

FOOD AFFORDABILITY, ACCESS AND SECURITY: THEIR IMPLICATIONS FOR SCOTLAND'S FOOD POLICY

A REPORT BY WORK STREAM 5 OF THE SCOTTISH
GOVERNMENT'S FOOD FORUM.



Water, our Care of the Environment and Energy: Key
issues for the security of our future food supply

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EXECUTIVE SUMMARY

1. As part of the Forum set up by Ministers to develop a National Food and Drink Policy a group has met to consider issues related with Food Affordability, Food Access and Food security. The group has reviewed existing evidence on these issues and has developed a series of proposals which it feels could be taken ahead in Scotland.
2. Food affordability, access and security are related issues. Without food security, individual access and affordability will be more limited. However at a personal level national food security does not guarantee either access or affordability. There is evidence that the rises in the price of food which were seen in 2008 had a major impact on the proportion of the population who can be classed as food poor. There is also evidence that food access is about issues beyond just proximity to a food store and that it is uneven across Scotland especially in our Remote Rural areas. We suggest means by which issues of these types may be addressed.
3. At the current time the UK has a robust supply chain which is currently serving many in the population well. It is based primarily on UK production, supplemented by imports from Europe. It should not however be assumed that this situation will remain unchanged in the future. In addition it is increasingly important to evaluate the supply chain in relation to its impacts on health, climate change and the functioning of communities.
4. Changing global demand and supply challenges will increase the volatility of food prices and will challenge the supply chain. Short term problems such as animal disease and interruption in the supply chain may present immediate threats to the supply of food in the UK. This requires Government to plan on the basis of the central importance and operation of food production and the supply chain.
5. The issues associated with the rise in the cost of food in 2008 suggest that prices will not return to those which characterised the last decade. The base line for food prices will be higher in the future.
6. For the past several decades food production has been subsidised by the supply of cheap energy but with implications for climate change. In the future energy supplies will be more expensive and so will food. There is thus a need to plan for a future which will be very different to the recent past.
7. Food and diet are at the heart of health and so consideration of what are the components of a healthy diet is important to defining what needs to be affordable, to what access is required and the food supplies which Scotland needs to secure.
8. Scotland has long seen it self as a nation which cares for all of its inhabitants. Ensuring that all have access to a safe, affordable and healthy balanced diet which is also sustainable and ethical is important to the achievement of our national ideals.

9. Government has rarely seen food as a locus for policy making. We suggest the need to recognise that the market mechanism alone has not been able to meet the needs of our population or to facilitate the consumption of diets which have a positive and sustainable impact on health.
10. We suggest the importance of the concept of Food Sovereignty at both national and local levels. This suggests the value of a number of food regions within Scotland and a range of local initiatives depending on individual regions geography and needs in relation to food.
11. At a national level Food Sovereignty would include an appraisal of what should be produced in Scotland and a commitment to an appropriate and significant proportion of what we eat being produced and processed in Scotland. It would also involve an assessment of the impact of our food imports on producer countries.
12. Adapting to climate change must be at the heart of food policy. Food policy must be a major vehicle for supporting the changes in both production and consumption required to meet the challenges of Global Climate Change.
13. We identify the principle issues relating to Food security as being:
- a) There are major uncertainties around the availability of sufficient energy, water (particularly in the countries from which we import), land and skills to sustain current levels of food security in Scotland.
 - b) As a consequence of our climate and land, which limit the range of crops we can produce, the comparative advantage principle and the diversity of tastes Scotland consumes more of some types of food than it produces although changing economic conditions could make a wider range of home production viable .
 - c) Increased domestic production would improve our balance of payments, give a measure of protection from global market volatility, reduce our dependence on overseas suppliers, transport costs and imports and prevent the disappearance of our domestic production and processing industries.
 - d) Future levels of UK food self-sufficiency will be controlled by energy costs.
 - e) Future threats to UK food security seem more likely to come from disruptions to supply chains rather than to a lack of food although there is need to keep this under review.
14. We identify the principle issues related to food affordability as being:
- a) The price of food is a major concern for many in the UK, particularly those on low incomes who feel they cannot afford to eat balanced diets.

- b) The price of healthy food items is very variable between shops in Scotland, with a tendency for prices to be lower in larger shops and in areas with low levels of social and economic deprivation.
- c) For many of the food poor their spending on food is the only flexible budget item which may, in times of rapidly rising process in food or energy, result in them economising by buying unhealthier food items or omitting meals.
- d) Food plays a critical role in health inequalities between socio-economic groups.
- e) Regional food price variations (due to use of convenience shops or higher transport costs) are critical for those on low incomes.
- f) The voluntary sector plays a key role in delivering affordable food to many of the food poor.

15. We identify the principle issues relating to food access as being:

- a) Retail access to healthy food is determined both by the network of stores in an area and by the stocking policy of those stores.
- b) Deprived areas have a greater density of small stores with reduced in-store availability of healthy food items compared to medium and large stores.
- c) There is a fall in the general quality of fruit and vegetables available in deprived areas and in small stores.
- d) Large stores are less accessible to those in remote rural locations, those with disabilities and those without transport.
- e) Electronic marketing and the voluntary sector will both have an increasing role in improving food access especially to the food poor and to those in rural areas.

1 THE GENESIS OF A FOOD POLICY FOR SCOTLAND

Events leading to the commissioning of this study. A discussion was held on 8 October 2007 organised by Scottish Government to hear the views of stakeholders on food related issues. A subsequent debate in the Scottish Parliament on 7 November 2007, determined that a national food and drink policy was needed to ensure a more coherent approach to food in Scotland. A Policy was needed which covered every part of the food chain from farm gate to plate and provided a long-term direction and vision for the industry so as to realise the full potential of Scotland's food and drink for the benefit of everyone. A Discussion document entitled 'Choosing the Right Ingredients' was launched by the Cabinet Secretary for Rural Affairs and the Environment, Richard Lochhead MSP, on 15 January 2008. Everyone in Scotland was given the opportunity to have their say about what is important to Scots and to Scotland - in terms of the food produced and the food consumed.

The Objectives of a Scottish Food Policy. The vision for food in Scotland expressed in the discussion document was that it should make the nation healthier, wealthier and smarter with production making communities stronger and consumption respecting the local and global environment. The document suggested that:

- A healthier Scotland will result from changing individual behaviour and attitudes about diet and food choices; from improving the nutritional quality, safety and freshness of food on offer in institutions and the catering sector; to supporting Scottish food manufacturers and retailers to take the initiative in driving forward consumer demand for more affordable, healthier food options. Communities across Scotland as a result will enjoy better access to affordable, safe, healthy and fresh seasonal food;
- A wealthier and fairer Scotland will result from the sustainable economic growth of the food industry through greater co-operation and collaboration from primary production to final market, ensuring the long-term viability of primary producers, and increasing export markets for Scottish produce;
- A safer and stronger Scotland will result from a thriving food industry where local communities will flourish and become better places to live through improved access to amenities and services;
- A greener Scotland will result from reducing the environmental impact of food and drink production, processing, manufacturing and consumption by encouraging responsible behaviour throughout the supply chain through reduced emissions, unnecessary use of raw materials, waste, packaging, energy and water use;
- A smarter Scotland will result from a highly-skilled and innovative food industry with consumers that are better informed about where their

food comes from, how it was grown and the wider health, environmental, social and economic benefits of the choices they make.

The discussion period ended on 25 April 2008. By then responses to the discussion had been received from 441 individuals and organisations, (individuals provided 259 written responses). In addition there were 13 stakeholder meetings which were attended by 605 individuals from 315 organisations. There were also 108 valid responses to the blog, which were analysed using the same text analysis technique as was used for the written responses.

The National Food and Drink Policy announced by Ministers in July 2008 aimed

“to promote Scotland’s sustainable economic growth by ensuring that the Scottish Government’s focus in relation to food and drink, and in particular its work with Scotland’s food and drink industries addresses quality, health and wellbeing, and environmental sustainability and recognises the need for access to affordable food for all.”

The Scottish Food Forum. A Food and Drink Leadership Forum was set up, led by Richard Lochhead MSP. The Scottish Government tasked the Leadership Forum to deliver views on five key themes:

- Sustainable Economic Growth
- Food and Drink Choices
- Enhancing Scotland’s Reputation
- Walking the Talk
- Affordability, Access and Security

1.1 The Role of Work Stream 5

Work Stream 5. WS5 has examined issues related to Food Affordability, Food Access and Food Security. We have sought to prioritise the issues which were both identified as priorities in the 2008 National Discussion ¹ (Anon, 2008), and which are capable of action in a Scottish context.

The elements covered by this study are important to both individuals and to Scotland as a whole and so it is important to view them in terms of what might be done to achieve a positive change for individual citizens; especially those for whom the current situation is unsatisfactory, and what actions are needed for our country as a whole. Some issues, particularly those relating to individuals, can be actioned now. Most of those which would affect us at

¹ The Future for Food in Scotland: Analysis of responses to the National discussion, Scottish Government, Edinburgh, 2008.

national level require more substantial change and so need to be addressed over a much longer time scale.

For all three elements of our work there are significant actions which can be taken within Scotland. However there are other matters which would require action by either the UK Government or the EU; many issues relating to food security are of this type. In identifying issues for action in this document we have focussed primarily on those areas where action is possible in Scotland and on those which seem to us to be of such importance that discussions with other administrations are urgent.

Our three issues are interconnected. To have access to an affordable supply of food is at the core of personal food security. As a Nation, securing dependable supplies of quality food are at the heart of giving all our nation access to a quality diet and at affordable prices.

Throughout our study we have been aware that our work is part of a much wider whole and that there is clear need to identify just how our findings relate to those of the other four workstreams. Where possible we have identified ways in which food affordability, access and security might be achieved through other parts of the wider Food Policy Initiative or through other current Government initiatives such as those relating to climate change, poverty or health.

The membership of the Group who have overseen Work Stream 5 and its methods of working are detailed in Appendix 1.

1.2 Priorities identified by the National Discussion

The National Discussion. In January 2008, the Cabinet Secretary for Rural Affairs and the Environment launched a national discussion to encourage everyone in Scotland by publishing a discussion paper **Choosing the right ingredients - the Future for Food in Scotland**, setting out Government's vision for food in Scotland and inviting stakeholders, individuals and organisations to submit their views.

The Conclusions of the Discussion. The analysis of the written responses² identified the top 10 topics (Table 1) with the percentage of total responses in which the topic was raised shown in brackets. The highlighted priority areas fall clearly within the remit of Workstream 5.

² *The Future for Food in Scotland: Analysis of Responses to the National Discussion, Scottish Government, 2008*

Table 1

Diet and nutrition	(68%)
Local food and local economies	(49%)
Health promotion	(44%)
Education in schools	(39%)
Access to food	(38%)
Adult education	(35%)
Farming industry	(33%)
Environmentally friendly food production	(33%)
Local food and communities	(30%)
Food labelling	(28%)

Source: SAC, 2008

For each of the highlighted priority areas and several others relevant to Workstream 5, example policy options have been extracted from the analysis of the discussion and outlined in Box 1. We have placed significant emphasis on these priorities in our study.

Box 1 - Example policy options for broad topic areas, identified in the National Consultation and within the remit of WS5

Diet and nutrition. Dietary and nutritional standards across the Scottish population rank very highly as an area of concern. Addressing this through policy actions represents a challenge, with a combination of approaches likely to be needed. These include various ways of enhancing consumer awareness and increasing access to healthier products, particularly for disadvantaged sections of society.

Farming industry. As a major user of land, the farming sector is highly visible, generating a number of externalities that contribute to enjoyment of the countryside for residents and visitors. It is also a significant employer in its own right and provides a high proportion of raw produce used by the Scottish food-processing sector. However, recent reforms to the Common Agricultural Policy and changes in international trading conditions have highlighted the vulnerability of many farms, raising concerns about maintenance of sectoral infrastructure and output volumes. Policy responses are constrained by CAP objectives of greater market orientation, but could include continued provision of advice and training to improve business performance, coupled with targeted support to sustain particular farming practices, including those associated with small-scale farming, particularly in remoter areas.

Environmentally friendly food production. Modern food supply chains have a number of undesirable environmental impacts, both locally through their influence on air and water quality or biodiversity, plus globally through their energy-intensive nature and emission of greenhouse gases. Reducing such impacts whilst maintaining food output is acknowledged as desirable but challenging. Policy responses include support for R&D into new production techniques, plus advice, incentives and regulatory controls to encourage the adoption of best practice.

Local food & local communities. There is increasing interest in the potential for shorter supply chains to contribute to local economic development. Although care needs to be taken to avoid the economic restrictiveness of imposed self-sufficiency, opportunities to rearrange supply chains and retain added value do merit investigation. Policy responses could include advice, training and funding for collaborative and community initiatives.

Prices - consumer. Although the proportion of household expenditure accounted for by food has declined in recent decades, it remains significant for a segment of low-income consumers. This has been exacerbated by recent trends on international commodity markets, but can also be exacerbated at a local level by limited choice of food outlets - the notion of food deserts. Policy responses may focus on increasing effective purchasing power, either by increasing the availability of affordable food (e.g. grow your own initiatives, increased local competition) and/or enhancing target consumers' income through benefit transfers (which could include rationing-type approaches, such as food stamps).

Food waste. Estimates of the proportion of food disposed of rather than consumed are worryingly high, with waste occurring at every stage of the supply chain. This suggests that there is significant scope for cost-savings to both producers and consumers, with associated benefits in reduced environmental impacts. Policy responses might include advice and training, but also a review of regulatory controls relating to food packaging and storage.

Grow your own. Primary food production occurs at many different scales, from large agribusinesses through family firms to private gardens/allotments. Historically, the latter have represented a significant source of domestic food supplies and interest in them is increasing again. This reflects leisure activities, but also concerns amongst some consumers about commercial produce and security of supply. It also represents one way of increasing access to healthy food for low-income consumers faced with few alternative supply options. Given the wealth of private sector activity in the provision of information in this sector, policy responses might reasonably be restricted to encouraging the release of land for small scale grow your own activities.

Source: SAC, 2008

1.3 Key Guiding Aims

The basis of this study. There is general agreement that in the decades ahead that the global food system will come under substantial pressure from a range of international issues (Evans 2009)³. Coping with these pressures will require radical changes to how we currently value, produce and distribute food.

The Chatham House study. The Scottish Government were one of the funders of a major piece of foresight work on food which was undertaken by The Royal Institute of International Affairs (Chatham House). This identified the most important of global changes which were likely to affect food security as world population growth, significant changes in the diet in some of the developing areas of the world such as India and China, the cost and availability of energy, the area of land available and useable for agricultural production, the quantities of water available for use in agriculture and global climate change (Ambler- Edwards et al, 2009).⁴ These issues are discussed at length later in the Report and we have made major use of the findings in our treatment of the issues we have been asked to examine.

These issues will affect different parts of the world to different extents but it is clear that all of them will affect us all both as a result of effects on our domestic production and perhaps even more by effects on the production of those from whom we currently source many of our needs. There is a need for Scotland to identify how it should respond to these national and international challenges.

The Impact of the 2008 Price Rises. The sudden rises in food price seen in 2008 were an example of the potential impact of such changes. The events of 2008 were initially regarded as simply a blip in the trend which has, for most Scottish consumers, seen decreases in the cost of food and in the proportion of income devoted to food purchases over recent years. However it seems more likely that 2008 indicated the arrival of a new era with a changed set of circumstances. The World Bank estimated that recent rises in food prices increased the number of people who are undernourished by 100 million.⁵ If this is the case, and we believe that it is, then we need now to plan so as to avoid the worst of potential problems and to place our future food supplies on a sustainable basis.

The Challenges Ahead. These altered circumstances require significant changes in how we all perceive and value food. Changing our attitude to food

³ Evans A (2009) The feeding of the nine billion: Global food security in the 21st century. Chatham House, London

⁴ Ambler-Edwards, S, Bailey, K, Kiff, A, Lang, T, Lee, R, Marsden, T Simons, D and Tibbs, H (2009) Food Futures: Rethinking UK Strategy, A Chatham House Report, Chatham House, London.

⁵ World Bank (2008) Double jeopardy: Responding to high food and fuel prices. World Bank Washington

seems likely to be the greatest challenge we have to meet. Arguably it will have a greater impact than any alterations in production methods or in trading relationships. Issues of this type have recently been discussed in a challenging way in an article produced by one of our members. This is included, in an edited form, to emphasise the scope of current issues and the range and magnitude of actions which need to be taken both internationally and in Scotland (Box 2).

Box 2: Recapitalising the UK food system

The recapitalisation of the UK's banking system saved it from collapse. Our food system is not on the point of collapse but we have a massive overdraft with the soil - worldwide perhaps one-sixth of our 12bn hectares of soil are degraded by our drive to take out more than we put back. We have cashed in fossil fuel to make nitrogen fertiliser and boost crop yields and amassed an atmospheric debt of carbon dioxide and nitrous oxide. We fly in oceans of embedded water with the irrigated fruit and vegetables from countries where water is scarce. We move food around the world and back again, just like we move money - but foods a lot heavier and accounts for a quarter of our carbon bill for transport. We have taken a loan of farm animals, reneging on the contract to respect and cherish them and treating them instead as disposable insentient commodities. And we've cashed in half the world's fishing grounds. Our food system draws heavily on human capital here and in other countries. And it's bad for our health, generating obesity and malnutrition rather than enough for everyone. Social capital is lost when trust in a grower, a grocer, a baker or a butcher is replaced with a loyalty card from a global business - and lost again when meals come from a company rather than company coming from meals. When food prices spiked last year we did some individual refinancing, spending more with the discounters and less on organic food - but this simply replaces financial debt from our personal credit card with collective ecological debt. So what would count as recapitalising the food system? Perhaps the G20 could establish a World Soil Bank, which raises capital through issuing sustainable food bonds and invests this in sustainable agriculture and primary processing for regional food markets. Some of this calls for small individual investments of time, to grow a little more of our own food, or to buy from someone we know. Some injections of social capital would help - small local food clubs which can share a delivery, or a shopping trip, or a meal, or a vegetable patch. In between, local and national government could start by acknowledging that a laissez-faire food system is not safe. Part of government's business is to make it easier for us to eat well than eat badly and easier for us to pay back to the planet. This recapitalisation will only succeed if it refocuses the food system on its primary purpose.

Pete Ritchie, Whitmuir Organics Web Site

The Approach of this study Important to such aims is the maintenance of resilience in the food system which needs to be rooted in sustainable systems of food production and acquisition and realistic expectations on the part of our population. Against this background in this report we have attempted to:

- Understand the contribution which policy, planning and on the ground practice in Scotland can have on food security;
- Clarify the make up of those within our country who are food poor and the probable impacts on them of increases in the price of food;
- Better understand of the global issues affecting food supplies as a basis for planning longer term food security;

- Assess the importance of maintaining a significant, but appropriate, capacity for food and drink production, through our farming, distilling and fishing industries and food and drink processing in Scotland;
- Improve our understanding of what would be needed so that the whole of our population, including disadvantaged groups such as the homeless had access to affordable quality food; and
- Further developing our understanding of how food security links to access and affordability especially in relation to trading fairly.

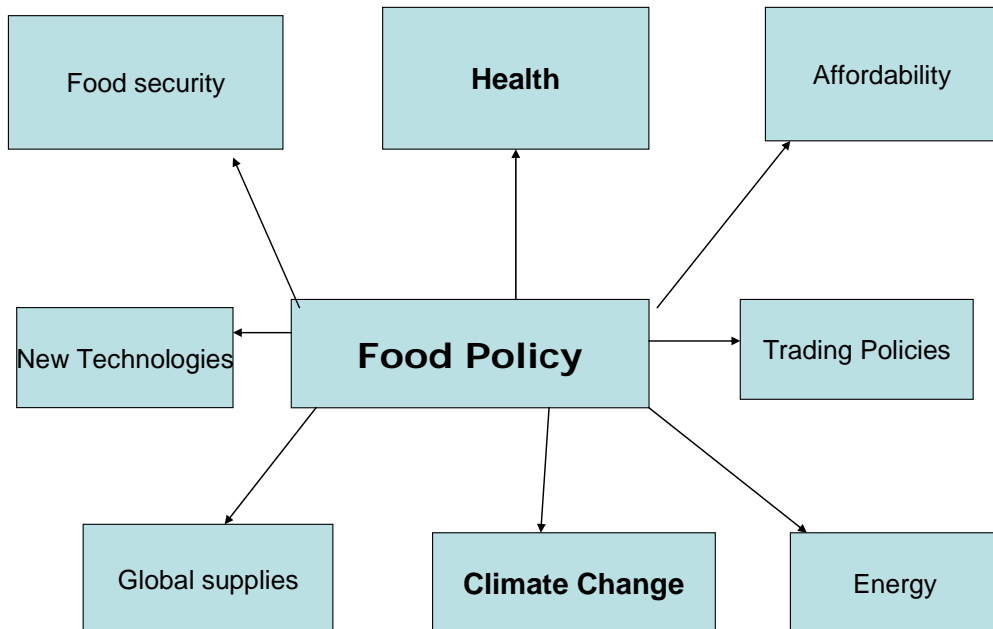
We start from the assumption that our future food supply can only be guaranteed through environmental care and fair trading policies, especially in relation to the developing world and through supply chains which embody fair trade principles. We also base our thinking on the role of food and drink as critical to holding together families and communities and as the basis of health.

The composition of the group which has produced this report and its way of working are detailed in Appendix 1

Recommendation

- 1. Food security has become a significant national issue at both national and personal levels. Access and affordability, together with the security of our future supplies, are key elements within an overall definition of security. While government intervention in areas such as agriculture, trade, health, and economic development is well-established food security has rarely been a locus for policy-making. There has, in the recent past, been an expectation that the market will ensure access to food for all. We recommend that in future food should become a primary and specified locus for policy making.**

2. COMMON AND CORE ISSUES



Any food policy will involve both direct actions and those which will be achieved through action in relation to other policy areas such as health or Global Climate Change or the Development of Novel Technologies.

The overall objectives of the National Food Policy require the clarification of some basic aims and the definition of some key terms. For example it is not possible to discuss security, affordability or accessibility of food and drink without being clear as to what elements of food and drink need to be made accessible and affordable with a secured supply. Issues of this type are common to the three stands of policy considered here and so we discuss them as core issues which we see as being common to all of the elements of this study.

2.1 Food Sovereignty

Food in Context While government intervention in agriculture, trade and trading standards, health, and economic development is well-established, the domain of food (which intersects with all these) has not been identified as a locus for policy-making or strategic intervention.

Housing provides an interesting analogy. A 'mixed market' operates, with private, local authority and housing association provision. Building regulations have ratcheted up the requirements for energy-efficiency, because the market alone fails to ensure this. Behind this, local government has a duty to prevent homelessness and to re-house people who become homeless.

By contrast, food policy has been implicit, with the expectation that the market will ensure access to good enough food for all. As a result most current food legislation is narrowly focused on issues of food safety and trading standards.

There is no explicit food policy framework to guide or regulate the food market, or to take into account the wider impacts of our globalized system of food production, processing and distribution. The changed circumstances in which we now find our selves require a new way of thinking about food in Scotland. We suggest that the concept of food sovereignty provides a useful starting-point.

Food Sovereignty as an approach to Policy. Food sovereignty has been widely discussed in the context of developing countries where malnutrition is widespread and where food represents a large element in household budgets. However, it has universal application, recognizes that we have many in our society who are malnourished and for whom food makes up a major part of their budgets and that this proportion may grow as a result of the current economic down turn. In addition its realization requires global co-operation.

The key elements of food sovereignty can be summarised as:

- **Production:** Scotland's agriculture, fisheries, nutrition, environment and rural development policies would give priority to the provision of good, healthy food to its population, sourced as locally and seasonally as possible, with high welfare standards;
- **Nutrition Policy:** In Scotland the diet of all social groups and ages should continue to be monitored, in order to make certain that policies are in place to help ensure universal access to a healthy balanced diet. It recognises the right to food and the duty of governments to secure this right with and for their citizens without compromising this right in other countries nor the integrity of other nations' food systems;
- **Supply Management:** Scotland would stimulate local production and consumption particularly of fruit and vegetables and limit imports of subsidised foods and feeds that would depress local market prices;
- **Fair Trade:** Scotland would embrace fair trade, in relation to both the production and processing of foods and to the social and environmental consequences (through changes in land use, displacement of local food production, and appropriation of water resources) of trade in food. In its trading relations with other countries, Scotland would also not 'dump' any food commodities in other countries' markets at prices below the costs of production in either Scotland or the recipient country;

- **Environment:** Production systems would become more environmentally sustainable with increased use of systems that conserve and protect water, soils and biodiversity, impose strict limits on environmental pollution and contamination of foods, feeds and the environment. Scotland would seek to lift intellectual property restrictions that limit the sustainable use of locally conserved genetic resources (seeds, livestock breeds, and fish stocks) necessary to sustain healthy, local production;
- **Refocus research and extension:** Scottish research and knowledge transfer would prioritise support for sustainable local food production that enhances nutrition and sustains the environment.

The role of Food Sovereignty. In the context of food security and affordability the primary focus of food sovereignty relates to the secure access by all too sufficient, safe, healthy, sustainable and culturally appropriate food. The production of commodities for global trade is vitally important, and in other contexts a primary aim, but in this context it's role is limited to the generation of income to help secure necessary food imports. In addition food sovereignty values the contribution and respects the rights of all, including small farmers, growers and those involved with fishing and of the workers who process food. The importance of small producers was highlighted by Evans (2009) as a key element in a future Global food strategy.

