barriers/opportunity for greater consumption*, Nutrition and Food Science, Number 5, September/October 1996 pp44-47; 5: 6omdagen.dk (Denmark) www.5to10aday.com (Canada) www.10parjour.net (France); www.qofor2and5.com.au (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 foods¹
- 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 treats²

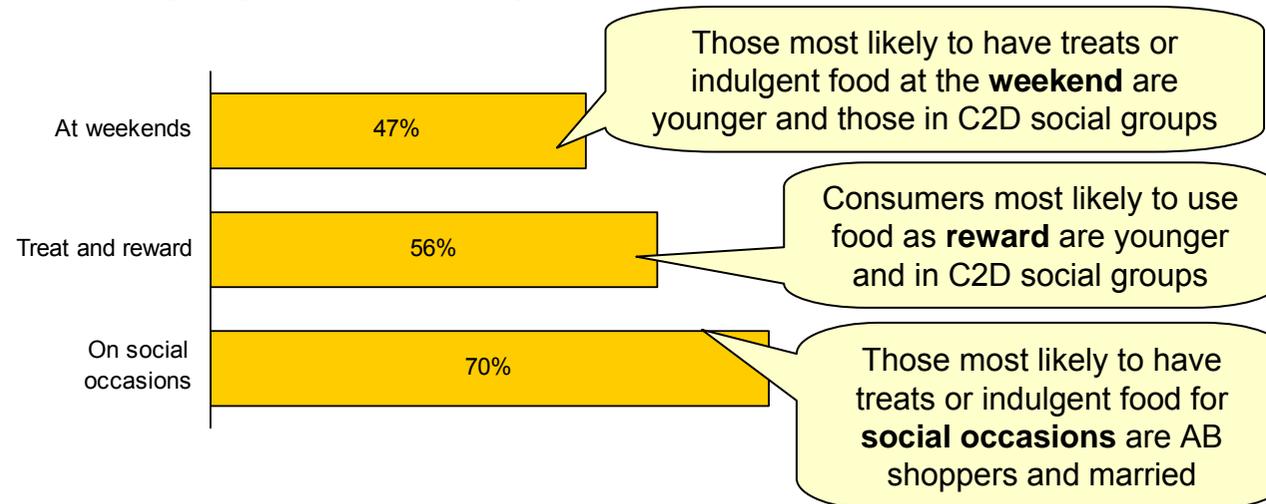
As more people feel under time pressure there has been a rise in the number of takeaway and home-delivered meals

% change in number of meals served 2002 – 2005³



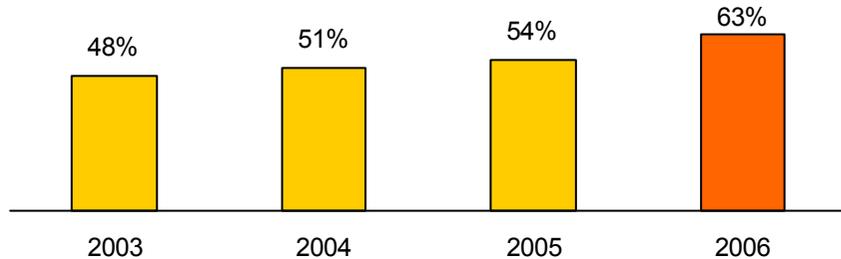
The most important opportunity for indulgence in food is a social occasion, followed by treats and rewards, then at weekends

% agreeing with occasion to indulge in food, 2006⁴



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 increasing¹
 % claiming to cook from scratch every day

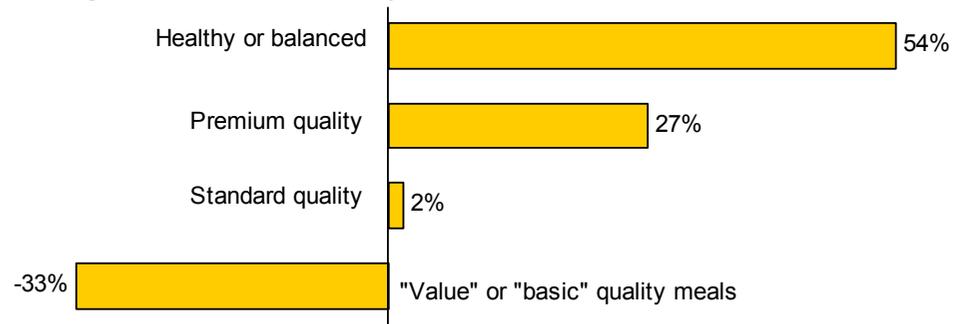


- Women, those aged over 50, in the AB social group and those not working are most likely to claim that they cook every day
- The survey results may be explained by people under-estimating the number of pre-prepared ingredients used; they may only partly cook with fresh ingredients. Fewer than 10% say 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 growth⁴

Making time for cooking proper meals, enjoying cooking and the relative cheapness of cooking healthily are all rated highly¹

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 meals²
 % change in share of chilled ready meals market, 2004-2005³

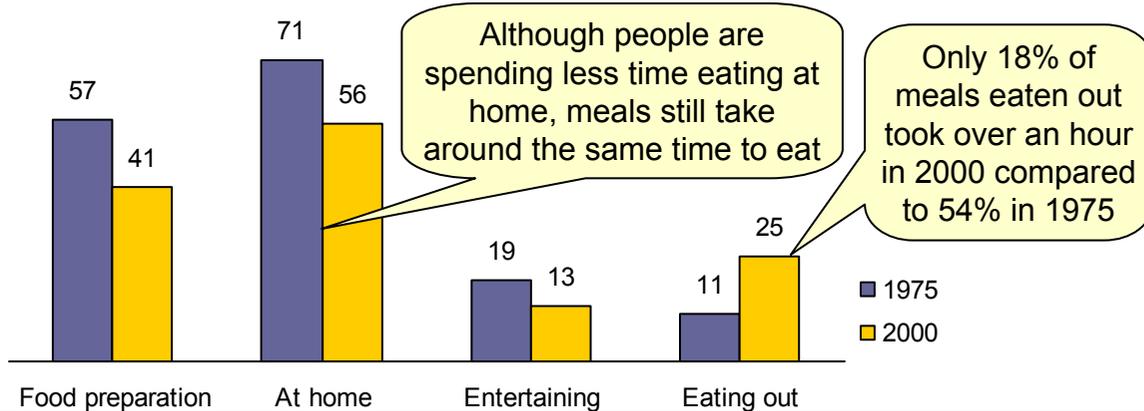


Eating is becoming a more public than private phenomenon with more people spending time eating out than at home

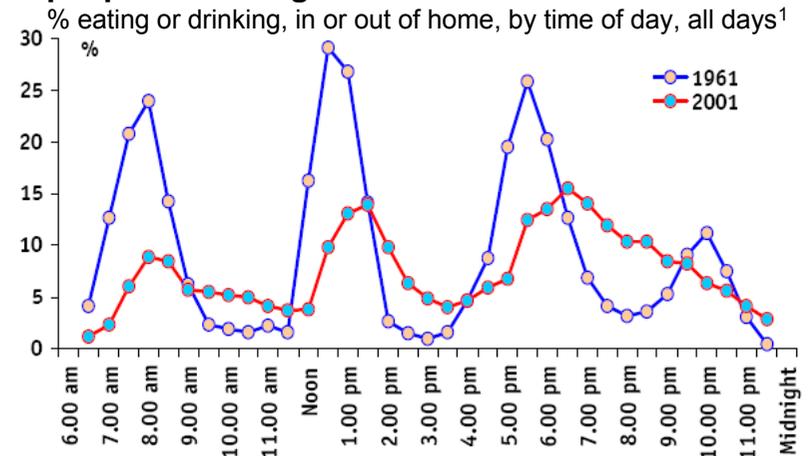
- Eating patterns are shaped by our cultural attitudes towards food, the rituals around meal times and social relationships. The popularity of convenience food, snacking and eating out have led to concerns about the demise of the 'family meal' as well as a decline in knowledge and skills about food
- 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 kitchen¹². 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 day³



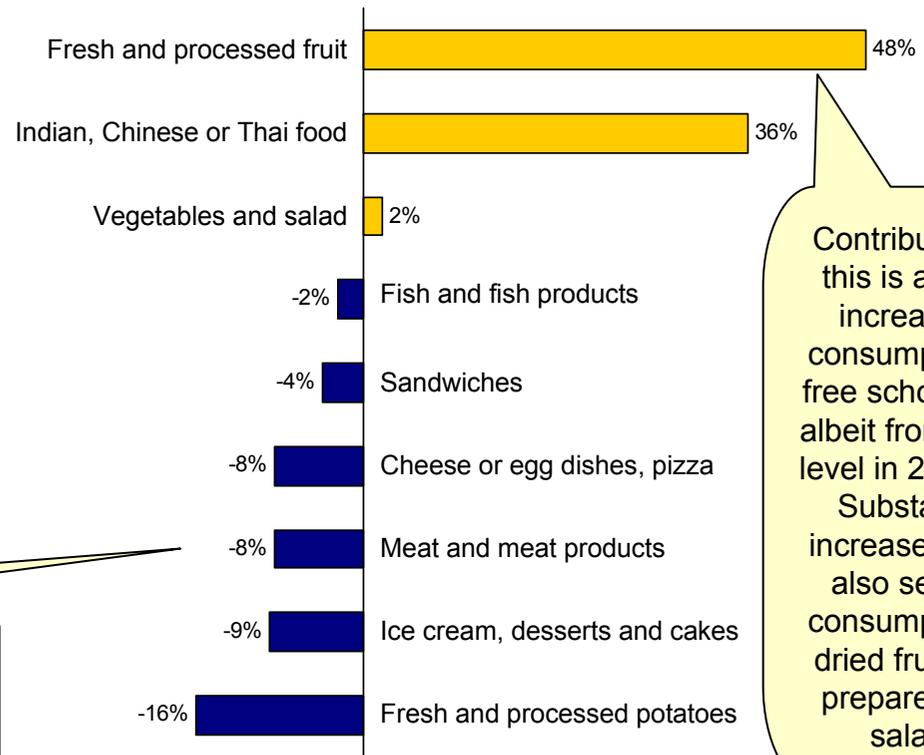
Meals are no longer bound to particular times - people are eating when and where it is convenient



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 out²; consumer expenditure on eating out hit £27.6 billion in 2005, a real-term growth of 29% in 10 years³
- Consumers are demanding a wider range of international choices when they eat out, along with more fresh, local and seasonal ingredients¹
- 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 content²
- 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
 % change in quantity of food types eaten outside the home, 2001/02 – 2005/06⁴



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

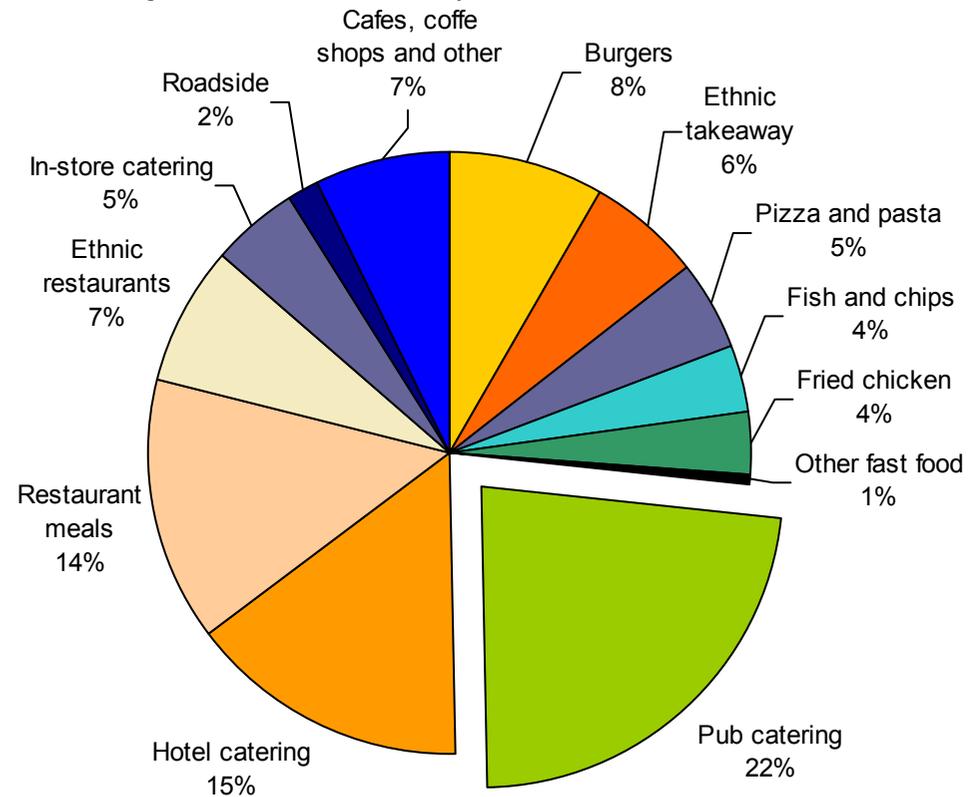
Mintel estimates that sales in the fast food sector grew by 73% between 1995 and 2005 but that growth tailed off towards the end of that period due to the trend for healthier eating¹. Data from Defra also show a tail-off in consumption of takeaway meats since 2000⁵

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 Moroccan¹
- 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 accounts for nearly a quarter 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, 2005⁴



Tapas are more popular than before. People have tried them on holiday and now have them as a small meal or light snack³

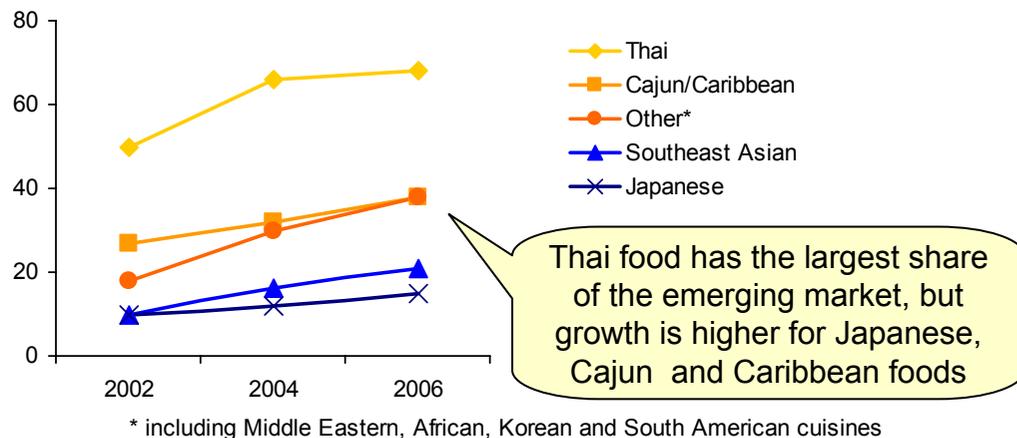
Sales of sushi – an alternative to the traditional lunchtime sandwich – increased by 30% from 2005 to 2006³

1. Mintel (2006) *Eating Out – Ten Year Trends* 2. ONS/Defra (2007) *Family Food in 2005-6* 3. The Grocer (2006) *Focus on World Cuisine*; 4: Mintel (2006) *Eating Out – Ten Year Trends* (data excludes institutional catering and other expenditure on food outside the home), a more detailed breakdown of the foodservice sector is shown on page 51, 52

... which is expanding our appetite for more adventurous tastes and increasing the variety of food we eat at home

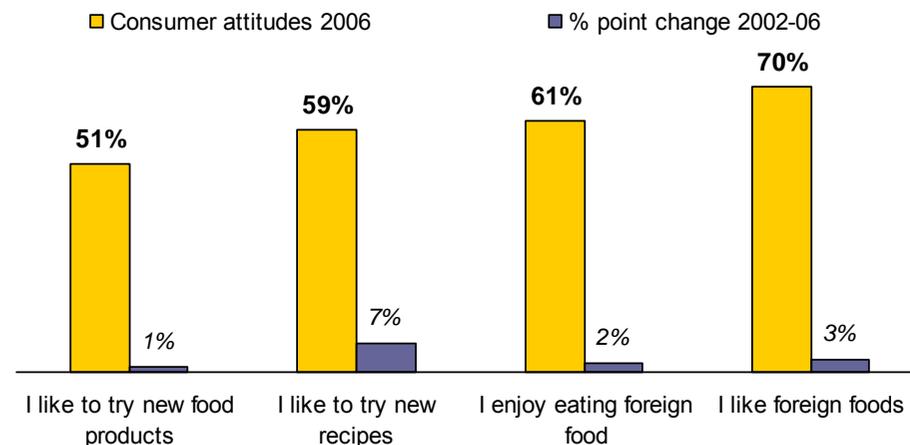
The ethnic food market is estimated to be worth £1.1bn per year³

Retail sales of emerging ethnic foods, 2002-06, £m



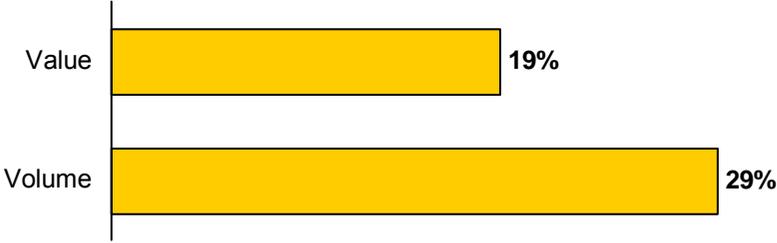
Consumers have become more adventurous in the foods and recipes that they are prepared to try

Agreement with lifestyle statements, 2002-06²



- 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 cooking¹. Consumers are travelling and eating out more, and wanting to introduce more exotic flavours into home cooking²
- There is a growing interest in preparing ethnic cuisines from scratch, rather than buying a prepared ready-meal³
- 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 buy³

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 eating¹
 - 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 week³
 - Average net circulation of women's interest magazines, specifically cooking and kitchen, increased by 96% between 2004 and 2006², 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, UK²**
- 
- | Category | Growth (%) |
|----------|------------|
| Value | 19% |
| Volume | 29% |
- 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 plates⁴
 - 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

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

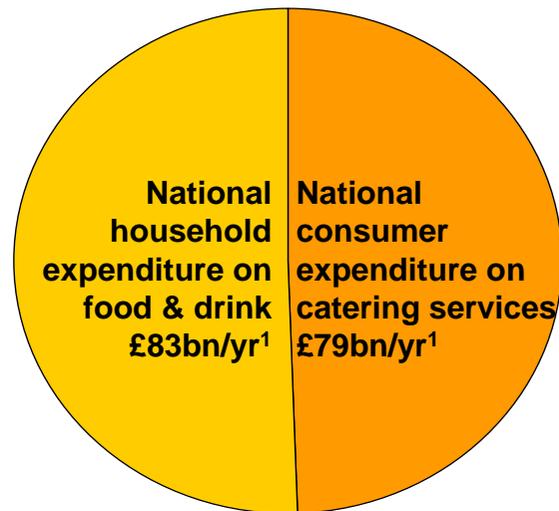
8: Food safety

- £162bn is spent annually on food and drink, 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 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' £162 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 jobs¹

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 outlets¹
- 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 markets³
- There are an 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 year⁴

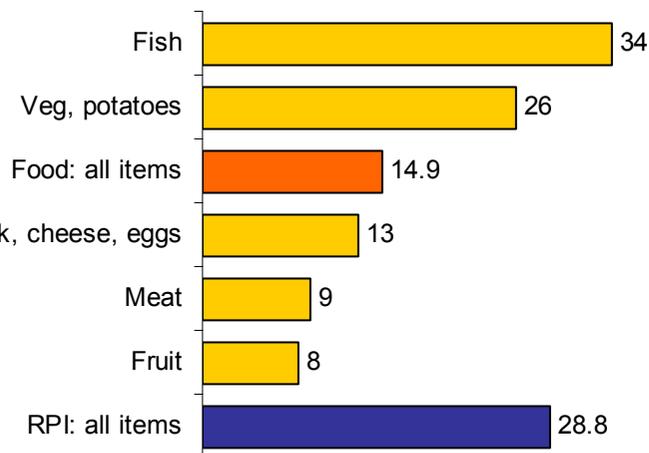


- Nearly 115,000 businesses service our demand for food '**out of the home**' in around 263,000 outlets
- For the leisure market there are more than 50,000 pubs and 26,000 restaurants, about 29,000 quick service restaurants and 47,000 hotels
- There are more than 65,000 outlets in the educational and health sectors, and 21,000 staff canteens⁵
- 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 85p⁶

In the grocery sector, competition for the opportunity to fill the consumer's shopping basket has been intense in a market of falling prices

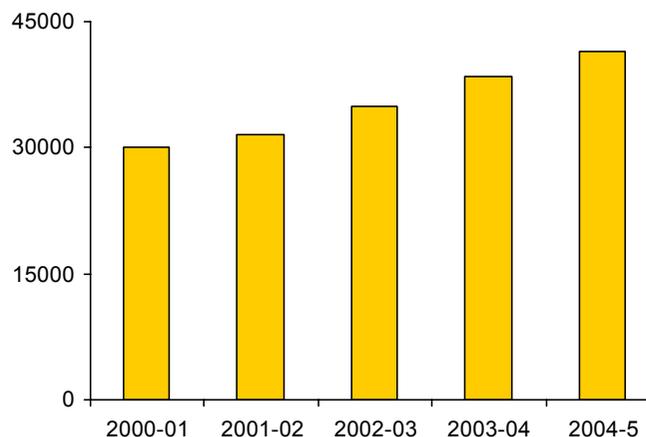
Over the last 10 years food price inflation has been half that of general inflation

