Resilience and Social Justice as the Basis for Urban Food System Reform - A Case Study of Bristol, U.K

Mark Wilson

Uppsala University, Department of Earth Sciences
Master Thesis E, in Sustainable Development, 30 credits
Printed at Department of Earth Sciences,
Geotryckeriet, Uppsala University, Uppsala, 2014.

Master’s Thesis
E, 30 credits
Resilience and Social Justice as the Basis for Urban Food System Reform - A Case Study of Bristol, U.K

Mark Wilson

Supervisor: Daniel Bergquist
Evaluator: Sofia Cele
Contents

Abstract ........................................................................................................................................................................ iii
Key Words .................................................................................................................................................................... iii
Summary .................................................................................................................................................................... iv
List of Figures ............................................................................................................................................................ v
Table of Abbreviations .............................................................................................................................................. vi
1.0 Introduction .......................................................................................................................................................... 1
  1.1 Research Aims .................................................................................................................................................. 2
  1.2 Research Questions ........................................................................................................................................ 2
  1.3 Contribution of the Thesis ............................................................................................................................... 2
  1.4 Delimitation of the Scope of the Study ........................................................................................................... 2
2.0 Conceptualising the Urban Food System ........................................................................................................... 3
  2.1 Agriculture, Cities and Sustainable Development ........................................................................................ 7
3.0 Methodology ....................................................................................................................................................... 10
  3.1 The Case of Bristol ....................................................................................................................................... 10
  3.2 Methods .......................................................................................................................................................... 12
    3.2.1 Analysis of Primary Literature ................................................................................................................ 12
    3.2.2 Semi-Structured Interviews ................................................................................................................... 12
    3.2.3 Direct Observation .................................................................................................................................. 14
    3.2.4 Questionnaire Survey ............................................................................................................................. 15
    3.2.5 Targeted Questionnaires ....................................................................................................................... 16
    3.2.6 Field Trial – The produce from two allotments over a 12 month period ............................................. 16
  3.3 Research Ethics ............................................................................................................................................... 17
4.0 Results ............................................................................................................................................................... 18
  4.1 Questionnaire Survey .................................................................................................................................... 18
  4.2 Allotment Trial ................................................................................................................................................. 21
  4.3 Direct Observation .......................................................................................................................................... 21
  4.4 Targeted Questionnaires ............................................................................................................................... 22
  4.5 Semi-Structured Interviews .......................................................................................................................... 22
    4.5.1 The Contribution of Urban Agriculture .................................................................................................. 22
    4.5.2 The Role of the City Council .................................................................................................................. 24
5.0 Analysis ............................................................................................................................................................. 26
  5.1 Resilience in Bristol’s Food System ................................................................................................................ 26
  5.2 How Urban Agriculture Increases Resilience in Bristol ........................................................................... 27
  5.3 Social Justice in Bristol’s Food System ......................................................................................................... 29
  5.4 How Urban Agriculture Supports Social Justice in Bristol ..................................................................... 30
Resilience and Social Justice as the Basis for Urban Food System Reform - A Case Study of Bristol, U.K.

MARK WILSON

Wilson, M., 2014: Resilience and Social Justice as the Basis for Urban Food System Reform - A Case Study of Bristol, U.K. Master thesis in Sustainable Development at Uppsala University, No. 179, 67 pp, 30 ECTS/hp

Abstract
This paper considers the contribution of urban agriculture to the local food system and the role of the city council in this system. Using an interdisciplinary mixed method approach, the study explores local stakeholders’ perspectives of these aspects in the city of Bristol, UK. The findings were viewed through the lenses of two conceptual frameworks, resilience and social justice. The results reveal that urban agriculture increases resilience through building community, maintaining a diverse food supply network, and strengthening adaptability by retaining the knowledge and skills to produce food. Urban agriculture also supports social justice, by providing access to healthy food, promoting equality and inclusion, and encouraging healthier living through education. Furthermore, the results indicate that the city council can increase resilience and support social justice in the local food system through four key interventions; their procurement policy, urban planning, assisting urban agriculture initiatives, and developing a holistic urban food policy. In conclusion, urban agriculture is regarded as more than a form of food production because local stakeholders use it to support a broad range of social objectives. Developing an urban food policy is the shared responsibility of the city council as well as private and voluntary sector actors. Resilience and social justice are advocated as normative goals of the food system, and can be used as frameworks to guide the complex process of urban food system reform.

Key Words
Urban Agriculture, Urban Food Policy, Social-Ecological Resilience, Social Justice, Sustainable Development

Mark Wilson, Department of Earth Sciences, Uppsala University, Villavägen 16, SE- 752 36 Uppsala, Sweden.

Email: mark.wilson@csduppsala.uu.se
Resilience and Social Justice as the Basis for Urban Food System Reform - A Case Study of Bristol, U.K.