The concept shapes elements of policy on food access, affordability and security. It recognizes the importance of local decision making. One possible implication would be a more joined-up approach at a 'food region' level (there might be 5-10 such regions in Scotland), with local food agencies taking a more integrated approach to the whole food system (health, carbon reduction, local economic multiplier, biodiversity, employment, social capital, tourism, culture etc). Such a coherent local approach would lead to a range of different initiatives dependent on the region's geography and demography. For example, some regions might introduce universal or targeted food credits which could be exchanged for local unprocessed food. Others might promote periurban production of fruit and vegetables, sponsor not for profit 'green' distribution companies, or support up scaling of food co-operatives.

At a national level, the policy would base national food requirements on a 'one planet' diet and develop a basis for determining what proportion of that diet should be grown and processed in Scotland. On a broader scale, a policy of food sovereignty would inform Scotland's relationship with developing countries, creating a series of shared goals.

Recommendations

2. The primary aim of Food Sovereignty would be to secure universal access too sufficient safe, healthy and sustainable food. This policy would require an increased emphasis on the challenges of regional food production and the development of skills. We recommend

a need to reconsider the current thrust of agriculture and food policy in Scotland and to recast them on this basis.

3. Local authorities, with their planning partners, are well placed to implement many recommendations within this work stream given their knowledge of local circumstances and engagement with the people most likely to face difficulties with access and affordability. We recommend the importance of their increased engagement with these issues.

4. We recommend the advantages of the community planning process and single outcome agreement frameworks having food as an explicit element within them and for suitable indicators being developed through negotiations between central and local government.

2.2 Climate Change

The contribution of Agriculture to Climate Change. Climate change is one of the most important areas for the development of both national and global policy at the current time and it seems likely to remain so for some considerable time to come. Agriculture has an inevitable impact in relation to both the production of the greenhouse gases responsible for climate change and in relation to the alleviation of the effects of climate change. Agriculture and Food production are together responsible for the generation of around 20% of greenhouse gases (GHGs). UK Agriculture its self is responsible for almost 10% of emissions both in terms of emissions generated within our borders and of UK consumption related emissions (Garnett, 2008).⁶

The situation in Scotland, as a consequence of the greater proportion of our land being devoted to agriculture, seems likely to be proportionally higher with agriculture and food responsible for perhaps as much as 30% of green house gas generation (Raven, 2008).⁷

The major GHG's produced by agriculture are Carbon dioxide (CO₂), Methane (CH₄), and Nitrous Oxide (N₂O). All forms of agriculture produce CO₂ while CH₄ is primarily a product of livestock production and N₂O a consequence of the use of nitrogen fertilisers in arable agriculture. Both CH₄ and N₂O are more damaging than CO₂ which is why the GHG impact of agriculture is so high.

The need for care in land management. There has been a pattern of rising temperatures since the 1960s. The largest increases have been in the winter and spring. Future increases are expected to be greatest in summer and autumn. The length of the growing season is projected to increase by between 20 and 60 days by 2080 with the greatest increases in the east. Climate change will also influence patterns of precipitation with the

⁶ Garnett T, (2008) Cooking up a Storm: Food, greenhouse gas emissions and our changing climate, Centre for Environmental Strategy University of Surrey

⁷ Raven H (2008) Address on Food security to CIFAL conference, Findhorn.

expectation of wetter winters and drier summers⁸. Given the major climatic limitations on agricultural production in Scotland this may not all be bad news. However it is important that any changes in agricultural activity do not result in an increased release of GHG's. Soils are natural stores of carbon; especially the high carbon soils which characterise much of our highlands and islands. Scotland's organic soils contain around 2,000 million tonnes of CO₂ equivalent and is of an order of magnitude greater than that contained in our vegetation. It is thus important that future changes to agriculture should not increase the loss of stored carbon.⁹

All of this is important both because it indicates the importance of agriculture and the extent of necessary changes. While we might reduce our domestic GHG generation by reducing domestic agriculture but unless we make significant changes to our patterns of food consumption such an approach might only move the source of the problem and could even result in us increasing the amounts of green house gas emissions which are a direct result of our consumption because of the GHGs embedded in the food we import. Response to climate change must both cover responses in Scotland and responses linked to how we trade with others (Church of Scotland 2007)¹⁰

Changing what and how food is produced, regardless of where it is produced, is vital to our response to climate change. A recent UK Government study concluded, "it is clear that current patterns of food production are incompatible with a low carbon and more resource constrained future".¹¹ All of these concerns ask questions about our self-sufficiency in food production. Reliable figures are not available for Scotland but for the UK as a whole, production relative to consumption has fallen from 68 to 61% in the last decade for all foods and from 82- 74% for indigenous foods (Soil Association 2008).¹² This issue and its implications are discussed elsewhere in this report (particularly in sections 3.2-3.4).

Impacts within agriculture. Different types of agriculture have different impacts both in extent and in type of impact. Arable agriculture impacts directly predominantly as a result of the nitrous oxide release which is a result of the use of nitrogen fertilizers. Meat and Dairy products impact through the release of methane from ruminant animals and their wastes and account for around half of the total direct impact of agriculture. The importance of livestock production to Scottish Agriculture makes this a major issue for both our attempts to reduce GHGs production and our economy. It is a complex situation. Simplistic approaches, such as suggestions of reducing the numbers of ruminant stock to reduce methane release, ignore the complexity

⁸ Anon (2008) Report of the Committee of Enquiry into the Future of Scotland's Hills and Islands, Royal society of Edinburgh.

⁹ Anon (2008) Report of the Committee of Enquiry into the Future of Scotland's Hills and Islands, Royal society of Edinburgh.

¹⁰ Church of Scotland (2007) Fair Trade in Food. Church of Scotland Edinburgh.

¹¹ Anon (2008) Food an analysis of the issues, Strategy Unit , Cabinet Office, London

¹² Soil Association (2008) An Inconvenient Truth about Food- Neither secure or resilient, Soil Association, Bristol

of the situation and the role livestock enterprises in conserving soil carbon reserves and sustaining rural communities.

There are of course a number of significant indirect impacts in agriculture. Nitrogen fertilizers and many pesticides require substantial quantities of energy in their manufacture which result in the generation of CO₂. Fertilizers and pesticides are used in all forms of agriculture. Together fertilizer and pesticide production account for over a third of the total energy used in agriculture. The production of ammonia which is the initial step in the production of nitrogen fertilizers requires 33.5 GJ/ ton and releases around 1.8 tons of CO₂ if produced from natural gas or around 3 tons if produced using coal. To put this in context the lower of these is a similar CO₂ release to that of a modern generation car travelling over 12,000 km. Ammonia generation for fertilizers needs about 4% of total world fossil fuel use. Machinery movement also uses fossil fuels and releases CO₂.

Options for Change in Agriculture. There are thus a number of potential avenues open to reduce the GHG profile of agriculture and it is important that all of these should be explored. Novel technologies will be important but it is also important for us to assess whether current practices might be reorganised so as to reduce the generation of GHG's and reduce the need for the use of fossil fuels.

Scotland has a long tradition of mixed farming. A study carried out for Defra in 2004 showed the extent of possible savings (Table 2) which might be achieved through a better gearing of arable production to the production of poultry and pigs which commonly occur in a housed environment and so are more independent of geography than would be the case for non housed stock.¹³ These represent a significant fraction of the estimated 881 kha of cereals in the UK while the Scottish part of this might meet the needs of 10-15% of our cereal production.

Table 2 The potential contribution of waste products from housed animal production to meeting the needs of UK cereal production.

		Component		
	Estimated number of animals (Mil)	Quantity of nitrogenous waste produced (thousand tonnes)	Nitrogen Fertiliser equivalent (thousand tonnes)	Cereal area able to be manured with animal waste (kha)
Poultry	732	105	35	175
Pigs	92	43	15	76

In relation to the potential impact of new technologies it is perhaps helpful to note that aiming to reduce the need for nitrogen fertilisers by developing crops which can fix their own nitrogen; long a major stated aim of crop genetic modification, seems unlikely to be the most profitable approach to this

¹³ Atkinson D, Wilkins RJ (2004) Eco – efficiency in the future pattern of British agriculture. Proceedings of BCPC forum on Eco-efficiency pp1-27 , BCPC Alton UK

problem.¹⁴ Leguminous crops use up to 40% of their total photosynthetic energy capture in the reduction of elemental nitrogen and to make the structural modifications needed to allow them to do so. This has major impacts on potential yields. This is probably why the ability to fix nitrogen has not, in evolutionary terms, been a recipe for dominant success and why legumes are rarely a major element in natural vegetation. The ability to be efficient in the capture of the nitrogen released by soil microbial action has however been important to evolutionary success and must continue to be a key approach both through genetic modification and the construction of less leaky farming systems. Exploiting this is the basis of reduced input agricultural systems of which Organic and LEAF production systems are examples which are currently being used in Scotland. There are therefore current and potential future technological options for reducing GHG generation which need to be explored. Ultimately, however, these seem unlikely to be able to generate enough of a reduction to meet current targets, 80% by 2050. It is clear that, in addition to changes to agricultural practices, that change in food consumption and in behaviour related to food will be needed.

The Urgency for Action. Climate change is with us now. Regional temperatures have increased over the past 40 years most commonly as a result of increases in minimum rather than maximum temperatures. Climate change has contributed to current food supply problems although not in a major way. Its impact will increase with time and seem likely to be negative in regions which are water limited, which includes regions from whom we currently access some of our food but may be positive in regions where production is temperature limited such as Scotland.

Effects on crop production alone are unlikely to be the only or even the most important aspects of climate change. There are a wide range of adaptation options which may be available particularly if planning is commenced at an early point in time (Gregory and Ingram, 2008)¹⁵. Climate change legislation will potentially change the pattern of our agriculture and our food consumption. In addition it seems likely that Climate Change and the global cost of energy will have particularly important effects on our remote rural communities over coming years and so there is a clear need to better understand the relative contributions of geography and economics in relation to access to quality food. It is clear that were food production to be organised so as to reduce current needs for external sources of energy and to explicitly conserve carbon within the production system that it can make a significant contribution to the delivery of several current climate change targets.

Much of current food production is tied, as discussed above, to the use of nitrogen fertilisers and pesticides. Nitrogen supply represents one of the most

¹⁴ Wood M (1996) Nitrogen Fixation: How much and at what cost? BGS Occasional Symposium 30, 26-35.

¹⁵ Gregory PJ, Ingram JSI (2008) Climate Change and the current Food crisis, CABI Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, 3, 1-10

common limitations to maximum crop yields. Pesticide applications allowed the use of higher rates of nitrogen without the consequence of increased losses from pests, weeds and diseases. Current methods of arable production are however not the only options available.¹⁶ Current levels of production using such methods are a consequence of the investment in research to provide the appropriate chemicals and to integrate optimum use of soil resources with crop varieties bred to require resources of this type. While alternative systems of production currently result in lower levels of production they also generate fewer externalities. Potentially they have the potential for a smaller carbon footprint. There is thus significant potential to increase the productivity of systems which are not centred on the use of fossil fuel based energy demanding inputs. These may however be challenged to maintain current levels of yield. This seems likely because most alternative systems include the need to co-exist with other elements of vegetation and with animals such as insects so as to maintain bird populations. Failure to do this comprises significant direct and indirect externalities in current production systems. There are however significant new approaches to be followed. An increased emphasis on the use of soil micro-organisms has the potential to both increase the availability of soil nutrients and to improve crop capture of soil nutrients. (Atkinson 2009)¹⁷ For example mycorrhizal fungi have recently been shown to have an impact on crop water use through the provision of information to the crop rather than through a contribution to resource capture which has long been seen as the role of soil organisms.¹⁸

Impact on the Geography of Production. Climate change will significantly influence what food may be produced and where. Current information on the probable impact of Climate change suggests that in the future Scotland may be producing a wider range of crops than is currently possible although this may be limited by an increased need for water and issues related to the use of nitrogen. This is discussed further in sections 3.2 and 5.4 There are also issues related to what might be the optimum role for Scottish production potential within an EU approach to climate change.

Climate Change impact on other Parts of the Food Chain. Climate change is also a significant consequence of un-fair trade which too often drives environmental damage. Scotland has traditionally been supportive of Fair trade. Most major cities and towns in Scotland are Fairtrade cities or towns. It is clear that a food policy, which includes food security, has to be compatible with Climate Change Policy. Detailed issues in relation to the implications of

¹⁶ Atkinson D, Black K E, Dawson L A, Dunsiger Z, Watson C A , Wilson S A, (2005) Prospects advantages and limitations of future crop production systems dependant on the management of soil processes. *Annals of applied biology*, 146, 203-215

¹⁷ Atkinson D, (2009) Soil Microbial resources and agricultural policies. Pp 1-16 in *Mycorrhizas: Functional processes and ecological impact*, Ed C Azcon Aguilar et al Springer, Berlin.

¹⁸ Atkinson D (2006), Arbuscular mycorrhizas and the form and functioning of the root system. Pp 199-222 in *Microbial activity in the Rhizosphere* Ed KG Mukerji et al Springer, Berlin

climate change are discussed later in the Report (sections 3.3-3.4).

While climate change has the potential to have significant impact on primary production it is likely also to impact on other parts of the food chain. Food processing, distribution, catering and retailing are responsible for ¹⁹around 10% of total UK GHG production. They have there for a relatively similar contribution to primary production.

Food transport alone in the UK accounted for around 3.5% of GHG release. The relative contribution of transport varies between food commodities being relatively small for animal products and much higher for fruit and vegetables. Road transport is a significant element in the sources of GHG's. This is important to Scotland because of the significant distances over which food may need to be moved so as to reach our remote rural communities. While transport by air represents only 1% of the carriage of food it remains responsible for 11% of the generation of GHG's by the transport sector including that due to customer travel to food shops.²⁰ Climate change will impact on how we buy our food. Meeting climate change targets will require a reduction in car use and so may increase the drive to internet based shopping. (Section 5.5)

The refrigeration of food is responsible for the generation of around 3.0 -3.5% of UK GHG's with the domestic and commercial sectors being the cause of two thirds of this total. Refrigeration thus accounts for around 15% of the food total contribution. The retail and catering sectors are responsible for the generation of GHG's both directly in relation to their refrigeration and heating and lighting needs and indirectly through their role in encouraging travel to shop. It has been suggested that supermarkets per square metre are more energy intensive than other food shops although this intensity will be mitigated by considerations related to the intensity of food turnover. The trend to 24hr opening has increased energy use for refrigeration.²¹

Food wastes also make a significant contribution to GHG's. Around 18-20 million tonnes of food is wasted each year in the UK. Household food waste alone accounts for around 7million tonnes. Wasted food represents a waste of all the embedded emissions involved in production and allows an estimate of around 18million tonnes of CO2 from the household sector which represents 2% of total UK emissions.²²

¹⁹ Garnett T, (2008) Cooking up a Storm: Food, greenhouse gas emissions and our changing climate, Centre for Environmental Strategy University of Surrey

²⁰ Garnett T, (2008) Cooking up a Storm: Food, greenhouse gas emissions and our changing climate, Centre for Environmental Strategy University of Surrey

²¹ Garnett T, (2008) Cooking up a Storm: Food, greenhouse gas emissions and our changing climate, Centre for Environmental Strategy University of Surrey

²² Garnett T, (2008) Cooking up a Storm: Food, greenhouse gas emissions and our changing climate, Centre for Environmental Strategy University of Surrey

The current economic downturn combined with the higher cost of raw materials; higher energy/fuel costs, and higher production costs have resulted in a squeeze on food processors margins. This in its self may impact on the ability of this sector to respond positively to the need to change just how they do business. In considering the impact of food on GHG generation it matters that we do not focus exclusively on the agriculture sector but that we consider the potential contribution of the whole chain.

Recommendation

5) The current climate change targets mean that the agriculture of 2050 will be as different to current agriculture as current practice is to agriculture of the 1950's. We recommend the importance of using the current projections from the Intergovernmental Panel on Climate Change in a Scottish context to both reduce GHG emissions and to guide the research needed to take advantage of any positive implications for Scotland's agriculture.

2.3 Recent Trends in Food Prices

Global Prices of agricultural commodities rose sharply in 2006 and 2007 and continued to rise even more sharply into 2008 before falling from their peaks in recent months. Similar trends have been observed in the meat and dairy markets, as well as for food in general. While the FAO food price index²³, which is an aggregate measure of price movements of cereals, dairy, meat, oils and fats and sugar, rose on average 8 percent in 2006 compared with the year before, it increased by 24 percent in 2007 compared to 2006. According to the index, commodity prices reached their peak in June 2008 and have been falling steadily since then.

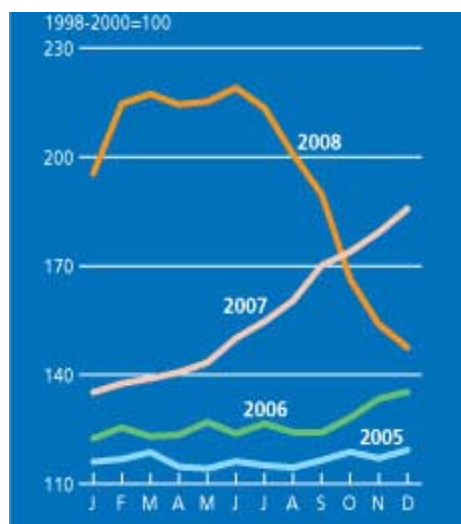
Recent large increases in commodity prices point to increased volatility and uncertainty in the current market environment.

²³ Food Price Index, FAO, <http://www.fao.org/worldfoodsituation/FoodPricesIndex/en/>

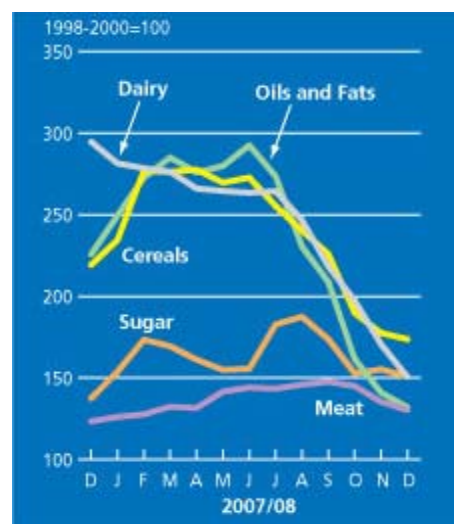
Figure 1 shows how commodity prices evolved since January 2005.

Figure 1

FAO Food Price Index Jan 2005 – Oct 2008



Food Commodity Price Indices Oct 2007 – Oct 2008

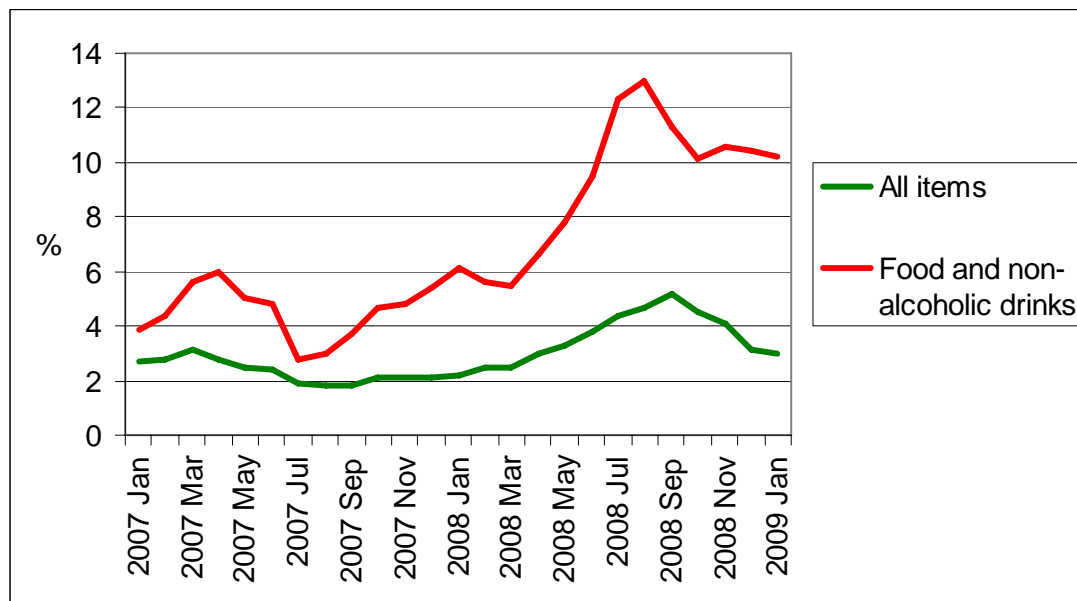


Source: FAO, 2008

Although the trends show a fast and consistent decline in global commodity prices in the last few months, the world food challenges have not disappeared and this trend may have been driven by slowing demand rather than recovering global stocks of commodities.

UK Figure 2 below shows the trend in the price inflation for the period of January 2007 and January 2009. According to Consumer Price Index, the food price inflation rate has stayed above the inflation rate for all items but the gap between the two rates has widened significantly since July 2007. In August 2008, the annual rate of CPI inflation for food peaked at 13%, over 7% higher than the rate for all items. Since August 2008, the annual rate of food price inflation has been on a downward trend but despite that, the difference between the two rates stayed at around 7% - a much wider gap compared to the start of the series.

Figure 2 Annual percentage change in Consumer Price Index on Food and All Items



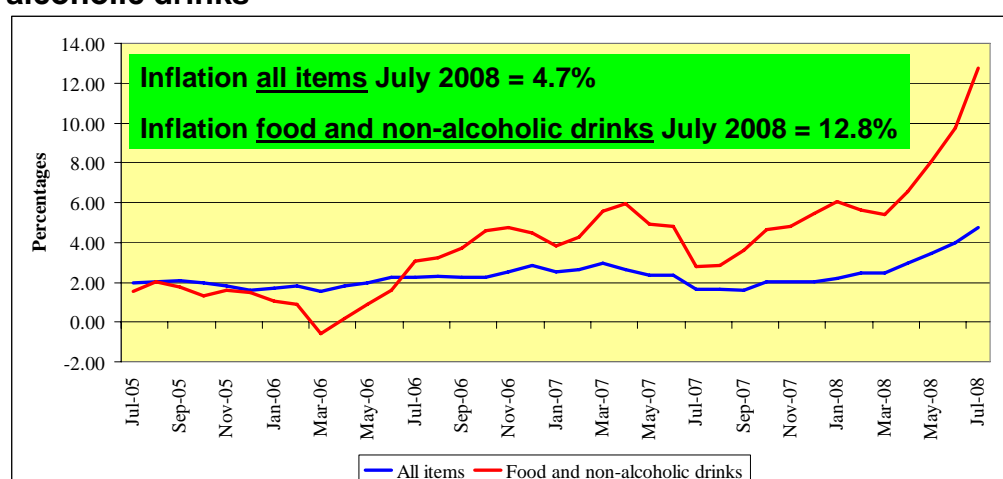
Source: Consumer Price Indices, Office of National Statistics

Scotland Figure 2 above provides an indication of the movement in prices across the whole of the UK. Whilst there is no official measure of price inflation in Scotland, a study by the Scottish Agricultural College²⁴ used data on Scotland-specific expenditure (from Expenditure and Food Survey, 2006) to derive a CPI type measure for Scotland. The findings show that overall inflation (all items) in Scotland has been consistently slightly below that of the UK (an average of 0.23 percentage points below the UK figure between July 2005 and July 2008), because of the difference in spending patterns.

There was a high rate of inflation in 'food and non-alcoholic drinks' in the summer of 2008 with the July figure in Scotland reaching 12.8 per cent, whereas the corresponding 'all items' inflation was 4.7 per cent. Again, the inflation pattern followed by 'food and non-alcoholic drinks' in Scotland closely resembles that of the UK. This is illustrated in **Figure 3**.

²⁴ Assessing the Effect of the Rise in Food Prices on the Purchasing Power of Consumers in Scotland, Reveoredo-Giha et.al., Scottish Agricultural College, 2008

Figure 3: Scotland: CPI Inflation – All items versus food and non-alcoholic drinks



Source: SAC

However, even within Scotland, different groups have experienced different rates of inflation. The expenditure structure of the 1st decile income group (the poorest) shows that the key components of the 1st (poorest) decile's expenditure are 'food and non-alcoholic drinks' (17.9 per cent, compared to 9.4 per cent for the 10th decile, the richest group) and 'housing, fuel and power' (19.6 per cent, compared to 8.1 per cent for the 10th decile).²⁵

Thus, the 1st decile is particularly hard hit by 'food' and 'housing, fuel and power' inflation and the 'all items' inflation rate for the 1st decile income group was above the overall Scottish inflation for most of the period under analysis. However, whilst during the period of July 2005 to July 2007, the difference was mainly due to housing, fuel and power costs, the divergence in the last few months is attributed to mainly to food.

²⁵ Deciles are created by splitting the population into 10 equally sized groups. Decile 1 is the 10 per cent of individuals with the lowest equivalised income, and decile 10 is the 10 per cent of individuals with the highest equivalised income.