Retail price changes, 01/98 – 04/07, %¹



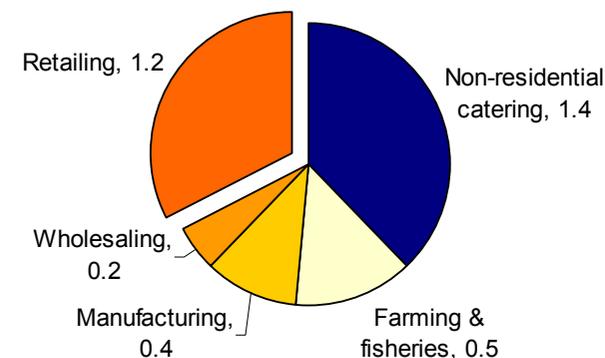
There has been a rapid increase in the number of food and non-food products that supermarkets offer to the consumer

Average no. of product lines, including non-food products, of big 4 supermarkets²



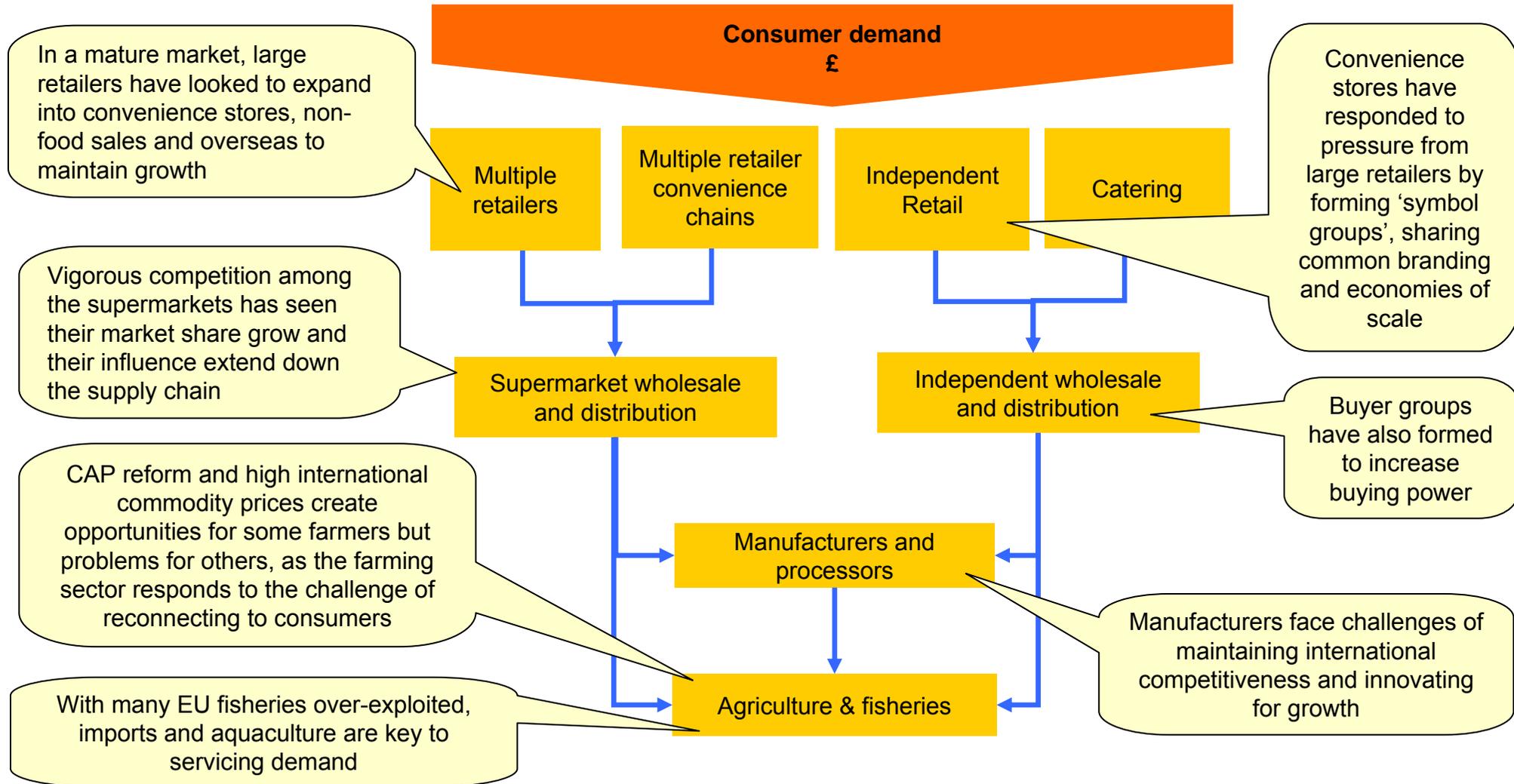
There are 1.2 million jobs in food retail

Food chain employees, million, GB basis Q4 2006³



- 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.

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



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 sales¹
- Larger suppliers are most likely to rely on supermarkets to provide most of their business. In 2003, the top 5 supermarkets accounted for more than 80% of turnover for half of larger suppliers, and for a quarter of smaller suppliers²
- Supermarkets have a very wide supply base – e.g. of Tesco's 2,600 suppliers, the largest accounted for only 2.6% of its purchases³
- 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

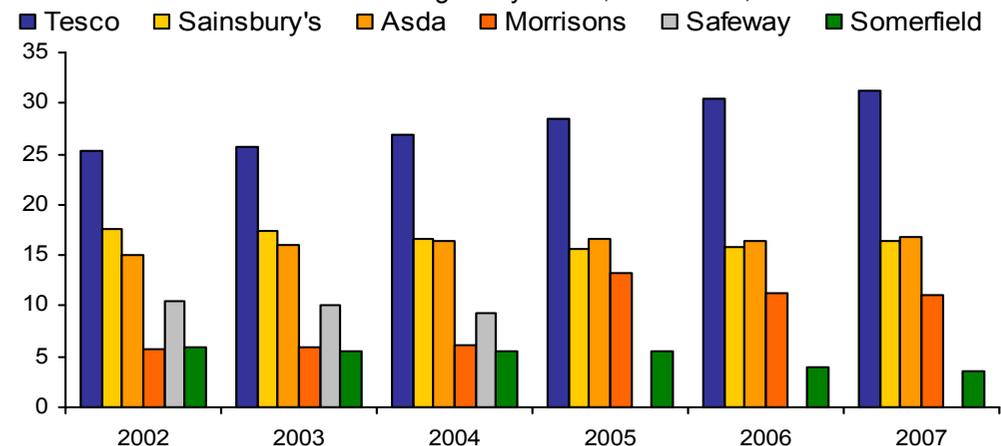
Market share has consolidated in fewer, larger food retail companies – four firms now account for 75% of total grocery sales (food, drink and household goods)⁴

Market share of non-convenience grocery sector of 4 largest retailers, June 07, %



Of the big firms, Tesco has seen the biggest rise in overall grocery market share in the past 5 years⁵

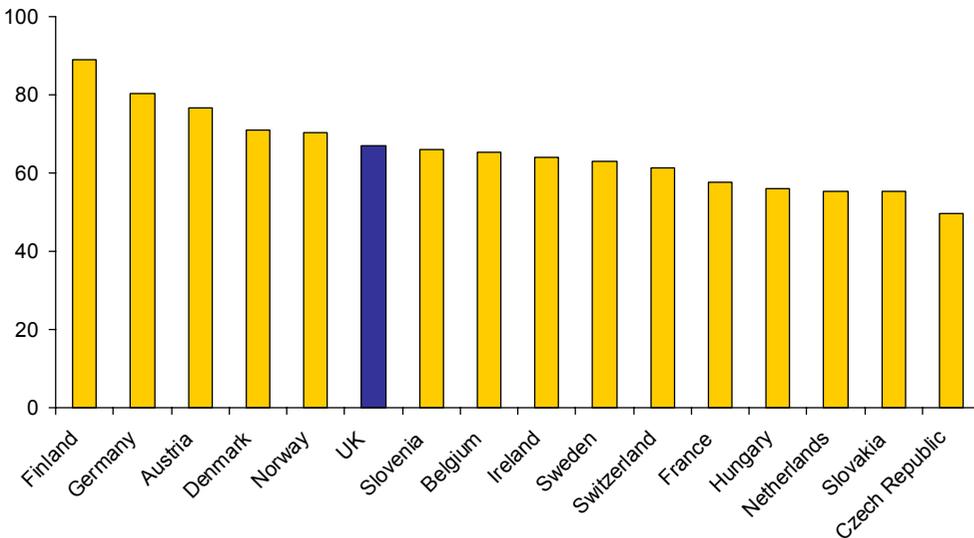
Market share of non-convenience grocery sector, 2002-2007, %



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

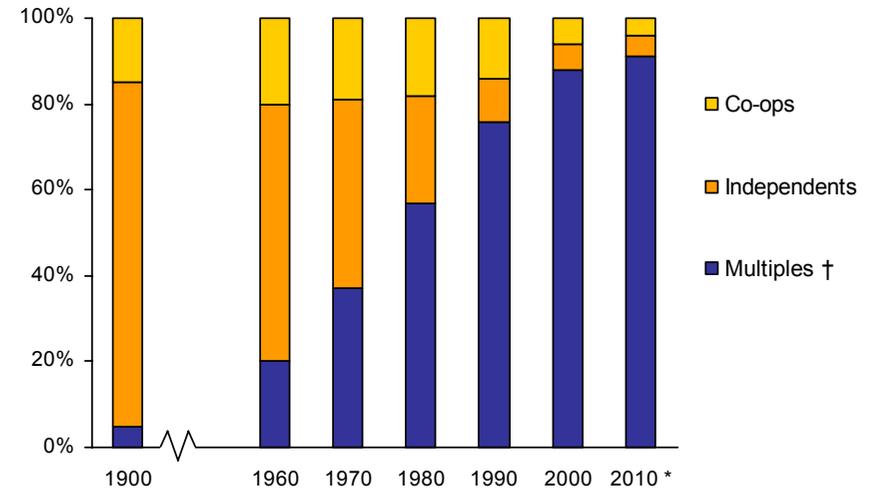
The UK grocery market is relatively highly concentrated compared with its European neighbours

Market concentration of 5 largest retailers in European grocery markets, %, 2007¹



Grocery market consolidation is a long term phenomenon

UK value market share, 1900-2010²



- 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; 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

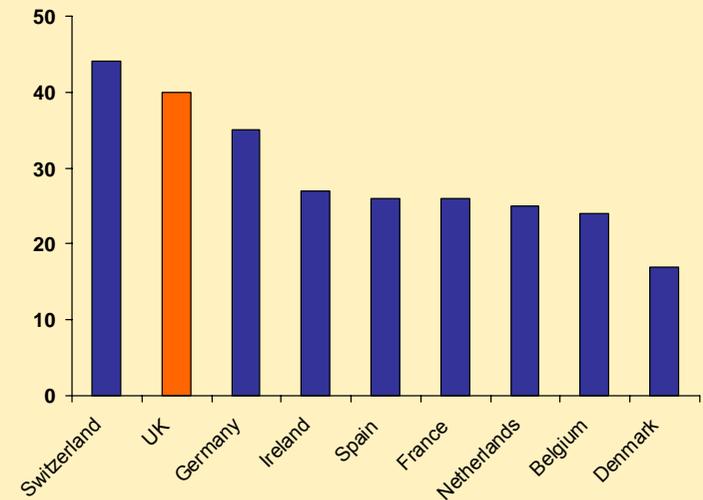
The extent and impacts of competition, and use of power within the supply chain, are issues of ongoing debate in the sector and, periodically, matters of regulator inquiry

- 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 on 31 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
- The Commission has suggested possible remedies regarding the planning system and tightening the Supermarket Code of Practice that applies to supermarket-supplier relationships
- After a period of consultation, a final report will be published by 8 May 2008

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 Europe¹



Own label goods are less profitable for manufacturers

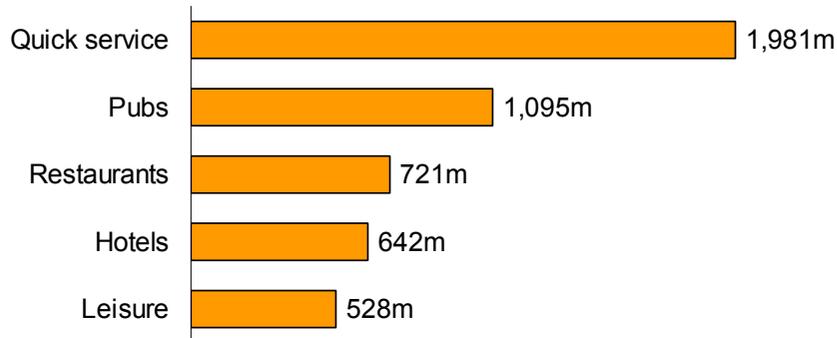
Profit margins (%) on branded and own label goods, for food manufacturers with sales of over £500m²



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

Estimated number of meals served, 2004¹



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

Net VAT registrations, restaurants²

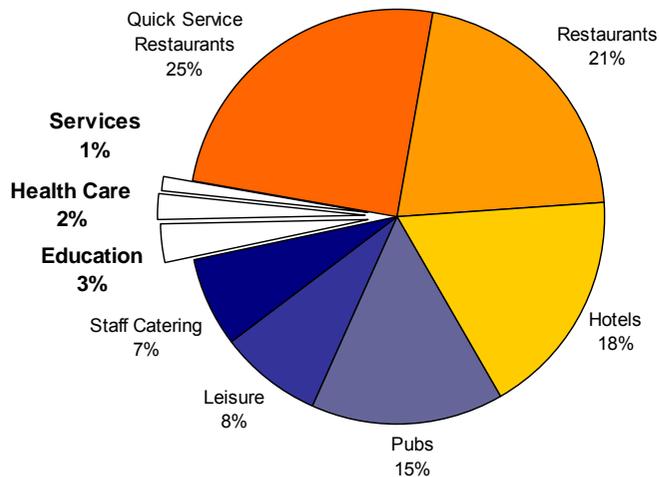


There were 26,700 restaurants in the UK in 2006, compared to 25,832 in 2001; 26% are in London²

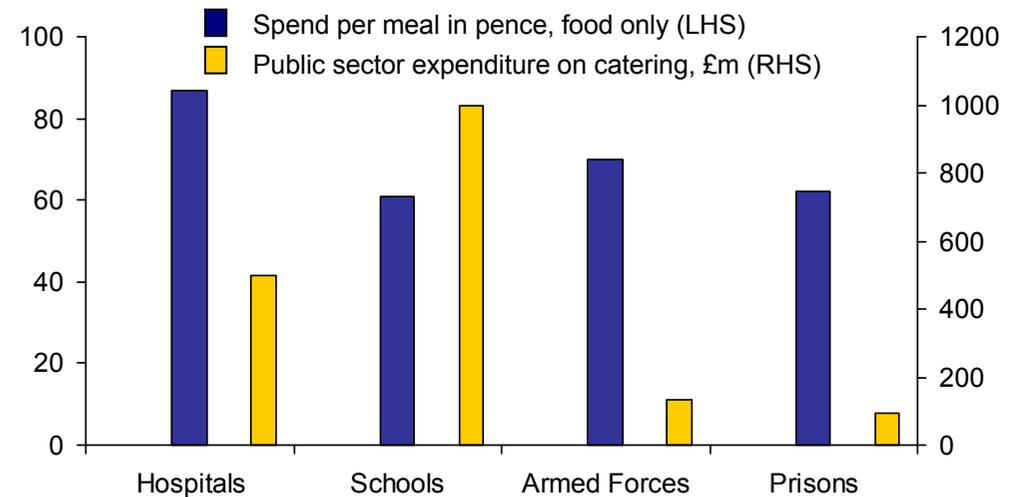
- The 'food service' sector is the part of the economy engaged in the provision of meals outside the home and captures about a third of consumer expenditure on food and non-alcoholic drinks and provides 1 in 6 meals³
- It is a highly diverse sector and employs 1.5m people – more than any other part of 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:³
 - 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

Public sector food service procurement is worth £2bn and provides over 1 billion meals a year - but evidence suggests the system's efficiency could be improved

Education, healthcare and services account for 6% of food service sales but 29% of meals served outside the home
 % share of food service sales, 2004 ²



Around half the public spending on food goes on school meals
 Spending on meals in the public sector ³



- 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 wholesaler 3663, which is worth £135m
- A recent NAO report¹ 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

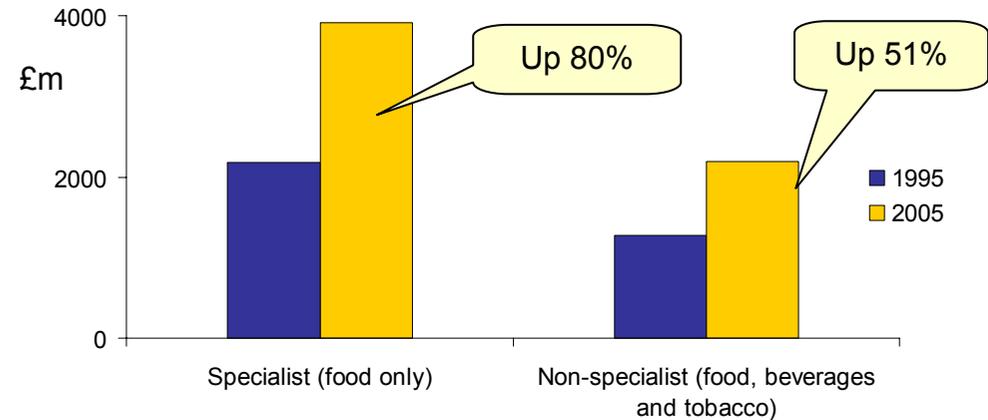
1: NAO, *Smarter food procurement in the public sector* (2006); 2: Horizons for Success – ‘Services’ includes Armed Forces and prisons; 3: NAO

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 non-specialists declined by just 36% from 1995 to 2006, while the number of non-specialists by 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

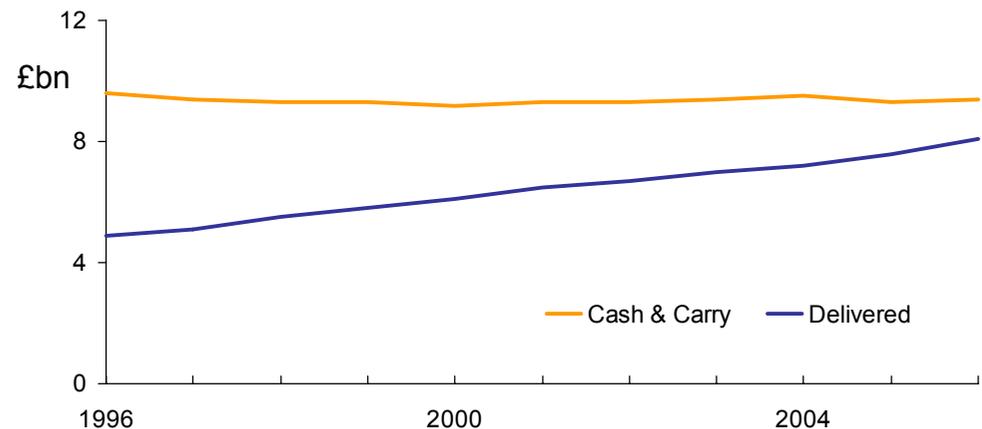
Specialist wholesalers have grown faster than non-specialists

Output by wholesaler type, £m¹



Wholesalers' business model has adjusted to a changing market

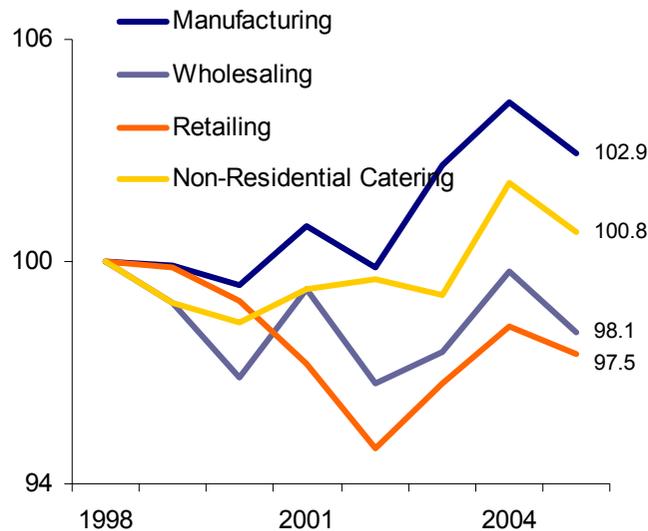
Cash & carry and delivered wholesale services, (£bn at current prices), 1996-2005²



Food manufacturers have rationalised, shed workers and improved productivity, whilst maintaining profitability