MARK WILSON

Wilson, M., 2014: Resilience and Social Justice as the Basis for Urban Food System Reform - A Case Study of Bristol, U.K. Master thesis in Sustainable Development at Uppsala University, No. 179, 67 pp, 30 ECTS/hp

Summary
This paper looks at the contribution of urban agriculture to the local food system and the role of the city council in this system. Using different methods, the study explores how local stakeholders view urban agriculture and the role of the council in the food system, using the city of Bristol, UK, as a case study. The findings were analysed using two concepts, resilience and social justice. The results show that urban agriculture makes the food system more resilient in three ways; through building community, maintaining a diverse food supply network, and retaining the knowledge and skills to produce food. Urban agriculture also supports social justice, by providing access to healthy food, promoting equality and inclusion, and encouraging healthier living through education. Furthermore, the results suggest that the city council can increase resilience and support social justice in the local food system through four key actions; their policy of buying food (for hospitals, schools etc.), urban planning, assisting urban agriculture initiatives, and developing a holistic urban food policy. In conclusion, urban agriculture is seen as more than a form of food production because local stakeholders use it to support a wide range of aims in society. Developing an urban food policy is the shared responsibility of the city council as well as people from the private and voluntary sectors. Resilience and social justice should be seen as goals or aspirations of the food system, and can be used as frameworks to guide the complex process of urban food system reform.

Key Words
Urban Agriculture, Urban Food Policy, Social-Ecological Resilience, Social Justice, Sustainable Development

Mark Wilson, Department of Earth Sciences, Uppsala University, Villavägen 16, SE- 752 36 Uppsala, Sweden

Email: mark.wilson@csd.uppsala.uu.se
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>The location of Bristol</td>
<td>11</td>
</tr>
<tr>
<td>Figure 2</td>
<td>QS results: perception of whether the council has provided sufficient land for growing food</td>
<td>19</td>
</tr>
<tr>
<td>Figure 3</td>
<td>QS results: perception of the council’s responsibility to ensure a diversity of food retailers</td>
<td>20</td>
</tr>
<tr>
<td>Figure 4</td>
<td>QS results: perception of the council’s responsibility to source local food for catering in schools, hospitals and public offices</td>
<td>20</td>
</tr>
<tr>
<td>Figure 5</td>
<td>QS results: perception of UK food security in the globalised food system</td>
<td>21</td>
</tr>
<tr>
<td>Figure 6</td>
<td>The location of UA sites and the Blue Finger in Bristol</td>
<td>27</td>
</tr>
<tr>
<td>Figure 7</td>
<td>An information board on forest gardens at Feed Bristol</td>
<td>28</td>
</tr>
<tr>
<td>Figure 8</td>
<td>HHEAG Food Cooperative</td>
<td>31</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Wheelchair accessible raised beds at Golden Hill Community Garden</td>
<td>32</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Street art on Cheltenham Road supporting independent retailers</td>
<td>33</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>BSE</td>
<td>Bovine spongiform encephalopathy</td>
<td></td>
</tr>
<tr>
<td>CESC R</td>
<td>United Nations Committee on Economic, Social and Cultural Rights</td>
<td></td>
</tr>
<tr>
<td>CSO</td>
<td>Civil society organisation(s)</td>
<td></td>
</tr>
<tr>
<td>DEFRA</td>
<td>UK Department of Environment, Food and Rural Affairs</td>
<td></td>
</tr>
<tr>
<td>DNA</td>
<td>Deoxyribonucleic acid</td>
<td></td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organisation of the United Nations</td>
<td></td>
</tr>
<tr>
<td>FPC</td>
<td>Bristol Food Policy Council</td>
<td></td>
</tr>
<tr>
<td>HHEAG</td>
<td>Hartcliffe Health and Environmental Action Group</td>
<td></td>
</tr>
<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
<td></td>
</tr>
<tr>
<td>OHCHR</td>
<td>United Nations Office of the High Commissioner for Human Rights</td>
<td></td>
</tr>
<tr>
<td>PAR</td>
<td>Participatory Action Research</td>
<td></td>
</tr>
<tr>
<td>QS</td>
<td>Questionnaire survey</td>
<td></td>
</tr>
<tr>
<td>RQ</td>
<td>Research question(s)</td>
<td></td>
</tr>
<tr>
<td>SES</td>
<td>Social-ecological system</td>
<td></td>
</tr>
<tr>
<td>SSI</td>
<td>Semi-structured interview(s)</td>
<td></td>
</tr>
<tr>
<td>UA</td>
<td>Urban agriculture</td>
<td></td>
</tr>
<tr>
<td>UFP</td>
<td>Urban food policy</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
<td></td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>United States of America</td>
<td></td>
</tr>
</tbody>
</table>
1.0 Introduction

Food production is arguably the most significant sustainability challenge we face. This is posited for two reasons; i) people simply cannot do without it, and ii) the current industrial, globalised model of food production contributes to, and is affected by, so many other sustainability challenges. The environmental impacts of the current model do not make for light reading; polluted waterways, greenhouse gas emissions, degraded or eroded soil, localised drought, land use change, biodiversity loss, and dependence on diminishing finite resources (Foley et al., 2011; Rockström et al., 2009). This is augmented by a host of social concerns, such as population pressure, changing diets, poverty, political and economic instability, complex supply chains, and monopolistic control of food supply (Roberts, 2008; World Bank, 2008). We must meet society’s growing food needs while simultaneously reducing agriculture’s environmental harm (Foley et al., 2011). Quite simply, if we cannot find ways of making agriculture sustainable, we will not achieve sustainable development.