Figure 4: Scotland – CPI Inflation: 1st (poorest) versus 10th (richest) deciles

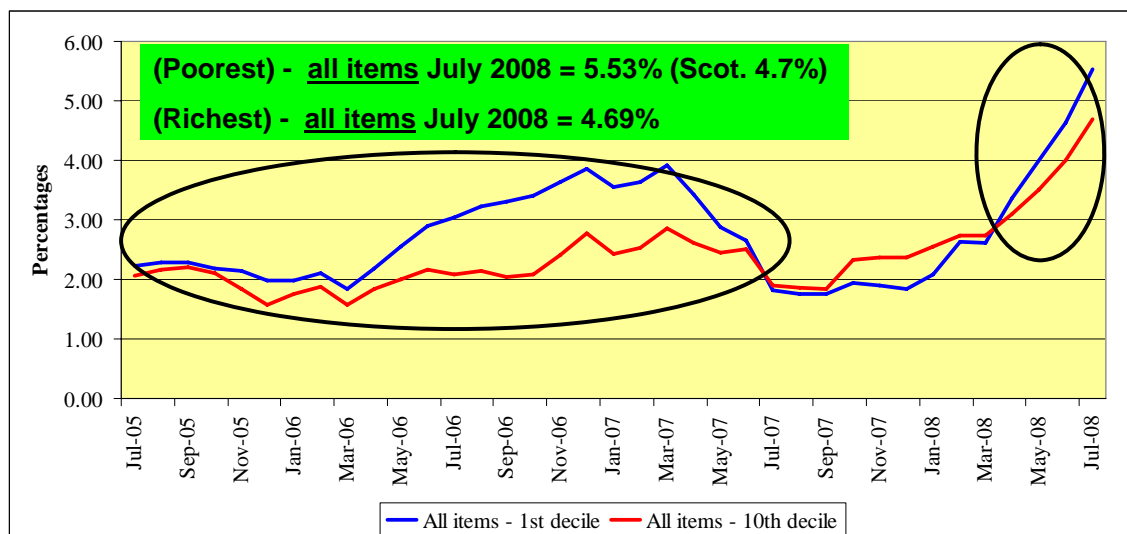
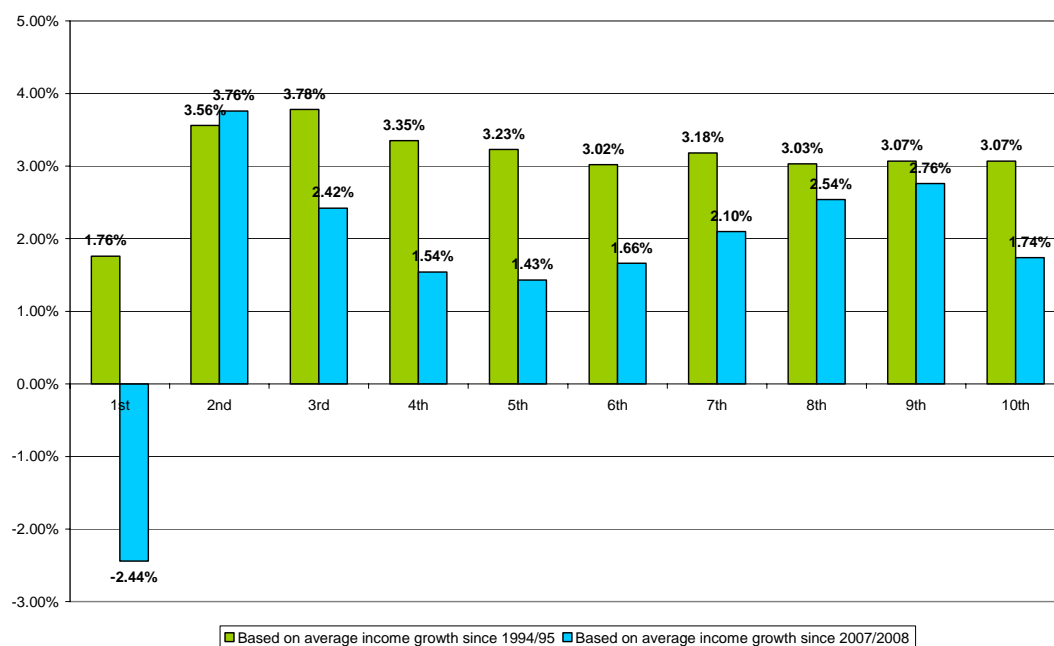


Figure 5 shows how real income growth may have differed across the ten deciles in Scotland assuming that income growth has been in line with average income growth in previous years with two different average growth rates considered. Adjusted for the rate of Scotland-specific CPI inflation, the real income growth rates show that the poorest decile experiences the lowest increase in income and this may have even been negative.

Figure 5 Real Income Growth in Scotland by decile 2007/2008



Source: SAC

Given that the above analysis is based on the UK, rather than Scottish prices, the same research study also looked into the differences between those. In

particular, it looked at how increases in food prices affected consumer purchasing power in Scotland by using a multiple retailer database to extract data on the evolution of weekly purchases by representative supermarket shoppers for the last two years. Table 3 compares the cumulative price inflation for Scotland and its regions with the UK prices from the same datasource for the period of October 2006 to September 2008.

For most products (with the exception of white fish and apples), price increases in Scotland have been similar to those in the UK. Whilst this could be due to the choice of products (as there are differences in products across the UK), prices in all Scottish regions show similar trends to the Scottish average which reinforces the findings.

Milk, salmon and beef are the only products prices of which showed higher growth in Scotland than in the UK. For all other products, prices show lower cumulative growth with the difference most prominent for white bread, fresh eggs and new potatoes.

Whilst the product selection is too small to draw conclusions on how Scotland's food prices compare to UK prices, the findings nevertheless confirm that the similarity in how these have evolved.

Table 3 Cumulative Inflation by Product and Scottish Region, 9-Oct-2006 to 22-Sep-2008 (Percentages)

Category	Regions			Scotland	UK
	Borders	Central Scotland	North Scotland		
Brown bread	42.4	37.2	35.4	38.3	38.5
White bread	39.0	36.1	37.0	37.0	53.0
Skimmed milk	28.1	29.7	29.6	28.7	
Semi skimmed milk	29.8	28.8	30.1	29.5	20.0
Whole milk	25.1	25.1	26.6	25.3	
Salmon (fresh and chilled)	-8.7	1.8	3.3	0.1	-1.6
White fish	-3.7	2.5	-3.1	-0.8	7.1
Fresh apples	3.3	1.7	3.1	2.2	20.3
Fresh eggs	39.5	39.6	41.8	40.4	56.7
Fresh new potatoes	36.2	..	28.9	29.9	60.8
Minced beef	41.6	25.8	22.7	26.1	19.8
Whole fresh chicken	20.8	28.4	26.1	27.6	39.6

Notes:

".." not enough purchases to establish a price

Source: Scottish Agricultural College, 2008

Recommendation

6) Scottish government should recognise the disproportionate impact of price rises in foods on the poorest in society. We recommend the importance of appropriate provision to protect such groups in times of rapid price rises such as those seen in 2008.

2.4 Food Quality, Diet and the Health of Scotland

What is Food Quality? Food quality incorporates a wider range of issues than those which are normally considered in discussions of diet and health. Some of these were identified by an earlier report from the Church of Scotland.²⁶ The types of food consumed influence interactions in families. The presentation of food impacts on what is consumed and whether this is part of a shared or a solo activity. Quality thus impacts on what becomes food waste which can represent as much as one third of the total amount of food purchased.²⁷ The functioning of community bodies in the supply of food have major impact on social interactions in just the same way as Post Offices have been seen to have a significant role as a community meeting place. In addition the role of all of the chemical, biochemical and genetic components of food is currently unknown but increasing. For example an appreciation of the important role of components such as phenolic compounds in fruits is very recent. Such issues are at the heart of debates between the organic farming and conventional producers over what ought to define food quality. It is important therefore to recognise this as an evolving area.

Diet and Health. Food quality thus incorporates a wider range of issues than those which simply relate to diet and health. Many of these wider issues are detailed elsewhere in this report. Issues which relate food quality to communities and families are detailed in section 2.5 while those linked to how food is produced and the full costs associated with its being traded are covered in sections 3.3 and 3.5 respectively. There are however a number of important aspects related to interactions with diet and health and these are discussed here.

Scotland has a longstanding recognition of the need to tackle poor diet and obesity which led to the publication of the Scottish Diet Action Plan in 1996²⁸. The action plan contained a set of Scottish Dietary Targets which comprise population level nutrient and food based targets, initially set for achievement in 2005 and now extended to 2010 (Table 4). Overweight and poor diet continues to contribute to high rates of chronic diseases such as heart

²⁶ Church of Scotland (2007) Fair trade in food: The development of policy which is fair to consumers and to producers in the UK and the developing world. CofS S, Edinburgh

²⁷ Ambler-Edwards, S, Bailey, K, Kiff, A, Lang, T, Lee, R, Marsden, T Simons, D and TIBBS, H (2009) Food Futures: Rethinking UK Strategy, A Chatham House Report, Chatham House.

²⁸ *Eating for Health: A Diet Action Plan for Scotland.* (Scottish Office 2006)

disease, type 2 diabetes, high blood pressure, stroke and certain types of cancer. Large socio-economic inequalities exist in relation to the prevalence of chronic disease in Scotland²⁹ and this may be exacerbated by differences in food intake⁵.

The Scottish Government has recently published an action plan (Healthy Eating, Active Living, 2008) to tackle issues of poor diet and physical inactivity which may result in overweight and obesity³⁰. This action plan aims to build on current Scottish objectives that include targeted actions towards those at greatest risk of inequalities, and increasing access to healthier food choices particularly for those on low incomes. Key life stages have also been identified in which to act and this includes addressing inequalities in the early years through the appointment of an Infant Nutrition Co-ordinator for Scotland and the development of the Healthy Start scheme. There is also a commitment to identifying and addressing the nutritional needs of older people in the community.

The 2008 Scottish Government National Food Policy discussion document 'Choosing the Right Ingredients'³¹ has carried forward themes highlighted in the Review of the Scottish Diet Action Plan⁵ about closer integration between the policy goals of improving Scotland's diet-related ill-health and those of social justice and sustainable development.

A review of progress towards the Scottish Dietary Targets indicated that there has been little change in overall diet since 1996³². Whilst some improvement has been made towards reducing total fat, there has been no change in the intake of saturated fat, fruit and vegetables, bread, oil-rich fish and breakfast cereals. The data also indicated an increase in the consumption of added sugars.

Diet and Inequalities: Whilst there are few differences in intakes of nutrients contributing to total energy intake, such as fat and sugar, there are marked differences in the types of foods consumed between affluent and deprived areas. Deprived households consume significantly less fruit and vegetables, brown/wholemeal bread, breakfast cereals (all types and wholegrain/high fibre) than those in affluent households. Similar trends were found in a recent

²⁹ Scottish Government's Task force on tackling inequalities: *Equally Well Report of the Ministerial Task Force on Health Inequalities June 2008* (<http://www.scotland.gov.uk/Publications/2008/06/09160103/0>)

³⁰ *Healthy Eating, Active Living: An action plan to improve diet, increase physical activity and tackle obesity (2008-2011)* (<http://www.scotland.gov.uk/Publications/2008/06/20155902/0>)

³¹ Choosing the right ingredients: The Future for Food in Scotland: Discussion Paper

<http://www.scotland.gov.uk/Publications/2008/01/23111646/0>

³² *Review of the Scottish Diet Action Plan (2007)* (<http://www.healthscotland.com/scotlands-health/evaluation/policy-reviews/review-diet-action.aspx>)

UK survey of low income groups³³. Such differences in food consumption may contribute to lower intakes of omega-3 fats, fibre, vitamins and minerals in deprived as compared to more affluent households.³⁴

The Scottish Government's report *Equally Well* (2008)³⁵ highlighted the importance of social justice and tackling health inequalities. It noted the usefulness of statutory and regulatory approaches (e.g. farming and trade policies, food labelling regulations, addition of vitamins to margarine and folate to flour) to improve the whole population's diet and health and ensuring people most at risk of poor health outcomes are included.

Diets in remote rural localities: To date, there is no evidence that people living in remote rural localities have poorer diets. Indeed there is some evidence to suggest that fruit and vegetable intake may be higher in the remote rural localities in Scotland along with increased intakes of brown/wholemeal bread, breakfast cereals (all types and wholegrain/high fibre), and oil-rich fish,³⁶. FSAS-funded work is currently underway to further explore potential differences between urban and rural dietary intakes.

Diets of children in Scotland in relation to deprivation: The Scottish Dietary Targets specified that children limit consumption of sugars to no more than 10% of daily energy intake and in 2005, FSAS commissioned a survey to measure intake of added sugars among Scottish children³⁷. The data revealed that added sugar intakes were considerably higher than recommended. Whilst total sugar intake did not differ by area, the results showed that children living in the more deprived areas consumed significantly more added sugars. Treatment for dental decay was associated with deprivation, with the most deprived children twice as likely to have had treatment for decay. Added sugar intake was significantly higher in children who had received treatment for dental decay. Not surprisingly the main contributors to added sugar intakes were sugary soft drinks, biscuits, cakes, pastries and confectionery.

Data from both the Scottish Health Survey³⁸ and the Survey of Sugar Intake among Children in Scotland show that children in the most deprived areas

³³ Nelson M, Erens B, Bates B, Church S and Boshier, T. (2007). *Low income diet and nutrition survey*. Food Standards Agency, London

³⁴ Summary of the main issues arising from the Retailing food and health inequalities meeting organised by Scottish Government (Health and Wellbeing Directorate) and the Food Standards Agency Scotland
12th March 2008

³⁵ *Scottish Government's Task force on tackling inequalities: Equally Well Report of the Ministerial Task Force on Health Inequalities June 2008*
(<http://www.scotland.gov.uk/Publications/2008/06/09160103/0>)

³⁶ Laura Nisbet, PhD student at the University of Edinburgh Business School.
Thesis submitted Jan 2009

³⁷ *Survey of Sugar Intake in Children in Scotland (2008)*
<http://www.food.gov.uk/scotland/scotnut/scotsug>

³⁸ *Scottish Health Survey (2003)*
<http://www.scotland.gov.uk/Publications/2005/11/25145024/50251>

more frequently consumed foods high in fat, salt and/or sugar. Fruit and vegetable consumption also varied by socio-economic group, with those in highest income quintile eating more than those living in the deprived areas.

Obesity: Data from the 2003 Scottish Health Survey³⁸ show no clear correlation between deprivation and obesity across the population. Whilst there is a pattern of increasing levels of obesity with increasing deprivation amongst adult women, (from 20.7% obesity in the least deprived areas to 31.8% obesity in the most deprived), overall, there is no clear evidence linking patterns of obesity with inequalities.

Table 4: Scottish Dietary Targets
(The Scottish Office Department of Health 1996)

Fruit & vegetables	Intake to double to more than 400grams per day
Bread	Intake to increase by 45 % from present daily intake of 106 grams, mainly using wholemeal and brown breads.
Breakfast Cereals	Average intake to double from the present intake of 17 grams per day
Fats	Average intake of total fat to reduce from 40.7% to no more than 35% of food energy. Average intake of saturated fatty acids to reduce from 16.6% to no more than 11% of food energy
Salt	Average intake to reduce from 163 mmol per day to 100 mmol per day
Sugar	Average intake of non-milk extrinsic (NME) sugars in adults not to increase. Average intake of NME sugars in children to reduce by half i.e. to less than 10% of total energy
Breastfeeding	The proportion of mothers breastfeeding their babies for the first 5 weeks of life should increase to more than 50% from the present incidence of around 30%

Total complex carbohydrates	Increase average non- sugar carbohydrates intake by 25% from 124 grams per day, through increased consumption of fruit and vegetables, bread, breakfast cereals, rice and pasta and through an increase of 25% in potato consumption
Fish	White fish consumption to be maintained at current levels. Oily fish consumption to double from 44 grams per week to 88 grams per week

Recommendations

7) Improvements in the health of Scottish consumers are everyone's business. Health is too important an issue to be considered a low-priority driver or something that is marketable only, as designer health foods, to the 'worried well.' Health outcomes extend beyond 'niche' health product marketed in a few square feet of a shop or as healthy choice on a foodservice menu. We recommend that health and social justice be given increased status as policy drivers to ensure that they are integral rather than incidental.

8) As some less healthy features of Scotland's diet are deeply rooted in our culture we suggest the need for different and more positive messages to be sent. These should stress the advantages of a changed diet: better quality of life, longer good health, less strain on healthcare services and improved mental wellbeing.

9) There are marked differences in the types of foods consumed between affluent and deprived areas. Children living in deprived areas are particularly at risk of poor diet. We recommend the need for new approaches to be taken to finding ways of encouraging and supporting healthy eating particularly for low income individuals and families.

10) The Scottish Government and NHS Health Scotland, working in partnership need to consider how nutritional advice, translated into inequality terms, might be formulated to provide practical guidance so as to help targeted consumers meet dietary goals such as the increased consumption of fruit, vegetables and fish and the reduction of saturated fats.

11) Efforts are required to dramatically and quickly increase the sales and distribution of fruit and vegetables. Scotland should set and vigorously market rising targets to reinforce the step-change that is needed.

12) As part of their total offer supermarkets are increasing their ranges of 'saver' and 'economy' lines of processed foods to attract those on a tight budget. Providing food for those whose food budget is limited is important. It is also important to ensure that economy processed foods do not contain higher levels of saturated fat, salt or sugar. We recommend the need for a process to keep the nutritional status of economy lines under review.

13) We recommend the need for more research and development to ensure that Scotland is at the forefront of emerging markets demanding safe, healthy, sustainable, locally sourced food of high quality, which is also convenient to buy, cook and serve.

14) Companies and agencies working throughout the food supply chain need to work together to help break the cultural reinforcement of poor diet. We recommend the importance of partnership with the retail sector as the basis of future research needs.

15) It is clear that there remain some in our society who are touched or engaged by few initiatives, e.g. the homeless, and so we recommend the need for research to find out what initiatives and methods of engagement would help specific vulnerable groups get better access to healthy food.

2.5 The Importance of Food Quality in Relation to Communities and Society

Food Quality: wider Issues. Our definition of food quality is a key issue in respect of all of affordability, access and security. While it is possible to see food quality only in respect of bulk chemical composition e.g. the content of protein, fats and carbohydrates or microbiological/chemical safety we think that this would be inadequate. To do so would be to ignore the social and structural impact that food has always had and which is attested to by the emphasis that it is given in Christian Jewish and Muslim scriptural texts. If, however, we consider food quality in environmental and social contexts then definitions become broad. Never the less it is important to ask whether food can be considered as being of high quality if its production has involved significant damage to the environment or if it has minimised opportunities for social enhancement or family cohesion.

We can ask if food can be considered as a quality product if it fails to exercise its traditional role as a significant element in the glue which holds together family units and societies. The breadth of such questions suggests that there would be value in establishing food quality as a public good and as one of the national values through which we characterise our society. These questions are addressed here as part of our consideration of the importance of a

minimal environmental impact (section 2.2) as an element of food security (Section 3.3) and as part of the relationship between food and the cohesiveness of communities and family units (section 4.2).

A community may be both a geographical and a social entity or a combination of both. Geographically it has impact on access to food particularly in rural situations. Socially it influences what are considered to be the important elements of an acceptable diet particularly in inner city areas. Issues such as these ask whether we have the mechanisms to deliver food, information or education to local communities. Do the mechanisms exist to permit local decision making in an area such as this? How could we get community buy in to any suggestions in relation to local production or processing? Should the focus of current debate explicitly relate to current health issues such as obesity and diabetes or are there more fundamental issues of which these are merely the current indicators of a significant disfunctionality? These questions frame the short and long term dimensions to these issues.

Consideration of the role of communities raises the issue of the importance of personal and community food production and questions related to community provision for such production. Personal production of food is unlikely to be able to provide a large proportion of the food required to feed Scotland.

Nevertheless it is vital in relation to the change process. It promotes a widened base of thinking about food related issues and so it is important to education about the components of food security and what is involved in the production of food. It re-establishes a critical link between citizens and the land. As a result it seems important for towns and cities across Scotland to incorporate food production through provision of allotments and community plots and the facilitation of garden sharing schemes as part of their planning in relation to both food sovereignty and climate change. In addition because the principle foods which are home produced in this way are fruit and vegetables this has shown it's self to be a key means of promoting the consumption of these foods which are currently under represented in the diet.

Yield of individual vegetable species vary greatly from garden to garden. Using figures for normal commercial production³⁹ an allotment with an area of 20x10 m divided so as to use 75% of the area for vegetables and the remainder for fruit could there for produce around 450 kg of vegetables and 40kg of fruit per year. If 1% of our estimated 1.58 million households⁴⁰ were to produce in this way this would deliver around 8,000 tonnes of vegetables and 650 tonnes of fruit per year which although small relative to our total need (Table 8) is never the less a valuable contribution to our increased need so as to meet dietary targets.

It also encourages exercise and so the meeting of the exercise targets identified in the Healthy Eating Active Living Plan.⁴¹ There are thus a wide

³⁹ SAC (2008) The farm management handbook

⁴⁰ Anon (2006) Rural Scotland Key Facts. Scottish Executive, Edinburgh

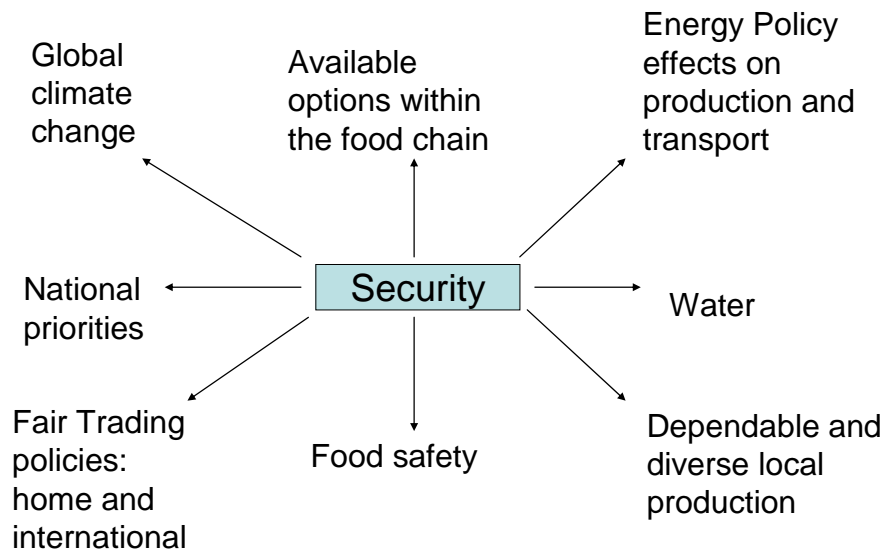
⁴¹ Anon (2008) Healthy Eating, Active Living, Scottish Government, Edinburgh.

range of locally based initiatives which local authorities can take to promote such activities.

Recommendation

16) Local authorities should be urged to consider food production as part of their future planning and contribution to Food Sovereignty. This could include actions such as through the provision of allotments and community plots and the development of garden share schemes.

3 FOOD SECURITY



What is Food Security? Food security as indicated above has a number of wide reaching elements the most important of which we attempt to discuss here. The Food and Agriculture Organisation define food security as “when all people, at all times have physical and economic access to sufficient safe nutritious food to meet their dietary needs and food preferences for an active healthy life” ⁴²

While there are significant food security issues for the individual it seems likely that its principle impact will be on issues at the national and international levels and so this is the primary focus which they have received here.

More specifically Defra considers the different levels of food security as:

- Individual or household food security which relates to income access to resources and affordability of food.
- National food security relates to the ability of a country to consume sufficient food even in the face of severe disruptions to the supply chain

⁴² FAO (1996). *Rome Declaration on World Food Security and World Food Summit Plan of Action*. World Food Summit 13-17 November 1996, Rome.

- Global food security is concerned with the ability of the world's agricultural producers to meet global demand and the efficiency and effectiveness of trading and distribution systems

Defra reports (2008) that “despite recent price increases the UK enjoys high levels of food security due to the small percentage of income spent on food and wide availability of food in stores.”

However, a recent Chatham House study concluded⁴³ “what we had thought of as an abundant food supply is anything but. Western societies, in particular, have tended to take their food supply for granted. The global system as currently operated will reach breaking point unless action is taken”. The overall pressures identified by Chatham House are summarised in Box 3.

Box 3 The Chatham House Fundamental Pressures

The Chatham House report lists seven fundamental pressures which affect global food prices and food production and therefore food security

- **Population:** Increase demand from a rapidly rising world population with estimates of nine billion people by 2050 with 95% of the population growth in developing countries
- **Diet:** The effect of “nutrition translation.” As a country becomes more affluent there is a shift away from traditional foods (e.g. crops based) to an increasing consumption of meat and dairy products refined and processed foods. This results in an increased demand of animal feed, water and grazing land and is projected to continue to cause pressure on world food and feed crop prices.
- **Energy:** Energy dependence of current systems and related factors such energy policies to reduce energy consumption, links to fertilisers, transport costs, biofuels,
- **Land:** The potential to increase the amount of land available to agriculture is limited which suggests that output per hectare would need to be increased to meet the rise in population. There are a number of factors which this relies on (e.g. quality of soil, skilled labour) which are a cause for concern.
- **Water:** Increase in global stresses on available water for human consumption relating to demand from an increased population, change in diet, reliance in some instances on non-sustainable sources, predictions for climate change.
- **Climate Change:** Effects on crops already attributed to climate change include disruptive weather events, falling yields changes and spread of crop/livestock disease, changes in water supplies. These are expected to continue and in some cases get worse. Predictions are that world agricultural GDP output will decline by 16% by 2020.
- **Labour:** Increased urbanisation is resulting in a decreased rural population able to produce primary produce. Other factors include suggestions that agriculture is not sustainable while it relies on poorly paid workers in temporary employment.

⁴³ Ambler-Edwards, S, Bailey, K, Kiff, A, Lang, T, Lee, R, Marsden, T Simons, D and TIBBS, H (2009) Food Futures: Rethinking UK Strategy, A Chatham House Report, Chatham House.

The study also identified a number of future-related observations about food.

1. The absolute level of food production worldwide is rising.
2. Despite this, food price has been rising for the last two years
3. Although absolute food production is rising, world population growth is outstripping the increase.
4. Measured in terms of days of consumption, world grain stocks have now fallen to half the levels of the mid-1980s and are lower than at any time since the 1970s.
5. In the short run food prices may well fall or be volatile, but the underlying supply shortfall must be confronted sooner or later.
6. Systemic change will eventually be necessary to 'square the circle' by halting the decline in per capita food provision.