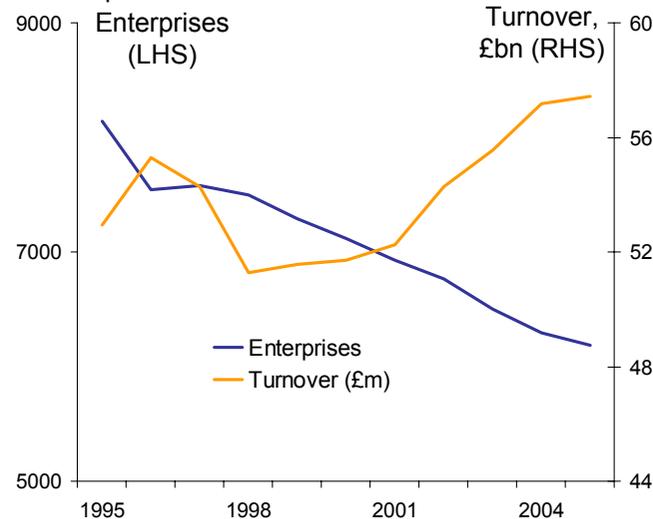
Productivity growth in the food chain has been poor but manufacturing's performance is better than most

Total factor productivity, 1998 = 100¹



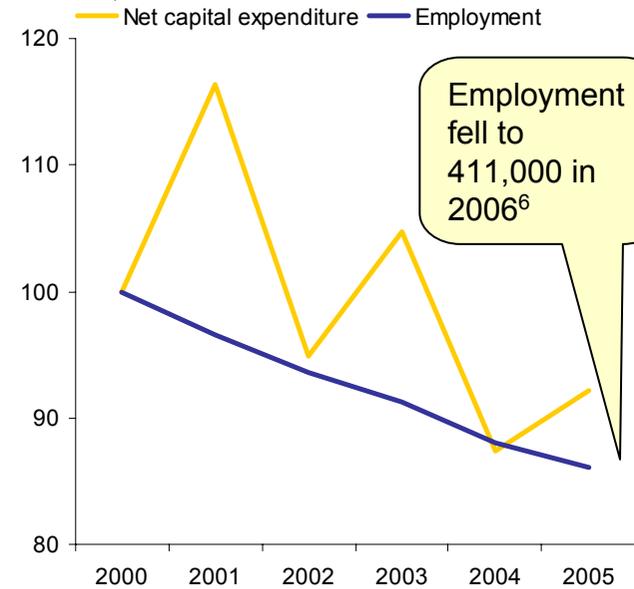
Food manufacturing has increased sales but consolidated – the number of firms fell 24% between 1995 and 2006

Food manufacturing enterprises and total turnover, current prices²



Employment in food manufacturing has fallen, as has net capital expenditure

Index, 2000 = 100³

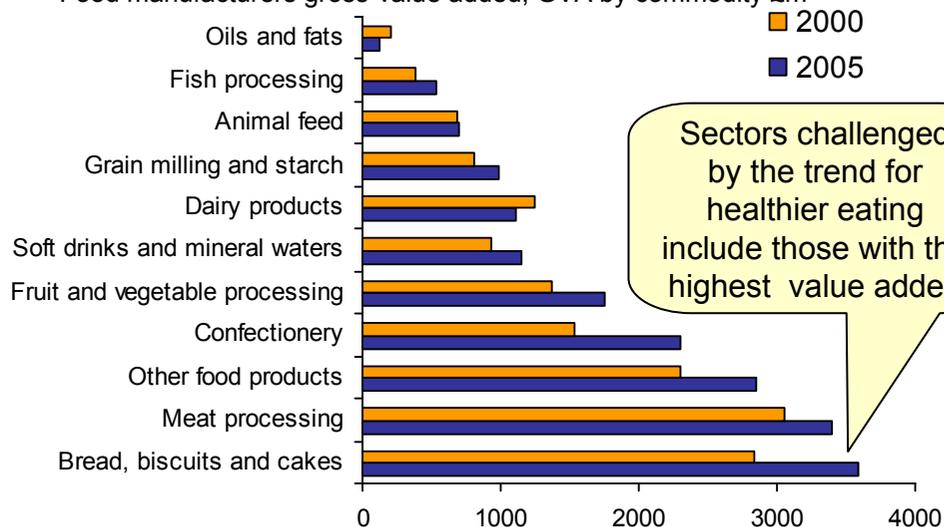


- Food manufacturing accounts for 17% of the UK manufacturing sector by turnover- its largest single sector
- An estimated 75% of food manufacturers' sales go to retailers (some via wholesalers), compared with 10% to caterers and 15% in exports⁴, so manufacturers are subject to strong competitive forces
- 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 2004⁵

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

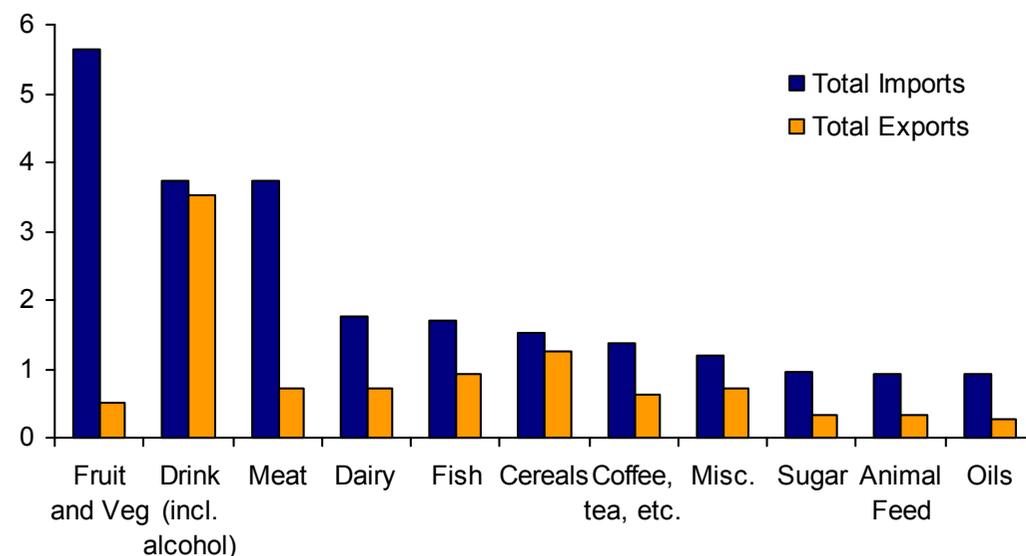
Gross-value added in food manufacturing has grown fastest in confectionery, fruit & veg, bread, biscuits and cakes

Food manufacturers gross-value added, GVA by commodity £m¹



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

Trade by food group, £bn at current prices, 2005²

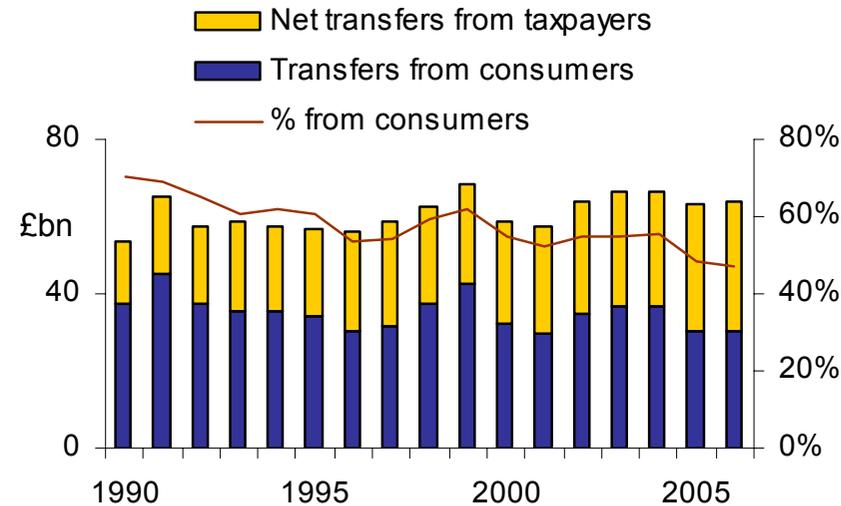


- Food manufacturers based in the UK include major international companies such as Unilever and Nestlé, managing large portfolios of household brands and exporting around the world
- Gross-value added (GVA) from the food and soft drinks industry increased by 20% from 2000 to 2005, with the biggest rise 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
- Food but 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

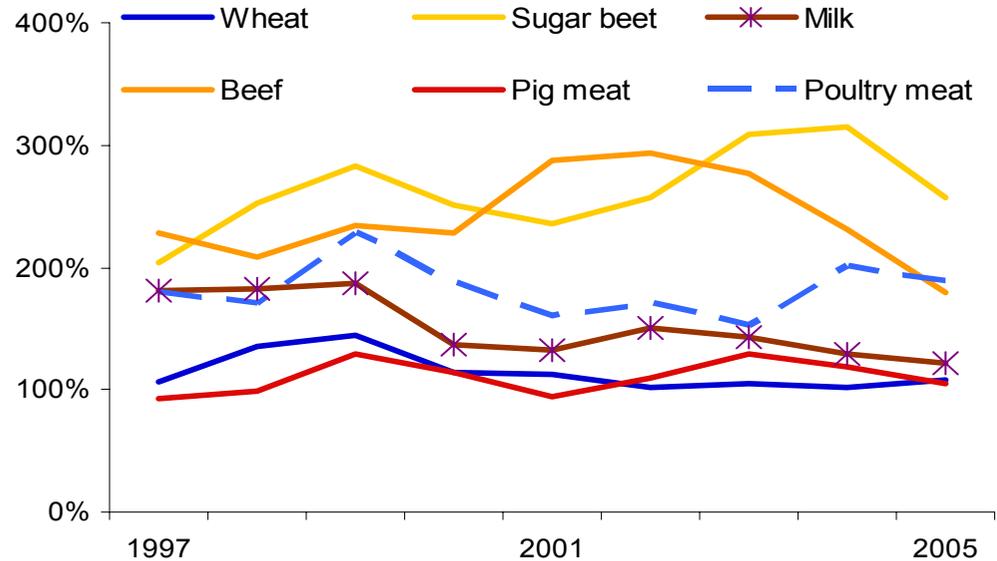
The CAP supports EU agriculture through direct support from taxpayers and via higher prices paid by consumers

CAP transfers to EU agriculture, £ billion¹



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

UK price as % world price²

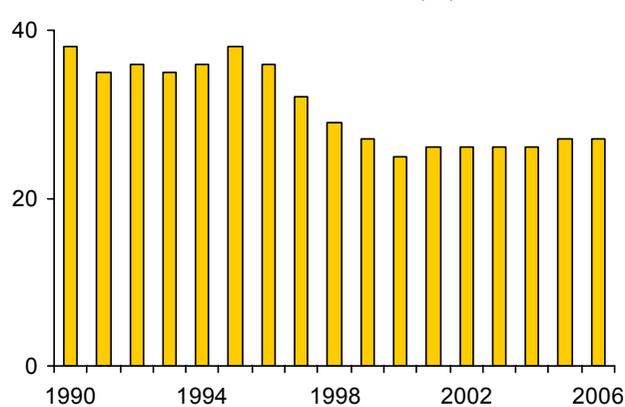


- UK farming still receives about £3 billion a year in direct subsidies, compared to Defra's estimate of total income from farming (TIFF) of £2.7 billion
- Direct payments to EU farmers under the CAP are now much more decoupled from production
- In 2006 the CAP cost the average EU household of four £557, 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

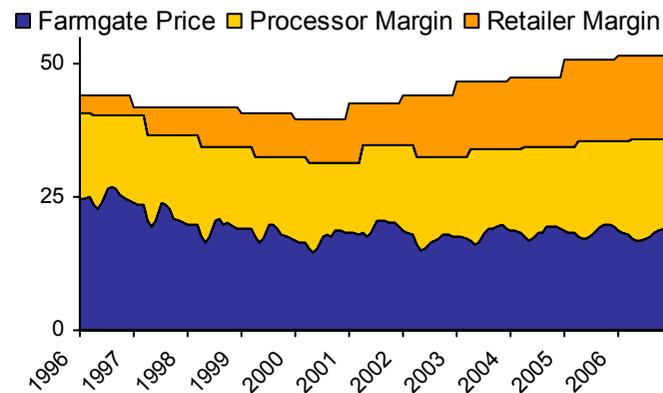
Farmers' share of the value of the retail food basket is lower than in the 1990s

Share of food basket, 1990 -2006 (%)¹



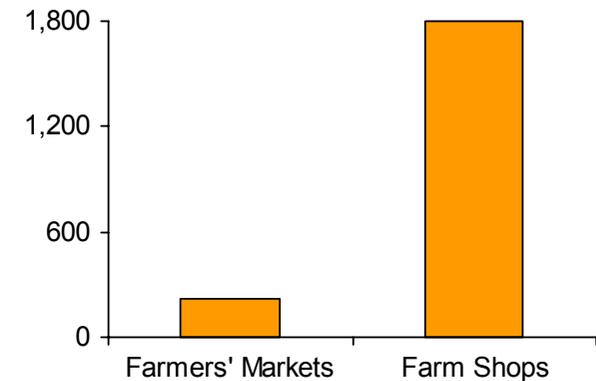
Farmgate milk prices are significantly lower than in the mid-1990s

Liquid milk prices in the supply chain, price per litre (pence), 1996-2006²



Direct sales provide some farmers with a more direct channel to consumer spending

Turnover of direct sales sector, £million, 2007³

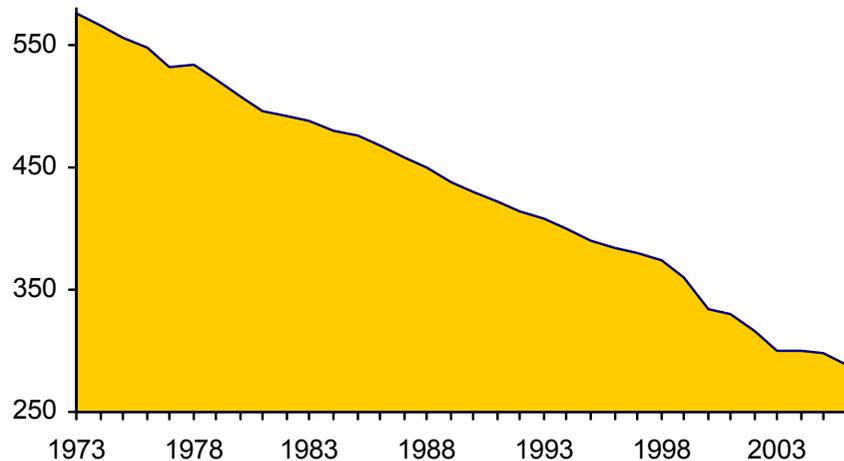


- Farmgate prices have been one of the key battlegrounds in the political debates about power in the food supply chain. The decline in farmgate share has reflected the falling (real) value of commodity prices
- As more food is subject to 'value-added processing' (anything from pre-prepared vegetables 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

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

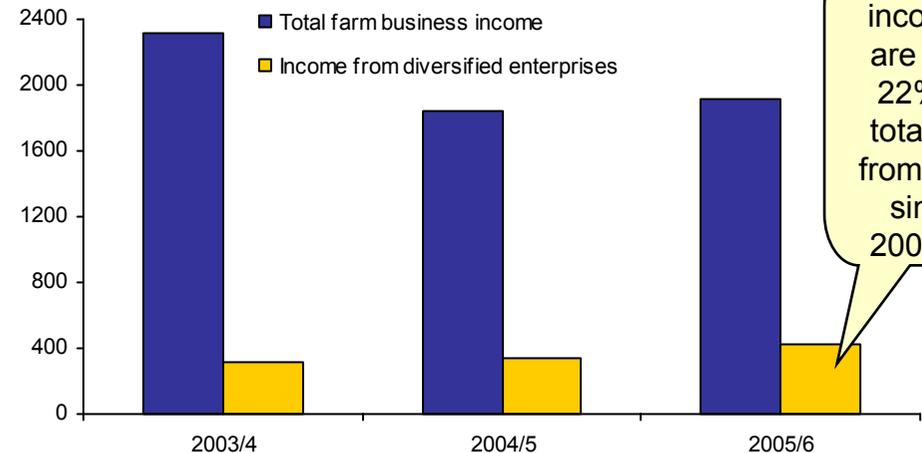
The long term decline in agricultural employment is continuing, with numbers down by almost half since 1973

FTE jobs in agriculture since 1973 (in '000s)¹



Diversified (non-agricultural) activities are increasing as a proportion of farm income

Total farm income and diversified income (£m)²

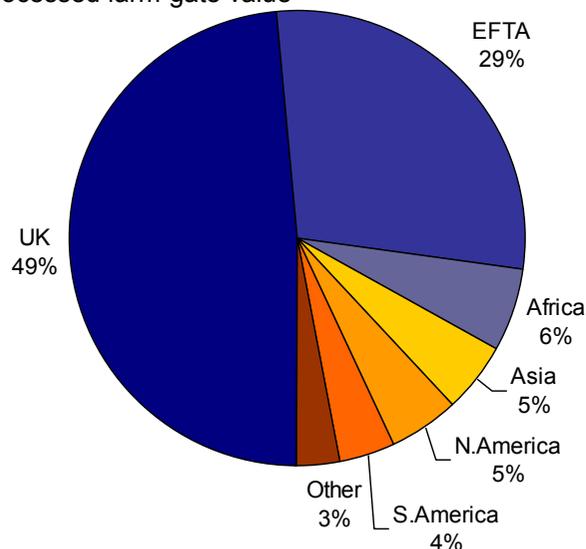


- Modern farming comprises a wide variety of business models, from outsourced contracting of arable cropping to the large number of small farms run on a hobby basis
- 60,000 farms in England occupy a farmer for at least half of their time. This is around half of all farms – but they account for 90% of 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 continues³, 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

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

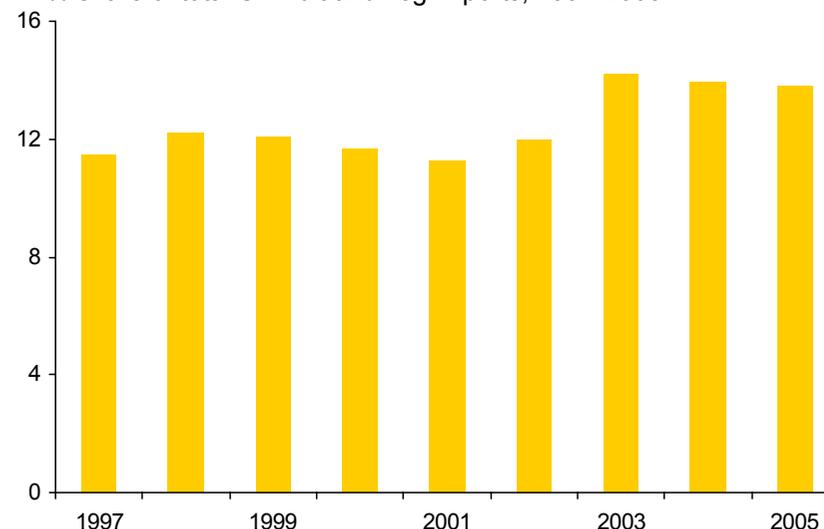
Most of the UK's food comes from the UK or Europe¹

Origin of food consumed in UK, 2006, % share based on unprocessed farm-gate value



There has been a modest increase in Africa's share of UK fruit and vegetable imports since 1997²

% share of total UK fruit and veg imports, 1997-2005

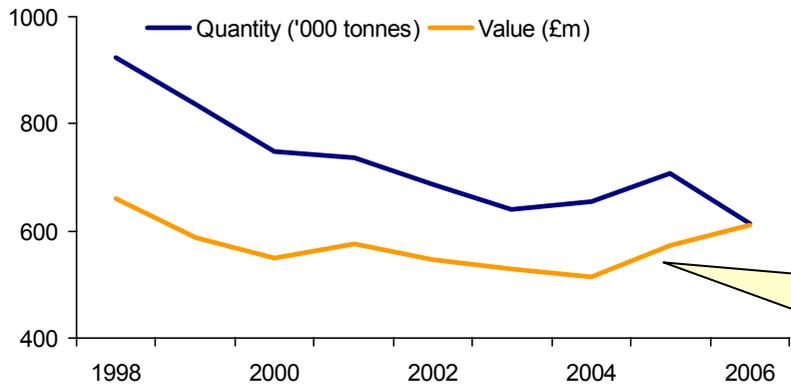


- Total exports of fruit and vegetables from Africa to the UK were valued at £495m in 2005, 47% of which came from South Africa³
- £105m of vegetables and £89m of fruit were exported to the UK from sub-Saharan Africa in 2005, supporting 715,000 growers and dependents⁴
- Higher standards set by retailers could be a threat to African farmers' sales in the short to medium term, a key trend given that 68% of exports are to retailers⁵
- 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 competence⁶

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

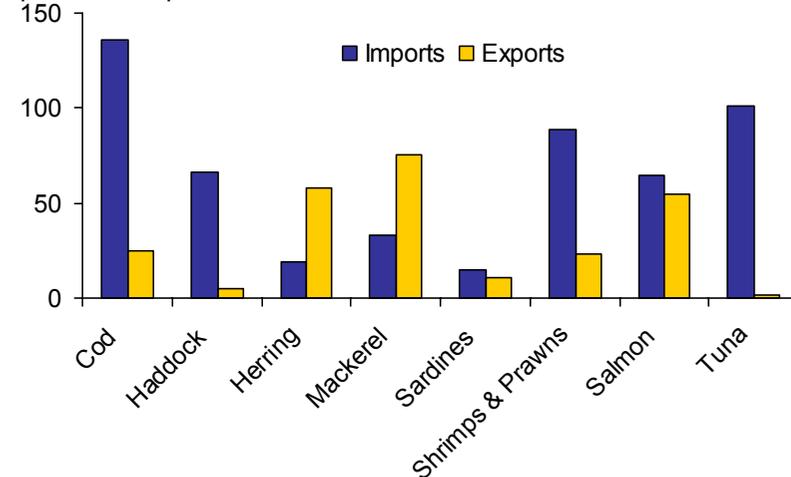
Quantity and value of fish landed since 1998¹



This recent growth is mostly shellfish

Imports and exports reflect the mismatch between tastes of UK consumers and local production

Imports and exports, '000 tonnes, 2006²

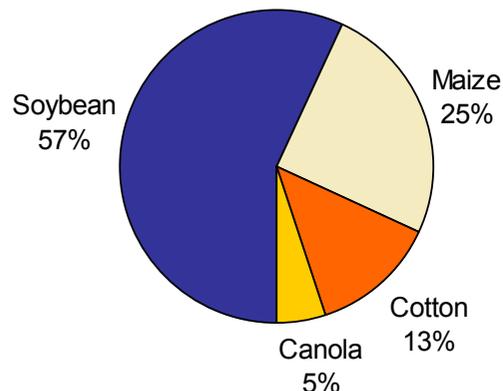


- UK seafood-related sectors are estimated to be worth £4.3 billion – 0.48% of GDP – and support 138,000 jobs³
- The UK fleet has declined since 1997 from 8,458 to 6,752 vessels but still generates £305m output (gross value-added)⁵; Britain exports £0.9bn of fish a year but imports £1.7bn
- By quantity 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 nephrops⁴
- 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 salmon⁶
- Fish processing is mostly separate from other parts of the food processing sector. It provides 22,700 FTE jobs, mainly in Grampian and Humberside⁷

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

% planting, global biotech crops¹



Biotechnology is being applied to food crops with various aims - to improve productivity on the farm, reduce waste in transit, and provide health benefits for consumers

Illustrative list of biotech crops in development²

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

- 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 UK³
- 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 efficiency¹
- 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 rapidly²
- 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 nanoparticles³

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.