Human societies are dependent on ‘natural capital’, defined as a stock of natural assets that is capable of producing a sustainable flow of valuable goods and services (Costanza and Daly, 1992; Wackernagel and Rees, 1997). Over half of the world’s population now live in cities, and by 2030 this figure is predicted to rise to 60% (UN, 2013). This spatial concentration of people necessitates the income or produce from natural capital, such as food or timber, to be transported to urban centres via complex transport networks. Thus, the natural capital required to maintain cities extends far beyond their physical boundaries (Global Footprint Network, 2013). This ecological demand is due not only to high population of cities. There is much evidence to suggest that the rising affluence of city residents correlates with an increased consumption of goods and services (ibid). For example, the ecological footprint of a Beijing resident is nearly three times larger than the China average (Hubacek et al., 2009). The convergence of urbanisation and consumption patterns leads Morgan and Sonnino to suggest that “cities have acquired a new role: namely, to drive the ecological survival of the human species, by showing that large concentrations of people can find more sustainable ways of co-evolving with nature” (2010, p210). Fulfilling this role will be a considerable challenge, considering the aforementioned trends.

The sustainability of cities is contingent on the combined actions of all sections of society; local governance institutions, private companies, communities and individuals. Councils or municipalities already play a fundamental role in ensuring a city functions to support the needs of its residents. They make essential services and infrastructure available, such as housing, power supply, water for drinking and sanitation, transport networks and waste collection. Food is also an essential for life but most municipal planning departments have yet to engage with the urban food system, a ‘puzzling omission’ which planning associations and researchers have only recently recognised (Pothukuchi and Kaufman, 2000; Morgan, 2009). The role of local councils in the urban food system has yet to be adequately defined by the research community, local residents, and of course the councils themselves. Determining this role is a vital step in creating urban food policies (UFP) which may result in more sustainable cities.

Urban agriculture (UA) has been presented as one way of making cities more sustainable and resilient to some of the food production challenges outlined above. Producing food locally may reduce the ecological footprint of cities (Dubelling et al., 2009) and by targeting its alleged benefits towards marginalised groups in society it may also promote social justice (Metcalf and Widener, 2011; Thibert, 2012). The motivations of individuals for engaging in UA vary in different areas of the world. In the global south, UA has long been a strategy of the urban poor to increase food security and provide a source of income (Armar-Klemesu, 2000). In the global north, UA has re-emerged in recent years under the impetus of individuals and grass roots organisations (Mason and Knowd, 2011; Sumner et al., 2010). In addition to food production, many people are motivated by an ideological critique of the industrialised global food system, and in this context UA has become an environmental and social movement acting on the desire to reconnect to food and implement sustainable local alternatives (Thibert, 2012). Despite a proliferation of research on UA in recent years, there are two areas which have not received adequate consideration. There are very few studies to date which show that UA decreases resource consumption at a global aggregate level in comparison to conventional agriculture, thus the debate remains open on how far UA can be considered a viable alternative in resolving the issue of finite resource dependency. Secondly, previous research has generally been orientated towards one or two specific benefits of UA in isolation, and
policy makers and UA practitioners alike would benefit from a more holistic approach which contextualises UA within broader scope of the local food system (Sonnino, 2010) and, where possible, the global challenges facing agriculture.

1.1 Research Aims
This study has two research aims:

i) to analyse the contribution of urban agriculture to the local food system, and
ii) to critically reflect upon the role of the local authorities in the urban food system

The city of Bristol in the UK was selected as a case to consider these aspects.

1.2 Research Questions
The following research questions were proposed to guide the research:

In what ways does urban agriculture increase the resilience of Bristol’s food system?

In what ways does urban agriculture support social justice in Bristol’s food system?

How do local stakeholders, including members of the council, view the role of Bristol City Council in the urban food system?

1.3 Contribution of the Thesis
This study contributes to two debates. The first is how urban food production can support the local food system, and this will be assessed in terms of i) actual food production, the types and economic value of fruits/vegetables which can be grown in an urban setting, and ii) the less tangible social benefits of UA. The second debate is the role of local authorities in the urban food system. The study will identify how the council and other stakeholders define this role, and explore the possible forms of intervention and collaboration available to them.

The study will use concept triangulation in order to build a deeper understanding of the position of urban agriculture and urban food policy in the local food system, and how they relate to each other. The discussion will be viewed through the lenses of two distinct conceptual frameworks; ‘resilience’ and ‘social justice’. Resilience has emerged from the natural sciences, whereas social justice is usually discussed in the social sciences.

1.4 Delimitation of the Scope of the Study
A key element of resilience with regard to food production is the degree of dependency on finite resources, such as phosphate, natural gas and oil, which are used to make inputs for conventional agriculture systems. There are several conceptual approaches which could be used to compare the resource consumption of UA compared to conventional agriculture, such as Cradle to Cradle or Emergy Analysis. To date only a limited number of studies have been conducted (For more information, refer to Bergquist, 2012; Martin et al., 2006; and Beck et al., 2001). These are extremely valid research areas, but it is beyond the scope of this study to explore this dimension of UA. This paper focuses on how UA may increase the resilience of social-ecological systems at the community and city scales, particularly with regard to local food provision. The discussion section does connect to resilience at the global scale by extrapolating how UA might reduce the energy consumption and some of the environmental impacts associated with conventional agriculture. However, it does not argue that UA will necessarily reduce the global aggregate ecological footprint of food production.
2.0 Conceptualising the Urban Food System

This section offers definitions of the key concepts and terms used in the thesis, and provides a review of the relevant literature. A food system is:

“The chain of activities connecting food production, processing, distribution, consumption, and waste management, as well as the associated regulatory institutions and activities.” (Pothukuchi and Kaufman, 2000, p.113)

This broad definition reveals that a food system constitutes multiple activities as well as the associated actors. Some of the actors are directly involved in the food chain, whereas others form the enabling environment in which the food chain exists (FAO, 2013b). An even more holistic definition would also include the activities which precede food production, such as the resource extraction required to make inorganic fertiliser inputs.