The Chatham report concludes that if these pressures are left unaddressed they "threaten to lead to a significant deterioration in the balance between global demand for food and the capacity of world agriculture to supply."

This document is primarily concerned with national food security as it pertains to UK. However, since national food securities in Scotland and in the rest of the UK are linked to global food security the points described in Box 4 have the potential to affect Scotland.

Recommendation

17) The recent Chatham House report details how a series of world forces are likely to impact on the UK. We support the conclusions of this study and recommend the need to evaluate how their impact on Scotland might differ from that on the UK as a whole and to plan appropriately.

3.1 The Contribution of the Food Supply Chain

Key Issues Constructive debate about Scotland's food security depends on asking a series of key questions. These include: Where does our Food currently come from? How robust is the current Scottish food system? What are its main strengths and weaknesses? What should be the continuing role of the supermarkets? How might value added activities in the food sector be increased? What proportion of the food we consume should we aim to produce in Scotland? We address some of these issues below.

Where our Food comes from. Trade in food is a major international activity and it is increasing. In recent decades trade in food has increased by 550%

over a period when total production increased by 320%. ⁴⁴The UK sources 55% of its food imports from the EU⁴⁵; with no single country accounting for more than 13% (Defra)⁴⁶. This suggests that our supply chain is founded on production in 'safer' countries in terms of their robustness. However this total masks a high level of reliance on non EU sources for fruit, animal feed and fertilizers ⁴⁷(Table 5). It also demonstrates how influential EU policy is on our supply chain.

Table 5 The source of UK food, feed and fertilisers⁴⁸

Component	Source		
	UK	EU	Rest of World
Food	48	29	23
Animal feeds	81	5	14
Soya	0	18	82
Non-UK Fertilizers		68	32

If the countries from which we purchase food are limited in number then so to an even greater extent are where individuals obtain food. According to TNS Worldpanel, in December 2008, the four supermarkets (Tesco, ASDA, Sainsbury's and Morrison's) accounted for 71.5% share of the food retail market in Scotland. As a result the supermarket sector is pivotal to both national and individual food security and to any attempt to make changes to the supply chain. This situation is however not unusual for the EU. Only in Italy and Greece and in a number of the new entrants to the EU such as Poland is the share of the food market controlled by major companies less than in the UK. In addition our existing retailers have a good record on national and local sourcing. For example, in the year ending 2006, 100% of eggs, 100% of milk, 90 % of fresh chicken, 89% of beef, 70% of lamb and 96% of carrots sold in major supermarkets were all produced here.⁴⁹

Additionally, over recent years our supermarkets have been effective at sourcing a widening range of products at prices which have fallen in real terms. Supermarkets have done this by simplifying their means of sourcing and distributing food. They have also improved the robustness of their chains through investment and working closely with their suppliers. Sophisticated traceability systems and co-operation with supplier's means that problems such as contamination are minimised so that the chain can react quickly to

⁴⁴ WHO (2003) Food and health in Europe: A new basis for action. WHO Regional publications Europe series no 96

⁴⁵ Ambler-Edwards, S, Bailey, K, Kiff, A, Lang, T, Lee, R, Marsden, T Simons, D and TIBBS, H (2009) Food Futures: Rethinking UK Strategy, A Chatham House Report, Chatham House.

⁴⁶ Defra (2008) Ensuring the UK's food security in a changing world, Defra, London

⁴⁷ Ambler-Edwards, S, Bailey, K, Kiff, A, Lang, T, Lee, R, Marsden, T Simons, D and TIBBS, H (2009) Food Futures: Rethinking UK Strategy, A Chatham House Report, Chatham House

⁴⁸ Ambler-Edwards, S, Bailey, K, Kiff, A, Lang, T, Lee, R, Marsden, T Simons, D and TIBBS, H (2009) Food Futures: Rethinking UK Strategy, A Chatham House Report, Chatham House

⁴⁹ British Retail Consortium

issues such as animal disease. Through contingency planning the supermarket supply chain can react to interruptions in supply. For example, when the primary source of long grain rice (the USA) experienced problems with GM contamination the retailers were able to switch to alternative suppliers.

However, current reliance on 4 major retailers can increase vulnerability though the ability to act against a small number of companies. In times of changing pressures it is critical to future security to assess if a greater number of options would enhance our food security. To this extent there would seem to be an important need to better understand the contribution and the importance of small scale producers and alternative supply systems.

One of the weaknesses in the supermarket dominated chain, which is based on a lean inventory system, is where the interruption is outside the retailers' control, For example, industrial action such as fuel strikes, where despite planning there will be problems without Government intervention.

Externalities and Challenges. In addition the workings of our current food supply chains have significant externalities both in Scotland and in the developing countries including environmental degradation; especially in developing countries, continuing malnutrition (which appears both as a result of an inappropriate diet leading to obesity and an inadequate diet in the food poor), commodification of animals and excessive pressures on agricultural producers in the UK and overseas.⁵⁰ Some of these “costs” are neither sustainable nor compatible with Scotland’s wider national aspirations and they have substantial carbon costs.

It is important to ask what the challenges Scotland faces in the future are. Those with the greatest potential impact on our food security in relation to the supply side of the food system seem to be:

- **Water Availability:** This will be a major challenge as international demand for water increases coupled with the impact of climate change. It matters to Scotland because of the extent of our food imports, especially of fruit and vegetables. Some action has been taken in the processing and retail sectors but more focus is needed on improved use of water. We believe that consumers are some way off an understanding of the importance of water use and the impact of various agricultural systems on water consumption. It is difficult, currently, to see how consumer demand could influence production to improve water availability. This means that improvements will rely on the supply chain working together, without a clear added value to the producers. It is more likely that the economic cost of water will have an impact on demand through higher prices;

⁵⁰ Church of Scotland (2007) Fair trade in food: The development of policy which is fair to consumers and to producers in the UK and the developing world. CofS S, Edinburgh

- **Farmed land:** There will be challenges from the environmental impact of land management. Agriculture, fishing and forestry will always have large environmental footprints. Nevertheless, we believe policy makers need to give sufficient weight on food production compared to environment issues;
- **Pesticide use:** The EU is currently considering the fate of a number of commonly used pesticides arguably for food safety and environmental reasons. If bans come into existence the short to medium term, impact on disease on crops within the UK are uncertain;
- **Fish stocks and aquaculture:** It is clear there will be increasing pressure on fish stocks in the future. There are several challenges for Scotland. Firstly, can we increase alternatives to current favourites that are under pressure, such as promoting less fashionable species? Secondly, can we increase farmed species, which can be successful but can bring their own problems such as disease and adverse impact on the environment? Finally, can we manage our existing stocks in a more sustainable fashion to ensure their long term future? In all of these areas, the Scotland has made progress and we will see further activity by retailers to promote alternative species and support schemes such as the Marine Stewardship Council, but it is difficult to see what difference these will make in global terms, unless others also act. Again, as with water, there is a need to make these issues relevant to the consumer;
- **Science base:** We believe it is important that Scotland and the UK continues to invest in our science base to ensure we are able to improve our supply chain, in areas such as climate change adaptation, food waste management, disease control and sustainable farming. Consideration should also be given to new technologies (e.g. nanotechnologies, animal cloning) and their potential impact on the supply chain along with consumer perceptions;
- **Consumer Trends:** It is also important to ask what trends are likely to emerge on the demand side of the food system in the UK and what use could be made of local food networks?

We predict consumer demand for these alternative food systems will continue to evolve in future years. There will continue to be more interest in the provenance of our food, its production and sourcing, but these will still lag behind the key drivers of consumer choice, taste and price. The key issue, as graphically demonstrated in the current market, is value, which doesn't preclude issues of provenance but means they must be clearly appreciated by consumers alongside price.

One interesting impact of the current financial problems and temporarily higher prices has been an increase in cooking from scratch and an appreciation of the value of food. If this continues, supported by increased knowledge of cooking we could see an increase in

interest in the sourcing of food and food knowledge.

Genetically Modified Foods. Any current discussion of the food supply chain must consider the issues posed by the cultivation of Genetically Modified foods in much of the world.⁵¹ Production using GM varieties covered 114 Million Ha of farmland in 2008. However 90% of this area was in just 4 countries and so 93% of world food production does not use GM technology.⁵² GM crops remain largely restricted to maize, oil seed rape, cotton and soya. Of these only oilseed rape with an area of 34 kha is a significant crop in Scotland (the maize area in 2008 was 909 ha).

Never the less the role of GM cropping is making it difficult to source components of the diet, and to an even greater extent the components of animal feeds, such as Soya from countries or regions which remain GM free. Soya is found in around 60% of processed foods. It is the principle protein component of many animal feeds. The UK imports over 2 millions tonnes of soya annually. The proportion of the soya crop which uses GM varieties is high in many of the major producing countries. It is estimated that 89% of the US crop is GM and 98% of crop from Argentina and over 50% of the Brazilian crop. 75% of food products in the USA now contain some GM ingredients.

We depend on imports from outwith the EU for soya which is a significant component of most of our processed foods and of our animal feeds, especially those fed to poultry, this is a real concern. (Table 5).

Indeed given the extent of our soya imports and the countries from which they are obtained it must be questionable as to whether all the nominally GM soya which enters the UK for use in animal feeds is really GM free. The extent to which a GM free food base can be sustained without an increase in production in areas over which we have greater control through specific trade agreements is also debateable. Maintaining non-GM product identity is in any case likely to become increasingly more expensive and so may require a revisiting of earlier decisions so as to re-emphasise the previous decisions and put in place mechanisms for monitoring the GM status of all imports or to reconsider policy options.

The GM Issues The use of biotechnological methods in respect of foods has raised issues which have not been evident in their use in other sectors including pharmaceuticals. This seems to be the case even in the USA. While most US production of soya is now of GM varieties to date no efforts have been made to commercialise GM rice varieties. The basis of this is consumer reaction.

In contrast to soya which is always used in a processed form rice is little processed prior to consumption which leads to a closer identification with the

⁵¹ Gomez-Barbero et al 2008 Nature Biotechnology 26, 384-6

⁵² International assessment on agricultural science and technology for development report august 2008

basic food product.⁵³ The ethical issues related to GM foods are today essentially just as they were when summarised by Bruce and Bruce and their co-workers a decade ago.⁵⁴ They identified the key issues as being the extent to which those who were concerned based that concern on inherent or intrinsic ethic stand points which were unlikely to change or on consequential ethics which might be alleviated by alterations in practice.

For example many early GM varieties contained, as a consequence of the transformation process, resistance to the antibiotic Kanamycin. Consequential ethics would lead to an objection to varieties containing antibiotic resistance. As a result later varieties were made with out the need for a Kanamycin marker so removing this consequential objection. Many consequential objections remain.

For example many studies, including the UK Governments large scale field evaluation of oil seed rape and maize have shown that current GM crops do influence biodiversity. Changes of this type, even had they been positive would however have no impact on intrinsic objections which tend more to be based on objections to the movement of genes across long evolutionary distances or to the role of the technology in increasing a move to intensive production systems with low biodiversity or the effect of placing key levels of control of domestic agriculture in the hands of a very small number of major international biotechnology companies

The recent IAASTD study confirmed that issues related to corporate control of intellectual property, creation, development and use remained major concerns and that current investment was not focussed on the needs of the poor. It must remain a matter of concern that most of the genes which might aid the alleviation of the consequences of climate change are under patent control by the major international biotechnology companies. At least 55 patent families of around 532 genes which could aid adaptation to abiotic stress have currently been filed on a near international basis by the nine largest Biotech firms.⁵⁵

Public Opinion on GM Foods Within the EU as a whole there remains significant opposition (58%) to the use of GM crops.⁵⁶ While opposition to the use of GM Technology varied, being highest in Slovenia (82%) positive support was never higher than 35% (Netherlands) and in most countries was around 20%. The one EU country with significant experience of the use of GM crops is Spain⁵⁷ Recently published results based on trials of Maize resistant

⁵³ Korth KI, Wailes EJ Clark JR Correll JC, (2007) Public perception and technological approaches to crop protection in the south eastern USA Proceedings XVI International crop protection congress pp160-1

⁵⁴ Bruce D and Bruce A (Eds), (1998) Engineering Genesis: The ethics of genetic engineering in non-human species. Earthscan, London.

⁵⁵ ETC (2008) Patenting the Climate Genes and capturing the climate agenda. ETC Communiqué, 99.

⁵⁶ EU (2008) Attitudes of European citizens towards the environment, European Commission.

⁵⁷ Gomez-Barbero M, Berbel J, Rodriguez-Cerezo E (2008) Bt Corn in Spain-The performance of the EU's first GM crop. Nature Biotechnology 26, 384-386.

to European corn borer showed that the GM variety out yielded conventional varieties and resulted in growers receiving a greater net return and a reduction in insecticide use. In general GM varieties have not been associated with yield increases. Concern over the potential impact of corn borer was the main reason for adoption. In the area of Spain where yield responses were greatest the price of the GM seed was increased by 20% compared to its price in less responsive areas.

Fair Trade and the Food Chain Fair trading policies both at home and internationally will be important to the correct balance between home production and importing from developing countries and the EU. Both in Scotland and in the developing world food will only be produced and so be available if in the short, medium and long terms production is profitable. Trading policy is thus important to securing future food supplies.

Food and health are current Scottish priorities for investment but they will need to remain so for the foreseeable future if the radical changes which are at the heart of linking food production to reduced green house gas production and using it as a means of improving national health are to be successful.

Recommendations

18) Food security is a complex subject and so it is important that Government and consumers identify the need for different aspects of food security to be assessed and addressed separately often within the context of major policy initiatives such as climate change mitigation, health improvement through diet, increased energy security, and land use allocation for food production. A Scottish food security policy must in total contain elements relating to climate change, water, biodiversity and eco-systems, energy, population growth, land, soil, labour and diet and health.

19) There is a need to quantify the impact of factors such as those identified here on Scottish food security and to evaluate the extent to which there is potential for local action

20) While home production provides a baseline for the national supply of healthy food the efficient workings of the market are also important to securing our food supply. Barriers that prevent markets from functioning properly, such as inadequate consumer information on food sourcing policies and production conditions, should be removed.

21) Food system vulnerability to climatic shocks can be reduced by increased food production (technology) and improved distribution (infrastructure), There is a clear need to better understand the contribution of all of these to food shocks

3.2 The Potential for Action by Scotland

There are a clear range of actions which if taken at a Scottish level are likely to have a significant impact. Dependable and diverse local primary production and processing are likely to give a degree of isolation from global forces. Improved resilience leads to improved security, and so an audit of growing, processing and manufacturing capability covering all aspects of the food chain would help to produce a better picture of how Scotland is currently placed and establish what action is required at a Scottish level.

Current Scottish Food production. The current production of agricultural crop commodities in Scotland in 2008 is summarised in Table 6 and current production of fruit and vegetables in more detail in Table 7.

In the last decade the area of vegetable production has increased but the area of fruit decreased. Not all of the Scottish production which might have been used as human food is used directly in this way. A significant proportion of Scottish wheat goes into distilling and barley to make animal feeds. In addition a significant proportion of Scottish beef (around 70%) is exported to England.

Table 6 The output, thousand tonnes, from the major sectors of Scottish crop production in 2008. Figures for cereal crops include total production for human and industrial use only

			Crop			
Wheat	Barley	Oats	Oil seed Rape	Potatoes	Vegetables	Fruit
706	575	106	142	680	291	26

Table 7 The out put in tonnes of fruit and vegetable production in Scotland in 2008

			Crop				
Carrots	Turnips and Swedes	Calabrese	Brussel Sprouts	Peas	Other Vegetables	Strawberries	Other fruits
136,973	66,616	12,429	13,655	17,376	44,648	18,086	8,143

Agricultural production in Scotland is however dominated by animal based production (Table 8) and especially that based on extensive systems. Animal production has however decreased in the last decade. Pig numbers have fallen by 30%, sheep by 20% and cattle by 10%.

Table 8 Agricultural production in Scotland and in the UK

		Area of major agricultural activities (kha)			
	Total agricultural land area	Crops, fallow and set aside	Grass	Rough grazing	Woodland
Scotland	6,210	600	1,244	4,036	249
UK	18,694	4,984	7,104	5,732	606
Scotland as % of UK	33	12	18	70	41

Climate and Production Climate has a marked influence on the agriculture which is possible. The land area devoted to rough grazing in Scotland is 368% of that in England but cereal production in Scotland is 48% of that in England and vegetables and fruit 11% and 6% respectively.

While Scottish agriculture functions with a series climate related disadvantages it never the less has a number of marked positive features. These include the quantities of carbon which are stored in our soils and their potential for further storage, the availability of water and our ability to produce animal products from grass and, as a result the ability to develop farming systems based on recycling of animal waste products and consequently a more limited use of energy based resources such as fertilisers and pesticides. Given the challenges associated with Climate Change all of these are of major potential significance.

Alleviating the impact of climate change will be aided by increased soil carbon storage. Current high levels of carbon storage are a product of low soil temperatures but aided by grass production, which partitions more of its photosynthetically fixed carbon to the soil than many other crops, as the major farming activity and by grazing and cutting the grass which accentuates the process.

Water seems likely to become an even more important determinant of crop production in the future as a consequence of increased temperatures. Mixed farming systems have the ability to meet some of their needs for nitrogen from the use of animal manures and so in Scotland where crop and stock production are less geographically separated than in elsewhere in UK there is a higher potential to contribute to climate change targets for agriculture through a higher level of integration of farming activities.⁵⁸ These issues were discussed in more detail in sections 2.2 and 3.1.

⁵⁸ Atkinson D, Black K E, Dawson L A, Dunsiger Z, Watson C A , Wilson S A, (2005) Prospects advantages and limitations of future crop production systems dependant on the management of soil processes. *Annals of applied biology*, 146, 203-215

Scotland's Ability to Produce a Healthy Diet In section 2.4 of this report we considered some of the links between food and health and identified that the average diet in Scotland is deficient in fruit, vegetables and in cereal based products and the quantities of these products needed to improve the diet (Table 4). Elsewhere in the report, sections 4.1, 4.3, 5.1 and 5.3, we discuss the availability of the components of a healthy diet in Scotland. The make up of items used in healthy eating retail studies and the concept of the healthy Shopping basket has been discussed by Anderson et al⁵⁹. The make up of the healthy shopping basket is summarised in Table 9.

Table 9 The make up of a health eating indicator shopping basket (HEISB). Items in bold can currently be produced in Scotland. Items in brackets may be able to be produced in the future if the effects of climate change are as is currently envisaged.

Food group	Food items
Cereal and potato Products	Brown rolls, porridge oats , potatoes , oven chips , white and brown rice,, spaghetti, (Wheat breakfast biscuits), (whole meal bread)
Fruits and vegetables	(Apples) , bananas, grapes, oranges, orange juice, canned pineapple, frozen berries , baked beans, broccoli , carrots , (cucumber), lettuce , onions , frozen peas , (peppers), canned sweet corn, tomatoes
Dairy products	Semi skimmed and skimmed milk , low-fat yogurt
Meats and fish	Beef mince , prepared lasagne, chicken breast , haddock fillet , salmon fillets .
Fatty and sugary foods	Low fat spread

The content of the HEISB was drawn up so as to permit a study of the availability and price of healthy food in different parts of Scotland. (see sections 4.3 and 5.3 for more detail) It should not be taken as a firm guide to the make up of a healthy diet. Never the less the composition of the HEISB can be used as a basis for assessing the extent to which those items deficient in terms of the Scottish diet might be produced in Scotland and the implications for our food policy of moving to a diet of this type.

It indicates both that many of the components of a health diet will need to be imported but that many fruits and vegetables either can either be produced or can be substituted by an item which can be produced in Scotland. On the basis of current healthy eating targets⁶⁰ and the population figures for Scotland⁶¹ it is possible to estimate what quantities of additional food would be required to meet these targets (Table 10).

⁵⁹ Anderson AS, Dewar J, Marshall D, Cummins,S, Taylor, M, DawsonJ, and Sparks L (2007) The development of a healthy eating indicator shopping basket tool (HEISB) for use in food access studies- identification of key food items, Public Health Nutrition 11, 1-8

⁶⁰ Anon (2008) Healthy eating, active living. Scottish Government, Edinburgh.

⁶¹ Anon (2006) Rural Scotland Key Facts. Scottish Executive, Edinburgh

Table 10 Estimates of the increased quantities of fruit and vegetables required to allow the achievement of current Scottish Government dietary targets.

Item	Projected increase per person per year (kg)	Quantity needed for the Scottish population (Thousand tonnes)	% of current Scottish production	Probable consequence of the change
Fruits and vegetables	73	370.7	117	Would require movement of some current cereal area into vegetable and soft fruit production. Personal production could contribute.
Bread	174	883.6	125 (current wheat crop)	Currently most Scottish wheat is unsuitable for bread making but climate change may allow some production especially if mixed with hard wheat from elsewhere and if bread making process changed
Breakfast Cereals	6.2	31.5	29.7 (current oat crop)	An increase in consumption of oat based products would help with this target

The Viability of a Diet Based on Local Production The future role of Scottish agriculture in its contribution to the national diet and its contribution to food security are very key issues. There is however a range of options available to our home based agricultural systems as well as options for significant change in our diets as illustrated in Box 4. The Fife diet represents an attempt to live on a diet focussed on foods produced in the area and as such indicates both what might be achieved through a change in patterns of consumption and the impact of such a local focus on the richness of the diet.

Box 4 The Fife Diet

The Fife Diet Collective (FDC) is measuring and affecting change beyond the farm gate. The FDC is an innovative consumer led network of people that are committed to sourcing food from within the region of Fife, they are the largest network of this kind in the UK.

The ongoing FDC involves communal growing to grow the food required to work towards restoration of a viable local food system. The research engages with the Fife Diet participants shopping and eating habits utilising new media technologies to enhance their ability to source food and communicate with each other as well as monitoring them on four levels: their food miles, carbon footprint, nutritional balance and household budgets.

Future Research and Technology Transfer Needs The amelioration of factors leading to the generation of green house gases and to global climate change is a major element within Government policy. Any food policy must be consistent with the objectives of climate change policy. The need to assess the significance of changes in crop or in animal production in non economic terms represents a significant change in emphasis. In the past a number of approaches to production were essentially discounted because of there lack of production even though they may have been good in terms of their carbon, nitrogen or water foot prints.

While it is clear that total food production is important it is also timely to review production against the background of a much wider range of objectives. This would suggest the importance of the development of a series of radical options for both agriculture and for the food chain. Such radical options would seem likely to benefit from the provision of additional resources, such as an increased spend on appropriate R&D and on technology transfer.

Recommendation

22) Improving food security will require changes in patterns of consumption as well as in production. There will be value in looking at the potential of initiatives such as the Fife Diet as means of stimulating interest in and discussion of food change options.

3.3 The Importance of Scottish Food Production

The Role of Domestic Production The impact of domestic food production and processing is clearest in terms of its potential effects on food security. Food prices have been affected by government actions for most of the period covered by recent history, and governments have regularly intervened to both reduce the price of food and as a means of influencing the basic nutritional elements. However, in an era of financial turbulence and problematic energy supplies local production seems likely to have a significant role in ensuring food availability in general, but also particularly through Government action for those on low income diets who will always be the most vulnerable to both price rises and short term interruptions to supply.

What proportion of our food we need to produce locally so as to affect security is a key question. Answering it requires us to look at the future and to assess what we think will be the major factors affecting both Scotland and the UK and those countries from whom we currently obtain most of our food. At the present time food remains relatively cheaper and more available to the consumer than it was a decade ago and so it could be concluded that there is no current problem in relation to current supply arrangements. However there are risks which are independent of well functioning markets, systemic risks may not be managed well by the market mechanism and in addition to market failures there are other barriers which can prevent the market from functioning.⁶² In addition the costs of ensuring an increase in food security by increasing home production will always be easier to estimate than are the benefits of such a policy. The latter depend on both probabilities and uncertainties as well as individual and collective attitudes to risk.