On the left is the standard bottle, on the right the coated one⁴



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 life⁵

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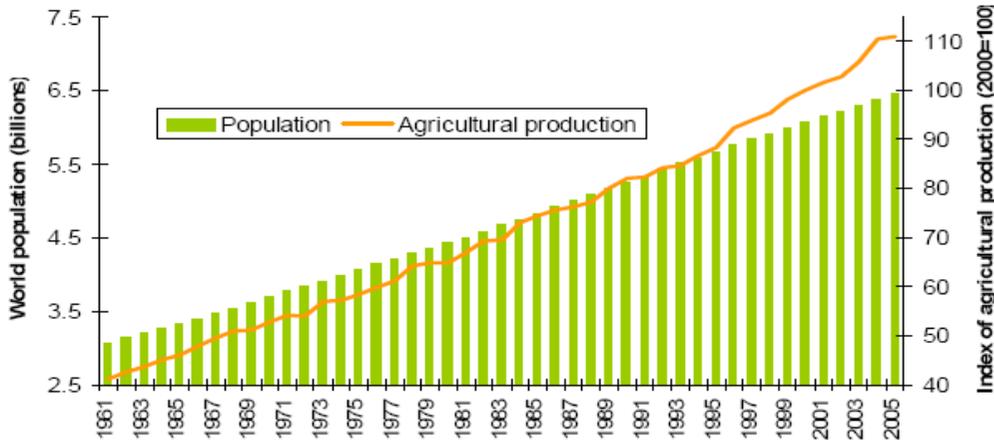
8: Food safety

- 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

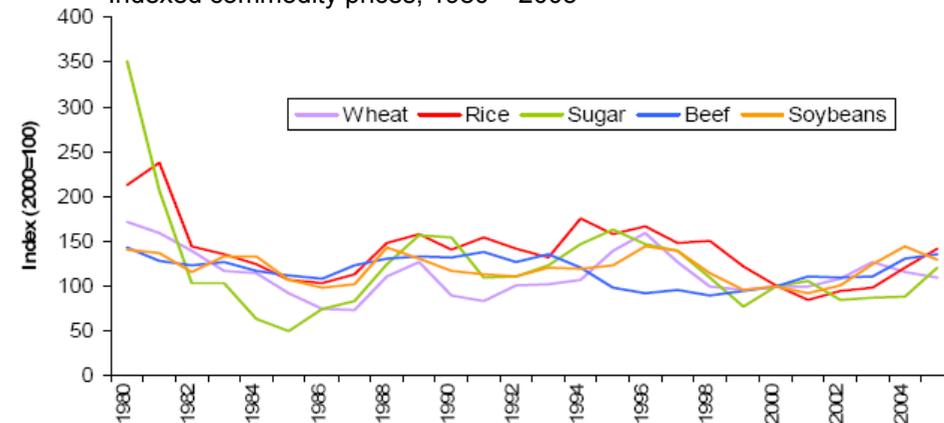
From the 1960s onwards total agricultural output has grown faster than world population

World agricultural production and population 1961-2005¹



Nominal prices for major commodities were broadly stable for 20 years from 1985 to 2005 – indicating real price falls

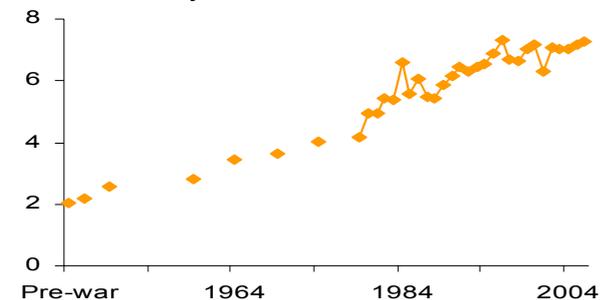
Indexed commodity prices, 1980 – 2005²



- 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 under-nourished but 2 billion are overweight¹
- 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

Declining food prices have been made possible by the productivity gains achieved in agriculture – illustrated by the rise in UK wheat yields

UK wheat yield, tonnes/ha³

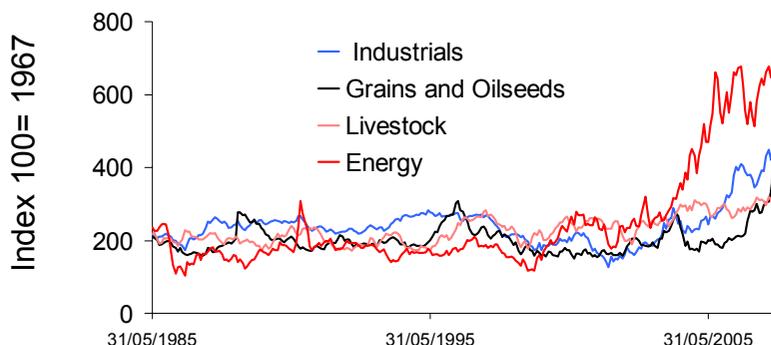


1: World Food Programme, WHO 2: [complete – see Defra food sec note] 3: Defra

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

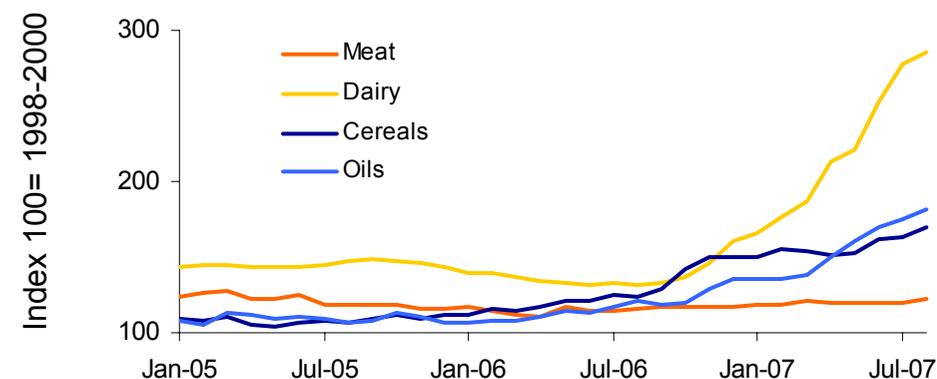
Agricultural commodity prices have risen strongly in the last couple of years, but less than energy and other commodities

CRB-Reuters 1997 indices, 1985-2007¹



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

FAO monthly price index data²

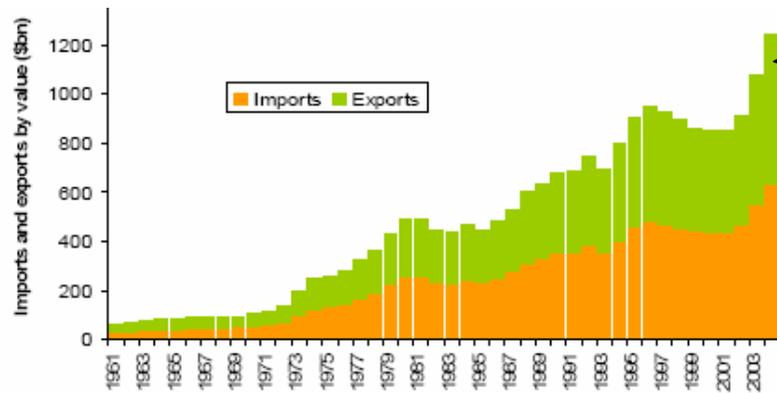


- Prices of agricultural commodities have increased significantly on international markets in the last 2 years
- These changes and other trends such as the deteriorating state of the global environment, soils and fish stocks, have prompted commentators to announce the 'end of cheap food' and the beginning 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

World imports and exports of food and agricultural products, 1961-2002¹

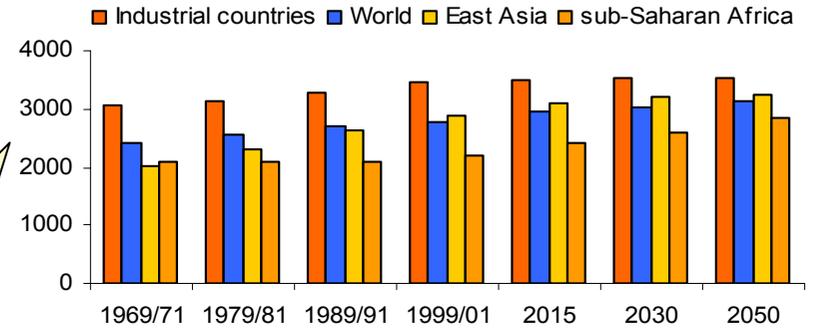


Cereal production in 2007 is forecast at 2125Mt, world trade at 247Mt

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

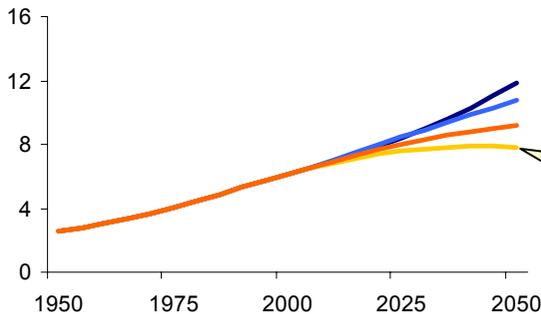
FAO projections see food consumption in developing countries catching up with the OECD and so driving global demand

Per capita food consumption, kcal/person/day, to 2050²



There is huge variation in UN population projections for 2050 and hence the potential future demand for food

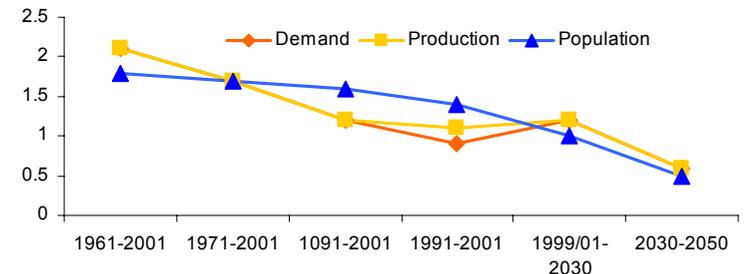
World population projections to 2050²



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

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

Growth rates in world population, cereal demand & supply %/yr⁴

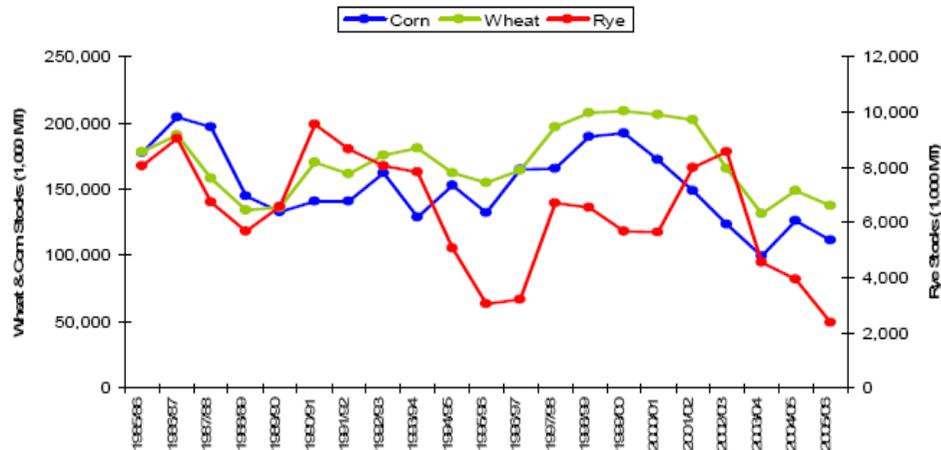


1: FAO; 2: FAO (2006), *World Agriculture towards 2030/2050, Interim Report*; 3: UN (2006) *World Population Prospects, The 2006 Revision*; 4: FAO (2006), *World Agriculture towards 2030/2050*

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

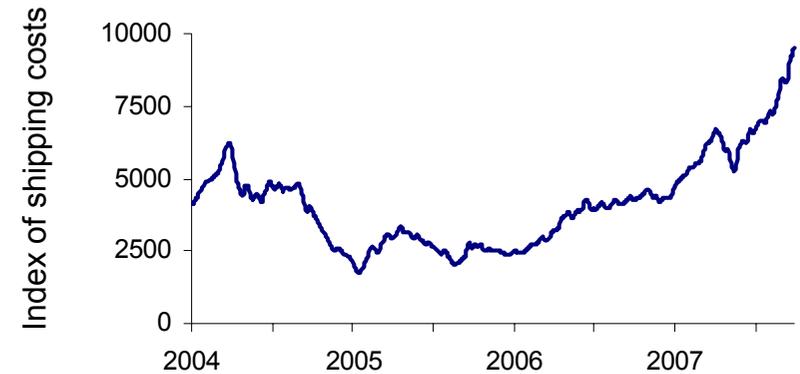
Global stocks of agricultural commodities have fallen, in part due to CAP reforms

Global commodity stocks 1985-2006²



Tight supply of bulk cargo vessels has seen ocean transport costs for grains rise to record levels

Baltic Dry Index, 2004-2007²

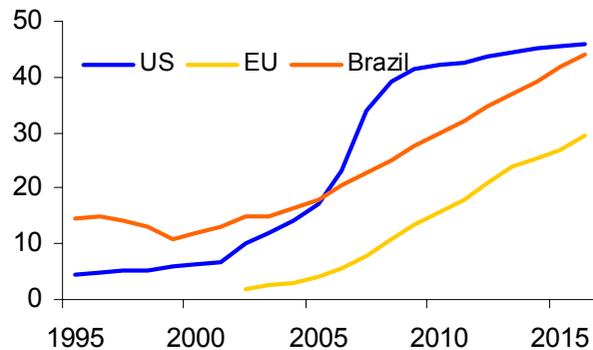


- Markets are seeing price and stock adjustments, partly due to agricultural policy reforms (e.g. EU intervention stock cuts have affected total global grain reserves)
- Higher oil prices make for higher food prices – through input costs such as fuel and fertiliser
- With global markets currently tighter, 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

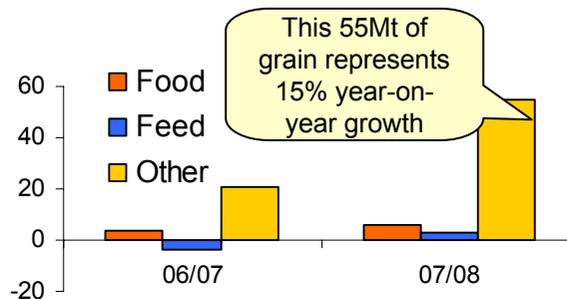
Ethanol and bio-diesel production is projected to increase dramatically under current policies

Ethanol and biodiesel output, billion litres³



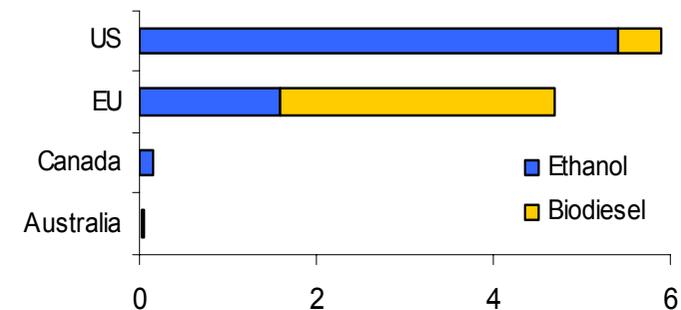
Demand from the bioethanol industry is having a bigger impact on world maize utilisation than food or feed

Change in global utilisation of coarse grains compared to previous year, million tonnes²



OECD governments' subsidies to biofuels in 2006 have been estimated at US\$11bn

Biofuel subsidy estimate, US\$bn, 2006¹



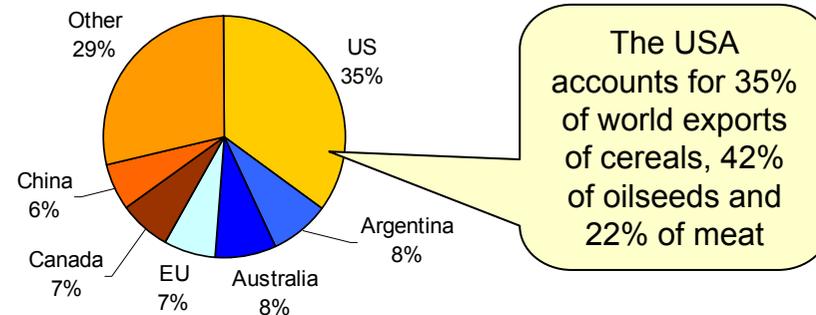
- The US and EU, both large grain exporters, have adopted policies mandating and incentivising use of bio-fuels
- Local maize, wheat and oilseeds production in the US and EU is being diverted into biofuel manufacture; tariff barriers restrain imports of biofuels from developing countries
- The FAO, OECD 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

Farmers can be expected to respond to higher prices by raising output

- World farmers' response to the stimulus of higher prices is now beginning to be seen, e.g.:
 - US farmers planted more maize in 2007 than in any year since 1947¹
 - the FAO has predicted a record cereal world harvest in 2007 and record winter wheat planting²
- 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

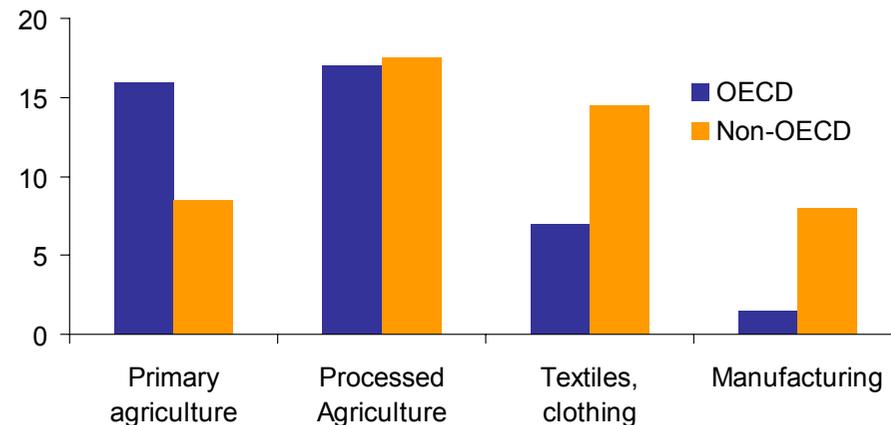
Output from just a few countries has a big impact on global markets because agricultural exports are highly concentrated

