

Contents

Preface	2
1.0 Introduction	4
2.0 Land use, oil and diversity: the current situation	6
2.1 Inefficient food supply	6
2.2 Insecure: declining food and employment security	7
2.3 Illogical: plums from Australia and potatoes from Madagascar	9
3.0 Environmental effects: global inputs, global impacts	10
3.1 Ecological footprint – trampling on the earth	10
3.2 Inputs and outputs	10
4.0 Sustainable food supply chains	12
4.1 Proximity – food doesn't have to travel miles from farm to fork	13
4.2 Diversity – a right royal variety show	15
4.3 Food and employment security	18
4.4 Eco-farms – low input farming systems	19
4.5 Sustainable energy and 'waste' management	20
4.6 Raising awareness	21
5.0 Reconnection – local procurement by restaurants, shops and the public sector	23
5.1 Public procurement of food	23
5.2 School dinners and hospital food	23
5.3 Partnerships in Powys	24
5.4 Hotels, restaurants and shops	24
Conclusion	25
CASE STUDIES	
Box 1 Types of local food scheme	5
Box 2 Farmers' markets	15
Box 3 Warborne Farm	17
Box 4 Return of the Victorian kitchen garden	17
Box 5 Community supported agriculture	18
Box 6 Walford Farm	20
Box 7 Edible gardens in the community	22
Box 8 School food	24
ANNEXES	
1 The benefits of going local	27
2 The products available at Winchester farmers' markets, April 2003	27
3 Twelve steps to reduce food miles and create sustainable food economies	28
4 Information on local food	28
NOTES & REFERENCES	29

Preface

With our farmers shackled in an 'armlock' by ever more powerful supermarkets, our children suffering from record levels of obesity as a result of unhealthy diets, food scandals splashed on the front pages of our newspapers, and evidence of food travelling ever greater distances to reach us, it is clear that our food system is in urgent need of radical change.

In response to the mounting evidence of the food crisis we face, an increasing number of reports have identified the importance of localising our food supply.¹ My own report, **Stopping the Great Food Swap – relocalising Europe's food supply** (2001), highlighted the absurdity of a system where we import and export precisely the same food between exactly the same countries in the same year – all for the sake of promoting international trade and competitiveness. In a subsequent discussion paper, **Look to the Local – a better agriculture is possible** (2002), published with Michael Hart of the Small and Family Farms Alliance and Colin Hines, we sought to examine the policy changes needed to achieve a more self-reliant agricultural system.

But what might this system look like in practice? How viable is the process of relocalising our food supply and to what extent can it answer the fundamental questions currently being asked about our food system? Can more localised food initiatives really provide consumers with sufficient produce throughout the year, and can retailers make a profit? What is the potential for expansion of this diverse, dynamic and growing sector?

This report attempts to answer those questions. **In the following pages, we make the case that relocalising our food supply is not only viable, it is essential, for social, environmental and economic reasons.** According to some estimates, local food may already have a turnover of £3.6 billion – almost 4 per cent of total UK spending on groceries of £98 billion, and over twice the total grocery market share of Waitrose.² It has been suggested that, in five years time, given sufficient political will, local food could account for 10 per cent of total food sales.³ And as we demonstrate, there is plenty of evidence that local food initiatives can

increase choice, expand availability and make a profit.

We also explore the idea of what 'local food systems' really mean. While a commonly held definition of 'local' refers to a radius of 30 miles, this does not necessarily give any realistic indication of the total distance so-called local food might have travelled. Recent investigations traced a lamb chop from a farm located 30 miles away from a supermarket travelling 750 miles, via abattoir, processing plant, and distribution centre, before arriving back at the supermarket. Supposedly 'local' beef reaches a supermarket after passing through four different transport stages involved in the processing and distribution of the product, involving a journey of 500 miles, ten times the direct distance from the farm to the store.

As these examples demonstrate, the vast distribution and packaging networks on which the main supermarkets currently depend mean that the environmental benefits of buying 'local' are often much reduced when buying from supermarkets. The benefit to the local economy is also much less when local food is bought in a supermarket rather than in a local store, or from a box scheme or farmers market. A study in Cornwall revealed that for every £1 spent at a supermarket, £1.40 is generated for the local economy, compared to £2.59 when the same money is spent at an organic box scheme.⁴ This is a result of the so-called 'multiplier-effect' which measures the number of times a sum of money circulates in an economy – thereby generating additional employment and economic activity – before leaving it.

While sales of local food presently represents a minimal percentage of total supermarket turnover, a number of supermarkets are planning to introduce more.⁵ The Council for the Protection of Rural England has set supermarkets the target of locally sourcing 5 per cent of all food sales from each store, and 5 per cent of food lines by 2005. It would be wrong to ignore this growth – and unwise to dismiss the huge impact which supermarkets currently have on the food retail system. But the dangers of following the supermarket route are also clear – that it will simply be used to bolster supermarket dominance still

further, that the full potential environmental, social and economic benefits of local food will remain untapped, or that 'local food' will become just another niche market, 'docking somewhere between the organic and sliced white loaves of Sainsbury's' as Greenpeace's former Deputy Executive Chris Rose has put it.⁶ For these reasons, while in some places, promoting local food in supermarkets can be a useful transitional measure, this route is unlikely to be able to offer a genuinely sustainable way forward.

Moreover, we make the case that 'localisation' should not simply refer to the distance food travels from producer to consumer. For the first time, this report examines in detail the environmental impacts of the different stages of the food chain – from the transport of agricultural inputs to the farm, transport of food to supplier, supplier to retailer and finally to the consumer. The report demonstrates, for instance, that last year, the UK imported over three million tonnes of fertiliser from over 40 different countries – at massive environmental cost. We contrast this to alternatives like those practised at Walford College Farm in Shropshire, where farm slurry management means that no fertiliser input is needed at all. After four years, when the initial outlay is repaid, the scheme will be generating over £35,000 a year.

We also challenge the perception that sourcing local food will mean reduced choice for consumers. In fact, localisation of food often results in the increasing diversity of food supplies. At Warborne Farm in Hampshire, for example, as many as 300 varieties of vegetables are grown, compared to between one and five on similarly sized conventional farms. Traditional and new techniques like cold storage and the practices of Victorian kitchen gardens can significantly extend the availability of local produce. Finally, we demonstrate what farms of the future could look like, with a casestudy of Little Ash eco-farm in Devon, which supplies its own energy from wind, solar power and wood, and where rain water is harvested from farm buildings.

But while the benefits of local food are clear, the opportunities need to be seized with much greater commitment than we have seen to date. **We urgently need a local food action plan**, supported by central, regional and local government, based on rebuilding the infrastructure needed for local food,

breaking down the policy obstacles which constrain the sector – including rules on EU procurement and international trade – and internalising the environmental costs of transport, since it is cheap fuel which enables so much unnecessary international trade. Longer-term, this will require changes in the rules of the Single Market and the WTO, so that increased self-reliance rather than free market reliance becomes the aim of national and local economies.

As a Member of the European Parliament, I am committed to working for the policy reforms needed to enable these changes to take place. Reform of the Common Agricultural Policy, for example, offers an important opportunity to change the direction of EU agriculture, away from ever more intensification and globalisation, towards more sustainable and self-reliant agricultural production, while the ongoing review of EU Procurement Policy provides the chance to make changes so that the policy promotes, rather than constrains, local procurement initiatives.

The challenges are certainly great. Relocalising the food industry in Britain at a time when the top five retailers in the UK account for over two thirds of food sales, and half the country's food is now sold from just 1000 giant stores, is admittedly ambitious.⁷ It will require nothing less than a revolution in supply chains, distribution and retail networks and in agricultural and trade policy. But as the evidence of the unsustainability of our food system grows, the benefits of local food become even clearer – for farmers, consumers, the local economy and the environment. It is vital that we seize the opportunities to promote it.

Caroline Lucas MEP

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- 1 Eg. **Eating Oil**, Andy Jones, Sustain/Elm Farm Research Centre, 2001; **Down Your Way**, CPRE 2001; **Local food, future directions**, FoE November 2002; **Local Food: A Snapshot of the Sector, Report of the Working Group on Local Food**, DEFRA, March 2003
- 2 Figures based on values for 2000. See Alex MacGillivray, **Local Food in Britain: A research review for CPRE**, November 2001.
- 3 Based on estimates of growth in supermarket sales, and changes in public procurement, as well as growth in other local distribution networks. It has been pointed out (MacGillivray) that poor data sets mean that it is not possible to forecast future growth for the local food sector with great accuracy. However, if past growth rates are a guide, it could well reach £10 billion out of a food market of c.£100 billion in the next few years.
- 4 MacGillivray, op cit
- 5 Sustain, April 2001
- 6 C. Rose 2002, A voluntary market mechanism through which the many may join the few. At www.tochrisrose.free-online.co.uk.
- 7 Prof. Tim Lang, **Food: the way we eat now**, Guardian 17 May 2003.

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The authors would like to gratefully acknowledge the help of Robin Webster for additional research and editing work.

1.0 Introduction

The contemporary food system is inherently unsustainable and if current trends continue our food supplies will become even less sustainable. The main aim of this report is to investigate the potential for developing sustainable food supply chains in the UK through a process of localising food supply. There will be a strong emphasis on identifying truly sustainable systems as opposed to attempts to make existing food chains, that may have a large environmental impact, slightly more sustainable by reducing the environmental damage they cause.

"The results of the Johannesburg summit confirmed the worst suspicions that the systems conditions of global capitalism are simply different and largely incompatible with those of a sustainable world. Our current global financial system demands continual growth, whereas sustainability requires us to acknowledge that is simply not possible in a finite world"

HERBERT GIRADET¹

An uncertainty now exists as to exactly what is meant by a 'sustainable product'. This applies to food products and to a certain extent the problem is related to the primacy of economic growth. Groups with a vested interest in squeezing ever more profit out of the food system have little interest in the social and environmental consequences of their operations. They are even less interested in identifying and developing food supply chains that are socially, economically and environmentally sustainable, largely because a sustainable food system would require fundamental change which is unacceptable to the large retailers, processors and farmers. Government has also failed to acknowledge the need for 'radical' change and lacks the vision and the courage to implement the policies that would facilitate a shift to a sustainable food system. This is confirmed in a statement by Larry Whitty, Food and Farming Minister:

*"A [self-sufficiency target] is not what drives policy. Being competitive drives policy."*²

And in the government's Strategy for Food and Farming:

"... in an increasingly globalised world the pursuit of self-sufficiency for its own sake is no longer regarded as either necessary or desirable. As the EFRA Select Committee recently recommended, the Government will continue to assert within the European Union that the best way of ensuring food security is through improved trading relationships, rather than a drive for self-sufficiency" DEFRA³

It is not 'self-sufficiency for its own sake' that many are now calling for; local and regional food systems, import substitution and fair trade are desirable because they produce tangible economic, social and environmental benefits. Even if the most ethical and fair trading relationships were established, however unlikely this seems at present, vast amounts of crude oil are required to move food products between and within countries. This results in greenhouse gas emissions and climate change, which has adverse impacts on farming and food security in developed as well as poorer countries. This is one of several environmental arguments to reduce trade in food. If the UK government is successful in its attempts to achieve further liberalisation of trade in food, oil consumption and the resulting greenhouse gas emissions will increase, food security will be threatened and the opportunity that we have to develop a sustainable food system will have been lost. There are also strong social and economic reasons for localising food supplies, some of which will be considered in this report. Possibly the strongest indictment of the modern food system is that it has produced food that kills, and contributes, either directly through consumption or indirectly in the form of pollution, to the ill health of hundreds of thousands of people.

Considering the evidence that has been produced for import substitution and local food (despite the lack of funding for research in this area) it is unfortunate that the UK government does not even want to consider the alternative to further trade liberalisation. The strategy seems to be that we don't need to produce much food (as well as other goods) in the UK any more

because we now have a service economy. Food can be produced at a lower cost in other countries (if the external costs are ignored), with the advantage of displacing and, in effect, exporting pollution, waste and greenhouse gas emissions associated with its production.

There are many risks associated with this strategy, which include: dependency, rural unemployment, sudden changes (e.g. industrial disputes), the spread of animal disease, increases in the price of food products or oil, a poor harvest (which may be related to climate change). In essence it is a policy that reduces security for producers and of supplies of food and energy. So why is it being defended and implemented?

The consequence is likely to be fewer farms, most being large, owned by consortia or even the multiple retailers and based on the US model. A few small organic holdings supplying farmers markets will continue to operate, essentially remaining a niche for the lucky few. Farmers will continue to move away from food production and become countryside wardens or work in call centres (until all call centres are relocated to India). The chances of attracting new people into farming also look grim. As Simon Fairlie points out:

*"There is not a single mention anywhere in the White Paper of new entrants into agriculture. The most striking image of agriculture in the White Paper is the portrayal of Mr. Richard Dix, whose family have been farming in Norfolk for 150 years. Richard sold his breeding herd of pigs to pay off the farms debts and has started up a computer consultancy, run from the farm. The farm's workload is so reduced that his father can manage it all, while Richard and his wife expand the computer business. Before and after photos show Richard in overalls holding a weaner and seated at his work-station in suit and tie. This (together with another farm that runs a nursery school) is what the White Paper advances as a model for 'diversification' "*⁴

When diversification within the farming sector is put forward as part of a recovery plan, it is often a move away from production that is being advocated, for example tourism.

Sustainable development is now a

Box 1

Types of local food schemes

Community Supported Agriculture (CSA) schemes come in a number of different forms, for example:

Subscription – The farmer ‘recruits’ local customers subscribe to a scheme and are supplied with a box of seasonal produce on a regular basis. The farmer is paid before the growing season to guarantee an income for the harvest.

Farmer Co-operatives – A collaborative effort by a number of farmers to supply and market their produce.

Box schemes can be CSA schemes as above although they are not necessarily so. They often supply organic produce and 300 are registered with the Soil Association. Box schemes can be run by the farmers themselves, consumer groups, or distribution/marketing companies.

Consumer co-ops can be informal or formal groups who come together to purchase food collectively, enabling them to benefit from cost savings and/or improved food quality. They can be effective in improving access to, and affordability of, better food and many operate distribution schemes to disadvantaged groups.

Producer co-ops in which farmers come together to supply and market their produce. Collective bargaining can often bring a better price for their produce, particularly when dealing with the multiple retailers.

Growing your own – edible gardens, allotments, and community gardens. Many people grow some of their own food, either in back gardens, on allotments, community gardens, or unused land. This gives their families a supply of fresh, seasonal produce which would often be expensive or unavailable at retailers. Most gardeners grow food for the sheer enjoyment of it but an added benefit is greater household food security and saving money.

Local shops often stock local food as this contributes to a sense of community, supports the local economy, and is easy to do.

Farm shops and **‘pick your own’** provide one of the most direct links between consumers and producers. Farm shops can buy a certain proportion of goods on sale from outside the farm but this proportion is regulated by trading standards.

Farmers’ markets are set up for the benefit of farmers and the local community. They only sell farm produce from within a certain distance from the market. There has been a rapid growth in the number and scale of farmers’ markets since the first one started in Bath in 1997 and there are now over 300 operating in the UK.

Public procurement of food by institutions such as hospitals and schools currently account for a significant proportion of food retailing in the UK. Despite EU and national regulations discouraging local procurement, there have been some recent inspiring examples of public institutions purchasing foods from local retailers, to the significant benefit of both.⁶

that goes beyond production and consumption alone, which can limit a study to the environmental impacts on the farm and in the household.

At present, each year farmers have to become ever more competitive and cut the cost of the products that they supply to the market in order to survive. In general, this requires higher productivity and/or reduced margins and has resulted in large numbers of farm labourers and farmers leaving the land. Another consequence is increased use of inputs such as pesticides, animal feed and fertilisers, higher levels of mechanisation and larger farm holdings and field size. Farm production has also become increasingly specialised, with holdings, and even whole regions of the UK, producing only a few products. Conventional logic has it that if farmers do not follow these trends then they will not be able to compete. The economic pressure on food producers to become ever more competitive and reduce costs by increasing the scale of their operations and labour productivity will be considered.