The concept of resilience was introduced by Holling (1973) to help understand the capacity of ecosystems to persist in the original state when affected by perturbations. In recognition that humans are often major drivers of such perturbations, social-ecological resilience (SES) has received considerable attention in recent years because it offers a framework for understanding the dynamic relationship between humans and the environment, and can offer models for increasing society’s capacity to manage change (Folke et al., 2010; Cabell and Oelofse, 2012). Moreover, resilience provides a common language which can intersect academic, policy and practice discourses (Shaw, 2012; Wilkinson, 2012). Resilience is defined as:

“The capacity of a system to absorb disturbance and reorganise while undergoing change so as to still retain essentially the same function, structure and feedbacks, and therefore identity” (Folke et al., 2010, p.3)

Thus resilience considers the capacity of a system to continually change and adapt yet remain within critical thresholds and maintain its main functions. If such a threshold is exceeded, the system will fundamentally change and follow a different trajectory towards a new configuration, as described in the adaptive cycle (Gunderson and Hollings, 2002). Whether or not a system crosses such thresholds is dependent on feedbacks and interactions between different system components and entities which result in ‘self-organisation’ (Folke et al. 2010). Self-organisation is a contested concept and is criticised for being teleological (Reghezza-Zitt et al., 2012), and in this study the term is used only to describe the system characteristics of ‘adaptability’ and ‘transformability’ in response to disturbances. There is no agreement with the proposal of a natural design. Folke et al. define adaptability as:

“The capacity of a SES to learn, combine experience and knowledge, adjust its responses to changing external drivers and internal processes, and continue developing within the current stability domain or basin of attraction” (2010, p.2)

Thus adaptability can be understood as the capacity of actors within a system to influence resilience and maintain the system in its current form or ‘stability domain’ (ibid). Transformability, on the other hand, is:

“The capacity to create a fundamentally new system when ecological, economic, or social structures make the existing systems untenable” (Walker et al., 2004, cited in Folke et al., 2010)

Transformability can be a deliberate process, initiated by actors within the system, or it can be exogenous, imposed by changing environmental or socio-economic conditions (Folke et al., 2010).

Several aspects of resilience are discussed in the literature. Davoudi (2012) distinguishes between two interpretations of resilience; the ‘equilibristic view’, or ‘the ability to bounce back’ from a disturbance and return to the previous state (referred to by Holling as ‘engineering resilience’), and the ‘evolutionary’ view where resilience is not conceived of as a return to normality, but rather as the ability of an SES to change, adapt, and transform (ecological resilience). Another key debate is the distinction between ‘specified’ and ‘general’ resilience (Resilience Alliance, 2010). Specified
resilience narrows the focus to define “resilience of what, to what”, for instance the continuous availability of healthy and nutritious food (resilience ‘of what’) in the face of global challenges to food production (resilience ‘to what’). In contrast, general resilience is about coping with uncertainty in all ways (ibid). A third discourse is a critique of resilience which questions its applicability to social systems. The adaptive cycle is regarded by some as overly deterministic and understating the importance of human intentionality and agency to break cycles through their cognitive ability, ingenuity and technology (Davoudi, 2012; Davidson, 2010). Davidson (2010) argues that humans can imagine possible solutions and use their agency to overcome some forms of social risk. Another contentious issue is how the outcome or purpose of resilience is determined. What is desirable is evidently a normative judgement, and this inevitably leads to the question of ‘resilience for whom?’ (Davoudi, 2012; Cote and Nightingale, 2012). The existing power relations between actors within a social system will affect how resources are controlled and distributed, and hence influence who receives the benefits of resilience (ibid).

Several authors have applied the resilience concept to urban planning and governance. Ahern (2011) offers practical suggestions of how resilience can inform urban planning, for example using modularisation to create redundancy, so that essential urban functions are supported by more than one entity in a de-centralised system. Davoudi (2012) notes the promising parallels between evolutionary resilience and the interpretive approach to planning, with the mutual emphasis on flexibility, multiplicity and connectivity. However, she argues that the concept of ‘self-organisation’ in ecological systems does not translate to ‘self-reliance’ in social systems, and so governments should not justify limiting the State’s support for vulnerable communities in the name of resilience. Shaw (2012) cautions against the equilibristic or ‘survival view’ of resilience as this may validate conservative, top-down forms of governance which favour a return to the status quo following a disturbance event. He advocates reframing resilience to develop a more radical and transformative agenda which allows for political voice and the challenging of power structures. Wilkinson (2012) discusses resilience in practice in the case of Luleå municipality, Sweden, whose members engaged in a learning process to explore the relevance of the concept to their strategic planning. A diversity of food networks was perceived to increase urban resilience in the face of global challenges such as peak oil and climate change, but this would be less efficient and therefore more expensive than the conventional globalised food system. This raised the important question of ‘who pays for resilience’, particularly in the current times of austerity.