Share of world total cereal exports, 2002-4, %³



Agriculture is one of the most protected sectors

Average applied import tariffs, 2001⁴

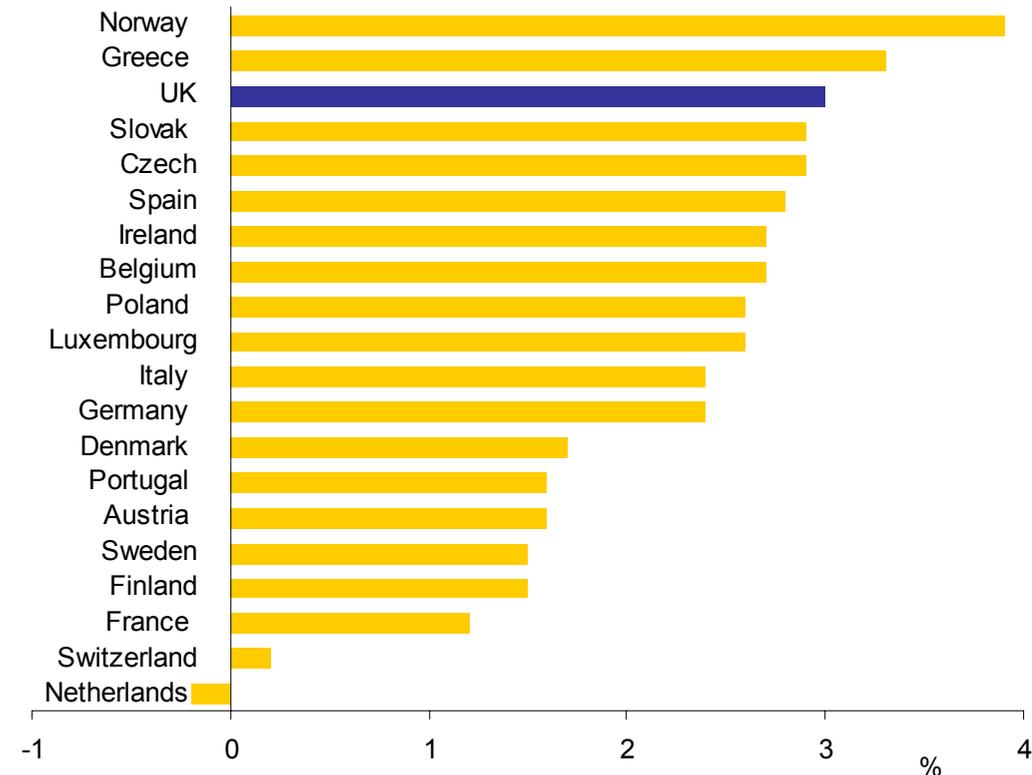


In the UK high feed prices squeeze livestock and dairy farmers' margins and add to manufacturers' cost pressures, but impacts on consumers are diluted in the supply chain

- 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 inflation has been comparatively modest thus far but increases are gradually feeding through from international markets to consumers – with the UK seeing greater change than most of the rest of Europe

% Increase in CPI (food only) August 2006-2007¹

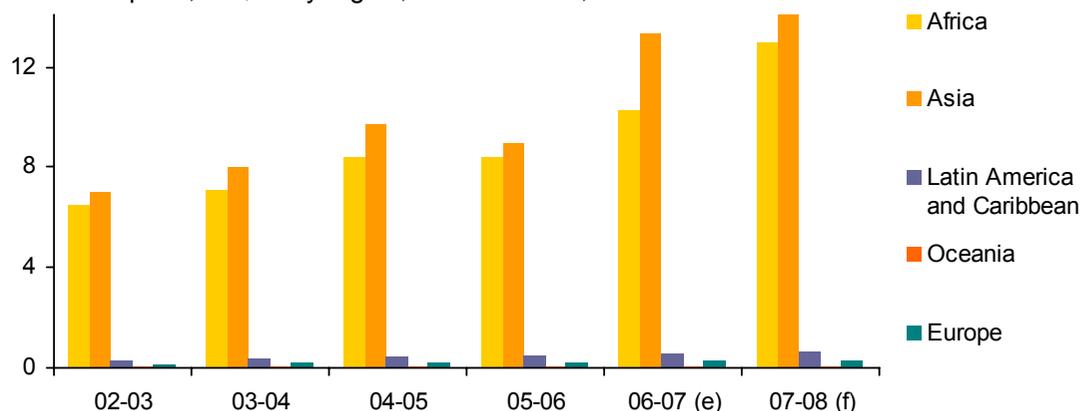


The global food price rises have a much greater impact on developing countries, especially their urban poor

- The urban poor in the developing world spend a high share of their income on food – up to 65%
- The FAO estimates:
 - The cost of the food import basket for the least developed countries has risen 90% since 2000, but just 22% in developed countries²
 - Developing countries will spend a record US\$52bn on cereal imports in 07/08, up 10% on 06/07¹

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\$bn by region, 2006 estimate, 2007 forecast¹



- **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

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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 of 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 supply¹
- Intervention may be required where markets fail to manage adequately

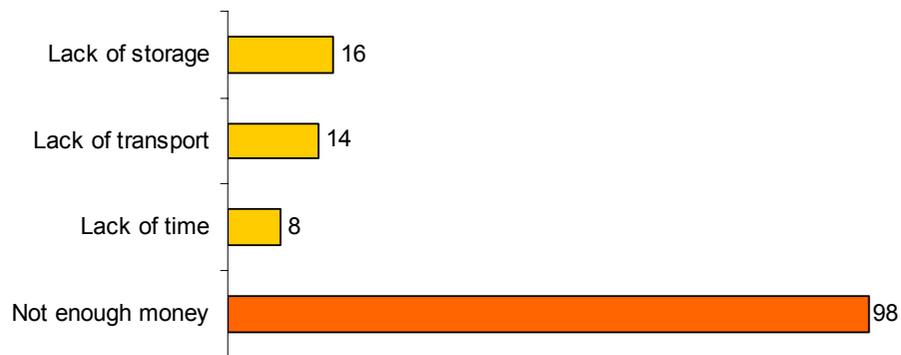
The multiple dimensions and interpretations of 'food security' can hinder discussion¹

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

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

Percentage of respondents citing factor¹



- 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

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

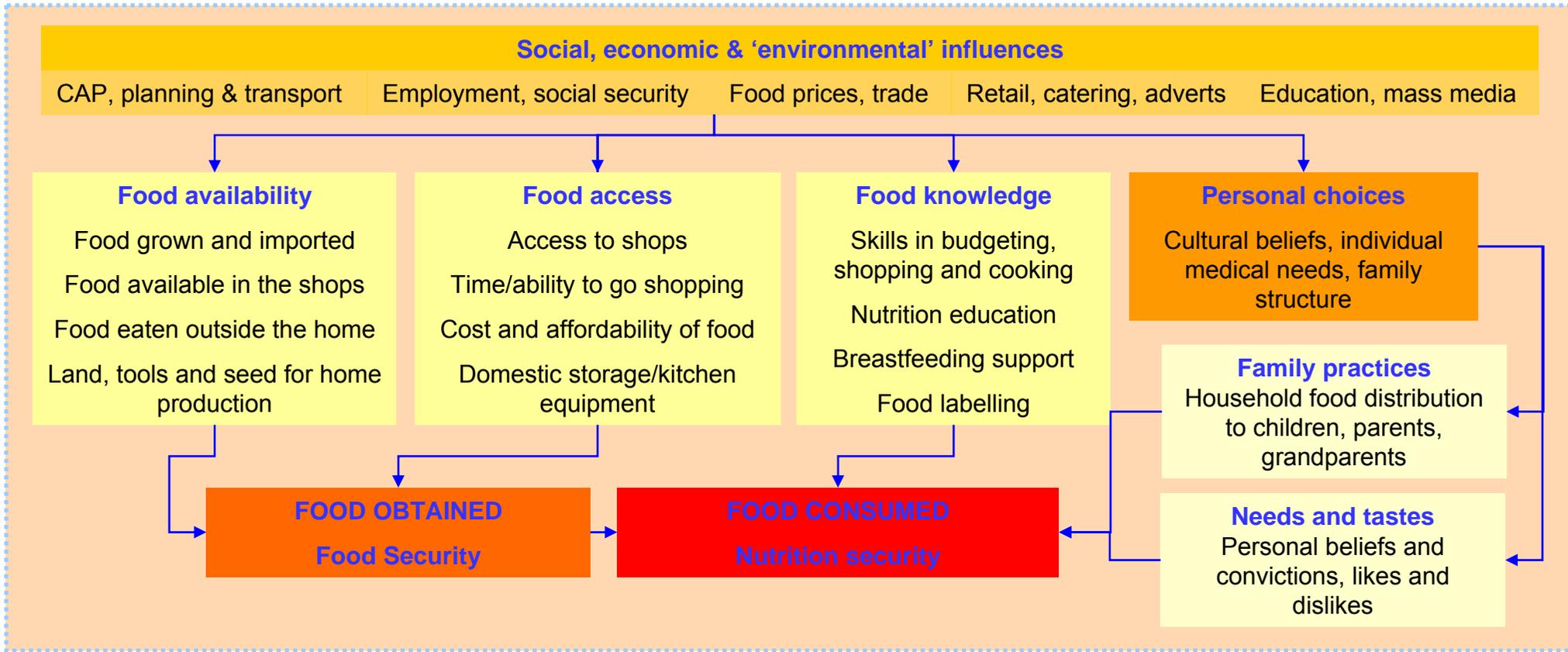
Those who are most food insecure worry about food running out, find that food runs out before they get more money and reduce portion size or skip meals

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 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 choice¹

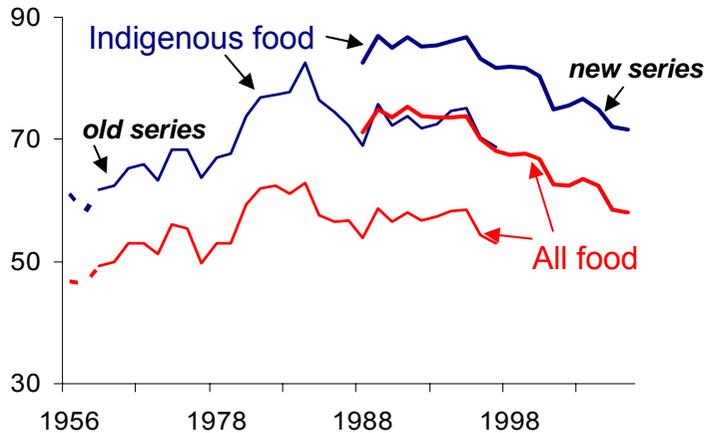


1:World Health Organization-E. (2002) *Food and Health in Europe*.

UK national self-sufficiency in food is falling but still high by historical standards

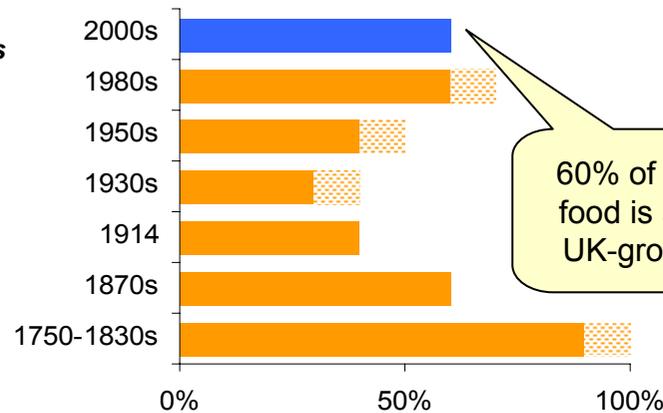
In value terms, self-sufficiency peaked in the early 90s and has since declined

UK self-sufficiency, old and new data series, %¹



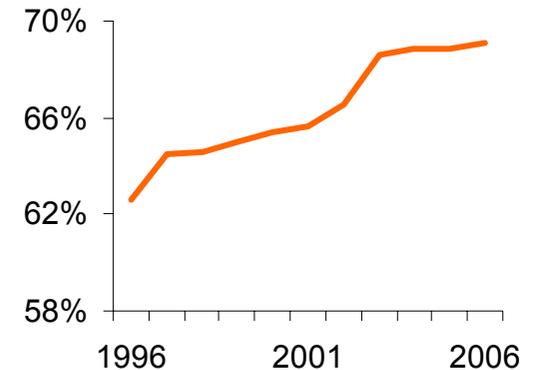
But today's self-sufficiency ratio is still high by historical standards

UK self-sufficiency – shading shows range, %²



The share of UK food imports sourced from Europe has risen in the past decade

European Free Trade Agreement (EFTA) countries as % all food imports³



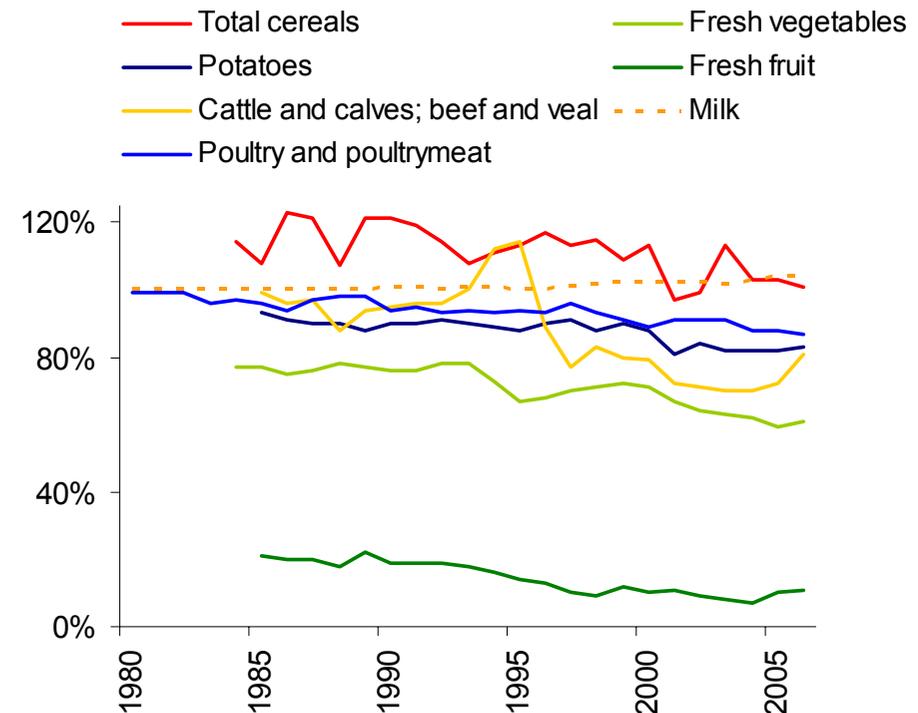
- The fall in UK food self-sufficiency (the domestic production's share of consumption) since the 1980s is sometimes used as evidence that UK food security is at increasing risk
- But the very high self-sufficiency of the 1980s and 1990s was unusual - an artefact of the Common Agricultural Policy and 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 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, 1980-2005¹

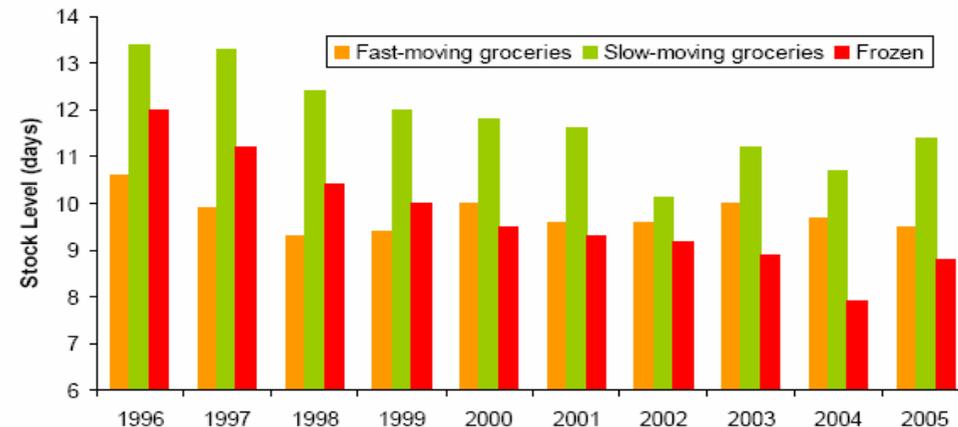


There is a legitimate public interest in the resilience of the logistic system and infrastructure that support the UK's food supply chain, and in good contingency planning

- 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 instance¹:
 - 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 ones¹
- 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 preparedness¹

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

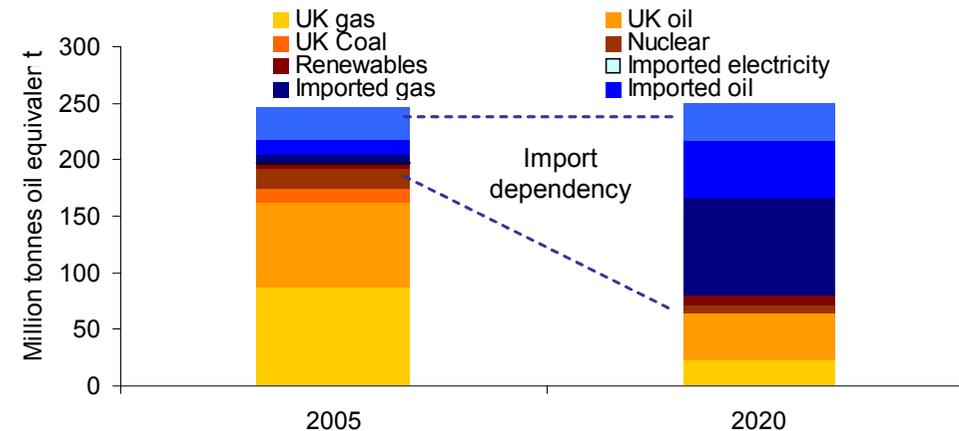


Recent Defra research³ concluded that there is a need for proactive planning by government as well as industry if continuity of food supplies is to be maintained in a national emergency

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 2020¹



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 assessment¹ 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 Europe¹

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:

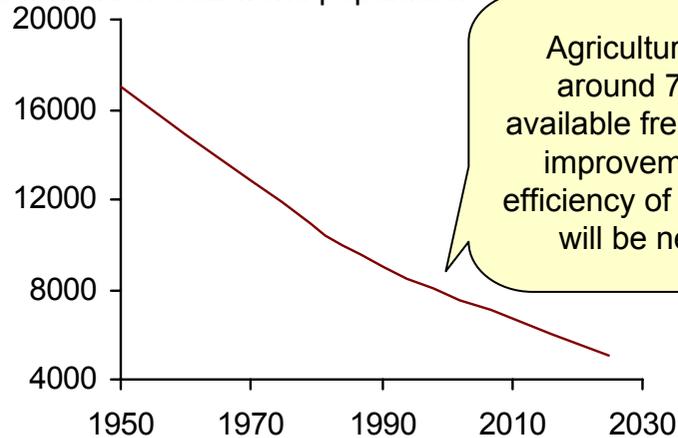
- In the Po Valley, Italy, maize yields dropped 30%
- In France maize yields fell 25% compared to the previous year and fruit harvests fell 25%
- Forage production fell on average by 30% in France

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

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

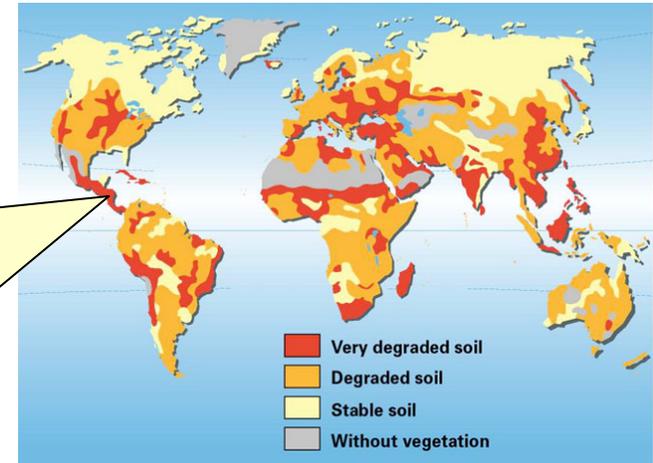
Actual and projected freshwater availability, cubic metres per head of total world population¹



Agriculture uses around 70% of available freshwater – improvements in efficiency of water use will be needed

It has been estimated that as much as 50% of the world's arable land may be unusable by 2050, overirrigation and overgrazing being contributory factors

It has been estimated that as much as 50% of the world's arable land may be unusable by 2050
State of world soils²



- 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

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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)