The alternative to this race to the bottom, is in the form of direct links between food producer and food consumer. The current insecurity that farmers are facing will be contrasted to the experiences of producers that have taken a different route and have established successful local food schemes. An acceleration of the process of relocalisation of food supply will require a wide variety of local food schemes ranging from allotments and community food projects to kitchen and market gardens as well as small and relatively large ‘traditional’ farms. The local food sector is already extremely diverse. This variety means that no two local food schemes are exactly the same in terms of their outputs, structure, size and operation. This is directly opposed to current trends in farming and the prescription that farmers are handed for them to recover or merely survive. The alternative to the industrial farming and globalised market doctrine described here will deliberately be non-prescriptive. However, several common themes will be considered that apply in many of the wide range of local food projects that already exist in the UK. These are:

- a. Proximity
- b. Diversity and Seasonality
- c. Security
- d. Low input farming systems

guiding principle for policy makers, business and industry and despite all of the rhetoric and misunderstanding at present, it will become increasingly important in the near future. In this report sustainable food supply is described as: the provision of nutritious, affordable and health-enhancing food products to all, providing security and reasonable returns for the food producer while minimising the associated environmental impacts.

If policy decisions relating to the food system and sustainable development are to be made, all possible supply

chains will need to be assessed in their entirety. This includes all options for meeting a specific need, including in the case of food supply the alternatives to the predominant production, distribution and marketing systems in the form of local, organic, permaculture and biodynamic systems. It is these alternatives that are described in this report. Factors that are considered include farm inputs, farm-gate price, freight transport and packaging. Energy consumption, waste generated and pollution need to be assessed during each stage in food supply chains. This requires an analysis

e. Sustainable energy and 'waste' management

f. Raising awareness

Although some the barriers to the expansion of sustainable food supply chains will be identified, current constraints (for example legislative barriers to public procurement of local food) will not be seen as permanent barriers to the development of sustainable food supplies. Change is inevitable and for a number of reasons the situation could change dramatically and rapidly – for example as a result of higher oil prices, or from increasing instability in many of the regions producing the oil on which the system is dependent. Different types of local food initiative will be described and the environmental, social and economic performance will be assessed and compared to their predominant counterparts.

Though they currently dominate the food chain, the potential role of supermarkets in local food trading will not be deeply considered. Though some recent efforts have been made by supermarkets to encourage local food markets, and it is imperative that more are made in the future, the overriding supermarket ethos and mass production and distribution runs counter to that of local food systems. Overall, the balance of policy has swung too far in the favour of supermarkets; it is time that the alternatives were recognised and replicated more widely.

Examples have been identified that demonstrate the diversity of local food projects, including: various scales (kitchen garden to relatively large holdings), different sectors (retail, restaurants and public procurement) and factors that affect food production (farm inputs, diversification, customers). Historical examples of local food production as well as the application of technology such as renewable energy systems will be covered. In terms of the physical and spatial organisation of food production, distribution, retailing and waste management, the aim is to highlight those systems in which social, environmental and economic performance is optimised. So that all components of sustainable development are considered rather than a narrow focus on increasing GDP, profit and shareholder return.

2.0 Land use, oil and diversity: the current situation

The current situation is inefficient, insecure, illogical and has significant environmental impacts.

2.1 Inefficient food supply

"the food chain has never been more efficient and ... clearly it worked together better now than in the past."

Large retailer submission to the Commission on the Future of Food and Farming⁷

It is clear that it was not energy or environmental efficiency that are being referred to in the quote above. Neither could it be claimed that the modern food system has contributed to social and economic sustainability in the form of farm employment, job security, thriving rural communities and healthy diet. Trends in recent years show that success for the large retailers and food processors is directly linked to farmers leaving the land in large numbers and increased incidence of diet-related illness. The farmers that have survived and continue to deal with supermarket buyers face unreasonable requirements and are often placed in the impossible situation of selling their produce at a price similar to, or lower than production costs.

- Between 1978 and 2000 the UK population increased by 6% and food consumption increased by 11 per cent, from 864 to 910 kilograms per person per year. Over the same period, the distance that food is transported within the UK by lorry, measured in tonne-kilometres, increased by 88 per cent, from 23.5 to 44.3 billion tonne-kilometres.
- The food system now accounts for between a third and two-fifths of all UK road freight. Moving food around the UK by lorry requires about 1.3 billion litres of fuel a year and results in over 3.5 million tonnes of carbon dioxide emissions.
- BBC Wales has traced the journey of lamb chops from farm to supermarket. They were for sale some 30 miles away from the farm

on which the lamb was reared. The programme asked how far they thought the chops had travelled. Estimates varied from about 20 to 100 miles. In fact they had travelled 750 miles, passing through abattoir, processing plant and distribution centre.

- The distance that food travels has been demonstrated in one study that considered the sourcing and distribution of the ingredients for a traditional Sunday dinner. If bought at a supermarket, many ingredients will have been imported and could have travelled, cumulatively, over 24,000 miles. However, choosing seasonal products and purchasing them locally at a farmers' market, for instance, could reduce the total distance to 376 miles, 66 times fewer food miles.⁹
- During the 1990's UK imports of fruit, vegetables and flowers increased sharply, by £1.15 billion (56 per cent). Yet over the same period, domestic sales of UK-produced horticultural crops increased at only one seventh of that rate. In the year 2000, the value of vegetable imports exceeded the value of UK vegetable production for the first time (see **Section 2.2**).
- According to DEFRA data, UK self-sufficiency in vegetables and fruit was 10% and vegetables 71% in 2000. However, these figures do not include processed products. Food and Agriculture Organisation data covers both fresh and processed produce and UK self-sufficiency in fruit (4%), seafood (25%) and vegetables (52%) declined by 12%, 15% and 29%, respectively, between 1978 and 2000.
- Transporting food long distances is energy inefficient. We put in more energy (in the form of non-renewable fossil fuels) than we get out (in the form of food calories). For every calorie of iceberg lettuce, flown in from Los Angeles, we use 127 calories of fuel.

- The food system is a significant contributor to climate change. A typical UK family of four would, each year, emit 4.2 tonnes of CO₂ from their house, 4.4 tonnes from their car, and 8 tonnes from the production, processing, packaging and distribution of the food they eat.
- International food trade is increasing faster than the world's population and food production. Between 1968 and 1998, world food production increased by 84%, population by 91% and food trade by 184%. The Kyoto protocol, the international agreement to cut greenhouse gasses, does not include emissions from international sea and airfreight, so there is currently no incentive to reduce them.
- In 2002, the UK imported 3.3 million tonnes of fertiliser from over 40 different countries including: Russia (393,000 tonnes), Morocco (142,000 tonnes), Venezuela (42,000 tonnes), Bahrain (22,000 tonnes), Lithuania (223,000 tonnes) and the USA (8,500 tonnes). The value of these imports was £260 million. The distribution of fertiliser by lorry *within the UK* in 2000 accounted for 1.2 billion tonne-kilometres.
- UK food imports continue to increase with the expansion of airfreighted food being of particular concern. Of all organic food consumed in the UK, 70% is imported.

Table 1 UK self-sufficiency in fruit, vegetables and seafood, 1978-2000¹⁰

	2000			1978	'78 -'00
	a	b	Average	Average	Change
Fruit	6%	1%	4%	16%	-12%
Seafood	44%	5%	25%	40%	-15%
Vegetables	54%	50%	52%	81%	-29%

a – products produced in the UK only b – UK imports only

2.2 Insecure: declining food and employment security

Between 1990 and 2000, reduced output from fruit and vegetable crops resulted in a decline of income of £125.8 million for UK producers (see **Table 2**). The associated figures describe UK supplies of cauliflower and plums in recent years. In each case the situation begins with UK supplies being greater than imports. However, as UK production declined and imports increased, self sufficiency decreased.

"It would be commercial suicide for any supplier to give a true and honest account of all aspects of relationships with retailers"

Supplier giving evidence to the Competition Commission¹¹

The global food sector now generates \$1.5 trillion a year, yet farmers in many countries, including the UK, are struggling and more and more leave the land each year due to declining

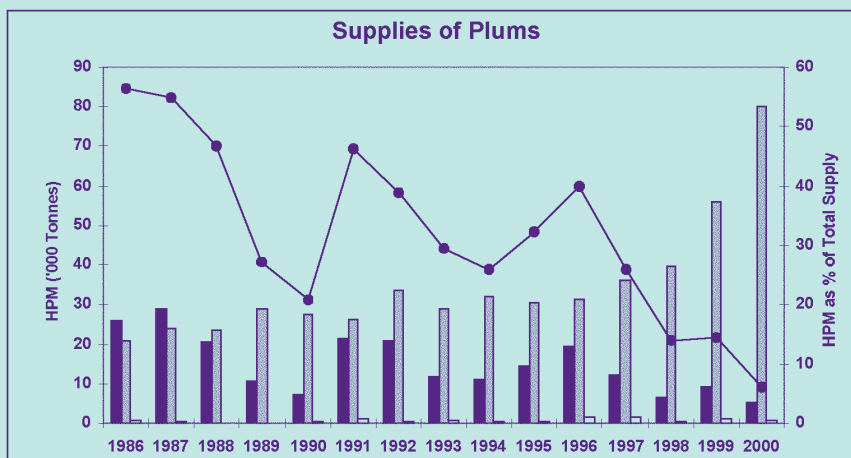
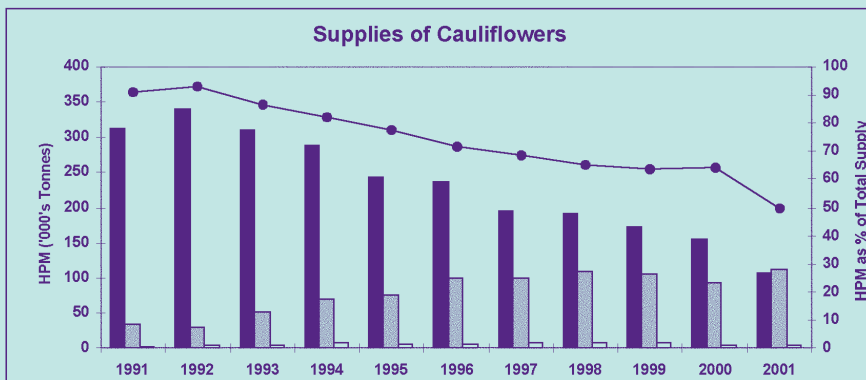
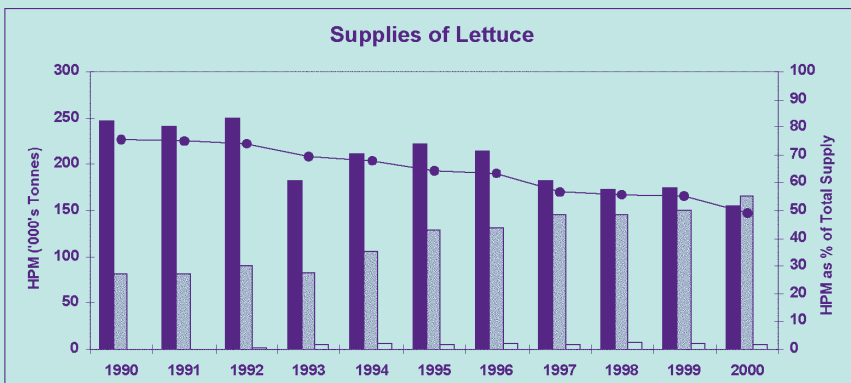
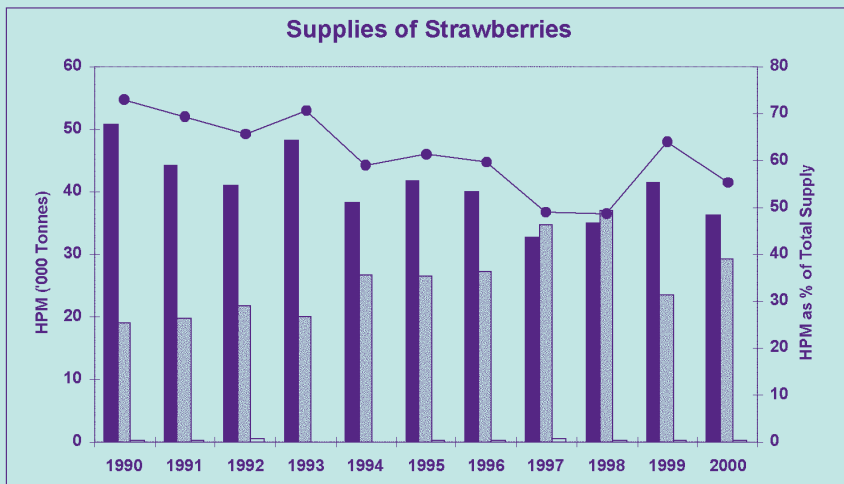
incomes. Over time, the value of food has been increasingly captured by manufacturers, processors and retailers. The farmer in Europe and North America received approximately half (45-60%) of the retail price of food fifty years ago. Today, that proportion has dropped dramatically to just 7% in the UK and 3.5% in the USA, with French farmers faring better at 18%.¹²

A survey by the NFU found that while a shopping basket consisting of beef, eggs, milk, bread, tomatoes and apples typically costs £37 in the shops, the farmers' share is £11, less than a third of the retail value. In some sectors, farmers get less than a quarter of the retail price. Cereal farmers receive 8% of the price of a loaf of bread, pig farmers typically receive 14% of the cost of bacon and a quarter of the retail value of apples, carrots and onions goes to the primary producer.¹³

Many food producers do not even recoup the cost of production. During 2002, most UK dairy farmers were selling milk for less than it costs them to produce, and producers have accused the leading retailers of crippling the industry by selling milk as a 'loss leader'. The pig industry has also been

Table 2 UK fruit and vegetable production, 1990 and 2000

	UK Production (thousand tonnes)			UK Production (thousand £)				
	1990	2000	change (a)	1990	2000	change (b)		
FRUIT	Cherries	1.5	0.4	-73%	1,831	922	-50%	-909
	Raspberries	28.4	9.5	-67%	23,974	25,909	8%	1,935
	Apples (Dessert)	179.0	101.3	-43%	84,029	36,223	-57%	-47,806
	Apples (Culinary)	159.9	107.5	-33%	33,356	23,137	-31%	-10,219
	Strawberries	50.8	36.1	-29%	69,324	81,291	17%	11,967
	Plums	7.2	5.3	-26%	5,124	5,359	5%	235
	Pears	34.1	26.6	-22%	17,810	7,529	-58%	-10,281
VEGETABLES	Watercress	5.2	1.9	-63%	11,231	7,488	-33%	-3,743
	Cauliflower	306.1	156.1	-49%	68,466	42,133	-38%	-26,333
	Lettuce	247.1	154.3	-38%	84,120	63,499	-25%	-20,621
	Cabbage	420.5	254.3	-40%	61,919	48892	-21%	-13,027
	Leeks	64.0	43.6	-32%	30,147	24,684	-18%	-5,463
	Peas and beans	341.3	266.3	-22%	84,849	83,166	-2%	-1,683
	Asparagus	1.5	1.7	13%	3,978	4,047	2%	69
Total (of above)	1,846.6	1,164.9	-37%	580,158	454,279	-22%	-125,879	



KEY ■ UK production marketed ■ Imports □ UK Exports
 ● UK Production as a % of UK supply HPM Home production marketed

hard hit by low prices and competition from abroad, with many producers going out of business.¹⁴

Despite the concerns identified by the Competition (other goods) in the UK any more because we now have a service economy. Food can be produced at a lower cost in other countries (if the external costs are ignored), with the advantage of displacing and in effect exporting the pollution, waste and greenhouse gas emissions associated with its production.

Commission when it investigated the practices of the large retailers in 2000 and the introduction of a voluntary code of practice in 2002, farmers' say that retailers continue to abuse their power over suppliers.¹⁵ A survey of farmers and growers in March 2003 found that that the majority feel the code has made no difference and that the relationship between farmers and the leading supermarkets has not improved. Of the 161 farmers and growers from the dairy, livestock, fruit and vegetable sectors that took part in the survey:

- A third of the fruit and vegetable growers and half of the dairy farmers said they were being paid the same or less than the cost of production for their produce.
- 17% of farmers said they had been asked to pay a rebate on a price previously agreed with the supermarkets.
- More than a quarter said they had been required to alter the transport or packaging of their products without being compensated for the extra cost.
- 16% had been required to meet the cost of unsold produce. A similar number complained of having to wait longer than 30 days for payment.