Another central theme in resilience literature is food production. Custot et al. (2012) suggest UA and peri-urban agriculture can increase the capacity of cities to adapt to urban environmental challenges. A strategy for increasing resilience comprises of three elements; the integration of food systems into urban planning, strengthening urban-rural linkages, and innovation in several areas, for example public-private partnerships. Grewal and Grewal (2012) quantify the land area and government resources required to make the city of Cleveland self reliant in food. Barthel and Isendahl (2012) draw from historical examples to argue that community gardens increase long term urban resilience because they display two key resilience principles; i) **diversity**; of food production systems, trade networks, and spatial distribution of primary food resources; and ii) **social-ecological memory**; of food production competencies, and also the local characteristics such as soil, climate, and fluctuating organism populations. This retention of social-ecological memory serves as a counterbalance to the “global generational amnesia” about how to grow our own food that we are currently experiencing (Colding and Barthel, 2012 cited in Barthel and Isendahl, 2012, p.9). Tidball and Krasny (2007) argue that urban resilience is fostered through actions of ‘civic ecology’ such as urban community greening and UA. Such actions not only build natural and social capital, but also promote learning and store knowledge which allows for adaptive capacity in times of crisis. Finally, Cabell and Oelofse (2012) take on the thorny issue of how to measure resilience, and argue that because farming systems are complex they are inherently difficult to assess using precise metrics. They advocate a broader approach for assessing the resilience of agro-ecosystems using a set of indicators, for instance ‘high social capital’, or ‘appropriately connected’.

The second framework to be used in this study is **social justice**, a concept which has multiple interpretations and so requires some delineation in order to focus on the relationship to food. The foundation of social justice is equality and dignity expressed through **human rights**. Human rights are inherent to all human beings with equal entitlement and without discrimination, and are all interrelated, interdependent and indivisible (OHCHR, 2013). The United Nations avowed these rights in The Universal Declaration of Human Rights (1948), and Article 25 is of particular relevance:
“Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services...” (UN, 1948)

This right has yet to be fulfilled for many people, and so in recent years it has been revisited by several UN bodies. The Committee on Economic, Social and Cultural Rights (CESCR) stressed the interdependence between the right to food and the right to health (CESCR, 2000), and stated that “the human right to adequate food is of crucial importance for the enjoyment of all rights” (CESCR, 1999). It is notable that the CESCR identified the State as a duty bearer that is responsible for providing the economic and social conditions required to fulfil this right (Dowler and O’Connor, 2012). In 1996, the Rome Declaration on World Food Security:

“Reaffirm[ed] the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger.” (FAO, 1996)

Some key terms to highlight are ‘access’, ‘adequate’ and ‘nutritious’. Food should therefore be available and accessible to all, it should be adequate in quantity, quality and be culturally appropriate, and it should provide ample nutrition so that people are healthy and capable of enjoying all other rights. This understanding of the right to food underpins the framework of social justice which is applied in this study. The food system, including the associated regulatory institutions, is the means by which this right is fulfilled.

Several authors have explored the issue of access to food. Anderson (2013) and Cooper and Dumpleton (2013) have identified a marked increase in food poverty and the number of people using food banks in rich industrialised countries in the last five years. They argue that governments, in the US and the UK respectively, have failed to tackle the structural causes of food poverty and unhealthy diets, namely the inadequate levels of minimum wage and social welfare. Anderson (2013) is critical of the US reliance on food assistance programmes as it undermines people’s dignity and deflects attention from the State’s responsibility to uphold human rights. MacMillan and Dowler (2012) examine the rhetoric in UK government white papers regarding food security. Contrary to the government’s emphasis on global production and trade, MacMillan and Dowler argue that food security at the household level is more closely linked to people’s access to food and their subjective perception of their economic circumstances. Carahar et al. (2010) found that food access can be limited by many factors, such as physical distance to shops, social impairment, and a lack of cooking skills and food knowledge. The shops which are cheaper or stock a greater variety of fruit and vegetables are often located far away, requiring private or public transport which may not be available to vulnerable individuals. This is often referred to as a ‘food desert’, which are “urban areas where residents do not have access to an affordable and healthy diet and where fast-food restaurants and convenience stores dominate” (Bristol City Council, 2013, p.10).

The second dimension of social justice is health. Lloyd et al. (2011) consider the impact of low income on diet, and found that food is an elastic item in the household budget which can be reduced when money is tight, often with health and nutrition consequences. Another major concern is the rising levels of diet related illnesses, particularly in economically deprived areas, which has led to the assertion that cities have become obesogenic environments (Bagwell, 2011; Morgan and Sonnino, 2010). UK local authorities have now been granted planning powers which can be used to restrict the location and number of fast food outlets. Bagwell (2011) suggests that although the low cost of fast food and prevalence of outlets are contributing factors to obesity, there are also important cultural and religious motivations for consuming a particular type of food which should not be overlooked.

A third central theme is food justice. Several authors advocate a ‘rights based food system’ (Anderson, 2008 & 2013; Dowler and O’Connor, 2012; Cooper and Dumpleton, 2013), whereby the government can be held accountable for failings in the food system which have led to social inequalities. The rights rhetoric can change people’s perception of themselves as citizens and also their relationship to the State and non-state actors which have allowed ‘violations’ of their rights to persist. Anderson (2013) discusses the food sovereignty movement which “challenges not just the quality and amounts of food accessible, but the power and structure of society in which the food environment is embedded” (p.118). Proponents of food sovereignty demand greater control in determining how their food is produced and who participates. Levkoe (2006) found that participation in local food justice movements often leads to transformative
learning which empowers individuals to engage in democratic processes in the wider community. Wekerle (2004) argues that anti-hunger efforts under the banner of food security have not been successful in mobilising significant support. The shift to a food justice frame creates a political space in three ways; by reinforcing food security from below, by exerting pressure on local government departments, and by connecting with social justice networks across issues and scales. Finally, Alkon and Norgaard (2009) assert that ‘food justice’ can serve as a theoretical bridge between disparate activist groups involved in sustainable agriculture and environmental justice. This can help the sustainable agriculture movement to incorporate issues of equity, and the environmental justice movement to move beyond a ‘place-based approach’ and connect to broader institutionalised inequality.