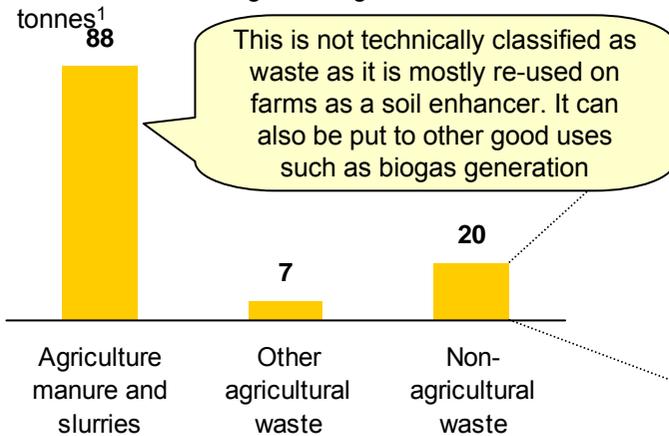
Consumers and Households

- 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

Agriculture is the food sector's main source of 'waste' arisings

Annual waste arisings for England, million tonnes¹



While consumers are the main source for the non-agricultural arisings

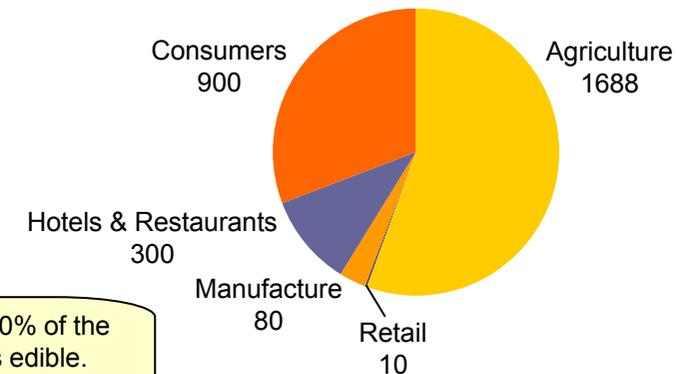
Non-agricultural waste arisings for England, million tonnes¹



Consumers throw away around 30% of the food purchased, of which half is edible. This equates to £250-£400/ person/ year

After agriculture, households have the largest waste-related greenhouse gas footprint in the food chain

Thousand tonnes CO₂ equivalent/yr in England¹



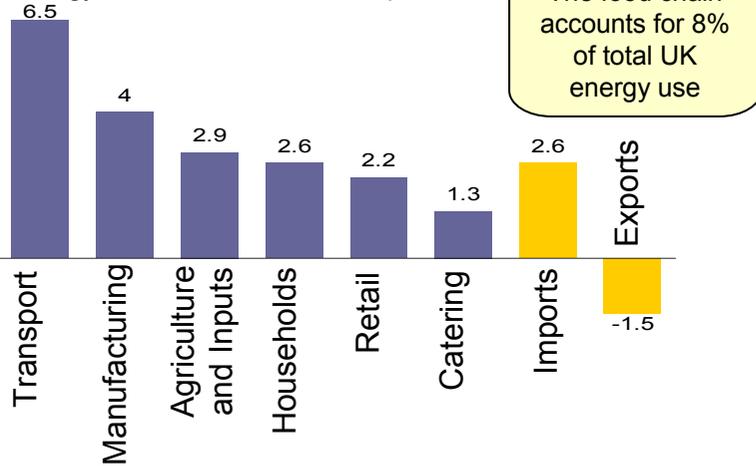
- The main sources of waste in the food chain are food and packaging
- For many foods packaging is necessary to prevent damage to the food, to prolong shelf life and for presentation, but its environmental and resource impact can often be reduced through re-engineering
- 6.5 million tonnes a year of 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 UK² 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 CO₂ 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)

1: All figures Defra/SU estimates, using statistics from EA/WRAP/ONS; 2: HMT (2002), *Plastic Bag Tax Assessment*

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

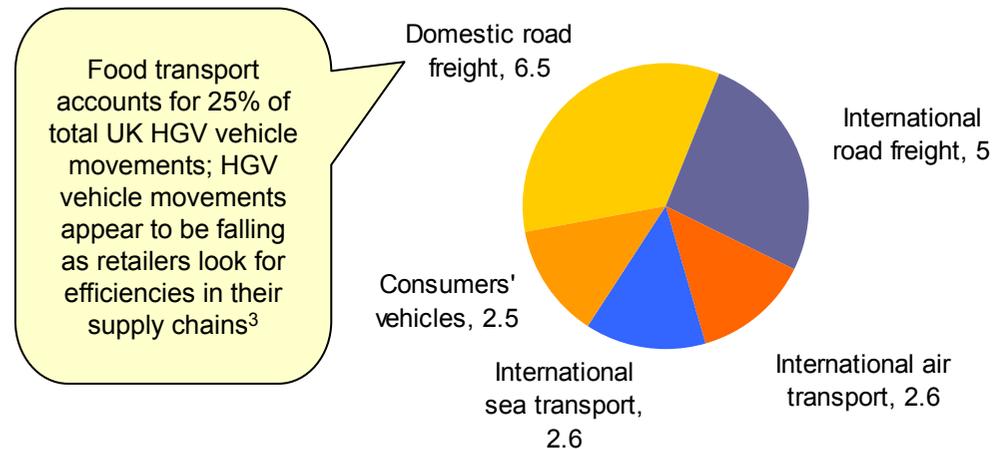
Transport accounts for a third of the 20.6 million tonnes oil equivalent of energy consumed in the food chain each year

Energy use, million tonnes oil equivalent¹



And generates 19Mt CO₂ equivalent a year, with road freight being the largest contributor

Transport emissions due to the food chain, million tonnes CO₂ equivalent/yr²



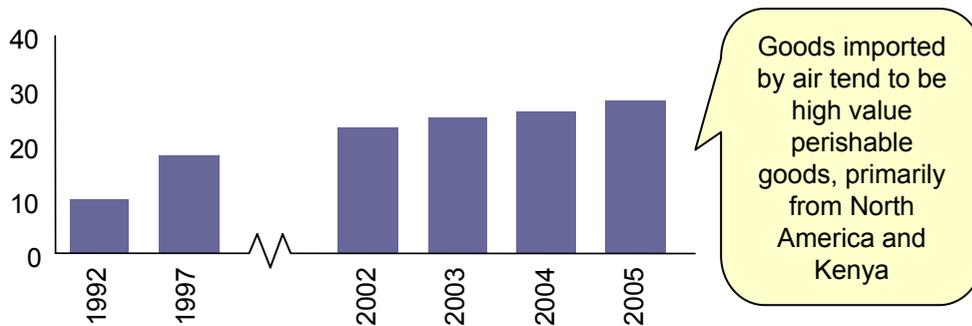
- Evidence of the environmental impacts that occur in the life cycles of a range of food products (fresh and processed goods, organic and conventionally grown produce, and locally and globally sourced foods) shows that the argument that local food has a smaller environmental impact is weak and that global sourcing can be better for some foods⁴
- Our food is estimated to be travelling 23% more than three decades ago^{5,6}:
 - 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.

1: Defra (2007), *Food Chain Energy Briefing*; 2: Defra (2007) Updated external costs of food transport miles; 3: Defra (2007), *Food Transport Indicators to 2006*; 4: Manchester Business School (2006), *The environmental impacts of food consumption and production*; 5: AEA Technology (2005), *The validity of food miles as an indicator of sustainable development*; 6: Faber Maunsell (2007), *Reducing the external costs of domestic transport of food by the food industry*

Although the amount of food travelling by air is increasing, the biggest external cost of transport is due to congestion, not CO₂

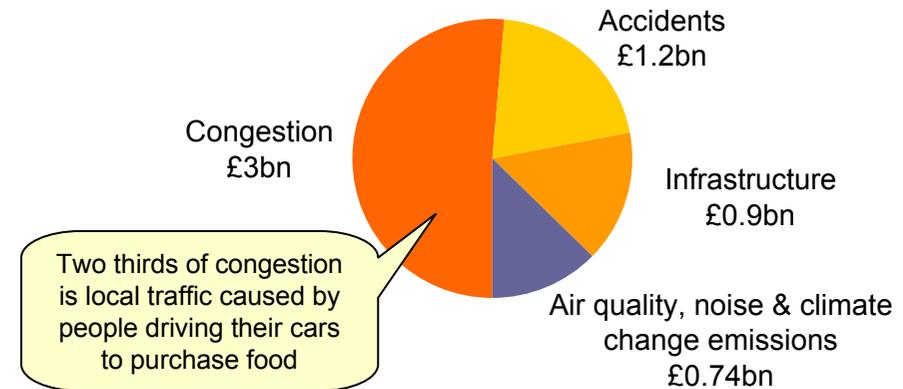
Food air freight is increasing, but only accounts for 0.1% of our food chain vehicle kilometres and 15% of the greenhouse gas emissions from food-related transport

Air freight, million vehicle kms¹



But the biggest external cost of food transport is congestion, not greenhouse gas emissions

Transport costs associated with food, billion²



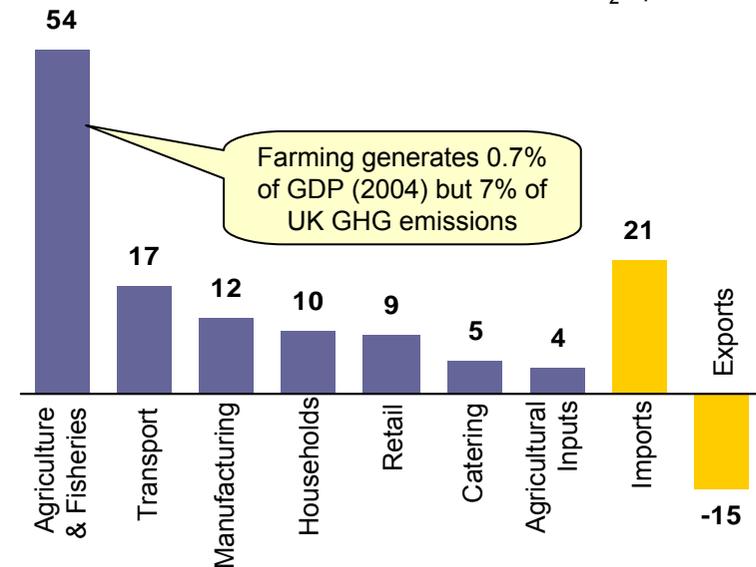
- The environmental impact of having fresh produce available all year round can vary hugely from season to season, and depends on the type of product, where and how it is produced, and length and type of storage
- For example, evidence suggests that at some times during the year, transporting produce 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

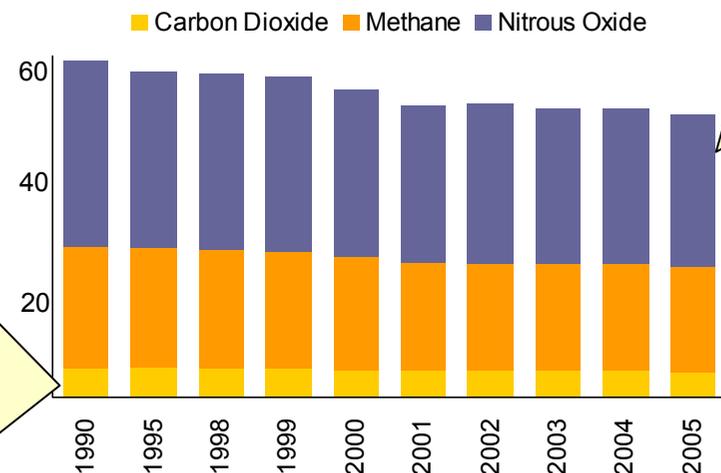
Estimated food chain emissions, million tonnes CO₂ equivalent¹



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

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

Agriculture emissions, million tonnes CO₂ equivalent²



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

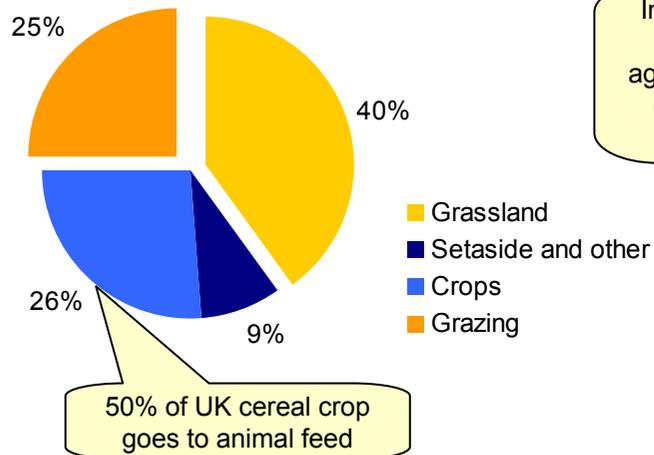
- The food chain's contribution to UK greenhouse gas emissions (equivalent to 18%) is larger than its contribution to energy use (8%) due to methane and nitrous oxide emissions from agriculture
- The external cost of these emissions is estimated at £2.9bn³
- While methane emissions across the UK have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

1: Defra (2007), *Food Chain Greenhouse Gas Briefing*; 2: AEAT (2006), *Greenhouse Gas Inventories for the UK 1990 to 2005*; 3: Defra (2007), *How to use the shadow price of carbon in policy appraisal - setting SPC at £25.4 / t CO₂ eq at 2006 prices*

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

Two thirds of the 9.7m hectares of UK agricultural land directly supports livestock production

Agricultural land area by type¹

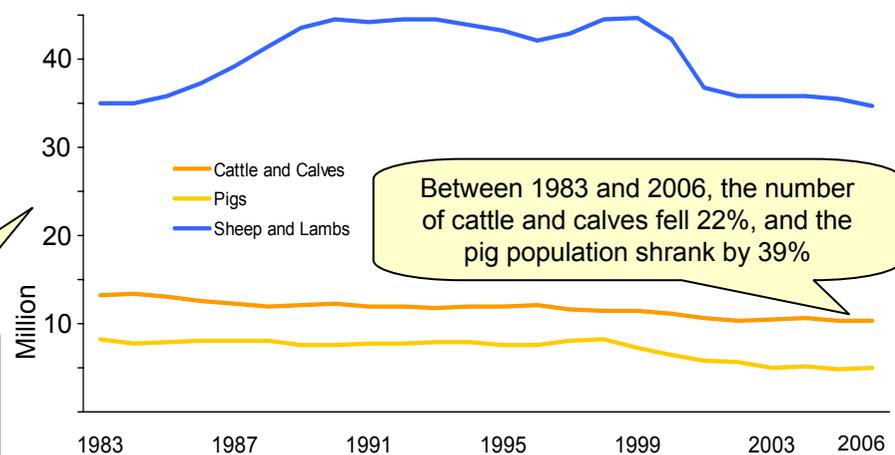


In the UK, the amount of land available for agricultural production has decreased by only 3% over the last 25 years

Between 1983 and 2006, poultry numbers almost doubled to 84m birds³

Livestock numbers are in decline

Livestock on agricultural holdings in England and Wales, millions, 1983 to 2006²

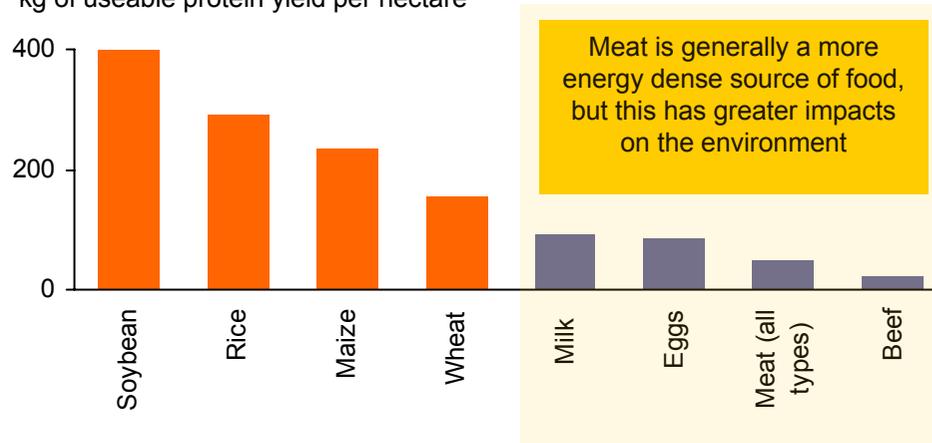


- Livestock production accounts for 76% of all nitrogen applied to farmland, and 60% of nitrates entering water bodies are attributable to farming⁴
- But livestock can bring significant benefits to the UK's landscape and biodiversity through helping to manage the land by appropriate grazing practices
- 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

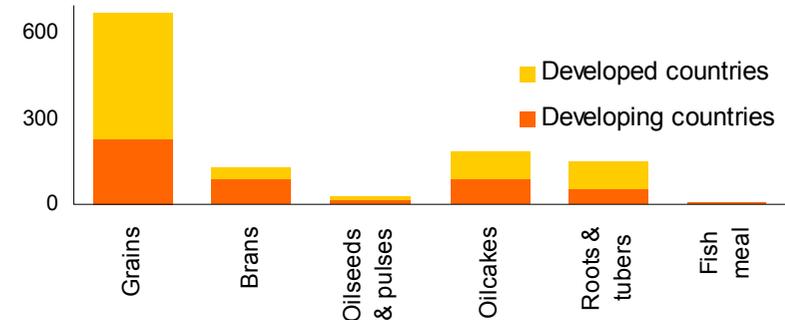
Meat production has a lower land use efficiency than other foods

kg of useable protein yield per hectare¹



Globally, more than a billion tonnes of grain and other animal feed is used each year

Million tonnes, 2002²

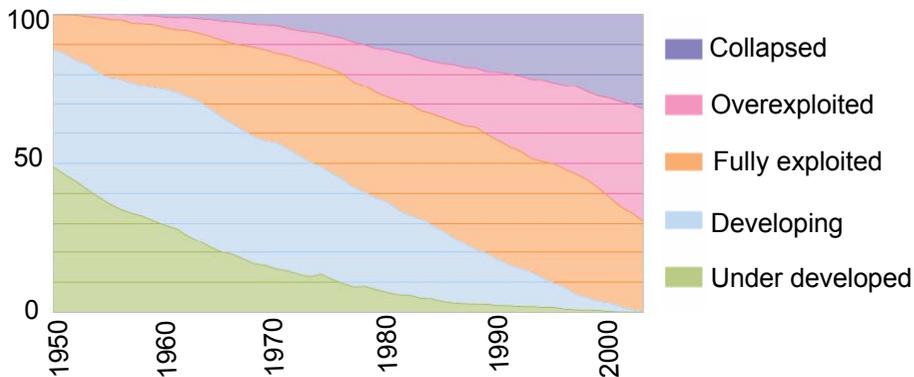


- At a global level, it is estimated that livestock account for³:
 - 18% of greenhouse gas emissions (including the emissions across the commodity chain): of which deforestation accounts for 35%; manure 31%; enteric fermentation 25%; and feed production around 7%
 - 8% of global human water use, 90% of which is for feed production
- Livestock consume more human protein edible by humans than they provide through the production 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% per cent of the world's fisheries are classified as fully exploited, overexploited or significantly depleted¹ others report a much greater problem

Exploitation status of marine stocks 1950 to 2003, %²



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 Council³ 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.

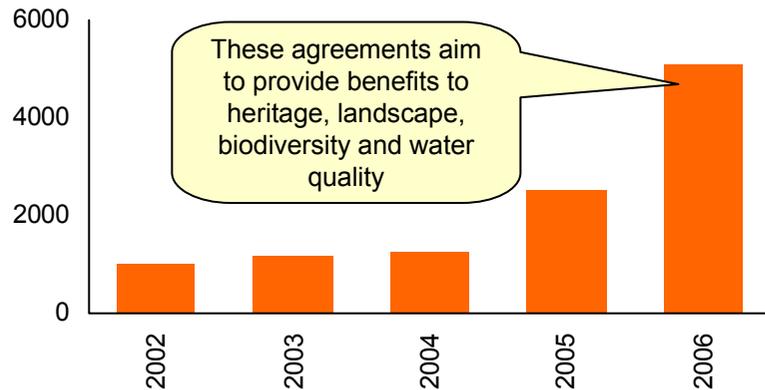
The changes are in large part due to changes in supermarkets' purchasing policies, but also due to a recent step by the MSC to increase the number of products and suppliers, and a shift in one large UK based manufacturer towards increasing the amount of MSC certified products it supplies.