The Competition Commission investigation found evidence that the relationship supermarkets had with their suppliers could act against the public interest, in the wake of 'rip-off Britain' allegations. The OFT has received only one complaint from a supplier since its introduction. However, the NFU claim that the lack of complaints is a reflection of the fear its members feel about speaking out. It seems that UK farmers remain in a supermarket armlock. One fruit grower in East Anglia commented:

*"I used to supply the big supermarkets directly but when I complained publicly that they kept cutting the price, I got delisted. I now supply the smaller supermarkets through an intermediary. When they want to do a promotion I have to carry the cost - it might be 3lbs for the price of 2lbs. You have no choice about it. And you have to pay for their stickers advertising the promotion. You have to take the loss because if you drop out they won't allow you back when the price goes back to the proper level. They rejected a whole consignment last year because six of the apples were 2mm too small."*¹⁶

2.3 Illogical: Plums from Australia and potatoes from Madagascar

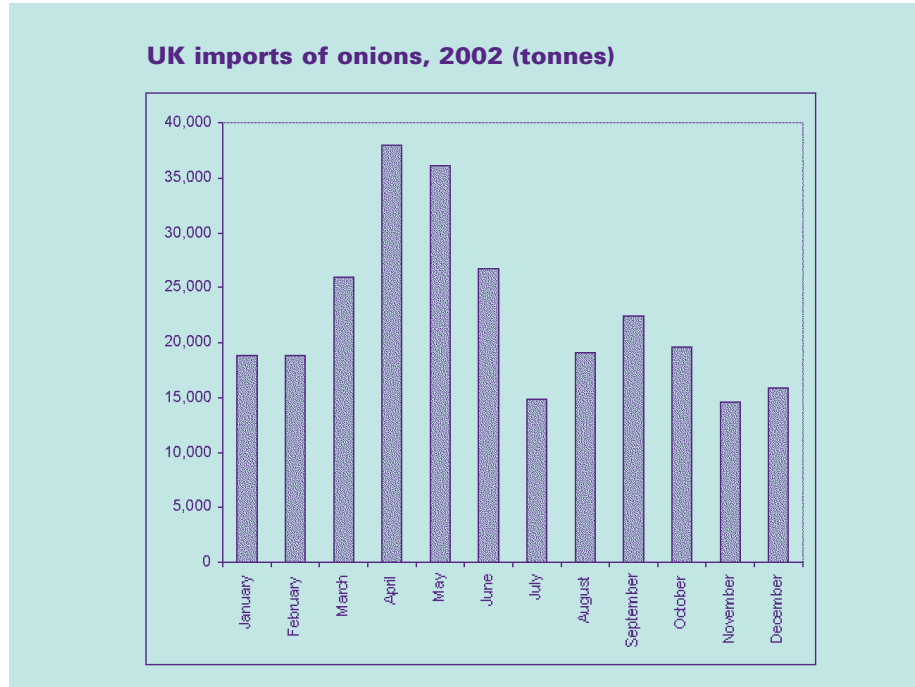
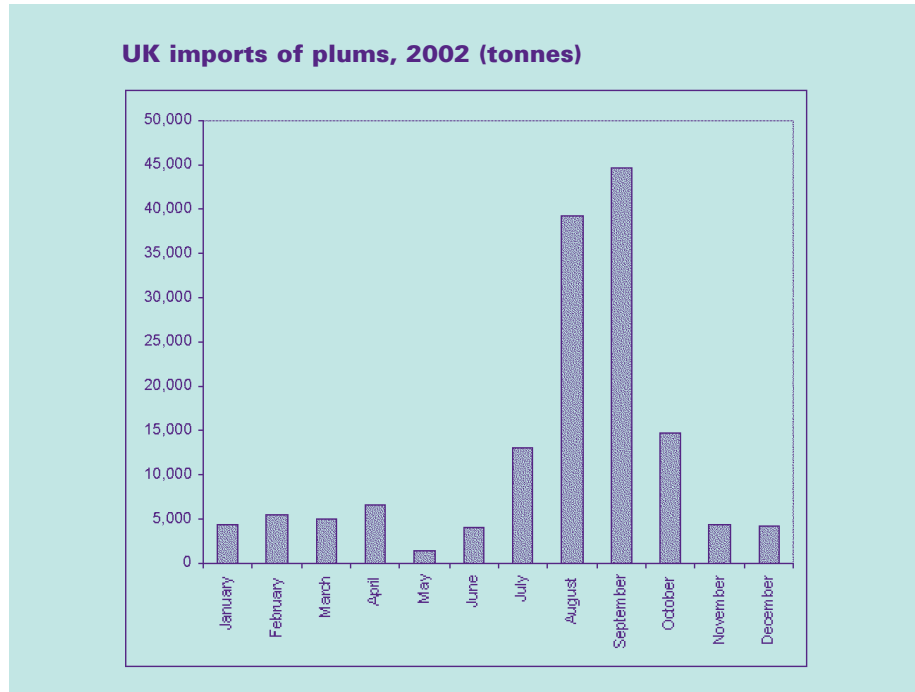
In 2002 a survey found that six out ten apples on sale in UK major supermarkets at the height of the British apple season were imported.¹⁷

Fresh produce is often imported at times of the year when it is available in the UK. For example, UK producers market onions and cauliflower during each month of the year, strawberries between June and October, and plums during August and September. The diagrams below show that the UK also imports onion and cauliflower through the year and strawberries and plums when these products are (or could be) being harvested in Britain.

Some of the products that are or could be produced through the year in the UK, currently involve long distance transportation. During 2002:

- over 270,000 tonnes of onions were imported from countries including New Zealand, Chile, Australia, Egypt, the USA, China, Mexico, Tanzania and Saudi Arabia as well as over 25 other countries;
- 110 thousand tonnes of cauliflower and broccoli was imported from countries including Spain, Poland, Australia and Italy; and
- about 150,000 tonnes of lettuce was imported from countries such as Italy, Spain, China, Kenya, Turkey and Portugal

Increasingly, these products will have been imported by plane, which requires large quantities of fuel and results in significant carbon dioxide emissions (see **Figure 2**). Although intercontinental food transport is often by ship for low value products that can be refrigerated or frozen and stored for long periods, airfreight of food is increasing rapidly and imports by road from continental Europe have expanded significantly in recent years.



3.1 Ecological footprint – trampling on the Earth

“..it is easy for us to perceive only a fraction of our dependence on essential ecosystem services. One of the purposes of the footprinting technique is to draw that portion of our dependence that is normally ‘out of mind’ into the sphere of our consciousness. Only then is it possible to analyse and discuss behaviour and resource use policies on the basis of more complete information, rather than faulty perception.” ¹⁹

One method that helps us to understand the environmental impacts of our consumption patterns and the products that we purchase is the Ecological Footprint (EF). In 2002, the Stockholm Environment Institute at York (SEI-Y), published an EF study of the city of York. The aim was to measure the quantity of food and other materials that the residents of York consume annually and to determine the resultant ‘ecological footprint’ - a measure of the City of York’s impact on the local and global environment. The study found that:

- The total Eco Footprint of York is **1,242,355** hectares.
- York’s Eco Footprint is **45 times** the land area of greater York and is nearly the same size as the total area of the North Yorkshire Moors National Park.
- Each resident of York requires on average **6.91** hectares of land to provide the natural resources required to support their lifestyle and to deal with all the pollution and waste created.
- The land used by the residents of York to support their lifestyles is situated in various countries around the world.

33% of York’s ecological footprint comes from food. In the analysis of the food consumption in York, 48 different food and drink product categories were considered. The analyses included the

energy required to grow, package, process and distribute the food (i.e. the ‘embodied’ energy), the area of land required to absorb the resulting greenhouse gas emissions and the land area required to grow the crops or rear the livestock.

To provide York residents with 92,500 tonnes of food each year a total of 515,000 tonnes of material is consumed. For every tonne of food consumed in York, 0.25 tonnes of packaging is required and most of this packaging is sent to landfill. Over a fifth of the food brought into York is not eaten and ends up in the domestic waste stream. In 2000, York’s total ecological footprint for food was 406,000 hectares – about a third of the total York footprint. The majority of the ecological footprint for food is not the land area required to directly cultivate crops or rear the animals to provide the food, but the area required to sequester the carbon dioxide emissions resulting from food processing, packaging and distribution.

A major component of the ecological footprint is the carbon dioxide emissions associated with energy use. EF analyses are therefore significant in the context of the UK Government’s domestic goal of cutting the UK’s CO₂ emissions to 20% below 1990 levels by 2010. In the York study, CO₂ emissions were calculated on a per capita basis, however, the York figure represents the total amount of CO₂ emitted to provide York with all its consumption items (wherever they are produced, in the UK or overseas) rather than the CO₂ emissions occurring in the UK alone, as reported by the Government. Thus, the per capita industrial CO₂ emissions for York are 7.5 tonnes compared with only 2.5 tonnes reported for the UK by traditional methods. The reason for this is not that York has a massive industrial base, but because the York figure represents the total CO₂ emissions from consumption, wherever the items were produced.

3.2 Inputs and outputs: oil wars, spills and climate change

The increasing reliance on road freight transport for food distribution, shopping by car and long distance international transport associated food imports (particularly airfreight) has contributed to increased fuel consumption and decreasing energy efficiency in the food system. As a result, the food system has become almost completely dependent on crude oil. This means that food supplies are vulnerable to increases in petroleum prices or any shortfall in oil supplies, as demonstrated during the fuel protests in the UK in 2000.²⁰ Additionally, non-renewable and unsustainable fossil fuels are consumed in large quantities during food processing and packaging and to store and prepare food in commercial and domestic kitchens. Demand for petroleum is increasing, yet supplies, in the form of production and reserves, are declining.

Britain will rely increasingly on oil imports as domestic production has peaked. This dependency is extremely dangerous. Events that the government and businesses in the UK cannot control can result in a sharp increase in the price of crude oil or disrupt supplies. For example, in December 2002 a strike in Venezuela, the world’s fifth-largest oil exporter, pushed the cost of oil close to a two-year high at 32 US dollars a barrel.

The Middle East accounts for a third of oil output and two-thirds of known reserves, and large areas of Iraq that have not been explored. The US administration and the UK government maintain, questionably, that the invasion of Iraq was not related to access and control of oil supplies – but it is undeniable that oil policy has led to conflict in many parts of the world in recent decades, and will continue to do so.

Outputs: yet another oil spill – Oil dependency has other unintended effects as well. On November 19th 2002, The Prestige, a Bahamian-registered oil tanker, broke in two and sank some 270 kilometres off the North West coast of Spain. This disaster resulted in the worst case of pollution ever on Spanish beaches and shut

down the fishing industry in areas where it is the main employer. The Atlantic coastline of South West France was also affected as oil from the Prestige washed up on beaches running halfway up France's west coast, devastating fishing businesses in areas like the Gironde and the Arcachon basin.²¹

Even though oil is often distributed under a flag of convenience, collective responsibility is required even if a tanker that spills oil is not destined for the UK. This is because it is likely that wherever crude oil is transported, a certain fraction will be used to produce food and other goods that are exported to the UK.

The effects of these spills linger. More than a decade after the 1989 Exxon Valdez spill in Alaska, oil remains on some beaches and continues to release toxins that harm sea life. Sea otters and harlequin ducks in waters near the oil patches experienced high death rates and poor reproduction. Liver samples from otters in the areas near the remaining oil patches showed high levels of an enzyme associated with oil exposure.

Climate change – Very few people now dispute that human-induced climate change is taking place and that if the issues are not addressed now the impacts during this century will be severe. Munich Re, one of the world's largest insurance companies, estimated that natural disasters, the majority of which are climate change related, cost \$70 billion in 2002.²² Transporting food from one end of the world to the other plays an increasingly significant role in climate change. The transport sector as a whole – of which food transport forms a significant part – was estimated to account for 20-25% of carbon emissions from energy use in 1995.²³

The first three months of 2002 were the warmest globally since records began in 1860²⁶. In 2000, England and Wales suffered the wettest autumn since records began 234 years ago²⁷. The latest predictions of the UK Climate Impacts Programme include forecasts that by 2080, UK annual average temperatures could rise by between two and 3.5 C and temperatures over the UK lowlands could exceed 40 C. Under the high emissions scenario summer soil moisture across much of England could be reduced by up to 40 percent, with serious implications for agricultural production; and

that sea levels will continue to rise around most of the UK, particularly in the South-East. With this level of change occurring, it is imperative that actions are taken as rapidly as possible to prevent climate change from having even more dramatic, and unpredictable impacts, on world agricultural systems.

"Climate change, linked with human-made emissions, is already underway. The world is facing a rise in extreme weather – events of the kind witnessed in 2002 – that will impact on every facet of life including agriculture, health, water supplies and wildlife"

Klaus Toepfer, UNEP²⁴

"We've known for some time that we have to worry about the impacts of climate change on our children's and grandchildren's generations. But we now have to worry about ourselves as well"

Margaret Beckett.²⁵

4.0 Sustainable food supply chains

“The emerging benefits of local food economies are diverse and cross-sectoral, covering economic, social and environmental factors that promote the development of thriving, healthy and vital communities in both urban and rural areas. The key to success in all these activities is the commitment and enthusiasm of all those involved, the quality and distinctiveness of the local products and the sense of well-being that comes from celebrating cultural heritage through cooking and eating food that comes from the landscape in which you live”

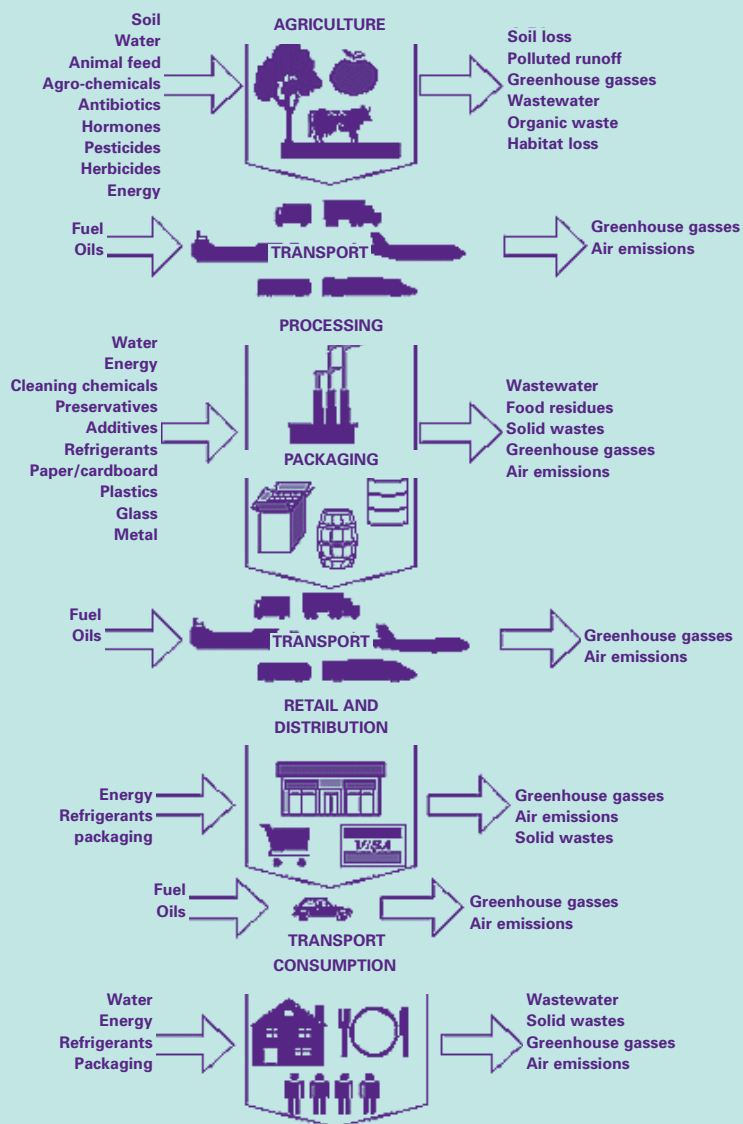
FLAIR ²⁸

The reason why the modern food system is inherently unsustainable goes to the heart of the economic rationale that has produced industrial agriculture, long-distance food freight transport and a highly concentrated food retail sector. As a result, the potential to reduce the negative social, environmental and economic impacts in existing food supply chains is extremely limited.²⁹ Indeed, if current trends in food production, processing, distribution and retailing continue, the damage caused to the environment, human health and farming communities will increase. The barriers to the contemporary food system being transformed into a sustainable system are insurmountable because they are both operational and structural.