What we can currently be certain about is that the gap between increasing world crop production and world population growth is decreasing, that most of the factors which have lead to increased agricultural production in recent years such as the expansion of the area under agriculture and the use of water for irrigation will not be options in the future and that, that global stocks of grain are at their lowest for many years. This suggests that an approach to the proportion of our food which we produce based only on economic factors⁶³ as suggested in the recent past would be unwise. However all of this needs to be seen in the context of the the UK having the greatest trade deficit in food of all the EU countries. Scotland has a trade deficit in most fruit and vegetables but a surplus in beef and lamb. At the present time the UK is 60% self sufficient and 74 % self sufficient in foods which can be produced in the UK. This however represents a decrease from a high of 80% in the mid 1980s for all foods and around 95% for indigenous foods.⁶⁴

It helps to question why we do not produce all of our own food. We produce less than we consume because agricultural land in the UK is scarce compared to our population and to the availability of land else where, because our climate prevents the production of many commodities such as soya and citrus fruits, because our climate is seasonal and because over time our population has developed diverse tastes requiring significant quantities of the food we produce to be imported. All of this would suggest that there is no easy way to estimate the % of our consumption which should be produced in Scotland. It will necessarily vary across commodities (Table 9, 10). It would be inadvisable to estimate it on the basis of current economic factors: the problems in the banking sector in 2008 and 2009 have made the UK a poorer country than it was when the previous Defra analysis of the situation was carried out. On the basis of past trends⁶⁵ the aim of producing approaching

⁶² Anon (2006) Food Security : An evidence and analysis paper, Defra , London

⁶³ Anon (2006) Food Security : An evidence and analysis paper, Defra , London

⁶⁴ Anon (2008) Ensuring the UK's Food security in a changing world, Defra, London

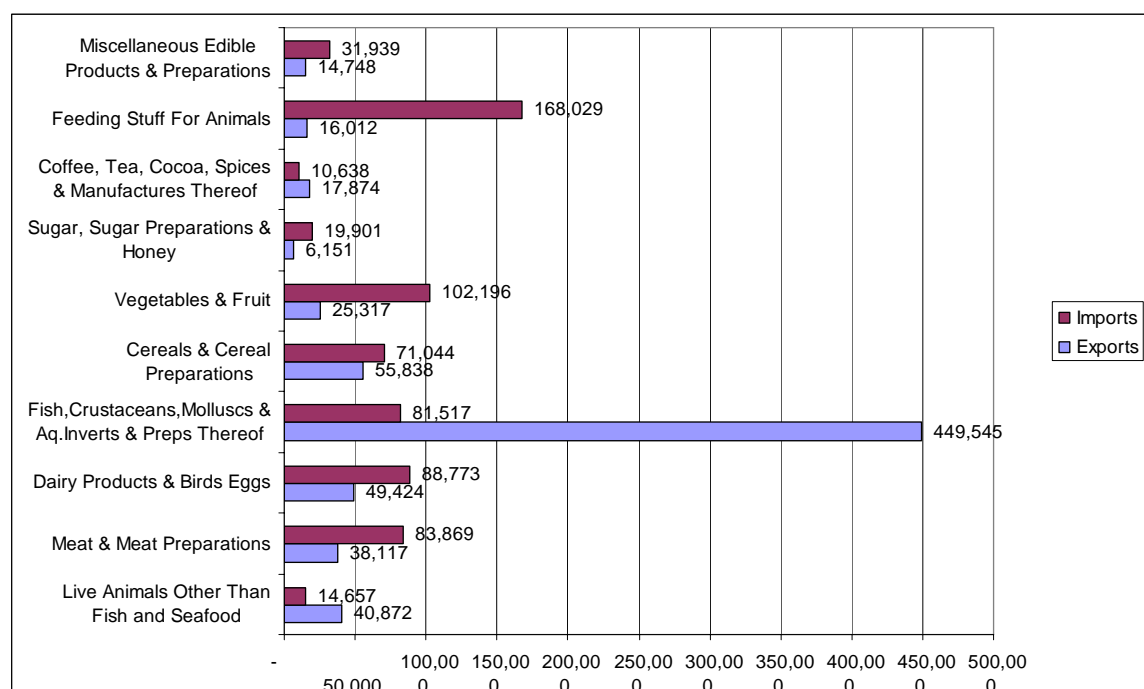
⁶⁵ Anon(2008) An Inconvenient Truth about Food- Neither secure or resilient, Soil Association, Bristol

two thirds of our food from our own resources would seem to be prudent. This needs to allow for our continuing ability to export premium products. The rationale for both of these is addressed later in this section.

Scotland's Food Trade The majority of markets for Scottish manufacturers are not actually in Scotland. Given the great importance of the UK and international markets to Scottish food and drink manufacturers, being insular is not an option. This is particularly true in light of the importance of both imported raw materials and home production for Scottish manufacturers. Furthermore, wider markets (beyond Scotland) are critical to food security in the sense that they encourage incremental increases in products beyond the demand levels generated by a purely domestic market.

Scottish trade figures are only available for trade with countries overseas, from which trade with the rest of the UK is omitted. Imports and exports of different food categories are shown in Figure 6. It would help to have better information on trade flows within the UK and to have information on Scottish capacity for food manufacture and on the requirements of this sector.

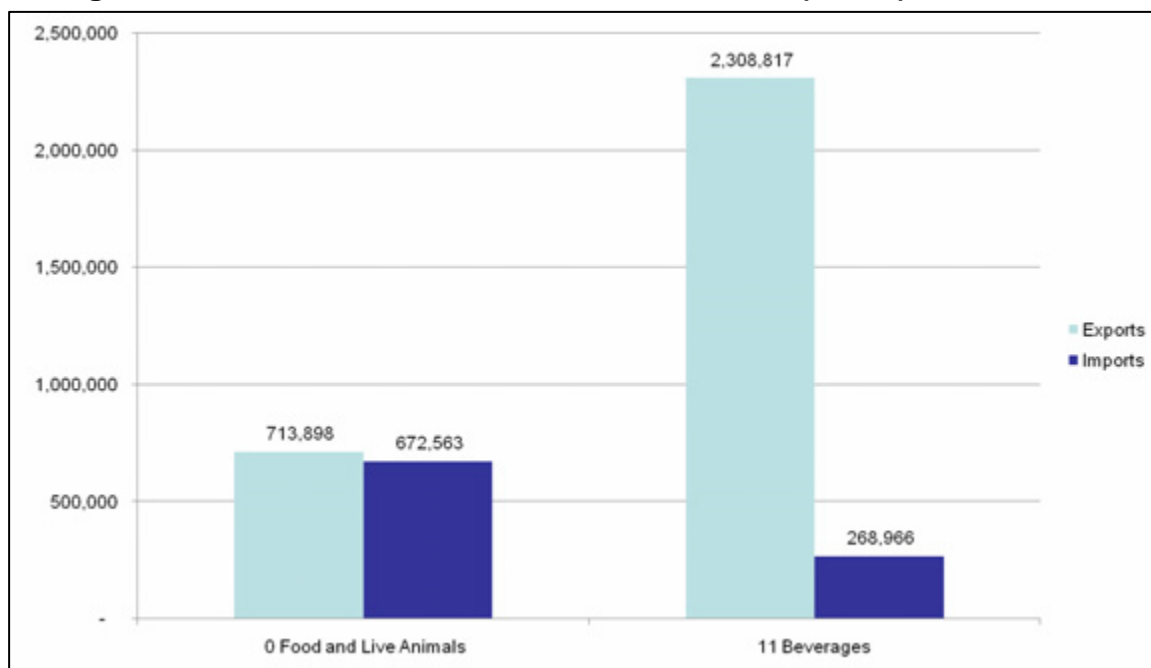
Figure 6 Scotland's trade in food by category, 2007 (£000s)



Source: HMRC

Given the large volumes of food imported and exported between Scotland and the rest of the UK, it is important not to read too much into these statistics. In addition to the fact that it does not show Scotland's trade relationship with the rest of the UK, any produce that flows between Scotland and overseas countries that goes through the UK is also unaccounted for.

Figure 7 Scotland's trade in food and drink, 2007 (£000s)



Source: HMRC

Nevertheless, these figures give an indication of what food types flow in and out of Scotland.

For example, Figure 7 shows that our food exports are much lower than our exports of drinks. This is mainly due to high exports of whisky, in production of which Scotland has competitive advantage. By looking at exports of different categories within food, Figure 6 shows that fish is our biggest export. Also, we are very reliant on the import of animal feed, which means that even though Scotland's livestock production is high, we are still heavily reliant on trade even in that sector.

What proportion should we aim for? The proportion of the food consumed in the UK which is home produced has varied from a low of around 30% in the 1930's to a high of around 70% in the 1980's.⁶⁶ As recently as 2006 the UK government argued that our ability to produce our own food was not of strategic importance as the market would ensure that we were fed.⁶⁷ This view is now being increasingly challenged on the basis of its sensitivity to global factors such as trading on the commodity markets and because of concerns related to the long term effects of climate change.

⁶⁶ Anon(2008) An Inconvenient Truth about Food- Neither secure or resilient, Soil Association, Bristol

⁶⁷ Anon (2006) Food security: An evidence and analysis paper. DEFRA , London

Although UK food imports have always exceeded exports the gap has been increasing steadily since 1960s and doubled between 1995 and 2005.⁶⁸ In this period imports of poultry increased by 82%, eggs and egg products by 163%, breakfast cereals by 229%, pork by 171% and beef and veal by 101% (Barling et al 2008) Recent UK government reports have tended to minimise the importance of home production and have stressed the importance of the market mechanism and our ability to import much of what we need, especially from else where in the EU⁶⁹.

Conversely, Defra also state “increased domestic production would improve the balance of payment, protect from global market volatility, reduce dependence on suppliers and ports, and prevent disappearance of industry⁷⁰”.

Also the recent Chatham House report on Food Security⁷¹ states “recent market responses in nearly 40 countries around the world delivered principally through imposition of export controls provide a sharp reminder that reliance on a fully functional global trade system comes with a degree of risk. Assessing what might be the appropriate balance between home production and imports and developing options to increase the security of home production now seems appropriate.”

The Reasons for a Reappraisal Price rises in 2008, and turbulence in financial and trading markets, issues surrounding climate change together with concerns about animal diseases and forward projections about the future capacity for production in some of our current suppliers are significant reasons why we consider the issue of home production should be re-examined. We understand that the current diet enjoyed by Scottish consumers can not be produced in Scotland. However we consider there is need for better understanding of what can be produced and of our current ability to meet our food needs from domestic production.

Government should ensure that there is research available to provide guidance on what crops would grow best in Scotland, what the land options are for such crops and how to use the produce both in respect of processing by food businesses and on an individual basis. This needs to relate both to the current situation but also to the projected cropping environment expected as a result of what we currently understand to be the situation when currently anticipated consequences of climate change have become a reality.⁷² Such information would also provide a better basis for Government to respond to current EU

⁶⁸ Anon(2008) An Inconvenient Truth about Food- Neither secure or resilient, Soil Association, Bristol

⁶⁹ Anon (2006) Food security: An evidence and analysis paper. DEFRA , London

⁷⁰ Anon (2008) Ensuring the UK's food security in a changing world, Defra , London

⁷¹ Ambler-Edwards, S, Bailey, K, Kiff, A, Lang, T, Lee, R, Marsden, T Simons, D and Tibbs, H (2009) Food Futures: Rethinking UK Strategy, A Chatham House Report, Chatham House.

⁷² Scarf- Becket C (2007) Climate change and Agriculture. Report on a consultation at St Georges House, Windsor Castle Nov 2007.

proposals to redevelop the CAP and which has the potential to have a major adverse effect on Scotland's ability to remain a significant producer of its own food.⁷³

The links between Scottish agriculture and food security are complex. They raise issues such as appropriate land use and the working of rural communities which go beyond food production. There is also widespread concern over the erosion of the Scottish and the rest of the UK farming sector and in comparison with other nations; the UK agriculture sector shows poor growth and levels of efficiency. There are also uncertainties over the long term capacity of some sectors of the UK agricultural base⁷⁴ (e.g. the dairy sector ;).

A Changed Scottish Agriculture We argue that. Scottish Agricultural production needs to be seen as the baseline for Scottish food supply. As such Government needs to consider the current and future position of Scottish agriculture and maintain programmes of research which will continue the supply of new technologies and change of practice to the Scottish agricultural industries. For instance we should support the new eco-technological production approaches which seem likely to emerge and may include: crop rotations, cover cropping, agro-forestry, 'green' fertilizers derived from agricultural and food waste, new varieties (that have resilient, pest-resistance), more efficient use of inputs through advanced information technology, and reduced waste.

Also, social values and preferences are shifting decisively towards what are broadly viewed as 'sustainable' methods, and wherever there are affluent consumers, the demand for local, seasonal, increasingly vegetarian, fairly traded and organic food seems likely to continue to rise.⁷⁵ Government needs to put in place the necessary research and knowledge transfer to assist these changes. There is a view that agricultural production can be switched on when needed in the same way that industrial commodities can be increased as long as the basic production capacity remains. However we would argue that much of agriculture is not like that. Land does not remain in a productive condition and the skilled work force, those able to take part in knowledge and technology transfer and researchers in key areas of agriculture such as agronomy and crop management will not be available unless these skill bases are maintained. If lost they will take a significant period, probably of the order of a decade, to recreate.

⁷³ Church of Scotland (2007) Fair trade in food: The development of policy which is fair to consumers and to producers in the UK and the developing world. CofS , Edinburgh

⁷⁴ Ambler-Edwards, S, Bailey, K, Kiff, A, Lang, T, Lee, R, Marsden, T Simons, D and Tibbs, H (2009) Food Futures: Rethinking UK Strategy, A Chatham House Report, Chatham House.

⁷⁵ Anon(2008) An Inconvenient Truth about Food- Neither secure or resilient, Soil Association, Bristol

Although the above section refers primarily to agriculture, fisheries and aquaculture have an important role to play in the food supply for Scotland and the issues affecting them are of a kind with those raised above and so should also be considered in the context of the discussion above.

Recommendation

23) The UK has the greatest trade deficit in food of the EU countries. There is a need to follow up the 2008 Food consultation with a public debate on these issues with the aim of developing a national consensus. Government will need to put in place the necessary research and knowledge transfer to inform such a debate.

24) Government should initiate research to assess what novel opportunities are available and likely to have significant impact on the proportion of the Scottish diet which can be produced in Scotland.

25) Scottish Agricultural production needs to be seen as the baseline for Scottish food supply. There is need for better understanding of what can be produced.

3.4 The Importance of Energy

The Energy Needs of Agriculture Energy issues will impact on all parts of the food chain as a result of their effects on storage and on transport costs. They will have a significant additional impact in the processing and production sectors.⁷⁶

In recent years the energy costs of the processing industry have increased significantly. There remains a clear role for Government to provide an energy network which is fit for purpose, has sufficient capacity to meet the needs of industry and facilitates growth. There is need for a range of approaches to reducing energy costs. These include for the processing industries more sustainable working practices, use of renewable energy, improved building techniques.

The functioning of Scottish producers is also linked to the availability of affordable energy. Many current approaches were developed at times when the supply of energy seemed unlimited and inexpensive (e.g. reliance on nitrogen fertilisers, pesticides) see also section 2.2.

⁷⁶ Garnett T, (2008) Cooking up a Storm: Food, greenhouse gas emissions and our changing climate, Centre for Environmental Strategy University of Surrey

Generation of Energy on the Farm Energy influences both our ability to produce and the dependability of production by many of our current suppliers. Developing means of linking the generation of energy and production at farm levels will be increasingly important. Box 5 gives an example of such an approach.

Box 5 Linking Food Production and Energy.

Ice cream manufacturers Mackie's of Scotland have their own energy supply - three Vestas V52 wind turbines - referred to as "Mackie's", "Ice" and "Cream". Each of these graceful machines have a 45 metre turbine and three 25 metre blades on the turning propeller and capacity to produce 850KW of power - so a total capacity at the farm of 2.5 MW. Wind turbines are not a new sight on the farm, Mac's father Maitland previously installed a smaller turbine which powered the business's former piggery unit until 1997. That was one of the first grid connected wind turbines in the UK but did not have a very large output. "Wind energy is renewable, economic, safe, and good for the environment. "Managing Director Mac says "We are keen to find new ways to cut our energy consumption alongside our other environmental projects. The investment in wind turbines makes good sense for our business because our consumers have told us that it is important for them to know that our ice cream is made with 100% renewable energy. It also makes good financial sense, we are a rural business which needs significant power levels and will continue to need more as we grow. "

Options for a reduction in energy needs Oil prices have in the recent past and will continue for the foreseeable future to be responsible for rising prices of food production. Many of the elements in our diets which are being emphasised in relation to health, such as fruit and vegetables, are particularly vulnerable to increases in the price of energy. Increases in the cost of energy in the 1970s were responsible for the loss of much protected cropping in Scotland. In addition the production of fruit and vegetables both require significant use of water, which is in increasingly short supply and which may involve a need for energy to power irrigation systems, and applications of fertilisers and pesticides both of which require major quantities of energy in their manufacture and application.

Horticultural crops usually receive many more applications of pesticides than do agricultural crops. For example carrots would usually receive applications of 4 different herbicides, 4 insecticides and 2-4 fungicides and strawberries 3 herbicides, 2 insecticides and up to 7 different fungicides. In contrast winter barley normally receives a similar number of herbicides but fewer fungicides and often no insecticides.⁷⁷ There is thus a real need to develop systems of horticultural production with lower direct and indirect needs for external inputs of energy if current targets for fruit and vegetable consumption are to be realised. (Table 10)

⁷⁷ SAC (2008) The Farm Management Handbook

This is important whether fruit and vegetables are produced here or imported. The key needs are for systems which are more effective in their use of water through systems such as deficit irrigation and more effective gearing of water supply to key production stages. One of the major limitations to the ability to produce fruit in Scotland is the frequency of late spring frosts which kill fruit buds at a time when they are very sensitive.⁷⁸ A consequence of climate change may well be a reduction in such frosts increasing the potential for Scotland to re-emerge as a producer of fruit and to meet the normal irrigation needs of this crop from our higher availability of water.

Developing ways of making Scottish agriculture less energy demanding is important to food security at the domestic level as well as our commitments to mitigating the effects of climate change. There is therefore a need for research to develop energy efficient means of crop and animal production. This is likely to require a return to a greater reliance on crop rotations, and further development of mixed farming (see also section 3.1).

Energy and the Rest of the Food Chain Energy is important in relation to other parts of the food chain. The food and drink manufacturing is highly energy dependent, especially in the sub-sectors of dairy and meat processing.

On average Scottish manufacturing purchases £0.09 of energy per £1 of Gross Value Added (GVA) generated. The dairy and meat processing sectors, which are of significant importance to Scotland have levels which are in excess of that and which can be up to £0.35 for dairy processing.

Transport is especially vulnerable both to price rises related to energy costs and also to industrial action. Currently our supermarkets hold only a small number of day's supplies. It seems important to evaluate the long term viability of such policies in an era of peak oil.

Some potential alternative routes of supply are discussed elsewhere in the report. It is clear that were food production to be organised so as to reduce current needs for external sources of energy and to explicitly conserve carbon within the production system that it could make a significant contribution to the delivery of several current climate change targets and increase the resilience of our food system.

⁷⁸ Jackson JE (2003) The Biology of apples and pears, CUP, Cambridge

Recommendation

26) High food prices and current levels of profitability permit investment in new agricultural technologies aimed at increasing production while addressing environmental issues. Over a period of 10 years and beyond, a new eco-technological production approach seems likely to emerge. Government needs to maintain programmes of research which will continue the supply of new technologies to the Scottish agricultural industries

27) Government should provide additional resources for knowledge transfer related to energy capture and use at farm level and research to identify what options exist for the generation of energy at a farm level which might be used to meet farm based needs such as crop drying.

3.5 The Role of Fair Trading Practices

The Maintenance of Production Capacity. Scotland has always been a trading nation. The limitations of our climate and soils mean that we will always need to import a significant proportion of the food we eat and which we use within our food manufacturing industry. The case for the need to trade fairly in relation to both home and overseas producers was detailed in a report produced by the Church of Scotland in 2007⁷⁹. This identified a series of instances of the ways in which the current Common Agricultural Policy and our food chains acted unfairly on producers both in UK and in the developing countries (Box 6.) In the short term current practices may lead to reduced prices but in the longer term production both in the UK and overseas, particularly in the developing countries will only occur if it is profitable. Exports of produce from both the EU and the USA based on marginal costs has resulted in loss of productive capacity in countries from whom we may in the future need to import. Similar considerations apply to some elements of Scottish production.

⁷⁹ Church of Scotland (2007) Fair trade in food: The development of policy which is fair to consumers and to producers in the UK and the developing world. CofS , Edinburgh

Box6 Effects of EU and US export subsidiesDairy - Jamaica

Winston Tailor, a Jamaican dairy farmer, inherited his land and everything he knew about dairy farming from his grandparents. He delivered fresh milk from his 25 dairy cows to locally based processors who turned it into various dairy products for Jamaican markets. However, a surge of milk powder imports into the Jamaican market – 67% from the EU – squeezed Winston out of business. He simply could not compete with cheap, subsidised EU milk powder flooding into Jamaica. The EU was estimated to be subsidising milk powder exports into Jamaica to the tune of € 4 million annually – with most of those subsidies going to European processors and exporters rather than European dairy farmers. In the end (2002) Winston was forced to sell his dairy cows to the butchers for meat.

Chicken - Ghana

Francis Kumajor runs up and down a busy road in the centre of Accra, trying to sell chickens to commuters in the sweltering heat. Few drivers, in their air-conditioned vehicles, stop for him. “For the whole day I have not managed to sell enough to pay my rent” complains Kumajor, with three cages of birds still standing by the roadside. The cause of Francis’ plight is not difficult to find; in fact, he articulates the problem well. “Walk into any supermarket and you will find they are bulging with imported frozen chicken”, he says. People do not want to buy local chicken because imported ones are much cheaper.”

For the last few years the Ghanaian market has been flooded with cheap imported chicken from the EU and the US. Demand for local poultry has collapsed, threatening the livelihoods of over 400,000 poultry farmers in Ghana. In 2004, imports were estimated to be as high as 40,000 tonnes. In 1992, domestic farmers supplied 95% of the Ghanaian market, but in 2001 their share was only 11%.

Importers pay a duty of 20% on poultry shipped into Ghana. Under WTO rules, the tax could be as high as 96%. In 1994, the Ghanaian parliament passed a law allowing an additional 20% duty to be imposed on imported chicken, bringing the overall tax to 40% - perhaps still not high enough to combat the subsidized chicken imports. However, under pressure from the IMF, the duty increase was reversed two months after its increase. And in 2006, the Ghanaian Government overturned the Act under which the duty was raised, even though a court had recently ruled in favour of farmers seeking the duty protection. The matter will likely go to Ghana’s Supreme Court.

(Sources: Oxfam and CorpWatch)

These issues remain important and could act as a basis to define our trading relationships. In particular there is a need to recognise the importance of social relationships both in respect of the consumption of food and in relation to the impact of trading regimes on social relationships among producer groups in Scotland and overseas. Issues such as global climate change have emphasised that there are issues which need to be viewed on an international basis.

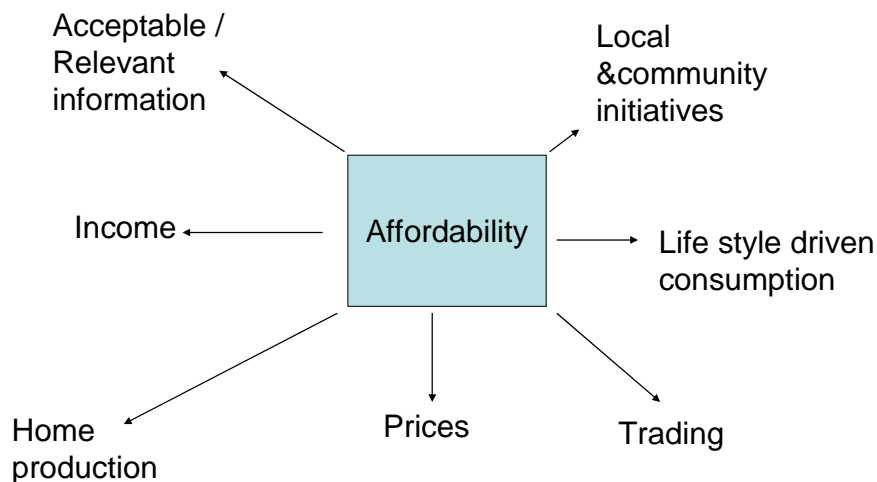
Unsustainable and environmentally damaging food production practices both at home and overseas have been a consequence of market orientated trading practices which have been dominated by pressures to reduce price and to buy on price rather than on quality.

The Carbon Footprint of Trading While we need to reduce our greenhouse gas emissions at home it would be wrong were we to continue to be a cause of increased emissions and more environmental damage overseas as a result of our trading practices. Trade is seen as a key element in aiding the sustainable growth of developing countries. Fair trade will not only help to prevent environmental damage, it will also allow developing countries to develop as trading partners and as sources for Scottish exports. Many of the rules relating to trade are set at EU or World Trade Organisation (WTO) levels and so are not capable of being set by us alone. It is important however that we are clear about the importance of fair trade and that we use our influence to support fair trading systems.

Recommendation

28) Scotland should continue to develop its thinking about what it means to be a Fairtrade Nation and to identify actions which it needs to take so as to increase this as part of its food security policy.

4 AFFORDABILITY



The Concept of Affordability Affordability is a wider concept than merely the ability to buy food at a particular point in time as the above diagram indicates. It is as much a sociological as an economic concept. Defra (2008) described affordability as food being available at prices that people can afford to pay and in particular whether low income consumers can afford enough nutritious food.

Universal affordability for food is a major objective of the proposed food policy and influences approaches to both food security and access. It is also perhaps the most intractable of all of current aims having been the subject of many previous initiatives which have been less successful than had been hoped. Many previous approaches, however, have been fundamentally linear in nature and have either aimed specifically at increasing the purchasing power of target groups and or at making food less expensive or both. Schemes aimed at increasing effective income through Government allowances directed at children or low income families or through the taxation system have had significant effects. However there remain families and individuals who are food poor.

The range of measures taken by Government and directed at reducing the price of food, such as subsidies to farmers through the Common Agricultural Policy (CAP), and the successes of the supermarkets which have led to reductions in food prices in real terms have had significant impact on the proportion of average income devoted to the purchase of food. Despite this a significant proportion of the population spend a much higher proportion of their income on food. Events in

recent months have shown that this proportion increases rapidly with increases in the price of food.

A Variety of Potential Approaches Within society there are a range of approaches to balancing income with expenditure on food some of which impact on long term health and on the ability to contribute to society. Success in making quality food available to all needs new approaches. In the past activity has sometimes been focussed on the development of universal solutions rather than recognising the need for a variety of approaches and for more local actions. In attempting to identify new approaches it is important to recognise that the market within which our supermarkets trade is very competitive which limits their scope for rapid change and the extent to which they can deliver services to all groups within society. Also a range of previous approaches to change diets so as to improve the affordability of food have been less successful than was hoped. Basing new actions upon how the people of Scotland actually use food currently is important.⁸⁰

Increasing Affordability by Reducing Waste An alternative and different approach to increasing affordability is the reduction of food waste. The UK WRAP report (2008)⁸¹ noted that we throw away about one-third of the food we buy and nearly two-thirds of this is avoidable waste. Much of this is thrown away completely unused, about one-tenth still in date, and about one-third is thrown away because too much has been cooked or prepared. UK households on average pay for £420 of food every year that could have been eaten but instead is thrown away. Initiatives at all levels which aim to reduce the amount of household food waste should be encouraged from an ethical and environmental perspective, but also to allow money to be spent more effectively within the family food budget.