The next key term is *urban agriculture* (UA), defined as “the growing of plants and the raising of animals for food and other uses within and around cities and towns, and related activities such as the production and delivery of inputs, and the processing and marketing of products” (Veenhuizen, 2006, p.2). In this study, UA encompasses peri-urban agriculture within a 10 km radius of the city. UA uses local resources (land, labour, organic wastes, water), produces for urban residents, and is strongly influenced by urban conditions (policies, competition for land, urban markets) (Mougeot, 2000; Veenhuizen, 2006).

Literature on UA varies depending on the context and so this review is primarily focused on the global north. The alleged benefits of UA are numerous and diverse. Brown and Jameton (2000) found that UA contributes to food security, nutritional health, and physical wellbeing through exercise and stress relief. Sumner et al. (2011) suggest that UA can strengthen community identity by linking urban food producers and consumers through cultural activities. Firth et al. (2011) use a social capital framework to differentiate between ‘place-based’ and ‘interest-based’ community gardens, highlighting the different types of community they engender. Pudup (2008) questions the ambiguity over the term ‘community garden’, and explores the process of nurturing alternative ‘citizen-subjects’ in ‘organised garden projects’ as a response to broader social and political trends, such as neoliberalism. Metcalf and Widener (2011) approach UA through a systems framework, emphasising its potential to diminish ‘food deserts’ and also produce emergent properties, such as an IMBY (in my back yard) effect where UA projects inspire ever-observant members of the community to invest time into their own gardens. Mason and Knowd (2010) assert that UA can prevent urban sprawl and present opportunities for local economic development. UA can also reduce the carbon emissions and fossil fuel dependency of food production, as well as improve the city environment by reducing the ‘urban heat island’ effect and promoting local biodiversity (Dubbeling et al., 2009; Havaligi, 2011). Steel (2008) breaks down the dichotomy of urban – rural, arguing that the form and function of cities are, and always have been, shaped by food. McClintock (2010) asserts that capitalism has created an ecological and social ‘metabolic rift’ between city and country, and humans and nature. The social context of producing food has therefore been largely removed, and UA attempts to overcome this rift through rescaling food production, de-commodifying land, labour and food, and engaging urban dwellers in the local landscape. In a similar vein, Turner (2011) regards UA as a form of embodied engagement with the local environment, which has the potential to promote sustainable living practices and a critical inquiry into our social role as consumers. Moreover, the physical activity of producing food and the ‘relationship to the soil’ this engenders may nurture a sense of ecological citizenship or stewardship (McClintock, 2010; Turner, 2011). There are also several critiques of UA, the most common being that it cannot produce the volume of food required by a city (Ackerman, 2013). Another concern is that food safety may be compromised by pollutants in the urban environment (Nabulu et al., 2006), the use of waste water for irrigation (Lydecker and Drechsel, 2010), and the use of organic waste as fertiliser (Flynn, 1999).

The last key term is *urban food policy*, which deals with the role of the council in the local food system. Mendes offers this useful definition:

> “Urban food policies can be understood as decisions that affect the ways that people in cities produce, obtain, consume and dispose of their food. Food decisions affect whether opportunities to grow food in the city are supported; whether a city’s most vulnerable populations have access to nutritious and affordable food; whether neighborhoods have grocery stores or farmers’ markets within walking distance; or whether strategies exist to divert food waste from landfills.” (2008, p.943)
From this statement it becomes apparent that an UFP encompasses a broad range of food related issues and could therefore involve multiple departments within the municipality. It also suggests that stakeholders other than the municipality may have a role in the formulation of the policy, either as informants or through some form of partnership.

There is a small but growing literature on the role of councils in the local food system. Thibert (2012) suggests local municipalities should develop appropriate regulatory measures of UA such as usufruct or ‘meanwhile’ licences for vacant land. Donald and Blay-Palmer (2006) argue that policy initiatives could be used to support the development of a creative food sector with the aim of providing a more socially inclusive urban food system, rather than catering only for the urban elite. Blay-Palmer (2009) considers the emergence of the pioneering Toronto Food Policy Council. She asserts that the Food Policy Council’s efforts have resulted in a ‘more just city’, by pushing hunger and social justice issues onto the urban planning and procurement agenda, and by shifting the discussion away from food security to food sovereignty. Sonnino (2010) argues the dichotomy of urban - rural is inhibiting urban food research and policy, because it diverts attention away from key aspects of the local food system such as distribution system failures and the locales of demand for alternative food products. Pothukuchi and Kaufman (2000), Morgan (2009 & in press) and Thibert (2012) observe that because agriculture is regarded as a rural activity, urban planners do not think of food policy as their ‘turf’ and do not feel qualified to intervene. More importantly, many planners do not perceive food system issues to be problematic because they consider the conventional food system to have delivered all that was asked of it (ibid). The emergence of health and social concerns has begun to change this perception, but municipalities remain unsure of where to locate an UFP which potentially traverses so many different departments (Morgan, in press). Mendes (2008) and Morgan and Sonnino (2010) highlight the challenge of not only defining an urban food strategy, but also note that local authorities may not possess the necessary capacity to implement it. It is notable that one of the most powerful intervention points available to municipalities is actually their own procurement policy (Morgan and Sonnino, 2010; Morgan, in press). Morgan (in press), Mendes (2008) and Blay-Palmer (2009) view partnerships with Civil Society Organisations (CSO) and the private sector as a fundamental element of successful urban food policies because they enable local actors to share the burden of urban food system reform. Finally, Born and Purcell (2006) caution urban planners against falling into the ‘local trap’, where local food systems are uncritically perceived as more environmentally sustainable or socially just than global ones.