As **Figure 1** demonstrates, the modern food system is structured in such a way that resources are consumed and pollution and waste generated during each stage as food items are produced, processed, packaged, distributed and retailed. The system is linear and the throughput of materials is substantial. In terms of operation, the main actors in the food system are now the multiple retailers and the multinational food processors, who currently dominate 80% of the food retail system. Their primary objective is to minimise costs, maximise profits and returns to shareholders. Environmental improvement and support for rural communities are little more than rhetoric in annual reports.

Multiple retailers have now had over a decade to develop local sourcing of

Figure 1 Resource use, pollution and waste in the contemporary food system



food, but progress has been painfully slow. In Sainsbury's, for example, 'local products' currently account for just 0.025% of sales³⁰. Organic food sales have increased, but the multiple retailers have contributed to a situation in which three-quarters of the organic food consumed in the UK is imported.

In order to minimise the environmental impacts of food production, one model that has been suggested involves a shift to local and regional food systems. Some of the social, economic and environmental benefits of local food schemes are summarised in **Annex 1**. Indeed, many commentators now assert that a sustainable food system will be achieved only if there is a significant expansion in the local food sector. This would be accompanied by a shift to the use and generation of renewable

energy on farms, sustainable waste management and diversification of food and non-food agricultural production: the goal being a food system which has a circular metabolism, so that resource use, pollution and waste are minimised.

“Local food markets could deliver on all aspects of sustainable development - economic (by providing producers with a profitable route to market), environmental (by cutting down on the pollution associated with food transportation, and by interesting consumers in how the land around them is farmed), and social (by encouraging a sense of community between buyer and seller, town and country).”

The Policy Commission on Farming and Food ³¹

The aim of this report is therefore to assess the potential of alternatives to the predominant food supply chains to minimise the environmental impacts associated with food supply. Re-localising food supplies does not imply complete self-sufficiency in food. What it does imply is the replacement of imported goods with locally-produced foods wherever reasonable and feasible. There are many food and drink products that cannot be produced sustainably in the UK, for example, coffee, bananas and olives. Imports of these products and others, that can be produced in the UK during certain times of the year only, are inevitable and - provided they are imported under fair trade rules – often desirable.³²

This report deliberately does not focus on the potential role of the multiple retailers in promoting local food initiatives, though it is recognised that, in the short-term, this is a significant issue. Efforts are undoubtedly being made by the supermarkets to recognise the importance of this market. Asda, for example, currently works with 2,607 local suppliers and employs dedicated Local Sourcing Managers; Sainsbury's have recently added 3,000 British products worth £60 million to their 20,000 lines³³. In the short-term, and to the extent that they do not undermine the livelihoods of the few remaining local food retailers, these efforts (though still representing a minute proportion of total sales) are to be applauded and encouraged. As argued in previous publications³⁴, however, a system in which only four companies (Tesco, Asda-Walmart, Sainsbury's and Safeways) account for 70% of retail sales is inherently damaging and unsustainable. In order to achieve genuinely sustainable food systems, greater weight needs to be given to smaller retailers.

The approach of the supermarkets so far to local food indicates how the sector may develop within the supermarket system. 'Local' food has often been loosely interpreted (e.g. Welsh lamb sold in Yorkshire can be marketed as 'regional produce'.) Local food is also seen as a niche market, in the same way as organic foods - a necessarily limited market. In the long term, this is not the route to sustainable food.

There are several important and inter-related factors that form the basis of sustainable food and farming systems.

These are:

a. Proximity – local food systems by definition require shorter food chains, involve fewer stages and are therefore less transport intensive. Minimising the distance between food producer and consumer can lead to a significant reduction in food miles and food packaging and therefore energy consumption and pollution.

b. Diversity and Seasonality – diversity within local food systems applies to the many different types of schemes as well as the provision of a wide range of food products and varieties of each. The shift to a (largely) seasonal diet - by establishing what can be produced in the UK during each month of the year and complementing this with stored and preserved food (dried, bottled, pickled, frozen, smoked etc.) and fair trade products (for foods that cannot be grown in the UK).

c. Security – economic security for farmers is achieved through direct links between themselves, and the consumer. Food producer can develop a loyal and local market for their produce. This security allows food producers to diversify and expand their product range and contributes, both directly and indirectly, to local employment and regeneration. This provides a viable and sustainable alternative to dealing with retailers, exporters and middlemen. As a result, returns to the grower are increased and secured. Food and energy security are also improved and dependency – on oil, food imports, the whim of supermarket buyers and fluctuating prices on international commodity markets – is minimised. The uncertainty of covering the costs of production, let alone providing a decent margin, is therefore reduced.

d. Low input farming systems – in sustainable food production systems the aim is to minimise the amount of external inputs in the form of pesticides, animal feed, synthetic fertiliser, energy (electricity and fuel) and feed. The environmental impact associated with the use of these inputs as well as their manufacture and distribution can therefore be reduced.

e. Sustainable energy and 'waste' management – fossil fuel use, air emissions and solid and liquid waste are minimised. The energy for food production (e.g. greenhouses, and farm

buildings and equipment), food processing, households and even farm machinery can be provided from local renewable sources. Localisation of food systems also allows circular food production and consumption systems to be developed (see also farm inputs).

f. Raising awareness – on the part of food producer and food consumer, of the damaging impacts of the predominant food system and the economic, environmental and social benefits associated with sustainable food supply chains. The aim is to inform the consumer in order to overcome 'distancing' effects, that lead to the situation in which the consumer is unaware of the origin of their food, its environmental impact and the transportation associated with its distribution. A direct link between producer and consumer facilitates this and encourages the exchange of information.

The following sections look in turn at each of these issues and provide examples of schemes in which these characteristics are displayed.

4.1 Proximity: food doesn't have to travel thousands of miles from farm to fork

*"Today, those of us who are not farmers express our connections with nature in combinations of three ways - by visiting it, by joining organisations, and by eating the food.... Perhaps most importantly because it is a daily activity, we eat the food produced from farms that are shaping nature on a daily basis. We vote once every two, three or four years, yet we shop every week, or even every day. We must have food, and in having it we also encourage the system of production that brought it from land to larder. This means that the food system as a whole deserves description as something that belongs to us all - yet in an unrestrained or unregulated context, the tragedy is that we over-consume and under-invest in these commons. Worse, we appear not to appreciate the consequences."*³⁵

The 'out of sight, out of mind' culture is at the heart of our current economic system and in particular the process of

globalisation. Distancing effects in the food system arise because food supply chains have become extremely complicated and geographically dispersed. The consumer is provided with little or no information on the origin and the farming, processing, packaging and distribution system associated with the products that they purchase and as a result has little knowledge of their impacts – environmental, social and economic.

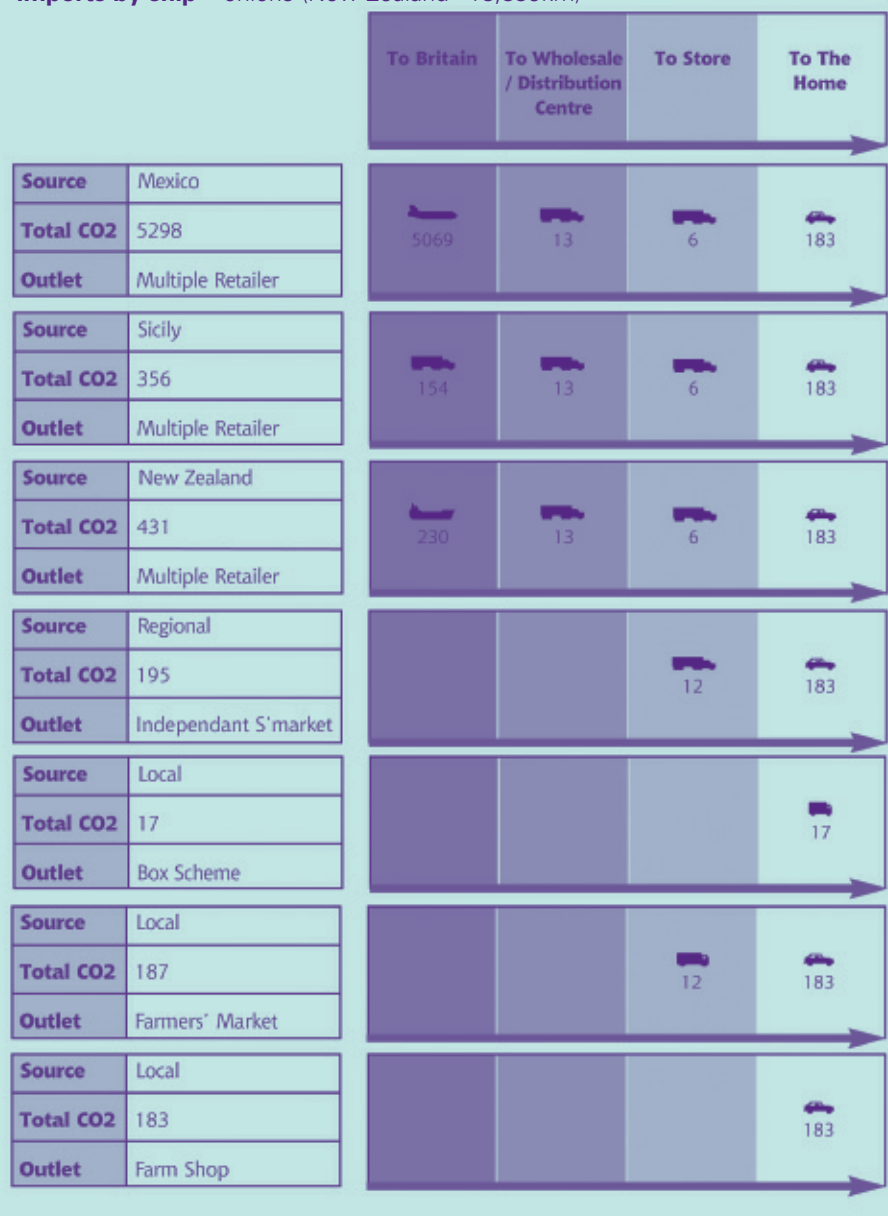
Ownership – Local food schemes overcome distancing effects as a direct link is created between food producer and consumer. This allows any questions from either party to be answered at the point of sale. They also foster a sense of ‘ownership’ and direct participation in sustainable and community development.

Environmental Impact – Home delivery box schemes and independent retailers are environmentally efficient when produce is sourced locally or regionally, as are farmers’ markets, particularly when shopping is not done by car. If the product is imported and purchased at a supermarket there will be at least four transport stages, resulting in carbon dioxide emissions of between 431 and 5298 grammes per kilogram of product (see **Figure 2**). When imported by plane the environmental impact increases significantly, as this stage alone results in an average emission of over 5 kilograms of CO₂. If locally sourced produce is bought through a home delivery box scheme, the carbon dioxide emissions are 300 times less than if they were imported by plane 9,000 kilometres from Mexico and purchased in a shopping trip by car at a supermarket.

Nutrition – It is important to recognise, not only that many of the food products that we import could be produced in the UK, but also that imported produce is likely to be nutritionally inferior, because of the time-lapse between harvesting and consumption and possible application of a post-harvest pesticide to keep products fresh. A locally sourced food product may look identical to its locally sourced counterpart, apart, perhaps, from the latter not always being the ‘right’ shape. However, the environmental (as well as the social and economic) impacts of the two products could not be more different.

Figure 2 The carbon dioxide emissions of alternative sourcing, distribution and marketing systems (grammes of CO₂ per kilogram product)

Results based on a survey of retailers between June and August 2001 include:
Imports by plane – spring onions (Mexico – 8,941km)
Imports by road – potatoes (Sicily – 2,448km)
Imports by ship – onions (New Zealand – 18,839km)

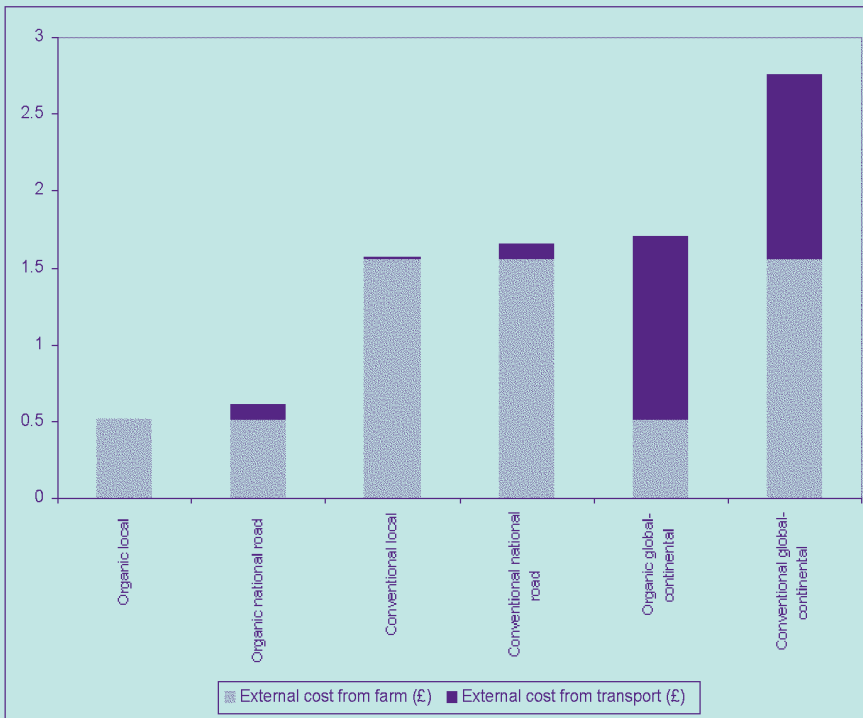


Reducing the external costs of food supply – Each stage in the food supply chain, from the production of inputs for farming through to processing, distribution, retailing, food storage and cooking and waste management of uneaten food and its packaging, produces a range of ‘external costs’ (see **Figure 1**) – negative side-effects that are paid for by society rather than those responsible for the impacts. These include pollution, human health impacts and biodiversity loss. A study from the University of Essex has used data on total farm externalities, the negative environmental and health costs of food production, combined with an analysis of the environmental costs of transporting

food, to calculate the aggregate externalities arising from the weekly British food basket³⁶. The study found that the cheapest food basket is organic-local (externalities are 3% of shop costs), and the most expensive is conventional-global (externalities are 16.3% of shop costs).

The results of the study demonstrate that when looking to minimise the external costs of food supply and develop sustainable systems, there is a need to consider all stages in the supply chain (pre- and post-farm gate). If food is produced organically but imported, the external costs remain high, as they do when sourcing local food that has been produced conventionally (**Figure 3**).

Figure 3 The external costs of food and drink purchases each week in the UK



4.2 Diversity: A right royal variety show

It has been estimated that over 2,000 vegetable varieties once commonly grown in Britain have disappeared from our diet since the 1970s. Traditional varieties contain greater genetic diversity than modern hybrids, which are often bred for size and shape rather than flavour. As a result, we are missing out on the superior taste which many traditional crops have to offer.⁴¹

One of the great myths of supermarkets is 'unlimited choice'. At a supermarket you can have any food product as long as it is one of a few varieties and is produced using industrial techniques, transported vast distances and requires extensive packaging.

For most food products, the limited choice available on the supermarket shelf is dwarfed by the number of varieties that can be cultivated in the UK. Vegetables such as chillies, herbs, and orchard fruit are examples of this. There may be a few types of apple on offer at a supermarket but over 2000 varieties can be grown in Britain.⁴² Different varieties of each food product provide diverse taste, appearance and can extend seasonal availability. Moreover, the option of storing and preserving foodstuffs contributes to availability through the year.