Correct use of date labels would also reduce waste. A recent survey commissioned by the FSA (Public Attitudes to Food Issues, 2009)⁸² provided information on knowledge of date labels. Around half of those surveyed were unaware that the best indicator of whether food is safe to eat or not is the 'use by' date. The results highlighted confusion in both the UK as a whole and in Scotland around the meanings of the different date labels. About a quarter of respondents said they would not eat bread or cereals past their 'best before end' dates, despite this being a guide to quality rather than safety. The FSA are currently reviewing labelling regulations for specific products with the aim of helping consumers from the perspectives of both food safety and waste reduction.

⁸⁰ Summary of the main issues for future consideration arising from the Retailing food and health inequalities meeting organised by Scottish Government (Health and Wellbeing Directorate) and the Food Standards Agency Scotland
12th March 2008

⁸¹ www.wrap.org.uk/downloads/Summary_v21.77542f88.5460.pdf

⁸² <http://www.food.gov.uk/science/socsci/surveys/publicattitudesfoodissues>

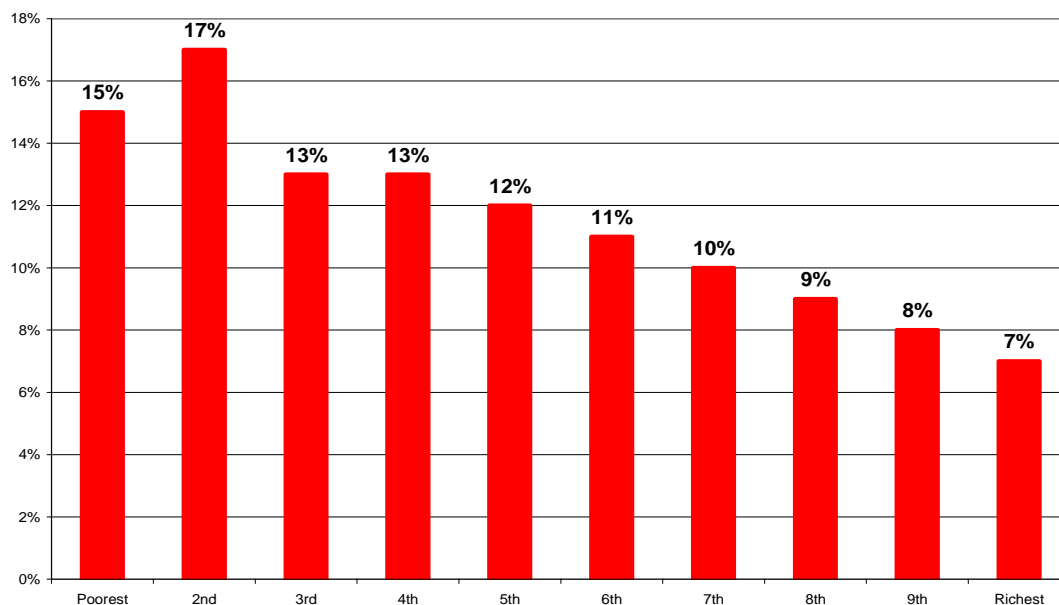
Recommendation

29) There is need for a range of initiatives to help households to reduce their levels of waste. Local authorities must play a major part in the development of local approaches which seem likely to involve working with consumers.

4.1 Affordability of a health diet

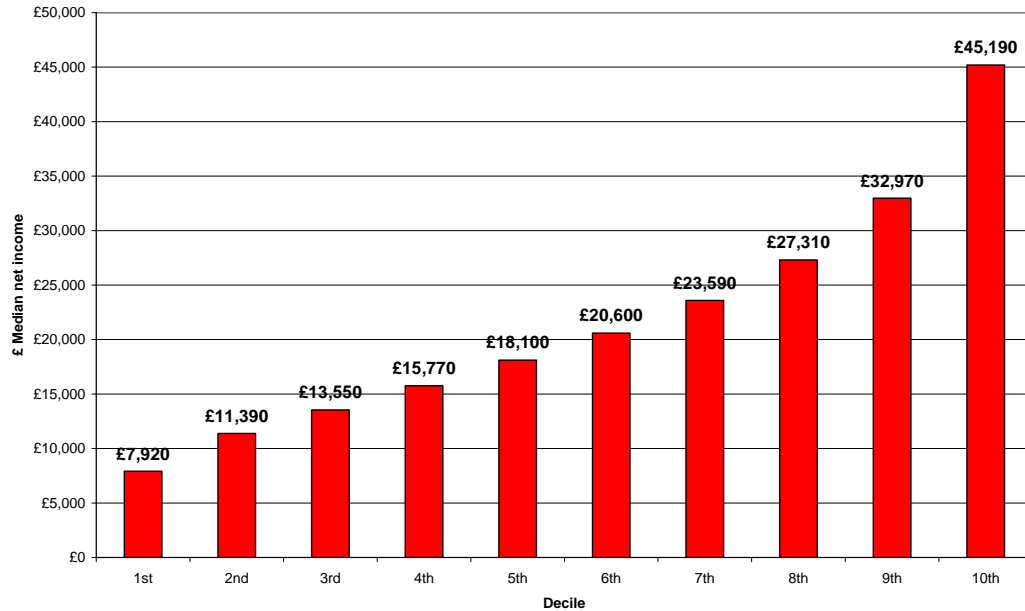
Income and Food According to the UK wide figures, the proportion of income households spend on food increases as income falls. Figure 8 shows that the bottom decile spend 15 per cent of income on food whilst the richest spend only 7 per cent. Given that the poorest 10 per cent of the population in Scotland has a median income of £7,920 (Figure 9), food price increases would have had a major impact on their purchasing power (this is confirmed by the study conducted by the Scottish Agricultural College⁸³, see section 2.4).

Figure 8 Share of UK household expenditure spent on food and non-alcoholic beverages 2005/2006



⁸³ Cesar Revoredo-Giha, Philip Leat, Beata Kupiec-Teahan, Chrysa Lamprinopoulou and Luca Cacciolatti SAC⁸³ (2009) The Effect of the Rise in Food Prices on the Purchasing Power of Scottish Consumers. Report to Scottish Executive.

Figure 9 Median equivalised net income (before housing costs) of each income decile, Scotland 2005/06



Additional data from the Expenditure and Food Survey (2006) in Table 11 indicates the average household expenditure in the poorest and richest deciles, showing that the poorest spend twice as much of their income on food and non-alcoholic drinks compared to the richest decile.

Table 11 Average weekly household expenditure in poorest and richest deciles in Scotland (2006 EFS)				
	Poorest	Share %	Richest	Share%
Food and non alcoholic drinks	£24.50	17.9	£71.90	9.4
Alcoholic drinks tobacco and narcotics	£6.60	4.9	£19.00	2.5
Housing fuel and power	£26.80	19.6	£61.60	8.1
Transport	£13.50	9.9	£151.70	19.9

A study commissioned by the FSA (2007) noted:

- In the last year (2006) 39% of the low income population were worried their food would run out before they got money to buy more; 36% said they couldn't afford to eat balanced meals 22% reported reducing or skipping meals and 5% said they did not eat for a whole day because they did not have enough money to buy food

A study by the Scottish Council Foundation suggested some low income consumers spend more of their disposable income on food because of where they live. This was attributed to the use of higher cost convenience shops on a regular basis because they did not incur additional transport costs.

Regional Variation in Food Costs This has been supported by a recently commissioned study which was designed to investigate the availability and cost of a range of healthy foods in nine different sample areas across Scotland chosen on the basis of urban-rural location and affluent-deprived conditions.⁸⁴

The sites included island locations; Lewis and Orkney, the highlands; Dornoch and Inverness, east coast locations; Ellon, Cupar, Broughty Ferry and Haddington and west Coast locations; Scotstoun Drumchapel and Kilbirnie.

This study was based on a Healthy Eating Indicator Shopping Basket (HEISB) made up of 35 items drawn from the 5 major food groups and included fresh fruit and vegetables, potatoes, baked beans, porridge oats, wholemeal breads, rice, oven chips, meat and fish and some low fat fresh dairy produce⁸⁵
The study findings demonstrated:

- There was a considerable range of price for the HEISB items across the stores and sentinel areas surveyed;
- The total HEISB median price varied substantially by store type from £37.48 in large stores, £40.30 in medium sized stores, to £47.83 in small stores;
- Across the 9 sentinel areas the total HEISB median price ranged from £52.75 to £42.34;

⁸⁴ FSA Scotland (2008) Accessing healthy food: A sentinel mapping study of healthy food retailing in Scotland.

⁸⁵ Anderson AS, Dewar J, Marshall D, Cummins S, Taylor M, Dawson J, and Sparks L (2007) The development of a healthy eating indicator shopping basket tool (HEISB) for use in food access studies- identification of key food items, Public Health Nutrition 11, 1-8

- The 3 sentinels with the highest price for the HEISB were all outside urban areas and had a significant deprived population: rural deprived £52.75, the Island sentinel £49.18 that contains notably deprived areas, and, small town deprived £47.25.

Another study ⁸⁶ found that those living on low wages and state benefits cannot afford to buy sufficient appropriate food to meet health dietary and nutrient guidelines. Regional food price variations (due to use of convenience shops or higher transport costs) which can be critical for those in low income groups are not accounted for in wages and benefits. These variations to those on low incomes who spend small amounts of money on food can be critical. Dowler refers to qualitative studies which have shown that people economise on food either by buying cheaper items such as processed meals, fewer fruit and vegetables or omitting meals. Given that the study was conducted in 2002, all of these points would have become more of an issue as a consequence of food price increases.

Minimum Income and Food A Minimum Income Standard (MIS) for Britain has been suggested in a recent report by the Joseph Rowntree Foundation⁸⁷. This study examined what people think is needed to afford a socially acceptable standard of living for different groups of society including the amount required to be spent on food. The report sets out a series of minimum income standard budgets which includes a minimum amount per week for food for 4 household types: single adults (£40.34), couples with two children (£97.47), lone parents with one child (£47.05) and couple pensioners (53.25). The report suggests that those living in poverty do not have an adequate income in order to provide a healthy balanced diet. Table 12 compares MIS against the mean expenditure on food of different family types based on the data from the Expenditure and Food Survey.

⁸⁶ Food and Poverty in Britain: Rights and Responsibilities, Elizabeth Dowler, Social Policy and Administration, vol 36, no 6, 2002

⁸⁷ <http://www.minimumincomestandard.org/>

Table 12 Minimum Income Standard (MIS) compared with actual mean expenditure per week on food (April 2008)

	EFS all	EFS IS*	EFS social housing**	MIS
	Mean £	Mean £	Mean £	£
Single working-age adult	39.53	25.30	28.47	40.34
Pensioner couple	65.60	53.58	52.81	53.25
Couple plus two children	111.55	67.58	82.16	97.47
Lone parent plus one child	52.27	41.56	44.80	47.05

* receiving Income Support/income-tested Jobseeker's Allowance/Minimum Income Guarantee/Pension Credit

** living in social housing

There is no reason why the MIS budgets should be identical to actual expenditure. Actual expenditure is constrained by income, whereas the MIS budgets have been derived without an income constraint but aimed to achieve a minimum income standard. The purpose of the comparison with the EFS is to place the consumption patterns derived from the MIS exercise on the distribution of overall consumption⁸⁸

Most of the above refer to the situation prior to the recent price increase. Increased food prices hit poorest household first and worse.

Recommendation

30) We suggest the Scottish Government should recognise the disproportionate impact of price rises in foods on the poorest in society and put in places mechanisms to ease the burden.

31) We suggest that the Scottish Government consider whether the Minimum Income Standard could be developed for use in Scotland as an index of the need for additional benefits to help with food purchase.

4.2 The role of Community and Voluntary Initiatives

The Community Sector and Affordability Food production, processing and

⁸⁸ A minimum income standard for Britain: what people think, Jonathan Bradshaw, Sue Middleton, Abigail Davis, Nina Oldfield, Noel Smith, Linda Cusworth, Julie Williams, 2008

retailing are major international business sectors but there are questions as to whether they represent the best means of delivery to the food poor. The voluntary sector may have the potential to become an intermediary between major multiples and vulnerable individuals. Scotland has both an incredible legacy as well as an amazing current resource in its community and voluntary sector that can assist in helping with issues relating to both access and affordability. The voluntary sector can deliver a range of foods but not all of these will necessarily be cheaper than those which might have been obtained from alternative sources. They are, however, likely to be more accessible and frequently are of better quality. Breakfast Clubs and the provision of quality fruit in schools are two national initiatives that can trace their origins to this sector and which are example of such an alternative approach. In this report we discuss separately the contribution of this sector to issues of affordability and access. Perhaps one of the major achievements of the sector is to ensure that current policy discussions are not restricted to agencies, boardrooms and lobbyists.

How the Voluntary Sector Works The Voluntary sector because of its nature often, but not universally, has significantly lower overheads than other suppliers. Low labour and often low premises costs; a consequence of the use of multi functional buildings, such as Churches, result in their being able to function in situations which would not be viable for those that have to cover costs at a market rates. Organisations of this type have in addition a role in connecting local producers to vulnerable consumers. In evaluating the role of the voluntary sector it is important to recognise the sectors major contributions being as a result of reach and reputation rather than just price. They provide a clear route to aid Government in facilitating more consumer orientated food chains. Voluntary organisations range from small local groups entirely made up of volunteers to national organisations with large numbers of professional staff. Together they make up a sector involving 45,000 organisations with up to 130,000 paid staff and over 1.2 million volunteers.

Many voluntary led initiatives involve participation from a range of organizations. A current study of food, health and homelessness found around 70% of initiatives being run by the community/voluntary sector, with a further 10% by faith-based organisations. Although around 90% of initiatives had paid staff, over 60% involved volunteers and in one in four initiatives homeless people were actively involved in its delivery.

Issues which require further consideration in support of these community and voluntary initiatives include:

- a) **Options for collaboration:** A scoping study on the options for greater collaboration within East Central Scotland of Food Co-op networks, commissioned by Community Food and Health (Scotland) [CFH(S)], “revealed five unique network organisations with widely differing approaches and

aspirations. Interest from Glasgow has further boosted aspirations for a national initiative⁸⁹ and has resulted in CFH(S) commissioning a similar study about the options for greater collaboration throughout the city's community and voluntary sector⁹⁰ and an embryonic network of Glasgow community food initiatives. The networks involved at the time covered 22% of the Scottish population and have since been joined by the north-east.⁹¹

At the time of the study the networks involved, collectively, supplied almost 50 food co-ops and over 200 schools/nurseries as well undertaking a range of other health promotion activities ranging from cooking classes to tree planting. The five networks studied at that point had 30 staff and 167 volunteers operating 15 vehicles from 5 warehouses with a collective turnover exceeding £1.2 million. A common feature of their funding at the time was support from the local authority. Most were invested in by their NHS Boards and all also took advantage of a patchwork of additional funding sources. Even the local authority and NHS Board funding could come from different headings at different times. The basic principles of such co-operatives are detailed in Box 7

Box 7 Community Food Networks in Scotland

There are currently 6 community Food networks in place in Scotland. They are:

Community Food initiatives North East

East Lothian Roots and Fruits

Edinburgh Community Food Initiatives

North Glasgow Community Food Initiatives

Lanarkshire Community Food and Health Partnership

West Lothian Food and Health Development

These existing networks work principally at a local authority level and combine the purchase of food with being community food outlets. For example within the area served by CFINE there are around 50 outlets which are run and staffed by volunteers and are open for 1-2 hours per week. Here CFINE orders the produce requested by outlets and delivers it to them. Future development seems likely to depend on the establishment of a central distribution point to permit the development of collective purchasing power.

⁸⁹ A business plan, part funded by CFHS, has been produced which will form, alongside the findings of the EKOS study, Eatwell's (the working title for the national initiative) bid to the Scottish Investment Fund.

⁹⁰ The study, being undertaken by EKOS Ltd, is due for completion in this spring.

⁹¹ Community Food Initiatives North East. See www.cfine.org

CFINE (Box8) is an example of such an approach which is currently active at a local level in Aberdeen.

Box 8 Community Food Initiative North East

Community Food Initiative North East (CFINE) aim is to improve health and well being and contribute to regeneration in disadvantaged and excluded geographical and interest communities by promoting the consumption of fruit, vegetables, pulses and other healthy products and encouraging and supporting volunteering which brings a range of personal, family and community benefits. CFINE also operates as a **Social Enterprise** selling fruit, vegetables and other produce on a **commercial**, but competitive basis. CFINE is now supplying fruit to a large number of companies who participate in Healthy Working Lives award scheme. We have launched a **fruit/veg/salad box scheme**, a further development of our Social Enterprise, where we deliver orders to workplaces. All profit from commercial trading is invested in the health and community development work we do in disadvantaged and excluded communities. Presently **around 40 Community Food Outlets** operate in Aberdeen's regeneration areas (Woodside, Middlefield, Tillydrone, Northfield, Seaton, Torry and Cummings Park) and also in the Mastrick area. Outlets also operate in various organisations for example the Alford Centre (for people with mental health problems) and Grampian Society for the Blind, and in a number of sheltered housing complexes. These outlets provide fresh fruit, vegetables, healthy snacks and dried goods at as affordable as possible prices to the local community

b) **Relevant training of people:** Many homeless organisations were recognised as having taken steps to improve the capacity of their staff to work on food, particularly through courses provided by the Royal Environmental Health Institute of Scotland. The importance of training was also most recently reaffirmed in a study on nutrition commissioned by Glasgow Addiction Services. They concluded "There is a need for training and resources to ensure that staff are providing evidenced based dietary advice, and referring to specialist services when appropriate. It is important to the development of food affordability that there is widespread recognition of the importance of this sector in developing strategies such as those delivered by Single Outcome agreements and HEAT targets.

Links between this sector and the private sector are evolving. The Food Train⁹² in Dumfries and Galloway (Box 9) and Fareshare in Aberdeen (Box 10) are good examples of co-operation between voluntary groups and other such as the retail trade whose involvement is crucial to the entire operation. CFHS are currently looking with the Food Train at how best to share their experience and skills with interested parties across the country.

⁹² See www.thefoodtrain.co.uk/ Dumfries and Galloway Food Train have only just been informed that they have been successful in receiving government funding to build nationally on their local success and will be working alongside CFHS to do so.

Box 9 The Food Train

“Managing the grocery shopping is often the first problem older people face as they age; many simply eat less in order to cope. Since 1995 The Food Train has been meeting the challenge of food access, delivering fresh groceries to older people across Dumfries and Galloway and seeing the struggles people faced before asking for our help. Now making 15,000 deliveries of vital fresh grocery supplies every year we witness first hand those long term results - our customers eat better, feel better and stay at home for longer. In 2006 the European Nutrition Health Alliance published recommendations to address the nutritional needs of older people, with a strong message that it's too complex for the NHS and Government alone. The third sector in Scotland is certainly ready, willing and able to help with the task of enabling our older people to keep nutritionally well for as long as possible.”

Taken from an article from Dumfries and Galloway Food Train in Fare Choice, newsletter of Community Food and Health (Scotland)

Box 10 Supermarkets and community organizations in partnership

CFINE's most recent development is a FareShare project whereby supermarkets' and food producers' surplus foodstuffs are collected and distributed free to people experiencing food poverty, for example, facilities for people who are homeless, women who have experienced domestic abuse and in the regeneration areas. **Benefits of FareShare**

- diverting produce that is perfectly good from landfill reaping significant environmental benefit• affording the food industry the opportunity to exercise corporate responsibility and work in partnership with the voluntary sector;
- improved diet for vulnerable/disadvantaged/excluded groups of people
- saving beneficiary organisations money from their food budgets which can be diverted to other purposes
- saving individuals and families money• Fareshare has distributed 17 tones of produce between April and December 2007. Six tones of dairy produce are thanks to Wiseman Dairies.

Initiatives to Generate Self Respect through Food Skills Other examples of where initiatives have successfully impacted on the ability of people to afford and gain access to quality food include groups specifically targeted on the most vulnerable of the food poor e.g. the homeless. For instance the initiative at Grey Friars Church in Edinburgh run by the Church and the Edinburgh Cyrenians has been successful in restoring self respect to homeless people in addition to improving their nutritional status. Box 11. These work in a variety of ways and their success commonly depends on the skills and enthusiasm of an individual or a small number of individuals.

Box 11 Transformation: An alternative approach which may have found its time.

At the Greyfriars Kirkhouse in the heart of Edinburgh's Old Town, a fascinating project is taking shape in which vulnerable people are rediscovering the culture and power of food as a means of transformation. A traditional soup kitchen that has for many years offered food and hospitality to vulnerable and homeless people in the Grassmarket area is being transformed into a place where people are learning how to cook and to appreciate healthy food. They are being encouraged to experience all that goes with eating well and they are doing so in a caring and communicative environment. This project is being supported by Edinburgh Cyrenians who have pioneered a project called Good Food in Tackling Homelessness. Along with Community Food and Health Scotland (formerly the Scottish Community Diet Project) they are developing a nation-wide programme that is rediscovering the culture of food as a tool for positive transformation.

By sharing food around a table and opening up lines of communication and fellowship that did not previously exist, positive change has taken place in people's circumstances. For many people, and not just those who have experienced homelessness, the idea of sitting at a table and taking time to serve one another and listen to other people's stories is both novel and empowering.

Peter is homeless and has all the scars of homelessness upon him. He has low self-esteem, suffers loneliness and there are times when he is tempted by drug abuse and is prone to despair. He signed up for a cooking class. After several weeks of tuition and support, he cooked and served a meal to his peers in the drop-in centre. Many compliments were offered for the delicious meal he had cooked and Peter beamed with satisfaction. It was clear that he was delighted with the outcome and explained later that this was the first occasion on which he had been praised for something he had done for as long as he could remember.

The boost to his self-esteem and the sense of accomplishment that went with the cooking class has led to new opportunities opening up and an end to the cycle of homelessness in which Peter was locked for many years. In addition to being able to move on in his life, Peter now eats better food, is healthier and making healthy eating choices and has learned a new and very satisfying skill.

Something else has happened that is of inestimable value too; he has rediscovered the culture of food. He has discovered the infinite value that comes from taking the time to share a meal at table with friends and the communications of life that flow from that as a part of the cement of community living. The culture of food is more than just nutrition and for many people in today's society the age-old customs of table fellowship and hospitality that are common to almost every culture are being downgraded in the rush for convenience and speed.

Waste Reduction Initiatives Many schemes run by Health Boards and Local Authorities in Scotland are short term in nature. It is important to consider how such initiatives which are delivering results continue to be funded in the longer term. An example of a scheme of this type is that operated by the Edinburgh Cyrenians and which aims to recycle food close to the end of its shelf life in supermarkets to the benefit of the community. (Box 12)

Box 12 Approaches to minimising waste

“Edinburgh Cyrenians have been running the Fareshare project since 1999 and are distributing food on a regular basis to over 30 homelessness organisations and projects throughout the Lothian’s. The project states that approximately a third of the food they distribute is in the form of fresh fruit and vegetables. Volunteers and trainees are involved in warehouse roles such as sorting, storing, packing and delivering food supplies. The project encourages social inclusion and skill development as steps to employment for supported volunteers and trainees. The Cooking at Home classes cater for a maximum of four people and teach basic cookery skills and information on food safety, nutrition and budgeting. The Cyrenians receive referrals for service users to attend their classes from homelessness, mental health and other organisations working with individuals whose vulnerabilities might include addiction, repeat offending or mental health issues. Edinburgh Cyrenians also shares their learning around food, health and homelessness with other organisations, for example through their annual food conference and study tours. In the last year, the Good Food in Tackling Homelessness programme delivered 118 cooking classes, involved volunteers and trainees in contributing over 9,000 hours of work, and received 467 tons of food from 27 companies. The redistributed food contributed to an estimated three quarters of a million meals.”

Taken from ‘Food, Health and Homelessness in Scotland – mapping practice, progress and impact’ commissioned by Community Food and Health (Scotland) from Blake Stevenson, Dec 2008

Community Food and Health (Scotland) There are plans for CFH (S) to support work exploring the common fresh produce supply chain problems experienced by both independent neighborhood shops and community retailers. In these days of outcome driven policy and evidence-informed practice the response to the joint CFH(S) / Evaluation Support Scotland evaluation self-help collaborative has been encouraging. The community-based initiatives are in the middle of a three phase programme to improve their confidence and skills in acquiring and applying information on the difference they are making through their work involving parents and children. A member of one of these groups has commented “Demonstrating the impact of our work is a challenge, due to the drop in nature of the group and the lack of structured time for discussion with parents, we have found most conventional evaluation methods quite difficult to use. As a result we have organised separate focus group sessions (with crèche provision) to allow more time for discussion with parents and we continually look at our evaluation systems/methods to enable us to capture and demonstrate the impact of our work. With all our other programmes we do baseline evaluations

with the participants, this allows the participants and us to compare how they have changed as a result of participating in the group”⁹³

This piece of work has particularly raised the dilemma of evaluation being recognised as more important than ever for improving impact and identifying outcomes at a time when dwindling resources and no shortage of competing priorities make it harder to commit adequately to. Most recently NHS Health Scotland have agreed to fund a programme of work around the economic evaluation of community health initiatives. A basic case study of the Lanarkshire Community Food and Health Partnership is to be undertaken in the spring.⁹⁴

From a CFHS perspective, alongside commissioned studies, the most useful sources of information on the activities and aspirations, conduct and concerns, of communities come from their interaction with regular CFHS activities such as the annual networking conference⁹⁵ (200 in attendance), Fare Choice quarterly newsletter (circulation c2, 000), CFHS website (20,000 visits last quarter) and annual small grants scheme. (59 current recipients from 249 applicants)⁹⁶

The Inspiring Scotland Model The Inspiring Scotland model is an example of an approach which could benefit being more widely adopted and which we would therefore wish to recommend for study, as a way ahead. The Inspiring Scotland model (Box 13) operates in conjunction with Community Food and Health Scotland. The purpose of this type of investment programme is to create sustained change through partnership and collaboration, achieving long lasting positive impacts for the disadvantaged peoples and communities in Scotland.