2.1 Agriculture, Cities and Sustainable Development

This section expands on some of the concerns outlined in the Introduction. It contextualises food production and cities within the broader discussion of how humanity can achieve sustainable development.

Access to sufficient and healthy food is one of the most fundamental and obvious human needs, and this places agriculture central to the sustainability debate. The Brundtland Commission defined sustainable development as:

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (The World Commission on Environment and Development, 1987)

The Brundtland Commission’s interpretation of sustainable development has been contested for several reasons; it is anthropocentric (Stenmark, 2007), its ambiguity allows for multiple interpretations (Sachs, 1999), it does not tackle the underlying causes of social injustice (Rist, 2002), and it sidesteps the ‘limits to growth’ argument (Sachs, 1999). It is not the author’s objective to enter into this debate, but instead to understand to what extent the current model of industrial, globalised food production meets fundamental human needs. Does the current model meet the needs of the present? The answer really depends on who you are. It feeds five billion people rather well. If you are one of the billion people in the world who are malnourished (UN, 2013), or one of the billion people who are obese (Dixon et al., 2007; Roberts, 2008), you would probably argue that your needs are not being met. Does the current model avoid compromising the ability of future generations to meet their own needs? Considering the extent and speed of environmental degradation caused by industrial agriculture, the answer to this would have to be a resounding ‘no’. Future generations will have to contend with a degraded biosphere, less cheap energy, and more mouths to feed.
So how can agriculture become sustainable? First, it must overcome the challenge of feeding a global population which is set to rise to 9 billion by 2050 (FAO, 2013). This is being augmented by the increasing consumption of more resource intensive foods, namely meat and dairy products (FAO, 2013; Foley et al., 2011). The Food and Agriculture Organisation of the United Nations (FAO) concludes that food production will have to increase 60% by 2050 to meet everyone’s needs (FAO, 2013). Agriculture must also reduce its environmental impact, because the rate at which we can sustainably extract useful goods and services is determined by the condition or health of both natural and agro ecosystems (Costanza and Daly, 1992; Wackernagel and Rees, 1997). Target areas include nutrient loading of aquatic ecosystems causing eutrophication (Rockström et al., 2009; Evanylo et al., 2008), soil erosion (Crawford, 2012), the loss of biodiversity attributed to monoculture cropping systems (Rockström et al., 2009), and the energy intensity of a sector responsible for (at least) 14% of anthropogenic greenhouse gas emissions (IPCC, 2007). Some of the proposed solutions to this dilemma include a new green revolution (World Bank, 2008), ecological farming practices (Francis et al., 2003), genetically modified crops (Frederoff, 2010), and reducing food waste (Gustavsson et al., 2011). UA is very much on the periphery of these propositions.

There are many indicators which can be used to assess ‘sustainability’. From an environmental perspective, the ‘ecological footprint’ is the most widely used measure of humanity’s demand on nature, by quantifying the amount of land and water area a human population uses to provide all it takes from nature, using the unit of the ‘global hectare’ (Wackernagel et al., 2006). This measurement includes resources used for consumption such as energy, food, and building materials, but also the ecosystems needed to absorb the pollution produced by humans (ibid). A 2002 report estimated the ecological footprint of the city of London to be 49 million global ha (Best Foot Forward Ltd, 2002). This is 293 times larger than London’s geographical size and equivalent to twice the area of the entire UK (ibid). The ecological footprint of a London resident is 6.63 gha, which far exceeds the equitable global ‘earthshare’ footprint of 2.18 gha per capita (ibid). We are using 50% more resources than the Earth can provide, and by 2030 we will require the resources of more than two planets, which evidently we do not have.

Social sustainability is generally measured using traditional, target-based social indicators, such as poverty, public health, education and income levels. In the last decade new ‘social sustainability indicators’ have been developed which are concerned with the integration of multidimensional and intergenerational issues inherent to the notion of sustainability (Colantonio, 2011). This approach incorporates the processes and factors which contribute to a particular condition over time. For instance, poverty would be measured together with its main manifestations; ill-health, inadequate housing, limited access to basic services, and so on (ibid). Whichever type of indicator you use, we are a long way from achieving social sustainability in the world’s cities. In the global south this is reflected in poverty, high unemployment, and limited access to basic services and housing (Frota, 2008). In the global north we see increasing inequality and rising levels of diet related illnesses (Dixon et al., 2007; Roberts, 2008).