"Selling direct has a fundamental impact on the nature of producing food. It encourages diversity as you are looking for a harvest over a long period. For example, we have planted fruit trees that crop over a four month period – over thirty different varieties of tree. Compare this with a commercial grower who may want to harvest in one hit. We are more interested in indeterminate varieties that flower and fruit over a longer period. For commercial reasons, this is one of the main characteristics bred out of vegetables, resulting in the loss of so many old varieties that are perfectly respectable vegetables and superior in many respects (they taste good, for instance)"

Matt Dunwell, Ragman's Lane farm⁴³

Box 2

Farmers' Markets

The concept of farmers selling trading goods directly at market is hardly a new one. Yet, incredibly, markets at which local food producers could sell their produce direct had virtually disappeared in the UK until a resurgence during the 1990's.

The aim of Farmers' Markets is to help local producers and processors to sell their goods direct to the public, close to their origin, creating benefits to them, the environment and the local community. The selection of produce available will vary with season and location. However, at many there is a large selection of vegetables, fruit, meat, eggs, bread and cakes, jams, fruit juices and dairy produce (see **Annex 2**).

In July 1998, Hampshire County Council's Economic Development Office set up a Hampshire Farmers' Market Working Group, including Winchester City Council, the NFU, Hampshire Fare, Trading Standards and Environmental Health.³⁷ This group met regularly to plan three pilot markets held on the site of the existing weekly market in the centre of Winchester, as a trial for Hampshire. The feedback from both consumers and farmers following the Hampshire Farmers' Markets pilot scheme was exceptionally positive. Around 32 Hampshire markets took place in 2000; by 2002 this had increased to 83 attracting around 4,000 customers each. The Winchester market currently attracts 11,000 people each month, making it the largest farmers' market in England.

The target is for the markets to contribute between a third and a half of the producers income.³⁸ Farmers Markets are growing rapidly in the UK - from just one in the country 1997 to 450 in 2003 – though some face problems as initial local authority grants run out after a few years³⁹. A recent NFU study put the yearly turnover from Farmers Markets in the UK at £50 million⁴⁰, though this may well be an underestimate. Many producers argue that without farmers markets in Hampshire their businesses would no longer be operating.

In a sustainable food system, diversity replaces monocultural production and specialisation. Increasing diversity and the produce available throughout the year becomes the primary goal. Successional planting extends the harvesting period and seasonal availability and the decision on what food to produce is based on local conditions. Local distribution and a direct link between food producer and consumer in CSA schemes and farmers' markets, allow information to flow in both directions and the requirements of the consumer to be incorporated in annual cropping plans.

As illustrated in **Table 3**, buying food from local sources does not need to be limiting. Greenhouses, heated using renewable energy sources, mean that seedlings get an early start and prolong harvesting so that the season is extended further. Coldstores are also used to significantly extend the availability of locally-available produce – commercial apples are often held in coldstore for three to twelve months and potatoes can be stored for up to six months. Value could also be added on or near the farm by preparing preserves, fruit juices, wine, beers and cider as well as well as dairy, cereal and bakery products.

Other food and drink products that could be sourced locally in many parts of the UK include:

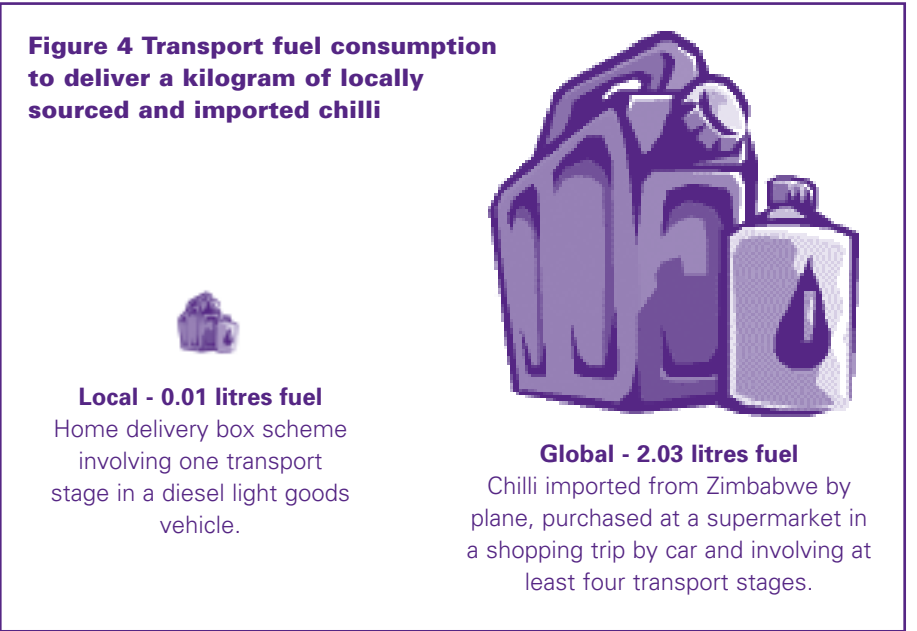
- Herbs;
- Treenuts;
- Seafood (fish, shellfish, crustacea and seaweed);
- Meat and meat products;
- Dairy products such as milk, butter, cheese, yoghurt, cream and ice cream;
- Vegetable oil; and
- Cereals to produce flour and bakery products.

This is a small selection of vegetables and fruit products. Many more vegetable varieties are available, such as those collected by the Henry Doubleday Research Association's Heritage Seed Library.

Table 3 Availability of a selection of vegetables and fruit in the UK ⁴⁴

	J	F	M	A	M	J	J	A	S	O	N	D
Apples												
Asparagus												
Basil												
Bean, French												
Bean, Runner												
Bean, Broad												
Beetroot												
Broccoli (including sprouting)												
Brussel Sprouts												
Cabbage												
Calabrese												
Carrot												
Cauliflower												
Celery												
Courgette/Marrow												
Cucumber												
Endive												
Garlic												
Kale												
Kohl Rabi												
Leek												
Lettuce												
Melon												
Onion												
Parsley												
Parsnip												
Pea												
Pepper, sweet												
Potato												
Pumpkin												
Radish												
Raddichio												
Rocket												
Shallot												
Spinach												
Sweetcorn												
Swiss Chard												
Tomato												
Turnip												

Available fresh Available from coldstore, fruit or vegetable cellar



Box 3

Warborne Farm

Warborne Farm in Lymington, Hampshire supplies households and restaurants in the area with a wide variety of organic vegetables and meat through a box scheme, delivered straight from the field to their door. Vegetables are grown for flavour and do not always look like the uniform non-organic supermarket produce that much of the general public is used to!

300 varieties of vegetables are grown on the 400 acre farm. They include courgette; spinach; broad beans; green, yellow and purple french beans; runner beans, aubergines; chilli peppers; squash; peppers; ruby chard; leaf beet; carrots and the earliest and apparently most tender sweetcorn in the country. On most conventional farms only a few vegetable products are cultivated and in some instances only one product is grown.

Organic lamb and beef, raised on Warborne Farm under the highest standards of animal welfare, is fresh and has not been previously frozen. The organic management regime at Warborne Farm is designed to promote optimum animal health and crop fertility. The key to achieving that success is a nine year rotation to rebuild fertility in his soil by rotating sheep and cattle, a dormant clover cover and finally arable crops of mixed organic vegetables. The traditional Hampshire Down sheep at Warborne perform more than three times better than the average lowland flock due to their low stocking rate and clover grazing that includes chicory, trefoil and mineral rich herbs. The winter silage mixture consists of barley, oats, peas, vetches, lupins and sunflowers.

Warborne attracts many farmland birds such as lapwing, fieldfare, goldfinch and siskin, some of which have declined significantly in recent decades due to intensive farming methods. When asked how the business will develop, George Heathcote explained: *"the answer is the same as it always has been – to keep it as local as possible and constantly work at trying to improve quality, taste and freshness."*

Box 4

Return of the Victorian kitchen garden – techniques of the past inform the future

In January 1999, English Heritage and the Henry Doubleday Research Association (HDRA) began restoring an overgrown and semi-derelict victorian kitchen garden near Saffron Walden, Essex. The garden had supplied Audley End House with produce throughout the year from the 18th Century up until the Second World War. Many traditional varieties from HDRAs Heritage Seed Library are once again being cultivated, using organic techniques. The produce is sold in the farm shop and supplied to local residents who subscribe to the Fresh Food Club.

The site now consists of a Historic Garden, a 21st Century Garden, and an Orchard. The 21st Century Garden will use the most advanced organic techniques and the Orchard, containing hundreds of fruit trees and bushes, will be used to establish best practice in non-chemical fruit production. A 170 ft long vinehouse, originally constructed around 1810 contains aubergines, tomatoes and peppers, as well as the 200 year old vine. This case study again illustrates the extensive possibilities in using different techniques to grow products. The site contains a mushroom house or 'darkhouse' where mushrooms as well as 'forced' delicacies like asparagus, celery and sea kale are grown.

PLANTING FOR THE ORCHARD HOUSE AUDLEY END KITCHEN GARDEN

APPLES	Golden Pippin, Reinette Du Canada, Melon
NECTARINES	Pineapple, Elruge, Early Gem, Early Rivers
APRICOTS	Early Moor Park, Moorpark, Alfred, Hemskirk, New Large Early
CHERRIES	Morello, Florence, Napoleon
FIGS	Brown Turkey, Sugar, White Ischia, White Marseilles, Violette Dauphin, Celeste
PEACHES	Early Rivers, Hales Early, Kestrel, Early Alexander, Flat China, Alexandra Noblesse, Violette Native
PEARS	Josephine De Malines
PLUMS	River's Early Prolific, Prince Engelbert, Jefferson, Late MuscadetReine Claude De Bavay, Royale De Vilvoorde, Early Orleans, Kirkes Blue Victoria, Autumn Compote, Reine Claude de Violette, Ponds Seedling Crimson Drop, Green Gage – Old, Coe's Golden Drop, Denniston's Superb, Guthrie's Late Grace

Figure 5 Variability in farm-gate price for dessert apples⁵⁴



4.3 Food and employment security

There is mounting evidence of the economic benefits and increased security for food producers when the shift to local direct marketing is made.⁴⁸ Research also suggests that local food systems and eco-farms provide a more secure livelihood for the farmer and their workers and that they generate new jobs.⁴⁹ Many local food enterprises, for instance Community Supported Agriculture schemes (see **Box 5**), do not generate large profits, but are initiated with the aim of increasing business security, since they guarantee a fair return for the producer.⁵⁰ Selling produce direct to the consumer means that the producer receives 80 - 90% of the 'food pound', as opposed to the 8 - 10% received through the conventional marketing system.⁵¹

In a recent survey, 84% of businesses involved in local food trading said that their local food sales were "significant" for the business. In the South-West of England, a survey of 70 small food businesses showed that 38% had created new jobs in the previous year.⁵²

This is consistent with work by the New Economics Foundation looking at the 'work' which money does which when it is retained within a local economy, as opposed to leaking out to external economies. Their research, carried out in Cornwall, demonstrated that £10 would generate £14 for the local economy if spent in a supermarket, but £25 if spent on a local organic box scheme – and if every consumer switched just 1% of their current spending to local goods, it would generate £52 million for the local economy annually.⁵³

The relative security generated by local food markets compares to the current insecure situation in the conventional food market. **Figure 5** demonstrates the fluctuating farmgate prices for dessert apples. In December 2002, the average farmgate price for Cox apples was 33 pence per kilogram – 23% of the supermarket price. Yet from one season to the next, prices can drop by as much as a half. The increase in the market share of the large supermarket chains has coincided with increases in food imports, particularly fresh fruit. The threat of cheap imports allows retailers to make unreasonable demands of UK producers, leading to wastage of good fruit, produce being sold at a loss and many growers going out of business.

Box 5

Community Supported Agriculture

One of the most interesting and inspiring developments in farming and the relationship between farmer and food consumer in recent years has been the concept of community supported agriculture (CSA). CSA farms offer local consumers the option to buy a share of the harvest in advance. The shareholders then receive a weekly box of fresh produce consisting of seasonal fruit, vegetables and other produce.

Whereas conventional farms have tended to become more specialised, producing large quantities of a small number of food products that are distributed nationally or globally, CSA encourages diversification and minimises the distance between food producer and consumer. CSA farms produce a wide range of foodstuffs, often several varieties of each food product in order to offer more choice and extend seasonal availability and meet the needs of their membership. In other words, this approach to food production leads to an increase in biodiversity and allows the consumer to influence farming, the rural economy and the future shape of the countryside. By taking responsibility for the impacts of the products that they consume, both positive and negative, the CSA member becomes more than a consumer: purchasing becomes a driver for positive change and a catalyst for sustainability.

CSA, which began in Switzerland 30 years ago and spread to Japan and North America, is now growing in popularity in the UK. By 2002 there were an estimated 1,400 CSA schemes in North America involving over 100,000 families, and over 100 initiatives where consumers and producers have entered into CSA partnerships in the UK.⁵⁵

CSA is about reconnecting people with the farm on which their food is grown. It is one response to the situation in which farmers sell basic commodities while others add the value, resulting in less monetary flows back to and within rural communities, and economic decline.⁵⁶ The CSA approach to food supply also overcomes distancing effects, by which the supermarket customer has no knowledge of the production, origin and distribution of the food they purchase or the associated environmental, social and economic impacts. CSA, called '*teikei*' in Japanese, translates philosophically to 'putting the farmers' face on food'. There is mutual support between the farmer and those that consume their produce, often with some degree of commitment.⁵⁷

The structure of CSAs and the produce available tends to reflect the culture and preferences of the communities they serve, local topography and climate and each individual farmer. In a survey of CSA schemes, the Soil Association found that no two CSAs are exactly the same and a variety of initiatives exist such as: whole farm CSAs, customer supported box schemes, conservation based initiatives, intentional communities, rent/adopt schemes, urban food growing projects, community allotments and charitable projects, all with direct public participation.

The secure market provided by CSA schemes allows the producer to expand with confidence. Perry Court farm, in Canterbury, for example, now turns over approximately £8,000 annually through a CSA vegetable box scheme. Just 0.75ha of the 81ha farm provides 60 members with vegetables. CSA members have helped the farm build a new barn with a £2000 donation and £8000 interest-free loan. For a time, the CSA generated one third of the farm's income despite being based on only 1% of the land area.⁵⁸

4.4 Eco-Farms – low input farming systems⁵⁹

“It is possible for an ecological farm to be ‘self-sustaining, diversified, economically viable, high net yielding, with socially, ethically and aesthetically acceptable agriculture causing no long-term or irreversible environmental changes’.”⁶⁰

The environmental, social and economic impacts of food distribution are only a part of sustainable farming systems. The production and distribution of farm inputs – such as fertiliser, pesticide, feed, machinery and energy – also need to be assessed in order to minimise the associated environmental impacts, which can be significant. For example, the production of nitrogen fertiliser is extremely energy intensive and ‘fertiliser miles,’ while often overlooked, are highly polluting. In 2002, the UK imported 3.3 million tonnes of fertiliser from as far away as Russia, Morocco, Venezuela and Bahrain and the distribution of fertiliser by lorry within the UK in 2000 accounted for 1.2 billion tonne-kilometres. The source and environmental impacts of the energy required to store and prepare food in the home and by caterers is also a component of the food system, as is waste food and packaging generated on the farm and during food supply and consumption. To achieve a truly sustainable farming system, farm inputs and farm energy supplies need to be sourced locally, benefiting the local economy and creating a considerable reduction in transportation and the environmental impacts of energy supply.

The principles of eco-farming apply to all scales of food production: from growing a few tomato plants in containers in a small city garden to relatively large farm holdings. The aim is to minimise external inputs and therefore the negative outputs – the environmental impacts associated with the manufacture, distribution and use of inputs. Although organic techniques are practised, the eco-farm goes further by taking a broader perspective, incorporating bio-dynamic and permaculture techniques. Energy is generated from local resources and reuse and recycling take place on or near the farm. Developing closed loop food systems with a circular metabolism can be achieved only through a process of

relocalisation, with the potential to minimise inputs and outputs in modern food supply chains extremely limited.⁶¹ The main difference between the contemporary and sustainable food systems, as described in **Figures 1** and **6**, is that the former operates on a global scale, is linear, and results in significant levels of resource use and pollution, whereas a sustainable system operates on a local scale, has a circular metabolism and minimises external inputs, pollution and waste (**Figure 6**). In localised food systems farm inputs (such as energy and fertiliser) and outputs (food and non-food products) are sourced/supplied at the county level. Some farms, which run a home delivery box scheme already function within an even smaller area, for example 10 - 30 miles. On an ecofarm inputs are also sourced locally.