Such an investment programme addresses a number of problems that have historically limited the ability of the VCO community food sector to make it work effectively and sustainably and to scale-up services and their impact. Past limitations have included:

- Short-term funding to voluntary organisations;
- Lack of resources available to build the capacity;
- An external perception of there being too many charities;
- A tendency for Trusts, Government and philanthropists to focus on ‘bits of problems’ rather than meeting social issues head-on;

⁹³ Quote from Hidden Gardens, Glasgow from as yet unpublished stage two report from CFH/SESS supported evaluation self help collaborative.

⁹⁴ Contract for work just going out for tender. CFHS on committee overseeing research.

⁹⁵ ‘Making a difference’ was held in Glasgow in early November and a conference report is due out in the spring along with a questionnaire on how participants have used the information and contacts gathered at the event.

⁹⁶ See www.communityfoodandhealth.org.uk/funding/keylearning.php

- The need for more collaboration amongst voluntary organisations;
- Too much 'bureaucracy of funding' resulting in more money being wasted;

An Inspiring Scotland-type investment programme for VCO's delivering scaleable community food initiatives would deliver:

- Robust evidence of reduced inequalities in Scotland with regard to good food access and affordability;
- A cohort of thriving VCO organisations in the community food field delivering more strategic, effective, co-coordinated and sustainable services that make an impact
- A step-change in the core capacity of VCO's in this field;
- Significantly increased learning and sharing of that learning – amongst providers as well as policy makers - about what does and doesn't work in achieving the main social outcome of this programme;
- Better evidence for the use of Government about the effectiveness of investing in community based activity;
- A bigger buy-in from the food industry to social investment in VCO's in contributing to a fairer and healthier Scotland

BOX 13 The contribution of the Inspiring Scotland Investment Model

The key features of the Inspiring Scotland investment model are:

Multi-sector funding contributing to a single fund: combining Government funding, business sector funding, trusts and foundations and philanthropists with a passion for making a lasting difference

Strategic focus: Starting with a base-line understanding of the current problem and a shared vision of where we want to get to

Long-term investment: 7-10 years of investment in a varied portfolio of front-line VCO's, investing in their organisational capacity to sustain progress beyond the investment as well as the front-line activity

Scale of investment: For example, the Inspiring Scotland NEET programme currently underway has an investment budget of £7-10m p.a. In addition, VCO's receive non financial business support both to deliver ambitious targets and improve their business acumen.

The portfolio model: The cohort of invested VCO's (24 organisations in the NEET programme) represents a variety of approaches to tackling the problem, operating in various types of community across Scotland. They are supported by both financial investment and business support to build on the successful work they are doing, so that it becomes sustainable, more effective and with a bigger impact.

Building knowledge and expertise: Whilst the portfolio supports diversity, there is a strong commitment to honest evaluation to sharing the learning about what has worked and what has not worked with investors and the other investees. The learning will be used to inform policy and practice and to benefit the whole VCO sector in this field.

The principle contribution of an Inspiring Scotland type model to a National Food Policy is not about funding the community and voluntary sector but ensuring that goals are being funded, pursued and delivered by those best placed to do so. A National Food Policy that engages with, and makes a difference to, all of Scotland's communities needs confident and competent community groups and voluntary organisations at its heart rather than ones feeling threatened, marginalised and distracted.

Recommendations

32) Novel and innovative approaches to tackling access by the community and voluntary sector should continue to be encouraged, not only in terms of approach and practice but also with regards to technology, scale and geographical coverage. It is recommended that every assistance is given from appropriate national agencies in ensuring the learning from such work not only continues to be shared but has greater opportunities to be applied.

33) To this end we recommend the use of the Inspiring Scotland model and believe there would be benefit for Inspiring Scotland to work with Community Food and Health Scotland to deliver a long term strategic investment programme with the dual outcomes of building a stronger community food and health sector and enabling grass root initiatives to scale up to make a bigger and more sustainable impact. It would be expected that such a programme would operate in conjunction with Community Food and Health (Scotland) and appropriate national agencies such as Food Standards Agency Scotland and NHS Health Scotland.

4.3 Affordability of Food in Rural Areas

Affordability by Rural Communities A significant proportion of our population are based in our four largest cities. 79% of our total population live on 2% of our land area while the 6% who make up our remote rural population occupy 69% of the land area. (Anon, 2006).⁹⁷ This has resulted in the cost of a healthy diet being significantly more expensive for those in this situation. A recent study carried out for the FSA(S) showed a higher price for food in rural areas predominantly as a consequence of the presence of fewer large supermarkets and more small general stores with higher average prices.⁹⁸ This study is discussed in more detail in section 5.2.

The sparse population in remote rural areas has meant that they have suffered disproportionately from the loss of services such as shops Post Offices, Public Houses etc. The combination of high costs, limited choice in access to food outlets and low wages has resulted in many of the food poor being found in rural areas. Traditionally a range of measures have been employed to alleviate some of these effects. The designation of the Crofting Counties and the legislation relating to Crofting as a means of small scale local production has had a significant and positive impact. Crofting has shown that with support of this type that a wider range of food can be produced than would be the case for economically driven commodities.

⁹⁷ Anon (2006) Rural Scotland Key Facts 2006, Scottish Executive , Edinburgh

⁹⁸ FSA (2008) Accessing Healthy Food, FSA (S) Aberdeen

4.4 Specific Initiatives for the Most Vulnerable

The Super Markets and the Food Poor The existence of a group in society who are food poor identifies that current measures aimed at providing affordable access to food have not been totally successful. The types of voluntary initiatives suggested above will help but there is also a need to use more mainstream and commercial routes. The impact of the Supermarkets from the 1970s has resulted in both significant reductions in the cost of food in real terms and in food supply chains which are radically different to those of the earlier era. The supermarkets reduce prices through removing cost from most parts of the system especially in relation to transport and scale of buying. The supermarkets are therefore key players in any attempt to reduce the price of food or to maintain it in periods of market failure. It is therefore important to identify whether there are new options by which supermarkets might provide healthier meals at low prices.

SGF Healthy Living Programme Local shops also have a part to play but here a key issue is whether quality food can be made more available and affordable at convenience stores, especially those located in deprived or in rural areas. The Scottish Grocers Federation (SGF) Healthyliving Programme (previously known as the Neighbourhood Shops Project) aims to improve the supply and provision of fresh produce and healthier food choices in local convenience stores, particularly in low income areas, and to promote this work to the wider trade; generating increased participation, spreading effective sales models and improving the wholesale supply chain.

In delivering the programme, the Scottish Government is working in partnership with the Scottish Grocers Federation (SGF); the trade body that represents independent convenience stores in Scotland, with approximately 250 members representing over 2,000 retail outlets.

The Scottish Grocers Federation is described in Box 13.

Box 13

SGF (Scottish Grocers' Federation) is the trade association for the Scottish convenience store sector. It is the authoritative voice for the trade to both policy makers and the media. The SGF brings together a whole range of retailers throughout Scotland, from most of the Scottish Co-ops, through Somerfield, Spar and local independents, who are our largest category of members. These retailers sell a wide selection of products and services throughout local town centre, rural and community stores. According to recent statistics there are just over 5,600 convenience stores throughout Scotland, with annual sales in excess of £3.2 billion

Healthy Eating Active Living (2008)⁹⁹ cites the SGF Healthyliving Programme as an example of best practice and commits the SG to support the food sector to drive forward and support positive changes within industry and ensure that health objectives are integrated. The SGF Healthyliving Programme was set up as a pilot in April 2004 to evaluate the potential of the convenience store sector to successfully and profitably promote the Healthyliving brand and healthier food choices, with a view to helping inform further action in this sector. The pilot involved 10 stores and tested a variety of potential promotional initiatives which successfully showed that the convenience store sector had the potential to promote healthier food choices profitably. A Project Coordinator was appointed to develop the programme throughout convenience stores in Scotland, particularly in low income areas. Following the success of the pilot, phase 2 was launched in April 2005 and ran until May 2006 and included 197 stores. This phase focussed on point-of-sale material, training costs, investment in equipment and store refurbishment costs to ensure appropriate focus on fruit and vegetables.

Key Results from Phases 1 & 2 An evaluation conducted by Harris International Marketing (HIM) found¹⁰⁰ that:

- 70% of shoppers said initiatives in their store had encouraged them to buy more fresh produce;
- 45% of shoppers are buying more fresh produce now compared to 12 months ago.
- Around 41% of shoppers said they would use their local convenience store as their first choice for fresh products.

Additionally, retailers noted that certain practices led to a marked increase in sales:

- Doubling of space for fruit & veg and relocation to the front of the store – 750% increase
- Appointing a “fresh champion” in-store - 176% increase
- Sited a new chilled unit for fresh produce- 55% increase¹⁰¹

Current Work Phase 3 of the programme has the aim of expanding the initiative as widely as possible. It aims to enlist new retailers onto the programme, with an emphasis on retailers situated in low-income communities. Around 550 stores are already signed up, with major operators in the convenience store sector including Robert Wiseman Dairies, David Sands Ltd, Scotmid, Botterills, CJ Lang, Spar, Somerfield and a number of key independent retailers. This figure is

⁹⁹ Anon (2008) Healthy Eating, Active Living, Scottish Government, Edinburgh.

¹⁰⁰ An evaluation of the first two phases was published by Health Scotland and can be found at <http://www.healthscotland.com/documents/1738.aspx>.

¹⁰¹ An evaluation of the first two phases was published by Health Scotland and can be found at <http://www.healthscotland.com/documents/1738.aspx>.

expected to rise as more retailers are convinced of the profitability of healthy options. The Programme launches a new phase of branding in spring 2009 linking it more closely to the Healthier Scotland super brand and Take Life On health improvement social marketing campaign.

Other key objectives include:

- To set up training programmes within the existing retailers, and to extend this to new retailers joining the initiative
- To further develop links to suppliers who have suitable products within their range to improve the quality and supply of fruit and vegetables to the convenience sector.

The Programme is also working with Community Food and Health (Scotland) to align with ongoing development and regeneration work at local level. There has been considerable interest in the programme from the Department of Health who have looked at the SGF Healthyliving Programme in Scotland to inform a pilot project to promote healthy options within convenience stores in England under the Change4Life banner.

Other Options There is also a need to consider more novel measures. Given the importance of linking climate change initiatives to food policy it would help to know whether making carbon credit linked food vouchers available to the food poor would be a way of both enhancing their diet as well as helping the achievement of Climate Change targets. In addition it would help to know whether money-off voucher schemes could be developed in partnership with the retail sector to encourage low-income and vulnerable families to access a healthier diet. (The BuyWell study¹⁰²).

Recommendation

34) The Scottish Government should consider investigating the options available in relation to developing the social support schemes in Scotland, in order to improve the range of benefits available to lower income households to enable them to more easily purchase a healthy diet.

4.5 The Role of the Supermarkets and Manufacturers

The Contribution of the Supermarkets The supermarkets currently dominate the food supply market and so are key players in any attempt to reduce the price of food or to maintain it in periods of market failure. They also have a pivotal role in any approach to the promotion healthy rather than less healthy options.

¹⁰² #uywell: Evaluation of a Targeted Marketing Intervention to Influence Food Purchasing Behaviour by Low Income Consumers http://www.ism.stir.ac.uk/projects_food_description.htm

Positive engagement with this sector is critical to any Scottish strategy while the UK basis of the current supermarkets networks suggests the need for discussions at a UK level.

A Food Access study carried out by White et al. in Newcastle 2004¹⁰³ showed that 77% of a representative sample of shoppers in Newcastle did their main food shopping at a multiple supermarket, 14% in a discount supermarket, 3% in a department store and 2% in their local shops, internet shopping at this time was used by 0.5%, market stalls were used by less than 0.5%.

In terms of the social and demographic characteristics of those using the main types of food store, there were strong socio-economic trends, with more affluent and better educated groups more likely to use multiple supermarkets and less affluent groups more likely to use discount supermarkets and other types of stores. Single parents and single adult households were more likely to use discount supermarkets and less likely to use multiple supermarkets, as were those on benefits, older age groups and those retired, and non-white ethnic groups. Younger people were more likely to use multiples and there was no difference in the main food shop used between male and female main food shoppers.

Improving access to affordable healthy food will require substantial changes in many of the ways in which the supermarket sector works but it is important to acknowledge that the industry has played an active part in reformulating many products to make them healthier, introduced healthier ranges, provided significant information and support to consumers and taken many socially responsible steps to help their customers make better, more sustainable choices. Although some supermarkets have moved/are moving away from But One, Get One Free (BOGOF'S), they are seen by the retail sector as a useful as part of a suite of measures to keep prices competitive.

Supermarkets and Affordability It is important that the retail sector should investigate ways to help individuals and families on a low budget to choose food which will maximise the value of their total spend in order to achieve a healthy diet. Supermarkets could do this by encouraging the purchase of low-cost foods which can contribute to a healthy diet, and also by providing advice about how to prepare these foods safely, healthily and with minimal waste. There is evidence of increased purchasing of ready meals in a recent report¹⁰⁴. In the last 6 months major supermarkets have also seen an increase in the purchase of raw ingredients suggesting that more customers are preparing meals from scratch¹⁰⁵.

For many, it is probably more expensive to buy ready meals than prepare meals

¹⁰³ <http://www.ncl.ac.uk/ihs/assets/pdfs/fsareport.pdf>

¹⁰⁴ TNS 2008

¹⁰⁵ Personal communication, David Paterson WS5 meeting 24/2/2009

from the raw ingredients. Supermarkets should do more to encourage, educate and support home preparation and cooking.

The UK food market is extremely demanding, where consumers expect affordable food and take an interest in its production and impact on the environment. It is key, therefore, that all retailers plan for the changes in global demand and production that affect our supply chain. Retailers recognise that a highly efficient just in time supply chain can also be a vulnerable one and have invested heavily to ensure its robustness. This has been tested by a number of incidents in recent years, including GM contamination of the primary source of rice and several animal disease outbreaks. Retailers have significant experience of what initiatives will work, which will not and what information their customers will take in and put to use in their stores.

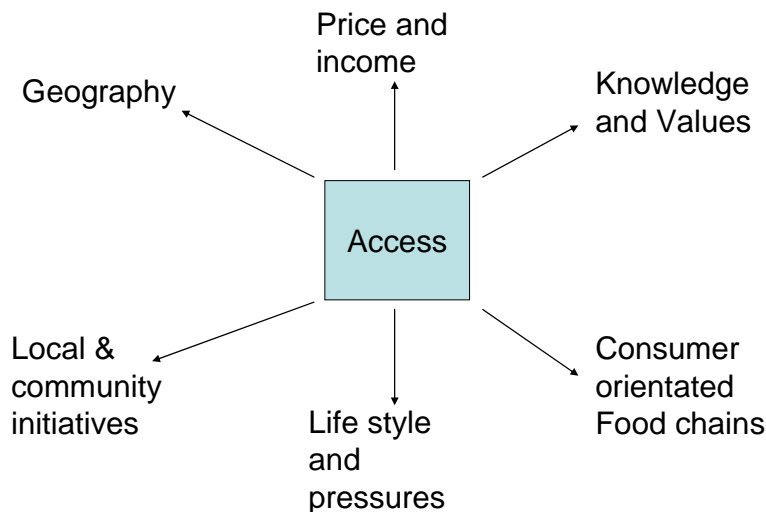
Manufacturing industry also has a key role in relation to the affordability of food. It has a responsibility to help consumers understand more about the food they eat and a role to play in helping to promote a healthy lifestyle. This could involve providing more informative labelling (e.g. nutrition labelling, Guideline Daily Amounts panel on pack) and continuing to reformulate products

Recommendations

35) Local authorities should put in place mechanisms to monitor the availability of affordable food. This might include assessments of whether appropriate transport to supermarkets and other retail outlets would allow the food poor to access a better quality diet at lower cost. It would also include the evaluation of the local availability of Electronic based food delivery systems, the use of community information centres to allow universal access to broadband and related services and the role of food hubs.

36) Small stores are an important source of foods for lower income groups. There is need for initiatives to be undertaken to improve the buying power of good quality fresh fruit and vegetables by the C sector stores.

5 ACCESS



What Is Access Defra describe Access as the transportation and food distribution system which gets food to where it's needed. A further description is the ability for all members of society to obtain sufficient food for healthy living.¹⁰⁶ Improving access is however not simply an issue of geography and while it is influenced by price this seems unlikely to be the major issue for all but the most disadvantaged of the food poor. Access has strong community elements. Like affordability the issues relating to access seem likely to change with time and will have particularly important effects at the level of the individual consumer. It also highlights the importance of "bottom up" community lead initiatives which are perhaps of the greatest importance in providing access to those who would otherwise not have a secure supply of food which they could access on a sustainable basis.

5.1 Food Access in Scotland

The Complexity of Access One of the priority areas identified by The Scottish Diet Action Plan (SDAP) in 1996 which aspired to improve the nation's eating habits was to tackle poor food access¹⁰⁷. The SDAP identified four major interlinking barriers to improving individuals' access to food: physical accessibility, affordability, culture and skills. Limitations in one or more of these four key areas may make it more difficult for vulnerable groups to obtain and

¹⁰⁶ FSA (2008) Accessing Healthy Food, FSA Aberdeen

¹⁰⁷ *Eating for Health: A Diet Action Plan for Scotland.* (Scottish Office 1996)

consume a healthy diet. In its very simplest form, adequate access is thus the ability for all members of society to obtain sufficient food for healthy living. The Scottish Government have already committed to increase access to healthy choices, particularly for those on low incomes and to provide support, education and skills development to allow people to break through the barriers of food availability and affordability.¹⁰⁸ Physical access is commonly among the least of issues for the population as a whole but for some groups such as the elderly and the disabled it can be the major limitation. Physical retail access is the range and quality of food available in shops that people can actually reach, whether by foot, public transport, or by car¹⁰⁹.

5.2 General Retail Access

Use of Supermarkets In Scotland, retail access is primarily via the 4 major supermarkets which provide around two hundred stores spread around the country. A Food Access study carried out by White et al.(2004)¹¹⁰ in Newcastle showed that 77% of a representative sample of shoppers in Newcastle did their main food shopping at a multiple supermarket, 14% in a discount supermarket, 3% in a department store and 2% in their local shops. Internet shopping at this time was used by 0.5% of respondents; market stalls were used by less than 0.5%.

In terms of the social and demographic characteristics of those using the main types of food stores, there were strong socio-economic trends. More affluent and better educated groups were more likely to use multiple supermarkets and less affluent groups were more likely to use discount supermarkets and other types of stores. Single parents and single adult households were more likely to use discount supermarkets and less likely to use multiple supermarkets, as were those on benefits, in older age groups and retired, and non-white ethnic groups.

FSAS Food Access Study A study funded by the Food Standards Agency Scotland (FSAS) on Accessing Healthy Food¹¹¹, outlined differences in the accessibility to affordable sources of healthy food and described the links to the social dimensions of affluence-deprivation and urbanism-rurality. The study identified 9 survey areas (sentinels) to represent different socio-economic environments. The detailed maps of the sentinel sites highlighted the high level of local variation in retail provision. More deprived areas have a greater density of general food stores, particularly smaller stores, than more affluent sentinels.

¹⁰⁸ Healthy Eating, Active Living: An action plan to improve diet, increase physical activity and tackle obesity (2008-2011) (<http://www.scotland.gov.uk/Publications/2008/06/20155902/0>)

¹⁰⁹ New Policy Institute (2000) Food access- whose responsibility? New Policy Institute.

¹¹⁰ <http://www.ncl.ac.uk/ihs/assets/pdfs/fsareport.pdf>

¹¹¹ The Food Standards Agency Scotland (FSAS) Accessing healthy food: A national assessment and sentinel mapping study of food retailing in Scotland(2008)
<http://www.food.gov.uk/multimedia/pdfs/accessfoodscotexec.pdf>

In each sentinel, all food shops were visited and the presence and the prices of 35 items in a healthy eating indicator shopping basket (HEISB) were recorded. In the large stores and some of the medium sized stores, a full range of HEISB items was available with the small stores generally stocking around half of the products in the basket. The number of foods available per shop was weakly negatively correlated with deprivation, so as deprivation increased, the number of HEISB foods available in stores fell. Quality of fruit and vegetables was found to be better in larger general stores, with small stores and deprived areas having the greatest proportion of poor quality products. Availability of vegetables decreased with deprivation, but fruit tended to be relatively more available in the deprived areas. In addition, stores in island (mixed) and deprived areas had the shortest opening hours.

The FSAS study concluded that most retailers and consumers should be able to adjust to the local environment. However, vulnerable consumers, such as the elderly and infirm or disabled individuals, carers, and those without transport, (including for example some mothers with young children), are less likely to be able to adjust to the current retail environment. Some individuals and families may have found it easier to rely more on fast food outlets which were more likely to be found in deprived areas¹¹² and which tend to provide more energy dense and less healthy food.¹¹³

Recommendations

37) The Retail sector should be used as a key lever for promotion of healthy eating. This might be used as criteria to assist the granting of planning permission. In addition it is important that planners require good provision of small shops in all new housing developments.

5.3 Rural Access

Mapping Retail Provision in Remote Communities As part of the FSAS Food Access Study a food map of Scotland was produced. This map indicated an extensive network of food shops in all socio-economic environments in Scotland. Levels of accessibility varied considerably with an estimated 250,000 people in Scotland living more than 1 km away from a large or a medium sized store, and an estimated 3 million living within 1 km. Figure 10 shows both the geographical location of food stores in Scotland and the urban-rural classification map. It is apparent that the large food stores are concentrated in urban areas of Scotland,

¹¹² MacIntyre, S., McKay, L., Cummins, S. and Burns C (2005). Out of home food outlets and area deprivation; case study in Glasgow, UK. *International Journal of Behavioural Nutrition and Physical Activity*, 2, (16).

¹¹³ *National Consumer Council (2008). takeaway health: how takeaway restaurants can affect your chances of a healthy diet. NCC, London.*

whilst in some remote rural areas they are absent altogether. Smaller stores seem to cover most of remote rural Scotland. The FSAS study found that the availability of the HEISB in small stores was higher in more remote areas than in urban areas, probably due to the presence of fewer medium and large stores in these areas.

Food Access in the Islands A study linked to the FSAS Food Access Survey¹¹⁴ has recently examined food access from the consumer perspective in a remote deprived area (Western Isles of Scotland). Fifty six semi-structured interviews were conducted concentrating on household access, buying strategies, food stockholding and meal planning and particular issues for low income families or groups. Participants' perceptions of retail provision were found to be generally favourable, despite the limited choice of stores available. Inconsistent availability of products in store was found to be one of the most frustrating aspects of shopping in the Western Isles, this made planning and budgeting difficult, particularly with regards to fresh produce.

Supply Routes to the Rural Areas Consumers in remote areas accepted that they may have to travel some distance to a food store due to the location in which they live though this is the trade off for living in safe communities with scenic countryside. Most participants had access to a car for food shopping and for those without a car, social networks such as friends and family were important, providing lifts and enabling them to access stores. Those using a voluntary organisation run shopping bus service found this service particularly useful. Community retailing networks are also important to food access in rural situations. (Box 14)

Box 14 The Community Retailing Network

From small communities seeking to retain their local shop, post office or petrol pumps to larger urban areas trying to provide better access to affordable, fresh, healthy food - community ownership can offer a sustainable, long-term solution. The Network aims to support and develop community owned retailing by:

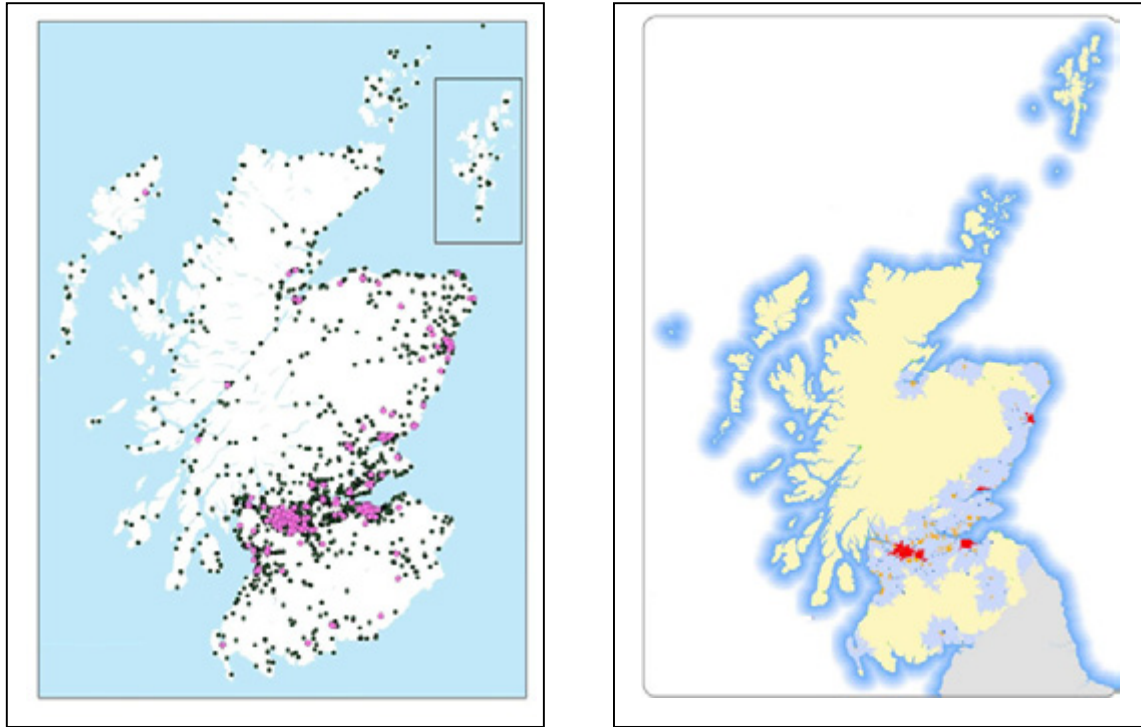
Supporting existing community owned shops and retail enterprises , Helping to set up new ones, Sharing knowledge and good practice and Promoting and representing community retailers

Alternative food networks such as local produce sales, farmers markets and home produced food were used in conjunction with the conventional food retail supply chain in order to meet the needs of participants. Food intakes measured in a small convenience sample provided no evidence that intakes were different from the UK population as a whole. In fact, there was some indication that intakes of fresh fruit, vegetables and fish in this group may be slightly higher than the rest of the population^{8, 115i}.