- In 2002, 50% of the UK catch (by value) came from stocks that were in borderline or unsustainable condition⁴
- 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 species⁵ and the European fisheries discard rate is estimated at 20-60%⁶;
 - Trawling can be very destructive; it is estimated that in the North Sea, beam trawl fleets reduces total biomass on the seafloor by 39%⁷.
- 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

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

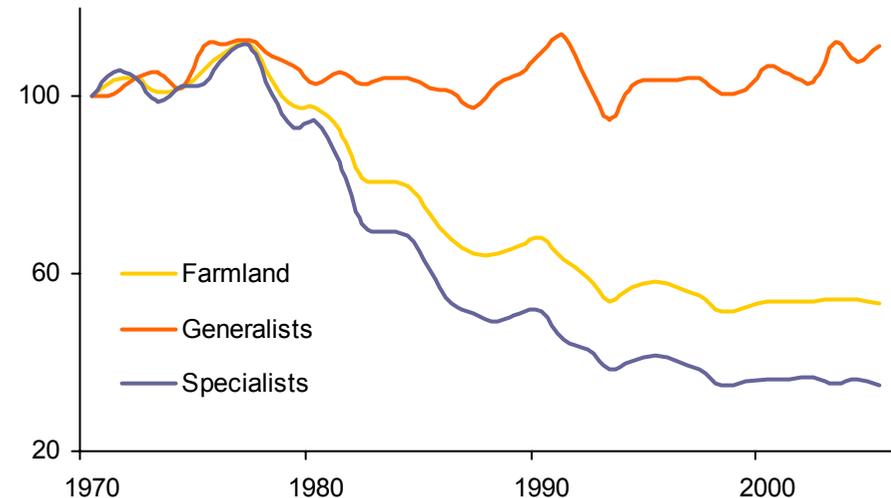
Since the 2005 reforms of the Common Agricultural Policy, the amount of land funded under environmental management schemes has dramatically increased

Hectares of farmland under environmental management scheme agreements in England¹



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

UK farmland bird index 1970 to 2004, 1970=100²



- 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 sector³

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

- 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

Too much

Saturated Fat
Salt
Sugar
Alcohol
Smoking

Too little

Fruit
Vegetables
Oily fish
Physical activity

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)

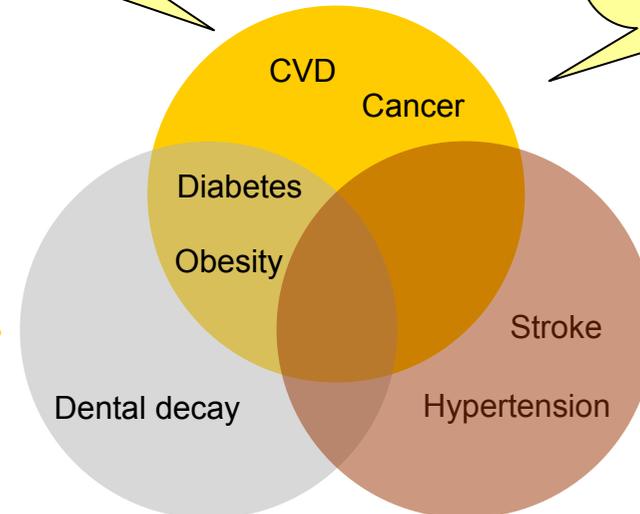
Too much saturated fat

Salt, saturated fat and sugar can become contributory factors in diet related ill health when consumed to excess

Calorie intake is lower than 30 years ago but energy expenditure is still insufficient to keep the diet in balance for many ^{1 2}

- 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

Too much added sugar

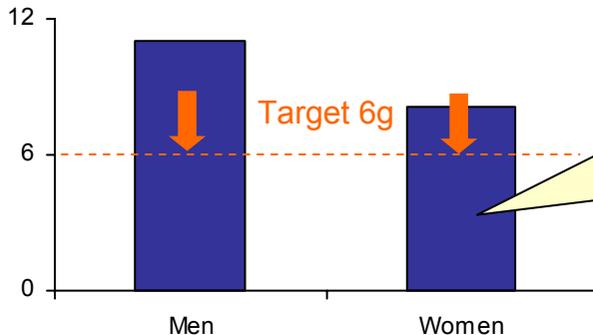


Too much salt

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 target¹

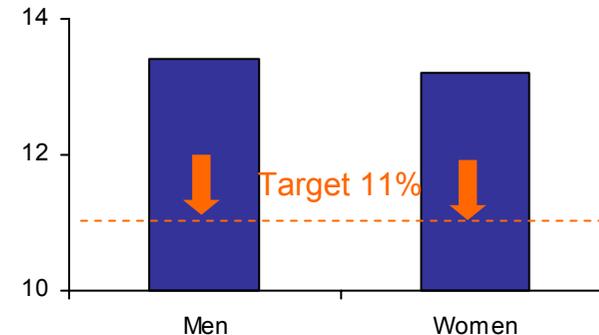
Salt intake per day, g



75% of the salt we are eating is coming from our consumption of processed foods³

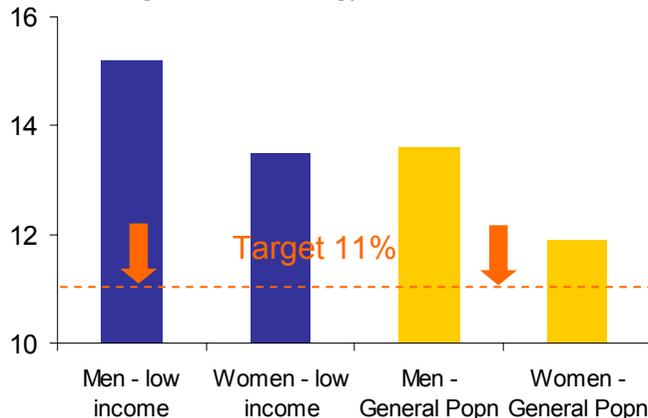
On average our intake of saturated fat is 20-25% higher than recommended intakes^{1,2}

Saturated fat intake, % of food energy



Too much of our energy comes from added sugar e.g. not sugars found in fruit, vegetables and milk^{1,2}

Added sugar as % of energy intake



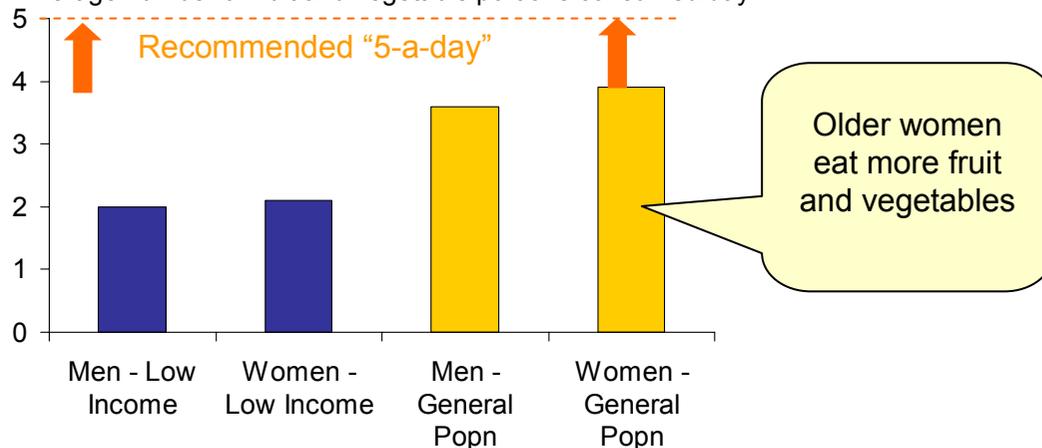
The World Health Organisation may make a change to recommended trans fat intake levels, from 2% to 1% of total energy intake

- 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 intake¹
- 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

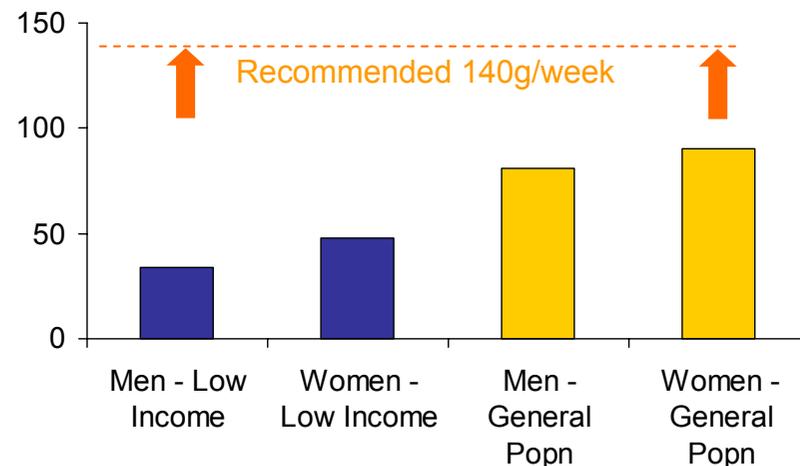
Consumption of fruit and vegetables is still below the recommended 5 a day...^{1,2,4}

Average number of fruit and vegetable portions consumed/day



...and oily fish consumption is well under the recommendation of 140 grams a week^{1,2}

Average consumption of oily fish, grams/week



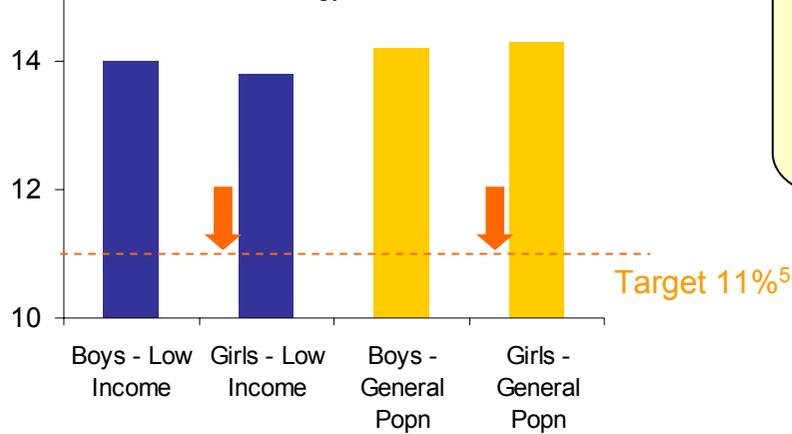
- In a 2001 national dietary survey 13% of men and 15% of women ate 5 or more portions of fruit and vegetables a day in the survey period; 21% of men and 15% of women ate no fruit at all and 19-24 years ate the least³
- But the Health Survey for England found 26% of men and 30% of women were achieving the 5-a-day target in 2005²
- 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

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...

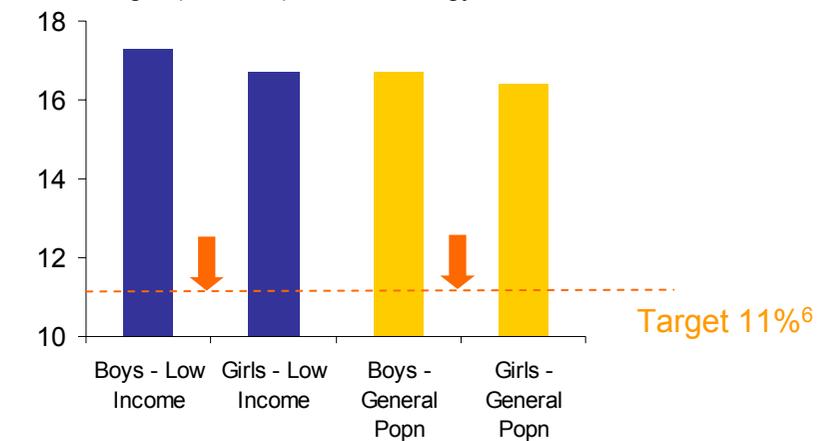
Saturated fat as % of energy intake^{1,2}



On average children only eat 2.5 portions of fruit and vegetables a day

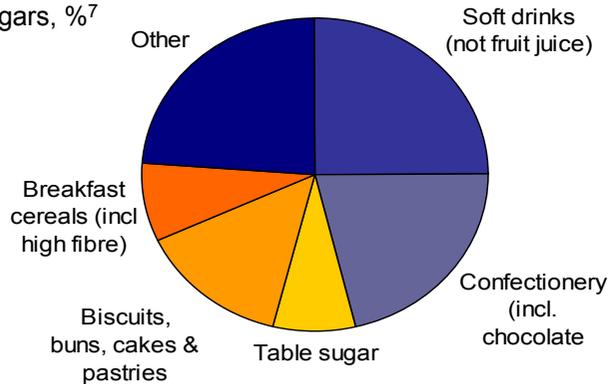
...and their added sugars intake is very high

Added sugar (non milk) as % of energy intake^{3,4}



The largest single source of added sugar in the average child's diet is soft drinks

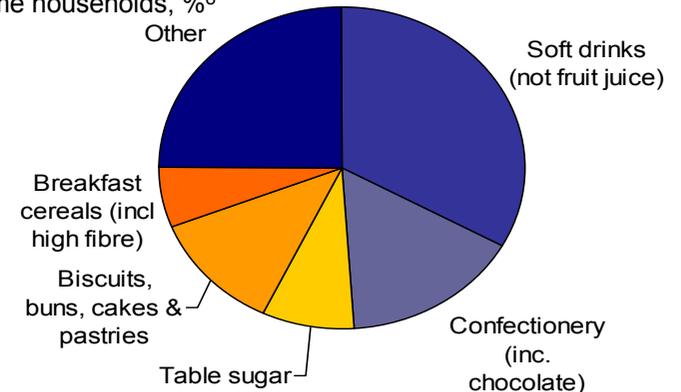
General population children aged 4 – 18 year olds intake, added sugars, %⁷



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, %⁸

Boys from low income families have the highest added sugar intake

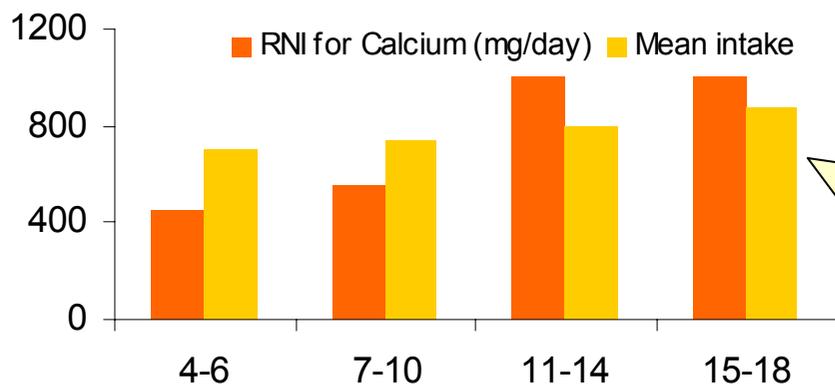


1: FSA (2007) LIDNS; 2: FSA (2000) NDNS (Young people 4 – 18) ; 3: FSA (2007) LIDNS; 4: FSA (2000) NDNS (Young people 4 – 18); 5: DH: Dietary Reference Values for Food Energy and Nutrients for the UK; National Diet & Nutrition Survey. Data for girls also show deficit against RNI for ages 11-14 and 15-18; 6: Ibid; 7: FSA (2000) NDNS; 8: FSA (2007) LIDNS

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 (RNI³) and surveyed intake, boys, mg/day¹

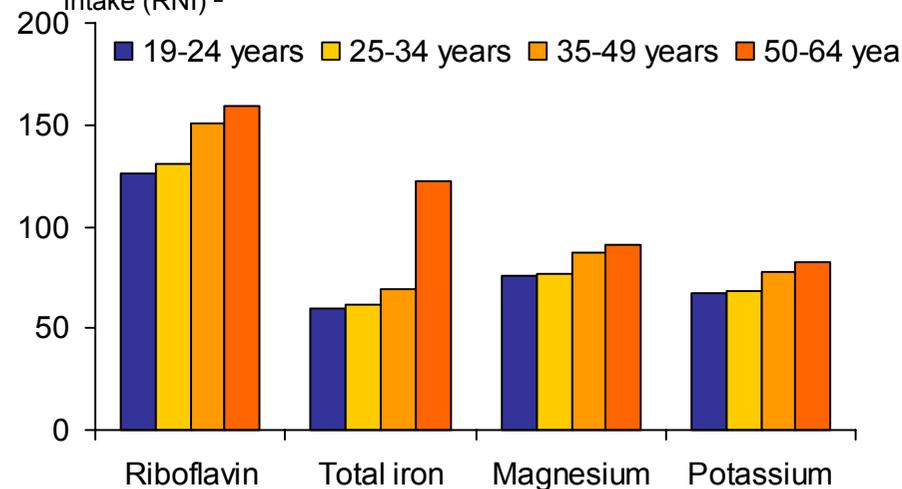


The majority of younger children get plenty of calcium but some older children may not be getting enough

- 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 groups¹
- 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

Young women are more likely to have low micronutrient intakes

Mean intake of selected micronutrients as % of Reference Nutrient Intake (RNI)²

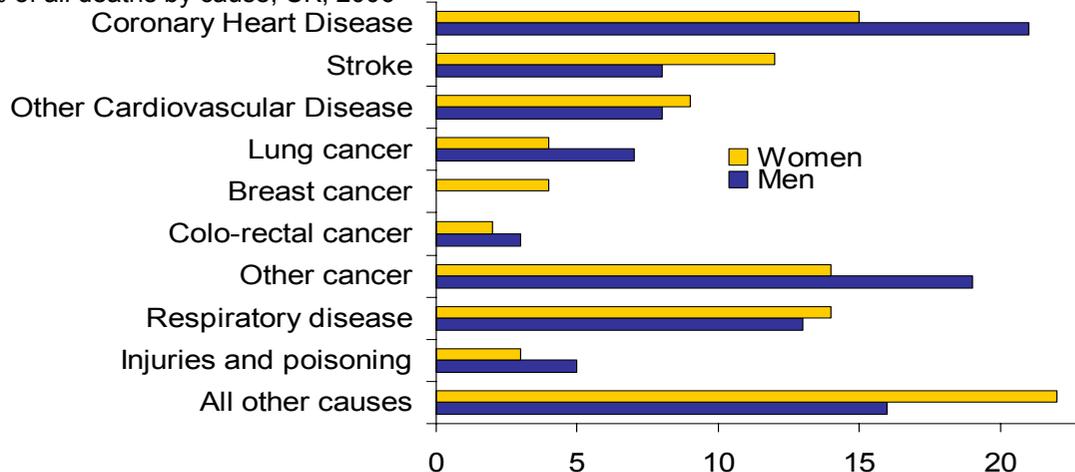


- Low iron levels can affect energy levels, lethargy and lead to anaemia. Women need almost twice as much as men. The main iron sources in women's diets are meat and fortified breakfast cereals
- 50% of some age groups have iron intakes below the lower reference nutrient intakes

A balanced diet can play an important role in the prevention of cardiovascular disease, the single most common cause of death

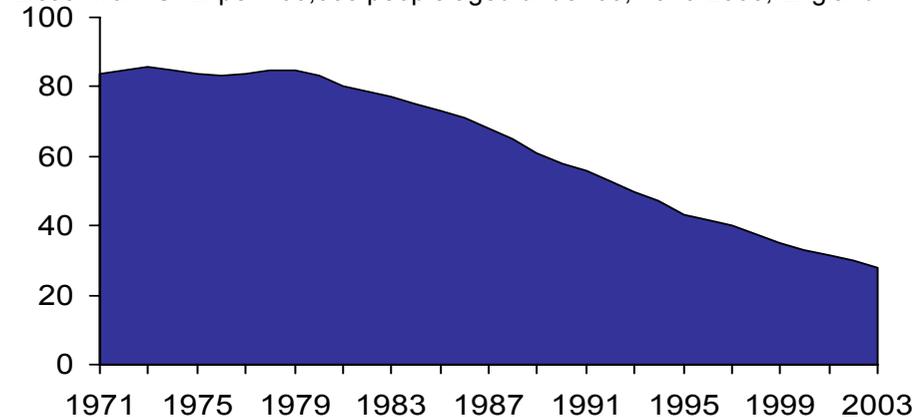
Cardiovascular diseases and cancers together account for almost two thirds of premature deaths in Britain ¹

% of all deaths by cause, UK, 2006



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 from CHD per 100,000 people aged under 65, 1970-2003, England



- 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 diets ²
- 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 population ³
- 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 hypertension²
- 2.6 million bed days a year in acute hospitals are given over to care of stroke patients³
- There is evidence that diets rich in fruit and vegetables are associated with lower rates of cardiovascular disease⁴

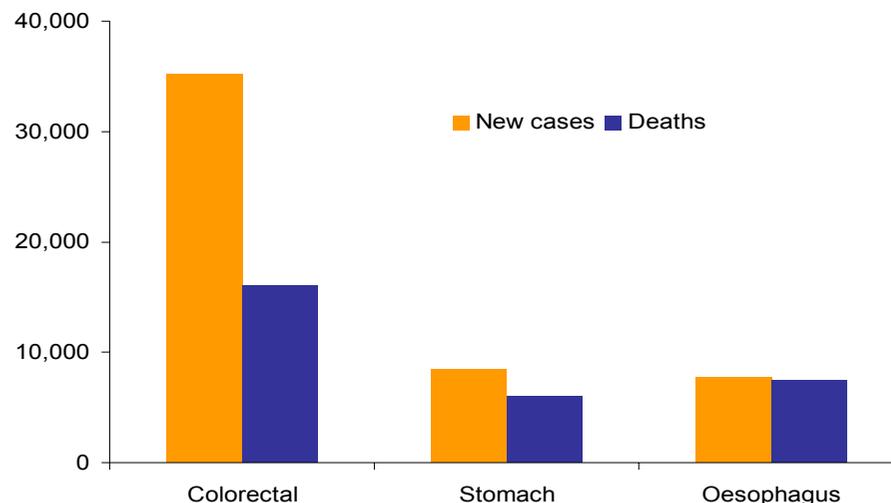
There is a growing body of evidence which suggests that diet affects an individual's risk of contracting cancer

The risk of certain types of cancer is linked to diet and, research suggests, highly preventable^{1 2}

- 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^{2,4}
 - Is reduced by a diet high in fibre or fresh fruit and vegetables

Bowel cancer is the most common diet-related cancer in the UK¹

Instances of diet-related cancers in the UK, 2003



- The 'standard' estimate that 30% of all cancers are diet related stems from a US study 25 years ago³
- 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 countries, 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