While modern farming consumes more energy than it produces, an eco-farm will produce its own: **Little Ash Eco-Farm** in Devon supplies its own energy from wind, solar power and wood and hedges and woodland can be managed to produce biomass. Plants such as sunflowers can supply biofuel, and animals provide biogas. Water can be recycled and rain water harvested from farm buildings. Trees are an integral part of an eco-farm. They reduce pollution, stabilise the ground and provide shade. Woodland can produce nuts, fruit and edible mushrooms and contribute to the abundance of the harvest; and the timber is important for biomass and wood for building and furniture. While the best soil will be earmarked for crops for grazing, woodland may thrive on poorer land.⁶²

Manure and other putrescible material from the farm and the local community is composted (or undergoes anaerobic digestion) to provide nutrients, trace elements and minerals that ensure long-term soil fertility. Nitrogen levels can be raised organically through green manuring using legumes (such as clover), which have a symbiotic relationship with nitrogen fixing bacteria. Established pastures may be enriched and sustained by the inclusion of deep rooting plants such as docks, which help bring up minerals which might otherwise leach away. The herbal ley seed mixtures will produce good grazing turf which is sustainable without the chemical management required for the rye seed monoculture of the chemical farm. Although labour costs

may be higher on the eco-farm (it takes one hour to spray an acre and one day to hand weed an acre), input costs for energy, fertilisers, pesticides, and animal feed are avoided as is the danger of becoming dependent on outside inputs that are imported (particularly if there is a price increase, for example, due to a sharp and sudden oil price rise).

“Whereas leading economies in the early nineteenth century used two tons of vegetables to one ton of minerals, by 1970 they were using six tons of minerals to one ton of vegetables. Now there are pressures to throw this trend into reverse. The rise of oil prices, the advances of biological sciences, and environmental regulation directed at the polluting effects of oil and mineral-based production are all making vegetable-based products more competitive.”

Robin Murray⁶³

Ultimately, the movement to replace the ‘hydrocarbon’ with the ‘carbohydrate’ economy aims to substitute renewable materials for non-renewable or hazardous ones.⁶⁴ Systems are designed to switch materials from the technical to the biological cycle. Sustainable biomass includes trees and coppicing to provide fuel wood, charcoal production, and woodland management to produce timber for the farm, furniture and building material. The carbohydrate economy will also include biogas and crop-based materials, for example ethanol production using specialist biomass and plant based solvents, equipment lubricants, paints and coatings⁶⁵

It should be recognised, of course, that the model of eco-farms are a long way from the present model of the conventional farming system and in the short-term, such methods may not be a viable proposition for the majority of farmers in the UK. Very few eco-farms exist at present, but as local sourcing increases their importance is likely to expand in parallel. Uncontrollable external factors – for example sudden rises in the prices of farm inputs such as oil, may radically alter the economics of farming in the future – increasing the importance of the eco-farm for UK agriculture.

4.5 Sustainable energy and 'waste' management

"Agriculture contributes to climate change. But the tools are available that could put agriculture on the positive side of the climate change balance sheet. The challenge is to make it happen." ⁶⁶

Current energy systems are polluting and inefficient.⁶⁷ Less than 5 per cent of our energy is derived from renewable sources, therefore there is an almost complete dependency on fossil fuels, as in the case of food distribution.⁶⁸

Energy is consumed in the food system during the following processes:

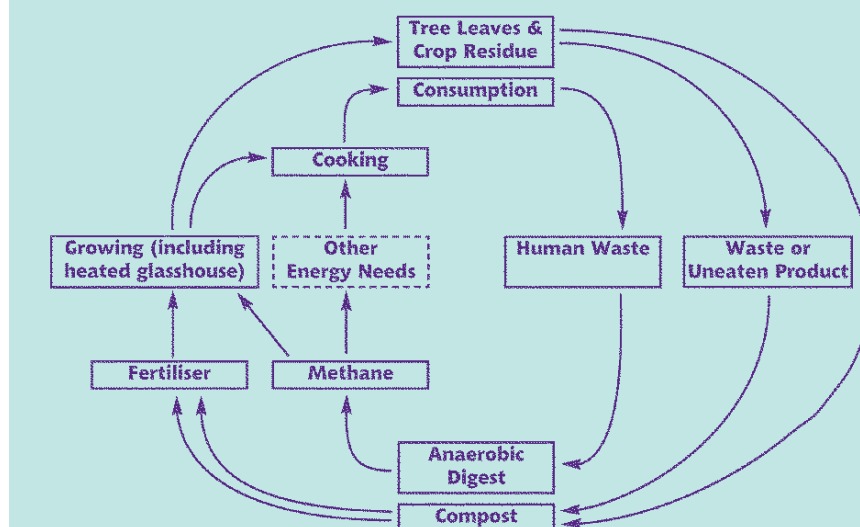
- **On the farm:** to operate machinery, provide lighting, heating and hot water.
- To provide **farm inputs:** such as pesticides, animal feed, fertilisers, machinery and fuel.
- During the **processing, packaging and refrigeration of food.**
- In the home to **store and cook food.**
- To **transport** food from farm to the consumer (which can involve several stages) and any waste to landfill or recycling sites.

Production and distribution systems are also a significant source of carbon dioxide.⁶⁹ Agriculture is responsible for two other greenhouse gases⁷⁰:

- **Methane:** a greenhouse gas 21 times more powerful than carbon dioxide. 40 percent of anthropogenic methane comes from agriculture.
- **Nitrous oxide:** is over 200 times more powerful a greenhouse gas than carbon dioxide. It comes from the breakdown of fertiliser and of manure and urine from livestock. Agriculture is responsible for 80 percent of the human-made nitrous-oxide emissions.

Agriculture is also the main source of the nutrients that cause eutrophication. Over 70% of nitrates and 40% of phosphates in English waters originate from agricultural land.⁷¹ Inorganic fertilisers, livestock manure and slurry are the main sources, with an estimated 90 million tonnes of manure/slurry produced each year in the UK. High

Figure 6 A food system with a circular metabolism



Box 6

Walford College Farm⁸¹ – local food provides a basis for low input and waste systems

Walford College Farm, Shropshire is owned and operated by Walford College, a further education establishment for agricultural and land-based industries. The 260 hectare mixed farm includes a 130 dairy cow herd, 160 sows and progeny, plus beef cattle and dairy young stock. These produce some 3000 tonnes of organic manure each year and environmentally acceptable disposal of this waste had presented a problem. In 1990, the college decided to introduce an integrated farm slurry management system based on anaerobic digestion (AD) to assess its advantages over the previous method of spreading raw manure directly to land.

As part of a three year demonstration project, an AD system incorporating a combined heat and power (CHP) facility was installed in 1994, rated at 35 kW_e (kilowatts of electricity) and 58kW_t (kilowatts of heat) output. Digestion of the slurry takes 16-20 days and produces 450m³ per day of biogas which fuels the CHP unit driving an electricity generator; heat is recovered from the engine's coolants and exhaust system. After digestion, the treated slurry is passed over a sieve separator; the fibre is removed to a composting shed and liquor is fed to a storage tank. The system also produces 15m³ per day of treated liquid slurry or 'liquor' and 3 tonnes per day of separated fibre. The liquor, which is odourless and easier to handle than raw manure, has an average analysis of 2.32kg nitrogen, 1.32kg phosphate and 5.3kg potash per 1000 litres. The farm's existing irrigation main will irrigate the liquor onto the grass fields. The fibre is made into compost for the college's own use and for sale to garden centres and other customers.

The cost of the digester, CHP and composting unit was £133,649 and the scheme is expected to generate an annual income (and/or savings) of £36,714. Within 4 years the new system will have covered the initial investment and be generating over thirty thousand pound each year.

Costs avoided/sales	£/year	Capital cost
Electricity	17,082	
Hot water	2,628	133,649
Compost	14,600	
Fertiliser	2,004	
Slurry spreading	2,500	Payback time 3.6 years
	38,814	
Running cost	2,100	
Annual income	36,714	

levels of nutrients, in the form of nitrogen and phosphorus, in aquatic ecosystems give rise to a variety of direct and indirect impacts (collectively termed eutrophication) on plant and animal communities.⁷² The European Environment Agency has identified eutrophication of inland and saline waters as a pan-European problem of major concern and English Nature identifies it as being one of the largest problems facing the ecology of freshwaters in the UK. In 2002 the UK government extended the area designated as nitrate vulnerable zones from 8 to 55 per cent of England.⁷³ Farmers in these areas are now restricted in the amount of fertiliser or manure they can use and banned from spreading manure and slurry during the autumn. This could mean transporting slurry from these zones to unrestricted zones by road (Slurry Miles?).

Other sources of solid waste in the food system are packaging, crop residue and food 'waste' and uneaten food through the food chain. Food packaging and food waste now account for a large portion of household waste: organic waste makes up 40 per cent of civic amenity site waste in the UK and packaging accounts for over 20 per cent of domestic dustbin waste. Almost all is buried in holes in the ground at landfill sites, which in the case of organic material produces methane gas.

If this waste were diverted, methane emissions and leachate at landfill sites could be reduced as well as contributing to overall waste reduction targets. Germany has banned the landfilling of all untreated organic waste by 2005 and Austria, Italy and Sweden have introduced similar provisions.⁷⁴

The options for organic waste are home composting programmes, kitchen waste collections and kerbside collection of garden waste. The need for regular food waste pick-up together with seasonal collections of garden waste that cannot be composted at home is recognised in the EU working document on a future Bio Waste Directive. Separate collections of organic matter are proposed for all towns and cities with more than 100,000 population within three years of the Directive coming into force, and for all towns and villages with more than 2,000 inhabitants within five years.⁷⁵ The collections would be for household waste, as well as for biowaste from restaurants, hotels, canteens, schools, public buildings, shops, markets, food

businesses and shops. Separate food waste collections have been the reason why so many Italian cities have achieved 50 per cent targets for waste diversion within three years.⁷⁶

In a sustainable food and farming system fossil fuel energy use, greenhouse gas emissions and solid and liquid waste are minimised. This is achieved through a major shift to renewable energy sources and avoidance of materials that cannot easily and sustainably be recycled or reused. Indeed any by-product is viewed as a resource that has further use.

In the case of solar and wind power there are no direct greenhouse gas emissions. These systems could be used as energy sources on the farm as well as households, in conjunction with biomass. Biomass is organic, non-fossil material of biological origin, including crops, agricultural residues, wood and animal waste. It does emit carbon when burnt to provide energy, but if it is produced sustainably, new growth replaces the harvested material and the system becomes carbon neutral as the carbon is sequestered by being turned into plant matter. Fast-growing grasses, oilseeds and agricultural residues offer great potential. In Brazil six million cars already run partly on alcohol derived from sugar cane and China has ten million dung digesters which provide a clean cooking fuel and an organic fertiliser.⁷⁷

Anaerobic digesters also have considerable potential in the UK.⁷⁸ The 'digestion' takes place in a warmed, sealed tank, which creates the ideal conditions for bacteria to ferment the organic material in oxygen-free ('anaerobic') conditions.⁷⁹ Anaerobic digestion, sometimes called a biogas system, provides an effective method for turning residues from crops, livestock farming and food processing into⁸⁰:

- Biogas (rich in methane) which can be used to generate heat and/or electricity
- Fibre which can be used as a nutrient-rich soil conditioner, and
- Liquor which can be used as liquid fertiliser.

The introduction of an anaerobic digestion system, incorporating a combined heat and power (CHP) unit, at Walford College Farm has provided a clean, odour-free and simple-to-operate

method of manure treatment. The end products of the digester, liquid slurry and fibre, are odourless, easy to handle, and provide fertiliser and compost. The CHP system produces a significant amount of electricity and heat (see case study in **Box 6**).

In a fully integrated system, heat generated could be used in glasshouses to produce fruit and vegetables. An argument that has been put forward against local food production and import substitution is that the energy consumed in greenhouses to produce crops such as tomatoes, peppers and salads in the UK is greater than the energy consumed to transport these products from countries with a warmer climate, where they are cultivated in the open. However, if the energy to heat greenhouses is from renewable sources, such as biogas, solar or wind power, then the environmental impacts of production in the UK are much less than those associated with the packaging, refrigeration and transportation of imported produce. These systems therefore demonstrate how local food economies can form a basis for effective, profitable and sustainable farming – the farming of the future.

4.6 Raising awareness

"For most of our history the daily lives of humans have been played close to the land ... humans have been hunter-gatherers for 350,000 generations, then agriculturalists for 600, industrialised in some parts of the world for eight to ten, and dependent on industrialised agriculture for two generations."⁸²

It is important that policy-makers and the consumer become more aware of:

- the problems within the contemporary food system,
- the causes, and
- the alternatives.

The public should also have the option of purchasing sustainable food products rather than the superficial choice of largely unsustainable food available on the supermarket shelf. This process has started and one of the reasons is that there is a growing understanding of the link between human and environmental health.

Many initiatives are now available to overcome the 'distancing' effects in the food system and to promote local and regional produce (see **Annex 4**). Local authorities, regional food groups or other organisations publish local and regional food product directories listing producers and retailers. Throughout the year, events are organised to display collections of fruit and vegetable produce.⁸³ These include:

- A **Chilli Fiesta** during August. At West Dean, 170 varieties of chilli and 40 types of sweet peppers are grown in the Victorian Glasshouses
- **The Totally Tomato Show** at the end of August. Over 100 varieties of tomato are cultivated at West Dean.
- An **Apple Affair** held during October. This is one of many events held across the UK to celebrate Apple Day and our heritage of over 6,000 varieties of apple. West Dean's collection contains over 100 varieties of apple.
- **The Isle of Wight Garlic Festival**. Attended by 25,000 people each year, to celebrate the Isle of Wight garlic harvest. It is held during August.

Schemes are emerging across the UK that are contributing to an increased awareness and understanding of a healthy diet, cooking skills, the link between food and farm and what constitutes a sustainable food system. For example, Lavinia Vaughan arranges cooking demonstrations in Powys using local produce and has developed environmental education programmes on her farm for local schoolchildren.⁸⁴ In this way, what is served in the dinner hour is linked to what is being taught in the classroom.⁸⁵ Issues such as: obesity, cooking skills, healthy diet, nutritional standards, understanding of the contemporary food system, awareness of the origin of food, and food miles can be discussed. This encourages children to think about the food they eat, the current food system and the benefits of alternative approaches to food supply. The RSA is looking into the effects of sustained food education on pupils in primary schools, in research tracking children's exposure to food education by monitoring their attitudes and understanding of food. Research methods include the use of concept mapping to help determine children's food concepts before the Focus on Food intervention. The work will

Box 7

Edible gardens in the community

"Community-based local food projects in deprived urban and rural areas are now finding ways to ensure access to healthy food, contribute to urban and rural environmental management, and help develop new, self-sustaining economies" FLAIR⁸⁶

One report has considered community food projects as being one of nine options for localising food supply.⁸⁷ The study found that in the UK, home gardens and allotments have long been important for home food production. In 1944, 120,000 hectares of allotments and gardens produced 1.3 million tonnes of food, about half of the nation's fruit and vegetable needs. Today, there are 300,000 allotments on 12,150 hectares, yielding 215,000 tonnes of fresh produce every year. There are now several hundred city farms or community gardens in the UK. They provide food, especially vegetables and fruit, for poorer urban groups, and a range of other natural products such as wood, flowers and herbs. They add some local value to produce before sale. They sometimes mean that derelict or vacant land is transformed into desirable areas for local people to visit and enjoy, resulting in the creation of quiet tranquil places for the community that can increase wildlife. The involvement of schoolchildren can mean a reduction in vandalism, as well providing them with an educational opportunity to learn about farming and animals.

Community food projects promote sustainable development by involving local people in initiatives that protect the environment while fostering community values. One project in Hackney – 'Growing Communities' – aims to achieve environmental, economic and social benefits through food growing initiatives including: the 'Fruit and Veg Scheme' which provides seasonal organic produce to over 100 local households, the 'Neighbourhood Food Growing Project' which has transformed three derelict sites into productive organic gardens and a 'Community Outreach Programme' which enabled over 600 volunteers to get involved with food cultivation.

be continually monitored in the pilot schools. After the intervention further concept maps will be produced. The National Trust has suggested a Farm Vouchers Scheme which would allow school children to learn firsthand in an 'outdoor classroom' and gain experiences that help inform the choices they make throughout their lives on diet, health and lifestyle. The National Trust has also started a pilot learning programme 'Plot to Plate'. This aims to link horticulture, farming and cookery, by developing knowledge and skills in food production and preparation in both children and adults.