¹¹⁴ Laura Nisbet, PhD student at the University of Edinburgh Business School. An exploratory Study of the factors affecting food access and food choice of consumers in remote Scottish communities. Thesis submitted Jan 2009

¹¹⁵ Wrieden WL, Barton KL, Armstrong J, McNeill. A review of Food Composition and Nutrient Intakes From National Surveys in Scotland: Comparison to The Scottish Dietary Targets (2006)

Figure 10 – Food Stores Map (2006) and Scottish Government Urban Rural Classification Map (2007-2008)



Scottish Government 6-Fold Urban Rural classification

- Large urban areas (with population of over 125,000)
- Other urban area (with population of 10,000 to 125,000)
- Accessible* small town (with population of 3,000 to 10,000)
- Remote small towns (with population of 3,000 to 10,000)
- Accessible * rural
- Remote rural

*Accessible is defined as those areas that are within a 30 minute drivetime from the centre of a town with a population of 10,000 or more

- All food stores
- Large food stores (>15,000 sq m floorspace)

Source: John Dawson et al, 2008; The Scottish Government, 2008

Recommendations

38) In order to improve access to affordable healthy food in rural areas the FSAS/SG should consider the value of commissioning a study to:

- a) Map out the geographical spread of home delivery in Scotland (Commercial and Community based schemes); and**
- b) Explore the future potential of working in partnership with supermarkets, C sector stores and other partners to examine the use of broadband access and new technology to increase food access in remote and rural areas in Scotland.**

39) The availability of healthy food at reasonable cost is a particular problem in the Highlands and Islands. Government should investigate how the costs of the transport of healthy food to the Highlands and Islands might be subsidised as a means of reducing the prices. This could include assisting current businesses and supporting new businesses in rural areas operating mobile shop schemes for food. Schemes such as those currently operating on the Isle of Skye could be extended in their coverage across Scotland.

5.4 Access for more vulnerable consumers

Who are the Vulnerable? As highlighted in Section 5.2, vulnerable consumers, such as the elderly and infirm or disabled, carers, and those without transport, including some mothers with young children, are less likely to be able to adjust to the current retail environment. However, the make up of the most vulnerable in society with problems of retail access and the extent of the problems they face, and they can best be supported, is unclear. There are increasing numbers of older people living in their own homes who are at significant risk of undernutrition¹¹⁶. The quality of the diet is therefore extremely important to ensure that both macronutrient and micronutrient requirements are met. Further analysis of the LIDNS¹¹⁷ data found that older men and in particular older men who live alone may be at particular risk of an inadequate diet¹¹⁸

Support services are often put in place to help meet the nutritional needs of older people who are unable to shop or prepare food themselves. There will be an

¹¹⁶ European Nutrition for Health Alliance (2006) Malnutrition among older people in the community policy recommendations for change London: European Nutrition for Health Alliance <http://www.european-nutrition.org/record.jsp?type=event&ID=54>

¹¹⁷ Nelson M, Erens B, Bates B, Church S and Boshier, T. (2007). Low income diet and nutrition survey. Food Standards Agency, London

¹¹⁸ Holmes BA.; Roberts CL.; Nelson M (2008) How access, isolation and other factors may influence food consumption and nutrient intake in materially deprived older men in the UK Nutrition Bulletin 33(3) 212-220(9).

increasing demand for such services in the future due to the expected increase in the numbers of older people living alone and requiring additional help.

The Scottish Government have already committed to investigating the nutritional needs of free living older people and mapping current interventions¹¹⁹. It is essential to emphasize the importance of these actions, as there is a lack of evidence available at present to demonstrate that the nutritional needs of these vulnerable consumers are being met. It is important to optimise the food safety, nutritional status, health and wellbeing of older people to allow them to stay in their own homes for as long as possible as addressing this inequality could potentially reduce further long term health and care costs. This may need a variety of approaches such as adequate training in nutrition for home helps, a more effective meals on wheels service, and support for community healthy lunch provision. This could be linked to opportunities to purchase food which could then be delivered to the homes of older people.

Recommendations

40) As discussed in the SDAP action is still needed to bring the facilities of the major stores within easy reach of consumers without transport. With increasing numbers of older people in the population, the need for additional help with retail access is likely to rise. Options for support for this section of society should be explored by Government in partnership with the retail sector.

41) Pensioner food poverty should be dealt with in a way which parallels fuel poverty.

42) The groups most vulnerable to problems with food access and affordability in our society are unclear. Establishing the demographic characteristics and needs of this vulnerable group in Scotland should be a significant research priority.

43) The Scottish Government should consider further actions to support the provision of safe, effective and adequate food related services for older people living in the community who require additional support.

¹¹⁹ Healthy Eating, Active Living: An action plan to improve diet, increase physical activity and tackle obesity (2008-2011) (<http://www.scotland.gov.uk/Publications/2008/06/20155902/0>)

5.5 Internet Access

Broadband and Access Internet access is an important prerequisite to facilitate online supermarket shopping. According to Scottish Household Survey (2007)¹²⁰ the proportion of households with home Internet access has seen a gradual increase year on year. Overall, 57% of Scottish households report having home Internet access in 2007. Households in the 15% most deprived areas of Scotland are much less likely than those in the rest of Scotland to have home Internet access, at 36% and 61% respectively. The proportion of households with home Internet access is higher in rural areas than in small towns and urban areas. For example, only 54% of households in large urban areas report having Internet access at home, compared with 67% of households in accessible rural areas.

Electronic selling seems likely to become increasingly important to food access in rural situations. Getting maximum value from such technologies in the future may require government intervention to assist in the development of community networks and the hardware needed to exploit them. Scotland currently has over 99% broadband availability. The current Broadband Reach Project is addressing the remaining (less than) 1%. Scottish Government is currently committed to provide basic broadband, defined as 512Kbps, to 100% of known demand by May 2009. This is to be welcomed and has the potential both to improve the accessibility of food and to contribute to climate change.

Prices and income will always influence access but there are ways of reducing their impact. It is clear that electronic marketing is beginning to have and will have a major impact in the medium term. As a consequence of its potentially lower overheads it will allow new players to enter the market. It has the potential to increase the role of the voluntary sector and to facilitate direct sales mechanisms e.g. electronic farmers markets, in delivering healthy affordable food, especially to the food poor. In order that its benefits are shared with the food poor and those in remote rural situations there may be a need for government to act so that broadband and subsequent technologies are universally available on an individual basis or through community mechanisms.

Electronic Hubs Developments of this type (Box 15) have the potential to reduce the price of food to those in remote rural situations where at the current time a basket of healthy food is around 25% more costly than in other areas¹²¹ but their major contributions seem likely to be through increasing access and quality and through a reduction in GHG's as a result of reduced car travel.

¹²⁰ <http://www.scotland.gov.uk/Publications/2008/08/07100738/11>

¹²¹ FSA (2008) Accessing Healthy Food, FSA Aberdeen.

Box 15 Larder Bytes: An electronic approach to Shopping

LarderBytes.com is a virtual organisation that manages numerous local food supply chains from producer to end customer, providing a technology service to our members. LarderBytes.com is owned by Sustain berry CIC a not for profit Community Interest Company. We have over 15 years experience in developing supply chain technology and have spent the last 3 years building a system to facilitate the distribution of local food. LarderBytes.com is the catalyst for local food producers and distributors that together form a national food network, incorporating a number of smaller regional networks within a single structure. It is our aim to deliver products into homes and businesses in an effective and efficient manner supporting our network of local producers. LarderBytes.com provides the overarching systems that create and manage the food supply chains. Much of the LarderBytes.com network is focused on providing solutions to ethical issues surrounding the production, distribution and consumption of food.

The concept behind Larder Bytes is simple. It uses a virtual outlet to bring together producers and consumers. Approaches of this type have the potential to reduce some of the down sides of the closure of rural shops and Post Offices.

The principle significance of this new approach is that the quantity and choice of foods delivered meet the needs of the consumer instead of the specifications set by a remote stock control unit. As a result it can contribute to a reduction in food waste at source. It can liberate time and permit food shopping to be done from the home without the need for travel. It has the potential to provide to those living in rural areas the advantages which the urban population have available to them through supermarket delivery services. Internet-based marketing removes the need for excessive packaging, lowering waste; and the transit system enables supply chain logistics to be optimized, reducing food miles, and cost and traffic congestion.

Food Hubs and the Vulnerable Local food hubs have the potential to aid vulnerable groups and those living within remote rural communities. A number of these have come into being as a direct result of Post Office closures and the need by rural organisations, such as the Churches, to take on the running of such facilities which then have the basis to become rural food distribution hubs (Box 16) ¹²². The value of this approach has recently been recognised by the Westminster Government who have asked “ Charities and public bodies to get over their squeamishness about giving money to religious groups as they are often best placed to run services because they good buildings, willing workers and knowledge of their areas.”¹²³

¹²² Scottish Churches Rural Group (2009) Report on The changing Post Office: An opportunity for churches to lead their communities in the provision of cost effective sustainable services. SCRG, ACTS, Alloa

¹²³ Beckford M (2009) Use churches as Post Offices say Ministers, Daily Telegraph pp9, march 25.

Box 16 The changing Post Office as a basis for novel food supply options

Recent changes in the organisation of and the number of outlets provided by the Post Office have to be seen in the context of other changes which have been occurring in the rural sector and in society as a whole. Centralisation and cost efficiencies as processes have resulted in the loss of independent shops, traditional pubs and many other facilities in all societies. Arguably these have had their greatest effect in the remote rural sector. Through its change programme the Post Office has responded to a reduction in Government funding although the changes have resulted in the loss of many outlets valued by local communities. On a more positive note the Post Office has expressed a willingness to work in partnership with community organisations, like churches, so as to allow such organisations to have a significant role in the provision of Post Office services. This presents a real opportunity for such organisations to provide an additional service to their communities. Significant dialogue has occurred between the Post Office and a range of organisations in England. This has resulted in the development of a series of guidelines for the provision of hosted Post Office services in venues such as Churches and village halls. Much in these guidelines is applicable to Scotland although differences in the legal systems and in the organisation of churches make it important for the Post Office to recognise the need to talk more widely to organisations in Scotland.

Information from organisations such as churches who had taken on the hosting of a Post Office showed that it was both viable and an appreciated community service. The provision of services from the Post Office could act as a basis for churches to take on the provision of other services for their communities. Companies, such as Sustain Berry, operate electronic hubs which put the suppliers of local foods in contact with customers who may wish to collect their goods from a church when using Post Office services. The church may wish to provide facilities so that those with out internet access at home can use church IT equipment. It is clear that such services will become more prevalent over coming years and so development of this type could be an additional service to rural communities.

5.6 Extending the role of the Farming sector

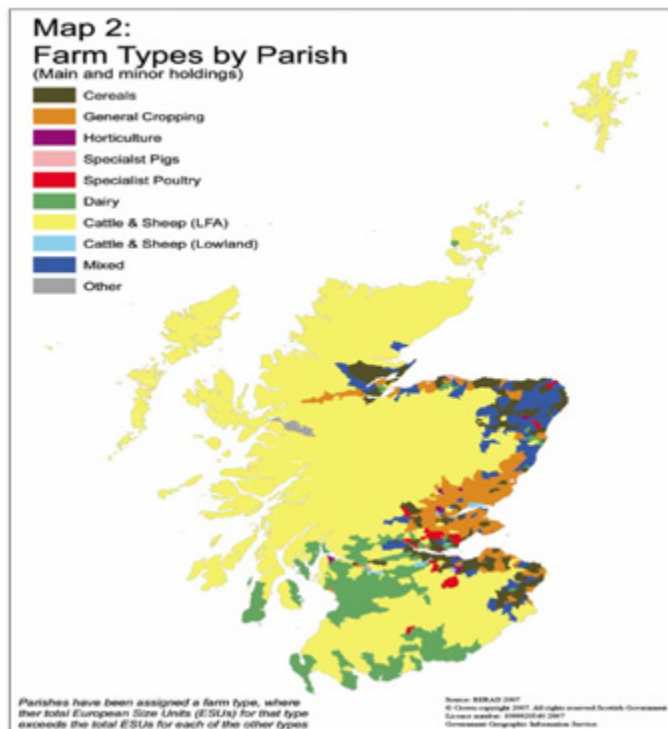


Figure 11 The farming potential of Scotland

Working within our Limitations The ability of Scotland to produce food is limited by its soils and climate. Figure 11 indicates that the most productive agriculture is restricted to a small proportion of Scotland. While these limitation are both real and unlikely to change in a very major way even as a result of climate change the success of crofting in the Crofting Counties indicates the potential for approaches to agriculture which may be very different to conventional crop or animal production.

The Role of the Traditional Estate The continuing existence of large estates is a function of Scottish history. The key decisions for an estate tend to differ from those of a farm. At the farm level the key decision is what crop to grow or which animal enterprise to employ.

At the estate level the key issue is often whether to farm or to use the land in an alternative manner e.g. for field sports or for forestry. This results in the traditional estate being important to the maintenance of the Scottish soil carbon base. In addition in recent year's farms and estates have developed a range of different approaches to direct selling which have the potential to increase access to quality food. A significant element in this approach has been through re-connecting with consumers. Their ability to do this, especially through public

events such as the “Big Tent” event in Fife and through interpretation is important to reconnecting urban consumers with food production. Many of them have also tried new approaches which have often depended on the involvement of their local communities drawing a range of new approaches onto the estate and an increase in the direct processing of crops on the farm. It is important that government monitors such developments and ensures that approaches which can help local production, access and engagement are not blocked by an over rigid application of planning legislation.

Box 17 provides an example of this approach.

Box 17 The contribution of the Traditional Scottish estate to Scottish Food Culture

The Falkland Estate provides an excellent example of a Victorian country estate with many interesting monuments, sculptures and natural features, such as waterfalls. The Estate is best known for its period as the Royal Hunting Park of the Stuart Kings from the fifteenth to the seventeenth centuries. Professor John Bruce, who had amassed a fortune in the British East India Company, assembled the estate lands in 1821-26, and began a series of improvements to the Palace, the farms and the grounds. In 1887 the Estate and the Keepership of the Palace were bought by John Patrick Crichton Stuart, the 3rd Marquess of Bute. He set about the studios restoration of the Palace. Falkland Centre for Stewardship cares for some 120 acres at the heart of Falkland Estate that is rich in wildlife, history and activity today. It also works with the local community, an assortment of partners and a band of dedicated volunteers to revitalise the estate and inspire good stewardship of land. Falkland Farm: an exemplary organic farm is committed to soil quality, biodiversity, Research/monitoring. On farm processing such as bread from the estates own wheat and porridge from its own oats are current enterprises. It is establishing a Grain Mill for hulled oats, grinds wheat for flour that will allow us to develop a Falkland brand for some products and do some limited processing on site. Barley from the farm will be sent to Black Isle Brewery who will then produce a festival beer for next years Big Tent Festival (July 2009).

Over the recent past individual farms have developed a range of approaches to increasing both their contacts with the public and their direct food sales. The farm shops of the 1970s and 1980s were followed by the development of farmers markets (Box 18). The development of farmers markets has continued both in terms of the number in Scotland but also in terms of the range of foods which they make available. The most recent new development is the significant investment in the electronic marketing of farm produced produce (Box 19).

Box 18 Scottish Farmers markets

The definition of a Scottish Farmers' Market is a market in which farmers, growers and producers from throughout Scotland sell their produce direct to the public. All foods/products sold should have been grown, reared, caught, brewed, pickled, baked, smoked, or made/prepared by the producer. Local growers and producers take personal pride in the food they bring to their Farmers' Market and want you to enjoy it. The emphasis is on freshness, quality and value for money. Buying locally means you can ask how the food is produced and grown and at the same time customer feedback is appreciated by the producer. Buying locally also reduces food miles and the stages in the food chain from fork to plate. It puts money back into the local rural economy thereby sustaining and creating jobs.

All of these approaches seem likely to develop further with time. Most seem unlikely to provide cheaper food but they are a means of improving choice in rural areas and so in providing better access. In all cases the major contribution of these direct selling methods is likely to be through the provision of locally produced food and through re-connecting producers and consumers.

Box 19 A Novel small farm approach to production and distribution

At Whitmuir Organics we are passionate about 'making food miles better' and 'growing for people we know'. And we're a small farm. So we're building a network of customers and supporters within a twenty mile radius. Our farm shop is open seven days a week supplying our own fresh meat, vegetables and eggs together with a wide range of organic groceries, toiletries and wine. We deliver large meat orders within our area, and we do have a regular delivery run for supporters in Edinburgh, where we make up individual orders including vegetables, eggs, meat and other specialities from the farm shop

While these approaches increase access in areas where it may be limited they also have a role in urban areas of restoring the connection between the consumer and the producer which has been lost in our increasingly urban society. It is important that developments of this type continue to be refreshed.

Recommendation

- 44) Farmers Markets have been successful in both giving consumers access to locally produced food and in promoting dialogue between producers and consumers. Government needs to investigate what might be done to further develop the Farmers Market concept. This would necessitate surveys of where farmers markets are held, what is currently sold at farmers markets and its affordability. From this produce guidance on how to set up a successful farmers market to encourage the sale of local, healthy, affordable food and how to encourage more Scottish businesses to sell affordable food at farmers markets.**

6) CONCLUSIONS

The principle conclusions identified in this report are as follows:

- There is a need for food security to be given an increased emphasis in government policy. Food should no longer be a permeating element dealt with under a range of other planning heads but should be a specific focus for future policy.
- While at the present time only one in five households spend 15% or more of their income on food this proportion rises at times of increases in food prices such as occurred in 2008. It seems likely to increase in future years as a result of a series of international factors which together will reduce relative food security and supply. There is thus a need to plan for an increased proportion of our population who will be relatively and in some cases absolutely food poor.
- Rises in the price of food have significant effects on the patterns of consumption which can have important implications for both health and for patterns of trade. The impact of the sudden rise in the price of food which we experienced in 2008 is a guide to the likely long term consequences of increasing food prices. This is an area where there is the potential for Scotland to take actions which will benefit its population.
- Health and wellbeing are major drivers for food policy. It is important that future food policy should secure the supply, affordability and availability of a diet which is able to have a positive effect on health.
- The importance of the links between diet and health and the limited success of previous initiatives suggest the need for alternative approaches to how these issues are addressed. There is need for a more participative approach and one which positively links food to enjoyment and as something essential to good family and community life. This is an area where specific focussed Scottish initiatives are both possible and needed.
- Community and voluntary initiatives are important to the supply of food to groups such as the elderly, the disabled and the food poor. They also have a major role in supplying elements of a healthy diet such as fruit and vegetables. The success of such groups depends upon a wide range of different methods of working and it is important that they become a higher priority for funding and that they are not required to conform to particular models of operation. Again this is an area where distinctive Scottish approaches are possible.
- Environmental Sustainability is a key issue in relation to food supply. The aims set out in the Scottish climate change bill will impact on domestic food production in a major way. It is important that we should not simply export our food related generation of green house gases. Moving the balance of food production overseas seems likely to increase rather than to decrease our carbon footprint. It is clear that there is considerable scope for changes in our farming practices, especially though more considered use of inputs dependant on the use of fossil fuels for their

manufacture, which would reduce the responsibility of our farming for the generation of greenhouse gases. It is important that what is asked of agriculture should be considered rather than simply focussed on the reduction of ruminant livestock. The response of Scottish agriculture will need to be different to that of the rest of the UK.

- The proportion of our total supply of food which should be produced within Scotland is a very real and urgent question. It has key implications for land use policy, for the direction of future food related research and knowledge transfer and for the maintenance and development of our national skill base. The intention to produce around two thirds of our food from our own resources would be both possible and have a positive impact on our food security and our overall food business sector.
- Production, processing and retailing issues are important to food security affordability and access. Around 70% of our food is currently supplied by a small number of retailers who are UK based and focussed. This means that the supermarket sector must be major partners in the development of any food policy. It also means that food policy needs to be considered at a UK level as well as resolving specific Scottish issues.
- The near universal availability of broadband and the development of electronic methods of food retailing by both the supermarket and by the voluntary and small business sectors provides an opportunity for us to consider whether we wish the majority of our food supply to be in the hands of a few large companies. It raises real issues in relation to the future viability of the convenience sector which are very much the parallel of issues raised in relation to rural post offices.
- Scotland's rural sector is larger than that of the rest of the UK. 21% of our population live in rural areas and its population is growing in contrast to that of urban Scotland. However food prices in these areas, as a result of the pattern of retailing are higher than in urban areas. Broadband raises the possibility of reducing this disparity but if this is not to be at the expense of community facilities such as local shops then approaches not solely based on economic considerations will need to be employed. It is clear that there is an increased role for voluntary organisations, such as the churches, in new approaches of this type.
- Major changes in how we think about food have substantial implications for civil society. No policy initiative will be effective without significant changes in attitudes to food. Food needs to be considered to be a more important resource. Our food consumption patterns both in relation to how much we eat but even more in relation to what we eat need to change. Where we eat will have a significant impact upon this.
- Exports of food are likely to continue to be at the heart of improvements to the quality of and the economic development of life in the Developing countries. The continued development of fair trade policies will be important in this context and vital to both our overall food security and to how Scotland is regarded in the world.

During the course of the study we have become aware of a series of significant tensions in respect of a number of key issues. In relation to most of these there would not have been a consensus with in the group and it is clear that Scottish society as a whole is likely to be as divided on them as we were. We therefore identify them as key issues upon which there is the need for a continuing public debate and for them to be maintained in constructive tension until such time as a consensus view emerges. The principle issues we have identified which are of this type are:

- a) The proportion of the food consumed in Scotland which should be produced from our own resources.
- b) The amount of our land area which should be devoted to food production and the proportion which should be reserved for wildlife conservation, forestry etc.
- c) The methods which should be employed for food production and the importance of maximising production from a limited area of land compared with the use of all land for a range of uses especially the encouragement of biodiversity. The potential for the expansion of organic production methods and the continuing debate as to whether genetic modification has any role in either the food we produce or in the production of the food we import are elements of this wider debate.
- d) The appropriate level of control exercised by the Supermarket sector and other parts of the food supply chain.
- e) The future development of electronic food marketing relative to the resources which should be used to maintain convenience food stores especially in small and rural communities.

Appendix 1: The composition and methods of working of the group.

The membership of the Workstream 5 group was:

Chair: David Atkinson (Scottish Churches Rural Group)

Secretariat: Linda Fenocchi (Scottish Government) Until Oct.2008
Neil Sinclair (Scottish Government) From Oct 2008
Susan Gallacher (Scottish Government) from Dec 2008

Members: Leila Akhoundova (Scottish Government)
Phillip Leat (Scottish Agricultural College)
Peter Ritchie (Whitmuir Organics)
Des Ryan (Edinburgh Cyrenians)

The group was advised by: Bill Gray (Community Food and Health)
Elaine Mc Gregor (Scottish Government)
Anne Milne (Food Standards Agency, Scotland)
David Paterson (ASDA)
Richard Taylor (Morrison's)
Anna Whyte (Food Standards Agency, Scotland)

Individual discussions of emerging and key issues were held with:
Tony McElroy (Tesco)
Maitland Mackie (Mackie's)
Fiona Moriarty (Scottish Retail Consortium)
Hugh Raven (Soil Association)

The group met on 4 occasions; one of which was by teleconference, between September 2008 and March 2009 to develop its report. Components of the report were developed by individual members and discussed electronically. The emerging conclusions of the Workstream were discussed at meetings of the Food forum and at a Scottish Government organised Forum on Food security held in March 2009.

Presentations on the work of the group and its emerging issues were made to:
Scottish Food and Drink Manufacturers Federation (11 Nov 08)
Scottish Parliament Cross Party Food Group (12 Nov 08)
Scottish Churches Rural Group (13 Nov 08)
A St Georges House, Windsor Castle, consultation on Issues related to Genetically Modified Foods (25/26 Feb 09)
A "Grasping the Nettle" Discussion at Scottish Churches House (4 March 09)



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ISBN: 978-0-7559-9034-4

Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

Produced for the Scottish Government by RR Donnelley B60943

Published by the Scottish Government, June 2009

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