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

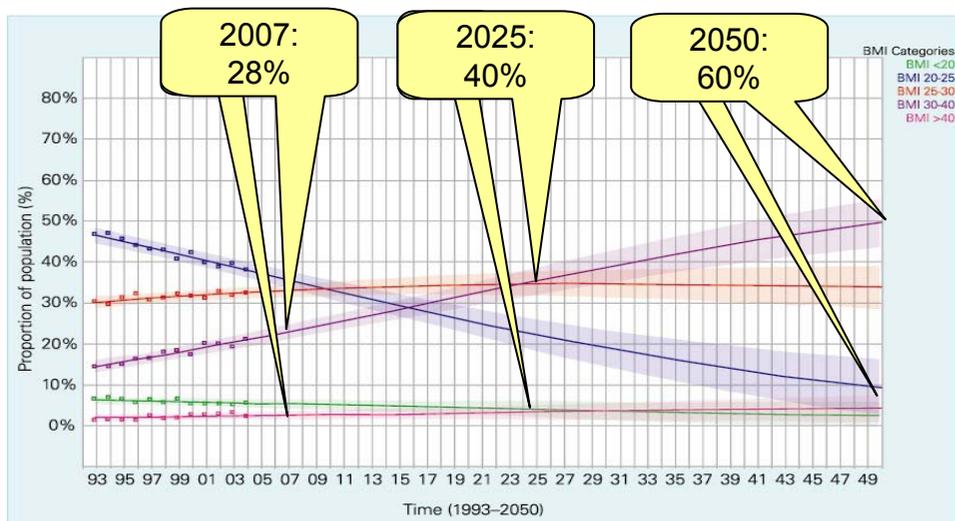
The challenge	The prize ¹	
	Deaths avoided each year	Quality adjusted life years gained (mortality & morbidity)
Increase fruit & vegetable intake to 5 a day	42,200	411,000
Reduce daily salt intake from average 9g to 6g	20,200	170,000
Cut saturated fat intake by 2.3% of energy	3,500	33,000
Cut added sugar intake by 1.75% of energy	3,500	49,000
Total:	69,400	663,000

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

A recent Foresight report projected that more than half of UK adults could be obese by 2050

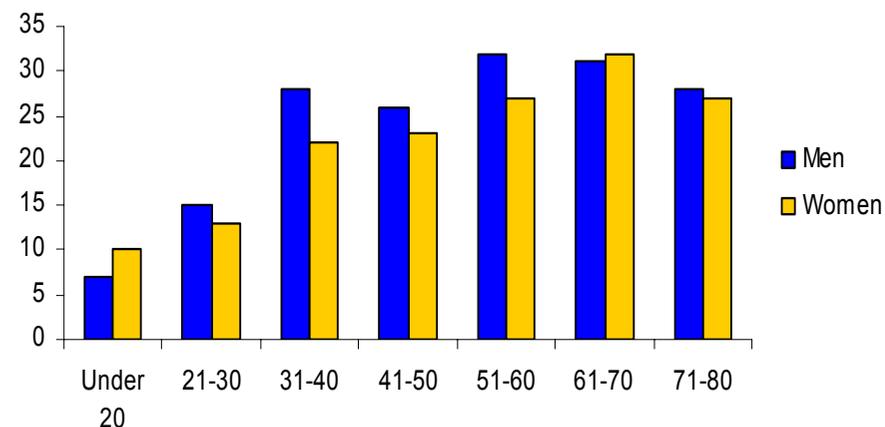
Foresight analysis predicts a huge increase in the prevalence of obesity by 2050¹

% of UK projected to be obese (BMI \geq 30kg/m²)²



Obesity rates are highest among those in their 50s and 60s

% men and women obese in 2007²



- 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 1990s¹
- 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 population²
- Diabetes is estimated currently to account for 5% overall NHS expenditure or 9% of hospital costs³
- Looking at Body Mass Index effects only, by 2050 stroke could increase 30%, CHD 20% and type 2 diabetes 70%⁴

Obesity is associated with increased risk of serious medical conditions¹

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

Children's diets are generating specific health problems and areas of concern

Rise in obesity and Type 2 Diabetes

- Childhood Type 2 diabetes is now being seen in children as young as 7 years old¹
- 25% of 11 – 15 year olds are classed as obese²

Increasing concern over additives in food

- Some people can react to certain additives. People who react may have asthma or other allergies
- 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
- 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

Persistence of Vitamin/Dietary Deficiencies

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

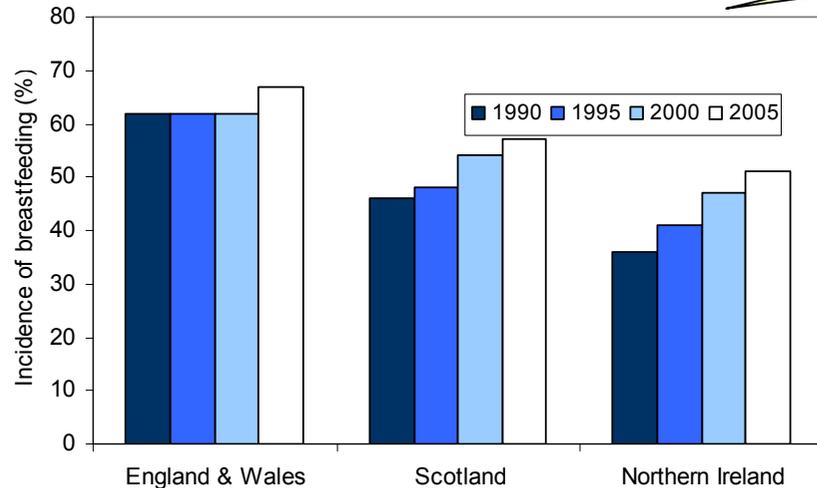
- 1.5 million people in the UK have a food allergy⁵ – 1-2% of adults and 5-8% of children²
- 1 in 55 children have peanut allergy⁵
- Anorexia affects 1 in 250 girls and up to 50% of those with anorexia are aged between 13 and 19⁶
- It is thought that between 1 and 3% of young women are bulimic at any one time⁶

Concern about Eating Disorders

A child's future health is affected by its mother's actions before and after the baby is born, such as breastfeeding

Evidence shows that breast feeding is the best start in terms of a baby's health¹

Incidence of breastfeeding standardised by the composition of the sample by country, 1990-2005

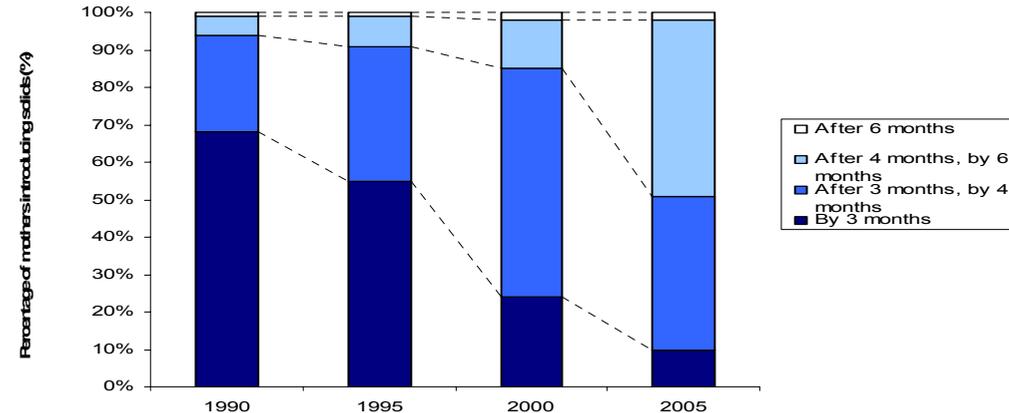


Despite an increase since 1985, UK breastfeeding initiation rates are still among the lowest in Europe¹

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

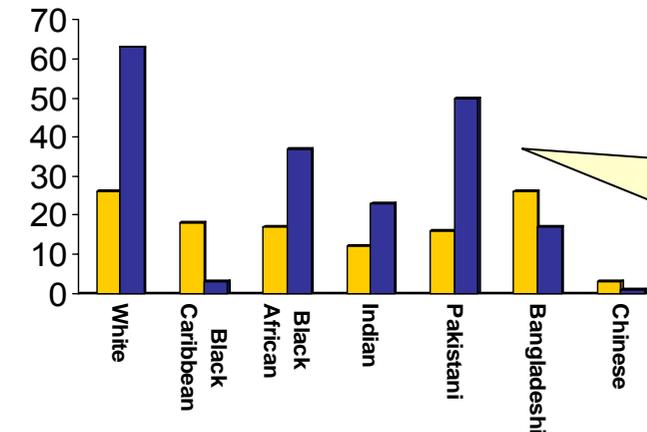
- Four out of ten older people (over 65) admitted to hospital are already malnourished
- Patients over the age of 80 admitted to hospital have a five times higher prevalence of malnutrition than those under the age of 50
- Malnourished patients stay in hospital for much longer, are more likely to develop 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 population²
- Black Caribbean, Black African and Bangladeshi women are significantly more likely to have high blood pressure²
- A black person is twice as likely to have a stroke as a white person³
- The South Asian and African Caribbean population are also 3-5 times more likely to suffer chronic kidney failure than the white population³

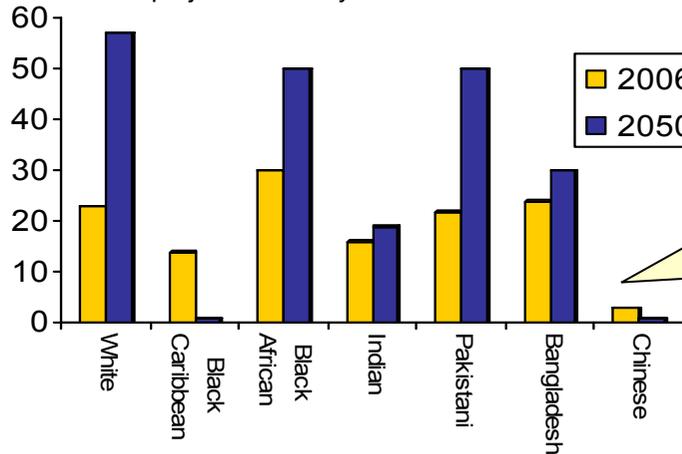
Some ethnic minorities are more likely to suffer obesity than others

Actual and projected obesity levels for men¹



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

Actual and projected obesity levels for women¹



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

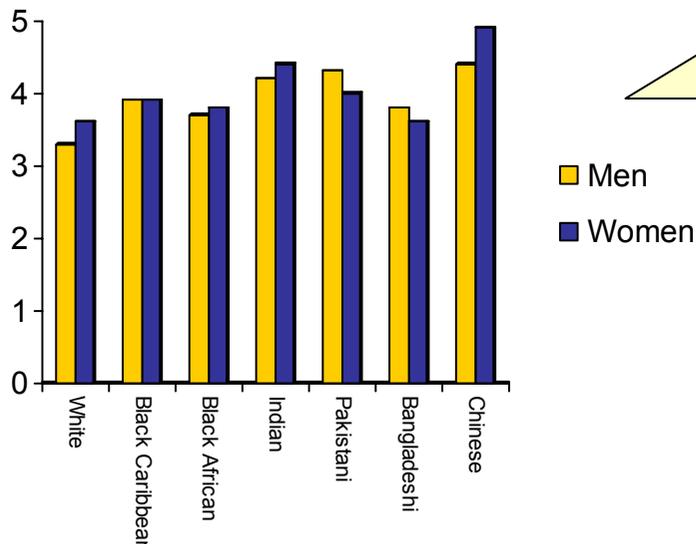
Ethnic diets can have a major impact on people's health, but other cultural and lifestyle factors also affect health outcomes

Traditional ethnic diets are healthier in terms of being low fat and high in fruit and vegetables, but are also higher in salt¹

- 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 women²

- 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

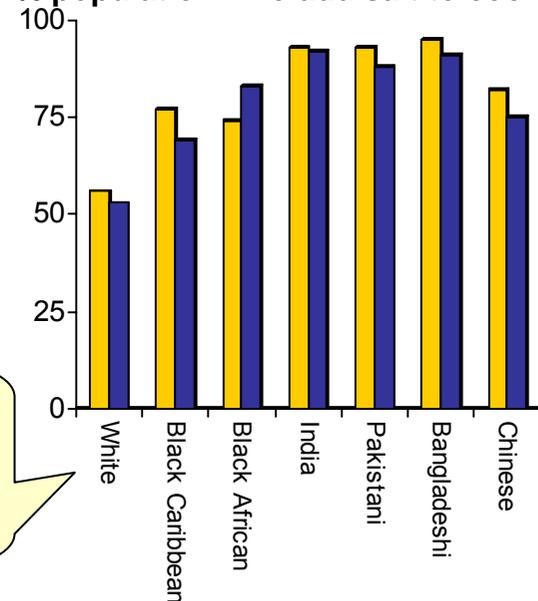
Portions of fruit and vegetables consumed a day¹



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

But they are also much more likely to cook with salt, placing them at risk of hypertension.

% population who add salt to cooking¹



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

- 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 £7.7bn⁵
 - 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

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 care²
- 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 ahead³

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

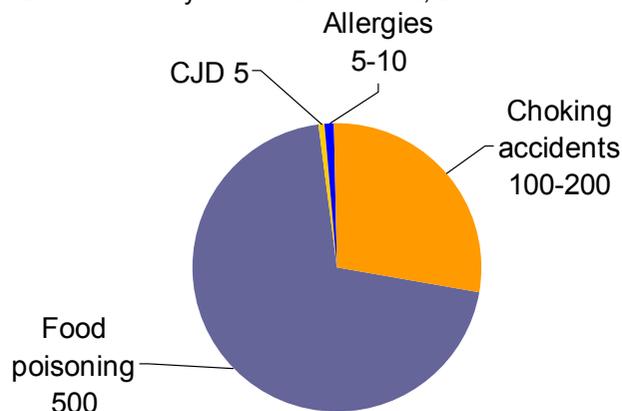
8: Food safety

- Public trust and confidence in the food system rests on the safety of food supplies
- There are over 300,000 reported cases of food poisoning each year, with many more cases 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



Listeria is a less common cause of poisoning but more deadly, and may be on the increase – though why is not yet clear

Campylobacter are the commonest cause of food poisoning and hospitalisation but other bugs cause more deaths

Food-borne illness health risks - number affected and severity, 2005¹

	Deaths	Hospitalisations	All cases
<i>Campylobacter</i> spp.	70	16,950	295,500
<i>E.coli</i> O157	20	400	1,100
<i>Listeria monocytogenes</i>	130	380	400
<i>Salmonellas</i> , non-typhoidal	100	1220	33,400

- 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 type¹

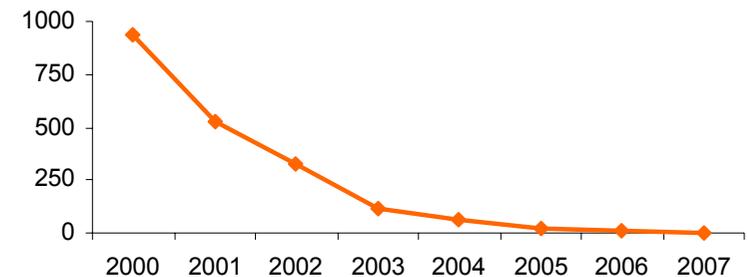
Allergen	4%
Physical contamination (e.g. pieces of glass)	10%
Microbiological contamination	11%
Natural chemical contamination (e.g. toxins)	13%
Environmental contamination (e.g. spills/leaks)	28%
Others	34%

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 15 in 2006

BSE confirmed cases²

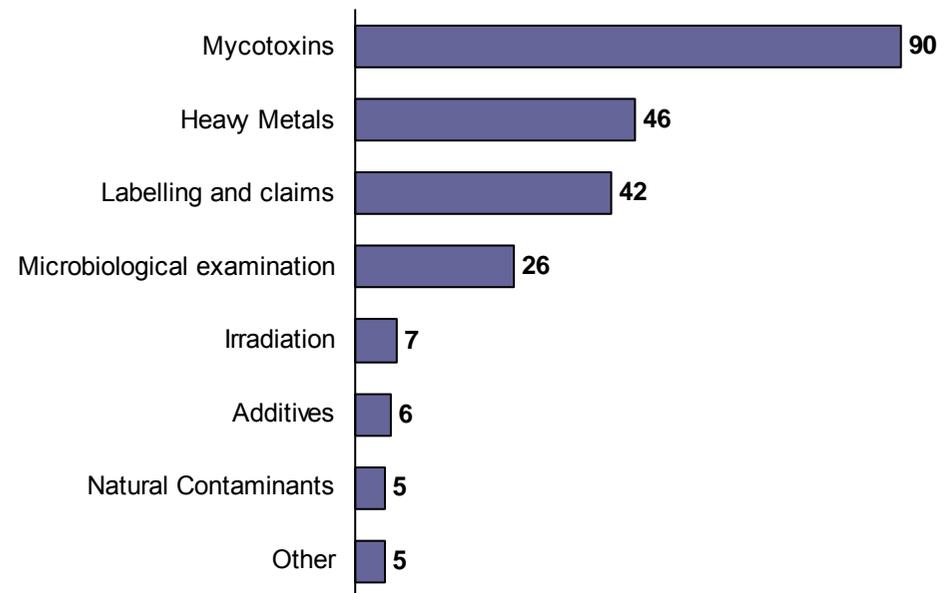


Most UK food alerts are caused by imported food, for which monitoring and traceability are key challenges

- Nearly 14 million tonnes of food and feed entered the UK last year from non-EU countries¹
- 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 EU², 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

Fungal toxins and heavy metals are the most common problems in imported foods sampled in 2006/7

Number of adverse samples found in 2006/07 imported food sampling programme and analysed by type ⁴



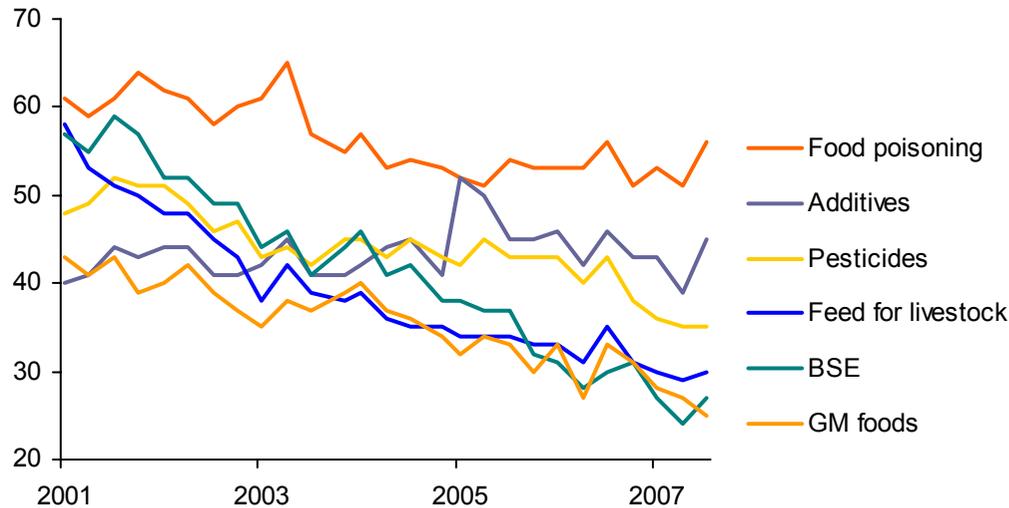
The Sudan I case illustrated how a contaminated ingredient can find its way into many different food products

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 £100m³

Public concern about key elements of food safety has decreased in the past 6 years while confidence in institutions protecting their health has increased

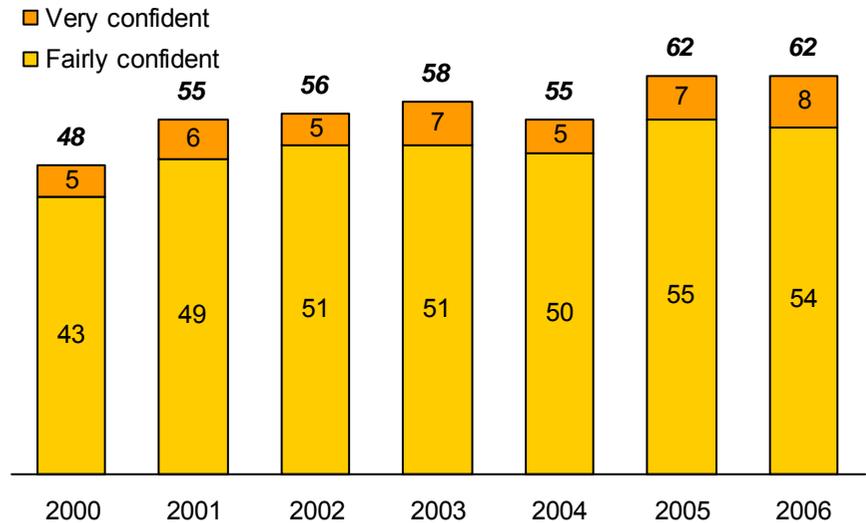
Public concern with a range of issues, from pesticides, allergies to BSE and GM foods, has declined since 2001¹

% mentioning concern with the issue



Confidence in all institutions protecting health in relation to food safety has increased¹

% fairly confident or very confident



- 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