The Countryside Agency's Eat the View initiative aims to help people make the links between the products they buy and the countryside they cherish:

"Interest in local produce is growing. As a result of a succession of high profile food industry crises, culminating in foot and mouth disease, there is now a greater public awareness of the issues around how our food is produced. Farmers and other producers are looking for new ways to develop their

businesses and add value to their products and they have a major opportunity to reconnect with their customers, giving consumers the information they need to make their choices with confidence. As consumers we can choose to support land management systems that help to conserve and enhance our countryside. By buying locally produced goods we can also help to keep more money in the local economy, boosting employment and generating wealth whilst reducing the damaging impact of excessive food miles. The Countryside Agency is supporting developments in a number of areas focusing on reconnecting producers with consumers and giving people access to locally produced goods, increasingly sourced from sustainable systems of land management."

The best way to increase awareness and contribute to sustainable development is to become part of the local food revival, whether this be a CSA or community food project or by shopping at a farm shop or market.

5.0 Reconnection – local procurement by restaurants, shops and the public sector

“Nothing less than a local food action plan is necessary to orchestrate the actions - to reform the regulatory regime and stimulate and calibrate demand and supply - that need to be ‘joined up’ if we are to avoid the spectacle of organic food, where some 75% of the UK market is currently being supplied by imports”⁸⁸

5.1 Public procurement of food

The purchasing power of the consumer can be a driving force for changes in food production and distribution, by demanding that the food on offer contributes to a sustainable food system. However, in many instances individual consumers rely on public institutions to manage these responsibilities, such as in hospitals, prisons, public administration, schools and care homes. Catering services in these institutions are managed through systems of public procurement, which are subject to powerful controls.⁸⁹ EU Procurement Regulations do not allow discrimination on non-economic grounds, with social and environmental criteria taken into account only if they benefit the purchasing organisation and do not discriminate against non-local business. At the same time, the Compulsory Competitive Tendering (CCT) regulations in the UK forced public bodies to always focus on the cheapest goods and services. The situation is beginning to change as CCT has given way to Best Value, which allows public bodies to take account of quality alongside financial considerations, schools must now provide meals that meet new nutritional standards, and they have more freedom in managing their budgets and in providing their own catering service.⁹⁰

There is massive potential for public procurement systems to lead to a large and rapid expansion in local food systems. The NHS, for example, is one of the main purchasers of food in the UK, providing over 300 million meals a year at a cost of £500 million – and therefore has the potential to make a significant contribution to sustainable

development through its procurement policies. In doing so, the NHS could act as a role model for other public sector bodies by developing sustainable food procurement practices.⁹¹ Research at Cardiff University has identified examples of how local food procurement initiatives can continue to develop even within existing EU and international rules.⁹² Local procurement systems in Italy, France, Sweden, Denmark demonstrate how ‘anti-local’ legislation can be circumvented by prioritising other criteria such as freshness and seasonality. They also suggest that breaking contracts into smaller ‘lots’ allows smaller producers to bid for parts of contracts.

5.2 School dinners and hospital food that taste good, are nutritionally sound and are based on sustainable food supply

“Despite most parents apparently wanting only the best they can afford for their children in most areas of life, school meals are given miniscule budgets while young consumers are bombarded with advertising for junk food”

Changing Places, BBC Radio 4⁹³

In 2000 the council of Pamiers, a small town near the Spanish border, became the first in France to ban ready-made, mass-produced meals in its school canteen and replace them with meals prepared from fresh local produce.⁹⁴ The ban followed a wave of popular protest in France led by the Roquefort cheese-maker José Bové, who declared war on McDonald’s as an agent of US culinary imperialism, on industrialised agriculture and on poor quality food, and vowed to defend the interests of traditional French food producers. The Mayor of Pamiers said: *“We’re striking a triple blow for rural French values. This will ensure our kids stay healthy, teach them the taste of proper French food, and help keep our small farmers in business.”*

Wastage, which was running at 60% of dinners rejected when school dinners were bought in bulk, has been significantly reduced. The menu now consists of ingredients sourced from within a few miles of the school such as free-range eggs and chicken, potatoes, organic salad, cheese and locally-produced flour and butter.

The UK government’s nutritional standards for school meals, introduced in 2001 to improve the diets of school-children, has so far not been a success.⁹⁵ A Which? magazine survey found that children between the ages of ten and 15 have a diet based on crisps, chips, chocolate and soft drinks. Fruit and vegetable consumption is low and many children are not receiving sufficient vital nutrients. The survey asked 246 children aged between ten and 15 at eight primary and nine secondary schools to keep detailed food diaries. The school meals reported in the diaries were repetitive and often read like fast food menus. The children ate an average of only two portions of fruit or vegetables a day, despite government advice that they should eat five to reduce the risk of cancer or heart disease. The older boys in the sample managed only one portion. School meals contributed less than one portion of fruit and vegetables a day to the children’s diets, which were high in fat, sugar and salt, and low in fibre, iron, folate, zinc and other nutrients essential to growth.

“Children’s eating habits are a real cause for concern. Today they eat 30 times more soft drinks and 25 times as much confectionery as they did in 1950. For many children their main meal of the day is the school meal. If they are not eating the right food there, it has a real impact on their health”

Rachel Clemons, Which? researcher

A Consumers’ Association policy review found that the food industry is responsible for encouraging children and parents to make unhealthy choices through the irresponsible marketing of some of their products. Kath Dalmeny, campaigner for the Food Commission

and author of the review, said: “The marketing of fatty, salty, sugary foods to children contributes to them having a positive image of them. They associate them with the most popular footballers and pop stars. That in turn contributes to their poor diet.” British children see the highest number of television commercials in Europe, watching on average 17 adverts an hour, of which 10 are likely to be for food. Of those adverts, nine are likely to be for products which are high in fat, sugar, and/or salt.⁹⁶

Box 8

School food

St Peter’s Church of England Primary School in East Bridgford, Nottingham, decided to do the catering for their 210 pupils themselves. Jeanette Orrey, the school’s catering manager, wanted to know exactly where the school’s meat came from following the foot-and-mouth outbreak, so she started to investigate and use local suppliers. The number of dinners served daily has increased from about 120 to 160, a 75-85% take-up. The school also runs a Senior Citizens Lunch Club on Wednesdays and supplies filled rolls to the village shop, all of which helps to boost numbers and allows for economies of scale in buying the raw ingredients. Not everything is local, but meat, eggs, milk, potatoes and other vegetables are, and the organic flour, margarine and sugar the school needs come via the village shop.

The environmental, health and animal welfare benefits of the switch to local food are discussed in the classroom and the Senior Citizens Lunch Club links to courses on citizenship. This initiative provides fresh, wholesome food for pupils, educates them and their families about sustainable food, supports the local economy, and encourages sustainable agriculture by supporting local farmers who are using organic methods. These benefits have been achieved at no extra cost. Both parties benefit: the local farmers get access to a regular and large local market, and by cutting out the middlemen, the catering service gets competitively priced produce.⁹⁷

5.3 Partnerships in Powys

In the UK, despite the poor nutritional quality of meals in many schools, there have also been some inspiring examples of best practice that could be replicated across the country. Five years ago, Powys County Council, supported by the Soil Association, set up ‘Powys Food Futures’. An 18 month programme of workshops was held in order to gain the widest possible participation. By the time it finished, the initiative had held farmers’ markets in Brecon, made progress towards using local food in Llandiloes Hospital, developed plans for a local meat plant, produced car stickers to advertise local produce, improved relations between producers, Trading Standards and Environmental Health departments, and set up Powys Food Links. This is now taking plans forward, with European funding for several staff, one of whom will initially focus on radical reform of school meals.⁹⁸

“Food growing and production is at the core of our lives, not only for our individual health but also for the health of our communities, and local food production is becoming seen as a central element in the development of sustainable communities. Sustainable agriculture is needed to provide an economic backbone for rural communities, and even the rural landscape may be threatened if farming becomes uneconomic. The innovations in Mid Wales show some innovative ways of moving towards sustainable agriculture and healthier, fresher local food for all of us.”⁹⁹

Following on from the successful ‘Food Futures’ project, the Powys Public Procurement Partnership was established. This is a group of organisations and individuals, led by Powys County Council, that want to see more local food used in the public institutions of Powys. They have encouraged the development of networks of local suppliers to jointly market their produce, thus avoiding the situation in which individual farmers are isolated and vulnerable. This also allows farmer co-operatives to enter the tendering process for large contracts and to create systems to cope with peaks and troughs of supply and demand by having access to a pool of suppliers.

The partnership in Powys, which consists of Dyfed Powys NHS Healthcare Trust, Powys County Council, the Soil Association, and the University of Wales, is investigating what is possible and legal within the current national, EU, and international regulatory framework. Two pilot projects, one at Llanidloes Hospital and the other at Llandrindod High School aim to develop a menu with more local and organic produce. Llanidloes Hospital was chosen because of enthusiasm by the chair of the healthcare trust, good contacts with other stakeholders, and because it does its own cooking. When the hospital contracts were up for renewal at the hospital, they were advertised in local papers and to producers on the Food Futures database. However, the programme also faces many of the barriers to public procurement to local food - it has been difficult to find a good diversity and consistency of local produce, and there is a shortage of suitable processing facilities. The partnership hopes to address these problems during the course of the project and as it gains momentum.

5.4 Hotels, restaurants and shops – eating well

Hotels, restaurants and shops could all contribute to increased local food procurement, in many cases leading to enhanced profile of the business. For example, Strattons hotel in Swaffham is known world wide for its environmental good practice.¹⁰⁰ The list of awards includes the DTI Queen’s Award for outstanding environmental achievement and the Good Hotel Guide green hotel of the year 2003. Local, sustainable food plays a large part in the hotel’s environmental policy, and the hotel is also involved in the production of a local food directory. All the hotel’s produce and services are sourced within a 25 mile radius, including the eggs and dairy produce and vegetables, sheep and goats cheese from the nearby village of Munford and the hotel’s menu therefore has to respond to the seasonal availability of local products.

Conclusion

The current food system is unsustainable and is becoming more so. Promoted to the public as the ultimate 'efficient' system, it is in fact increasingly inefficient in terms of energy use. More than this, it is inefficient in terms of the energy of the people who are forced to engage with the system – and who are exploited and misled as both producers and consumers.

The system is illogical, importing food from all over the world even at times when they are readily available in the UK. Techniques highlighted in this report – including cold-storage, and 'forced' vegetables, demonstrate how availability of UK products can be extended further.

The system is insecure, creating a situation where farmers are forced to respond to unpredictable farm-gate prices over which they have absolutely no influence and to diversify away from farming in order to survive.

Finally, the current food system has significant environmental impacts – in terms of CO₂ emissions, increasing congestion on the roads and the impact on the countryside of needless intensive production.

This situation is ripe for change and people at all levels of the food retail system are beginning to recognise that this is so.

The local food initiatives highlighted in this report are admittedly relatively small-scale in comparison to the present might of the global food system. The evidence, however, demonstrates that they are expanding rapidly and that:

- Local food systems provide a **realistic alternative** to the 'conventional' food retail system. Despite a legislative context which mitigates against local food initiatives, they are growing fast. While highly diverse, the different initiatives are characterised by being **profitable, economically beneficial** to local communities and providing a **guaranteed income and secure livelihood** to farmers.
- Local food systems are able to meet the needs of consumers, providing an increasing diversity of healthy (often organic) produce and year-round availability of many products

- Providing food through localised systems results in significantly reduced environmental impacts at all stages of the food retail chain. Further to this, local food systems provide a basis for the development of sustainable farming systems, where the costs of food production are effectively internalised.

Recommendations

What is needed is a Local Food Action Plan, which is supported by Central, Regional and Local Government.

Kevin Morgan and Adrian Morley's report of 2002¹⁰⁴ proposes the following stages for such a plan:

- Improve the Regulatory Framework
- Educate the public about local food
- Stimulate demand for local food
- Develop the supply of local food
- Facilitate healthy food choices

Building on this plan, we propose:

... improving the regulatory framework

It is now time for an active new **food and farming policy** rather than aiming for policy drift, cherry picking and the lame hope that the market will solve any problems. This will require a fundamental shift in approach: a 'break with the present' not just the past.

Food and farming policy must refocus on the goal of **food and farmer security**, which were the goals of post war food policy. Imports should be minimised for products that could be produced in the UK and positive discrimination to allow expansion in fair trade products.

The current emphasis on being internationally competitive will lead to further job losses in the UK agricultural sector and farm closures and amalgamation. Without fundamental changes to the structure of the UK food and farming system, increased liberalisation of international trade in food, removal of CAP support and EU enlargement will result in fewer farms and farmers, more food imports (and exports of farmers) and the food system becoming more unsustainable

Some have argued that expanding local food markets will mean that people have to pay more for their food, as costs in local food markets are relatively higher than in supermarkets. Some evidence contradicts this assertion – for example, a survey by the University of the West of England found that prices of organic vegetables were 33% lower at farmers markets than in the supermarket¹⁰⁵. It should also be remembered that savings would also be made by the health service, where a decrease in diet-related health problems (such as coronary heart disease and rates of cancer) would result from the changes in the food system. If prices did go up however, social welfare mechanisms and the minimum wage would need to be raised to an adequate level to compensate for any increase in costs.

... educating the public and stimulating demand

- Consumers need to be educated about the value of local food.
- Action should be taken in schools to promote the topic – for example through school talks, and through studying food and food retail systems in the curriculum.
- Directories of local food producers (many of them web-based) are already being effectively produced at many levels – for instance by Regional Development Agencies and Non-Governmental Organisations such as the Soil Association. These initiatives need to be promoted and extended as much as possible, in order to reach as wide an audience as possible.
- A labelling and branding scheme needs to be introduced to identify food products which are *genuinely* local (e.g. produced within 30 miles of the point of retail).
- There is a great deal of scope for future research in this area – for example, research (funded by Defra and performed by an independent body) could be undertaken into the total environmental, social and economic impacts associated with

the supply of food items over the life cycle of food products.

- changes in public procurement policy are required to enable local procurement to be promoted, rather than constrained.

... developing supply of local food

The Regional Development Agencies are in a key position to promote local food initiatives, and in many cases are already doing so. Many of the recommendations below could reasonably be facilitated by the RDAs:

- Promotion of regional networking between those involved in working on local food initiatives.
- Training for those involved, from people who have already undertaken schemes. Mentoring schemes could also be developed to help new initiatives.
- Problems do exist, for example in some Farmers Markets, in schemes being started with only short-term funding and then running out of money after a few years. In order to facilitate new schemes, a small loans and grants scheme is needed. Where schemes have been started through the *Local Food Links* and *Food Futures* schemes, the Regional Development Agencies could take up this funding and continue them on a more long-term basis.
- Co-operative structures are needed, for example to promote the establishment of farm shops in towns and cities, in order to provide what farmers' markets at present do not – access to local produce through the week.

... facilitating healthy food choices

- A more effective labelling system - for example obliging supermarkets to label the point of origin of products sold - would help to facilitate more effective choices amongst consumers.
- Adverts (particularly aimed at young people) which aim to promote unhealthy foods should be restricted.

Annex 1

*The benefits of going local*¹⁰¹

Localised food systems:

- Act as a link between the local community, food producer and the land by bringing local food producers and consumers into direct contact. Consumers have the opportunity to communicate directly with the food producer and state their preferences and farmers get valuable feedback.
- Food traceability is improved
- There is an increased awareness of the environmental benefits of sustainable food supply and a greater understanding of the implications of sustainable development through involvement in sustainable purchasing. Localised food systems are in effect 'sustainability in practice' and cover all three (social, environmental and economic) dimensions of sustainability.
- Food security is maximised as dependency on fossil fuel, food imports and vulnerable long distance transportation is avoided.
- Lead to a massive reduction in food transportation.
- Reduce primary, secondary and transport packaging.
- Food producers benefit from a stable local market for their goods and receive the fairest return on their products.
- Cut out the costs and value added by processors and retailers. Farmers and growers can invest their time producing food and increasing their product range rather than looking for customers.
- Education about where food comes from and how it is produced is also a strong feature of local food schemes. The consumer becomes more aware of seasonality and availability of produce through the year.
- Local food systems lead to regeneration and increased rural employment: the local economy is stimulated by

consumers supporting local business.

- Sustainable farms embody a diversity of ownership, cropping systems, landscapes, culture and traditions. A varied farm structure contributes to biodiversity, a diverse and esthetically pleasing rural landscape and open space.
- Local food schemes can contribute to healthy eating by providing a varied seasonal diet consisting of a higher intake of fresh organic fruit and vegetables. Those involved in food schemes, whether it be full-time, part-time or on a voluntary basis get regular exercise which improves fitness, promotes well-being and reduces the risk of heart disease.
- Responsible management of natural resources of soil, water, and wildlife produces significant environmental benefits for society.
- Less concentrated land ownership produces more equitable economic opportunity for people in rural areas, as well as greater social capital. This can provide a greater sense of personal responsibility and feeling of control over one's life.
- Farmers who market their produce to local businesses and households are more likely to have a stake in the well-being of the community and the well-being of its citizens. In turn, local land owners are more likely to be held accountable for any negative actions that harm the community.

Family farms can be nurturing places for children to grow up and acquire values. Farming knowledge and skills are passed from one generation to another. Currently these skills and experience are being lost.

Annex 2

The products available at Winchester farmers' market, April 2003

- Alcohol free wine style drinks
- Bedding plants, patio plants, herbs and planted bulbs

- Beef and lamb
- Beef, chicken, duck, turkeys, geese
- Beef, pork, lamb, bacon, poultry, homemade sausages and burgers
- Blueberry products
- Bottle conditioned beers, bitter and real ale
- Bread, pastries, baked goods, honey, cakes, scones, meringues, IOW clotted cream, ice cream, cheesecakes.
- Cheese
- Cider
- Clematis, climbing plants, daphne, crocosmia and helleborus
- English country wines, meads and liquers
- Farm pressed and bottled fruit juice and fruit products
- Free range chicken, burgers, sausages, eggs, lamb
- Free range eggs, duck eggs, quail eggs, pickled eggs, turkey at xmas
- Free range eggs, sunflowers, hot crepes
- Free range lamb, chicken and beef.
- Turkeys and geese at Christmas
- Free-range pork, dry-cured bacon,
- Hog Roast
- Fresh and smoked trout, pates, smoked meats
- Fresh fish, fish products and shellfish
- Fresh pork, bacon, sausages, pork pies, cooked ham, butter, burgers, fresh beef and lamb
- Fruits, summer vegetables, cut flowers
- Garlic products, asparagus, sweet corn
- Glasshouse salads, peppers, celery, tomatoes, cucumber, melons etc
- Goats cheese
- Hand made cheeses
- Hand-made confectionery
- Handmade preserves
- Hardy perennials, vegetable plants and produce, preserves, duck eggs
- Herbaceous perennials
- Herbaceous, vegetable, bedding and rockery plants, patio containers
- Home made gourmet fudge
- Home-made Sausages, Hog Roast
- Honey and honey products
- Honey preserves and cosmetics
- Lamb, sheepskins, fruit jelly, herbs, game, birdfeeders, Christmas fare
- Lavender and Rosemary products
- Milk, cream and yoghurt

- Mushrooms and mushroom products
- Oils, vinegars, fresh/dried herbs, preserves, polish, lotions
- Organic bread and cakes
- Organic poultry, wild rabbit, pigeon, duck, organic fruit
- Organic preserves, sauces, dressings, mayonnaise, nuts
- Organic vegetables and fruit
- Ostrich meat products
- Oven ready game
- Pepper and plum sauces, relishes, chutneys, marmalades
- Perennials, shrubs, herbs
- Pork, bacon, sausages, burgers, watercress, seasonal fruit and veg
- Preserves, baked goods, seasonal fayre
- Preserves, chutney, mustards, pickles, fruit curds, baked goods
- Rare breed raw meat, sausages, burgers, wool and woollen products
- Rare breed, free range pork, bacon, wild venison, traditional beef
- Rustic furniture and decking
- Sausages, meat, pies,
- Sheep milk products, preserves, cold cooked meats
- Soft fruit, vegetables, herbs, flowers
- Tomatoes, cucumbers, smoked tomatoes, peppers, tomatillos.
- Unpasteurised jersey milk and cream, farmhouse ice cream
- Unusual hardy perennials, native wildflowers, cards
- Vegetables and seasonal flowers
- Vegetables, soft fruit, salads, flowers, herbs
- Vegetarian Italian style cheese
- Water buffalo meat
- Watercress
- Watercress products, seasonal preserves, sponges, desserts, sandwiches.

Annex 3

Twelve steps to reduce food miles and create sustainable food economies¹⁰²

1. When buying food that can be grown in the region, i.e. Europe, you could follow a hierarchy of purchasing priorities;
 - buy locally produced food (which should therefore be seasonal)
 - buy nationally
 - buy products from the region that have been imported by ship
2. When buying food that cannot be grown in the region, such as tea,

coffee, bananas, or chocolate, buy fair trade products where these are available.

3. Try to buy locally produced, seasonal fresh produce when available, from small, local shops and markets, and request that produce be stocked from farms in the surrounding area. This can be ensured by purchasing food at farmers' markets, or from community supported agriculture schemes and, in many instances, box schemes.
4. Ask retailers and supermarkets how food products have been imported and avoid those products that have involved airfreight distribution. Ask them to stock more produce in your local supermarket from farms in your area.
5. Contact your local food link organisation or local authority and ask if a local food directory is available. If not, ask them to produce one or consider producing one yourself!
6. Consider setting up your own local produce marketing scheme or join an existing one. Contact the Soil Association for more details.
7. Grow your own food using organic techniques, in the back garden, on an allotment or community garden, or help to establish a new site.
8. Write to your MP and MEP, and to the Department of Environment, Food and Rural Affairs and the Food Standards Agency, supermarkets and food manufacturers, demanding a clear labelling system showing the distance food has travelled, its country or countries of origin and transport related environmental impact.
9. Ask publicly funded canteens (such as schools, hospitals, local authorities, and prisons) to buy more local, seasonal, and organic food.
10. Write to your school governor, hospital trustee, or local councillor asking what they are doing to introduce more local, seasonal, and organic food into their school, hospital, or local authority catering service.

11. Write to you MP, the Department of Environment, Food and Rural Affairs, and the Food Standards Agency to demand better food in public sector catering by changing to menus using local, seasonal, organic, and co-operatively or fairly traded produce.

12. Ask your Regional Development Agency (RDA) what they are doing to support sustainable food economies in your region. Ask them to fund your local food project.

Annex 4

Information on local food

Food link organisations and support projects

A number of national projects and campaigns have sprung up in the voluntary and statutory sectors to promote a more sustainable food system, varying in their range and remit. The following is just a small sample;

Council for the Protection of Rural England's, Sustainable Local Foods project
Countryside Agency's Eat the View project
Foundation for Local Food Initiatives
Friends of the Earth's Real Food and Farming Campaign
Green Party
International Institute for Environment and Development's Race to the Top initiative
New Economics Foundation's Plugging the Leaks project
Slow Food Movement
Soil Association's Food Futures, Local Food Works, CSA project, Eat Organic Buy Local campaign, Sustain's Sustainable Food Chains project and Organic Targets Bill Campaign,
Transport 2000's Wise Moves project

There has also been a growth in the number of local and regional networks to support and develop local food economies. Some of these are housed within a local authority or a local voluntary group, whilst others are independent, they include;

Bristol Food Links
Community Action for Food and the Environment (CAFE) (East Sussex)
Cornwall Food Links

References and Notes

Devon Food Links
Doncaster Local Food Network
East Anglia Food Link (EAFL)
Forest Food Links
Forth Valley Food Links
Gloucestershire Food Links
Herefordshire Food Links
Leicestershire Food Links
London Food Link
Nottingham Food Initiatives Group (FIG)
Oxfordshire Food Links
Powys Food Links
Skye and Lochalsh Food Links
Somerset Food Links
West Dorset Food and Land Trust
Wiltshire Food Links

Web Contacts ¹⁰³

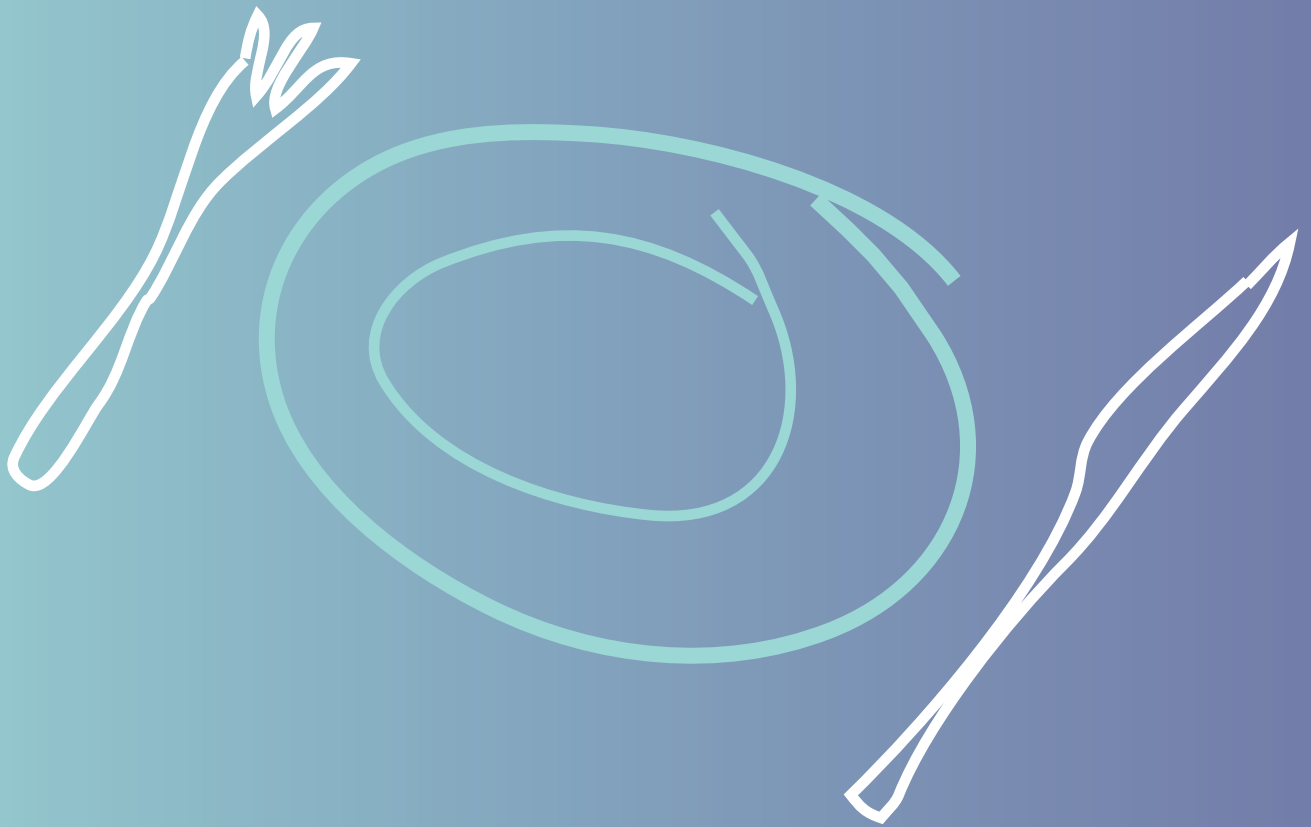
Bioregional Development Group
<http://www.bioregional.com>
Calderdale & Kirklees Food Futures
<http://www.foodfutures.co.uk>
Common Ground
<http://www.commonground.org.uk>
Community Food Security Coalition (US) <http://www.foodsecurity.org>
Compassion in World Farming
<http://www.ciwf.co.uk>
Council for the Protection of Rural England <http://www.cpre.org.uk>
Countryside Agency
<http://www.countryside.gov.uk>
Department of Environment, Food, and Rural Affairs <http://www.defra.gov.uk>
Devon Food Links
<http://www.devonfoodlinks.org.uk>
Dumfries and Galloway Food Futures
<http://www.foodpartnerships.fsnet.co.uk>
Durham Local Food
www.durham.gov.uk
East Anglia Food Link
<http://www.eafl.org.uk>
Eat the View <http://www.eat-the-view.org.uk>
Fair Trade Foundation
www.fairtrade.org.uk
Farm Retail Association
<http://www.farmshopping.com>
Farmers Weekly <http://www.fwi.co.uk>
Federation of City Farms and Community Gardens
<http://www.farmgarden.org.uk>
Food in Newcastle
<http://www.newcastlefood.co.uk>
Food Standards Agency
<http://www.food.gov.uk>
Foundation for Local Food Initiatives
<http://www.localfood.org.uk>
Friends of the Earth
<http://www.foe.co.uk>
Grab5 (promoting fruit and veg to pupils) <http://www.grab5.com>

HDRA – The Organic Organisation
<http://www.hdra.org.uk>
Health Education Board for Scotland
<http://www.hebs.com/research>
International Society for Ecology and Culture <http://www.isec.org.uk>
Local Food Finder Big Barn
<http://www.bigbarn.com>
Local Food Works project
www.localfoodworks.org/
Local Food; The Global Solution conference report <http://www.go-local.org>
Local Government Association
<http://www.lga.gov.uk>
London Farmers Markets
<http://www.lfm.org.uk>
London Food Link
<http://www.londonfoodlink.org>
National Association of Farmers Markets
<http://www.farmersmarkets.net>
National Farmers Union
<http://www.nfu.org.uk>
National Federation of Sub-Postmasters <http://www.subpostmasters.org.uk>
National Society of Allotments and Leisure Gardeners
<http://www.nsalg.demon.co.uk>
National Trust <http://www.national-trust.org.uk>
New Economics Foundation
<http://www.neweconomics.org>
Nottingham Food Initiatives Group
<http://www.foodfig.org.uk>
Oxfordshire Food Links
<http://www.oxfordshire.gov.uk/food>
Permaculture Association
<http://www.permaculture.org.uk>
Slow Food <http://www.slowfood.com>
Soil Association
<http://www.soilassociation.org/>
Somerset Food Links
<http://www.somersetfoodlinks.org.uk>
Sustain <http://www.sustainweb.org>
Village Retail Services Association
<http://www.virsa.org>
WI Country Markets Ltd
<http://www.wimarkets.co.uk>
Women's Environmental Network
<http://www.wen.org.uk>
World Health Organisation (Nutrition and Food Security)
<http://www.euro.who.int/Nutrition>
Wyclec
<http://www.wye.org.uk/business/directory/wyclec.htm>

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- 72 Eutrophication causes an accelerated growth of algae and higher forms of plant life leading to an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned. The resulting disturbed aquatic ecosystem may:
- become an unsuitable habitat for other species such as fish and invertebrates. This reduces biodiversity of both the aquatic habitat and of other species in the food chain;
 - become too low in oxygen for some species to tolerate, such as fish and shellfish;
 - damage the quality of areas of high wildlife conservation value, such as Sites of Special Scientific Interest (SSSIs);
 - produce toxic algal blooms which poison fish and shellfish, making them unsafe for human consumption, thus damaging the fisheries industry. However, there is as yet no well-established link between nutrient enrichment and the incidences of shellfish toxicity in marine waters. Local livestock and wildlife may be at risk and blooms in recreational waters can result in closure of the area, with impacts on tourism;
 - produce so much vegetation that navigation or recreational use of waters becomes impossible. This also impacts on the tourism and leisure industry.
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- 82 Pretty, J. (2003) **The magic bean**. New Internationalist vol. 353 Jan/Feb 2003.
- 83 www.westdean.org.uk
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- 85 The fast and convenience food sectors have expanded in recent years. As a result junk food, ready to eat meals and take-aways form a large proportion of our diet and the average meal preparation time is now 20 minutes, compared to 2 hours in 1980. ⁸⁵
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LOCAL FOOD

Benefits and Opportunities

Caroline Lucas MEP and Andy Jones