A city food system must be contextualised within the national food system. In the UK, around 70% of the land area is used for agriculture, yet the sector accounts for only 0.65% of gross domestic product (DEFRA, 2012). The country has a temperate climate which is favourable for crop production, with a long growing season and ample rainfall, although parts of the East coast do occasionally experience drought (Pearce, 2006). Livestock production contributes 55% of the production value of agriculture (DEFRA, 2012). Overall, the agricultural sector provides 481,000 jobs (ibid). The average age of farmers is 58 and there is a shortage of new recruits entering the sector (Whitmell, 2012). 40% of the food consumed in the UK is imported, particularly from other EU countries, and the UK is a net importer of food (DEFRA, 2010b). For some staples the imports are much higher, such as 90% of fruits and 60% of vegetables (Carey, 2011). 91% of food imports arrive by ship, notably into the large ports of Felixstowe, Dover and London, with the remainder arriving by plane or the channel tunnel (DEFRA, 2010b).

---

1 The IPCC (2007) estimation of GHG emissions from agriculture does not include emissions from related activities such as land cover change. A recent study by Vermeulen et al. (2012) concluded that emissions from global food production as a whole may be as high as 29% of anthropogenic GHG emissions.

2 Global hectares are the common, standardised unit used for reporting ecological footprint and biocapacity across time and for areas throughout the world. It recognises that different types of land have a different ability to produce useful goods and services for humans (Global Footprint Network, 2013)
The UK government has published a number of reports outlining its strategy for national food security: *Food Matters* (Cabinet Office, 2008), *UK Food Security Assessment* (DEFRA, 2010b), *Food 2030* (DEFRA, 2010a), and *The Future of Food and Farming* (Foresight, 2011). These reports discuss the many challenges of the global food system, and identify the most notable threats to UK; volatile markets and price fluctuations (DEFRA, 2010a), trade restrictions (ibid), dependency on oil and gas exporting countries (DEFRA, 2010b), and inadequate sea port infrastructure (ibid).

The government’s strategy includes greater integration into global markets and the removal of trade barriers (DEFRA, 2010a), a well-functioning transportation system (ibid), and consideration of genetically modified organisms to increase productivity (Foresight, 2011). In general, the proposed policy interventions are aimed at the national and international levels as oppose to the local level, and urban agriculture is not mentioned.
3.0 Methodology
Evans and Marvin argue that “moving from unsustainable to more sustainable forms of urbanism demands interdisciplinary research that is neither solely ecological/technological nor social” (2006, p.1009). An inquiry into a city food system touches on a broad range of issues and can draw understanding from several scientific fields, such as urban planning, community development, agriculture, economics, and public health. Moreover, a city food system concerns a diverse group of local stakeholders who each have their own interests. It is therefore posited that UA and city food system planning is an interdisciplinary field. Interdisciplinary research has emerged due to the perceived limitations of approaching complex problems from the perspective of only one academic discipline (Quin et al., 1997). The assumption is that better solutions to these problems will emerge through interdisciplinary research (ibid), and this is reflected in the design of this study.

This research is exploratory and uses an inductive approach with the objective of understanding how urban food systems can become more resilient and socially just. Denscombe (2010) argues that the choice of methods should depend on the aim of your research; you choose the strategy which is most likely to be successful in achieving this aim, and you must be able to justify your selection. This study uses an interdisciplinary mixed method approach. There is a strong emphasis on stakeholder perspectives, and this places the research within the domain of constructivist inquiry. It is accepted that people’s views on the local food system are inherently subjective based on their own experiences, and this will affect how they interpret various elements such as the role of the council. However, I am in agreement with Kalof et al. (2008) who argue that the dichotomy of social theory is a limiting approach to social science and that by accepting some tenants from both views, with a critical and reflective approach, we will likely improve our scientific methods. Some aspects of resilience are relatively easy to ontologically define from a positivist perspective, for instance the increasing fuel prices in the past decade. These aspects can be appropriately assessed using quantitative data. The understanding of other factors, such as food education, will vary depending on who you are, and so a constructivist approach using qualitative data is more pertinent. Social science methods are more prominent in this study due to the focus on stakeholder perspectives.

In any hermeneutic study there is a possibility that the researcher will interpret the data according to his or her own subjective world view (ibid). I am concerned about the problems associated with globalised food production, and this is why I chose to explore an alternative food system as a thesis topic. I hope to avoid unduly influencing the results by being explicit about my own bias and through a critical and reflective approach to my analysis.

Any research endeavour should be reliable and valid (Chambers, 1997). Chambers (1997) states that “validity refers to the closeness of a finding to a physical reality, and reliability refers to the constancy of the findings”. This research will be deemed valid if the findings accurately reflect the situation in Bristol. Validity was enhanced through the selection of knowledgeable respondents who collectively encompass a broad spectrum of activities connected to UA and/or UFP. Validity was also reinforced by checking for errors or uncertainties in the methods and data throughout the research process (Kvale, 1996). Confidence in the reliability of the results was increased though triangulation in two ways; i) by gathering comparable data from different respondents, and ii) by using different methods to obtain similar data. It would theoretically be possible to replicate the study using the methods described below. In Participatory Action Research (PAR) there is the conviction that, in addition to being reliable and valid, research should be relevant (Chambers, 1997). While I do not believe I could have fully participated in an engaged PAR process in the short time I was in Bristol, I did use the approach of conducting research with people rather than on them in developing my understanding. A clear, easy to read summary of the findings was sent to local stakeholders who participated in my interviews and who may find it relevant.

3.1 The Case of Bristol
Bristol is located in the South West region of England, at the head of the Bristol Channel and 169 km west of London (see Figure 1). It is the largest city in the region, with an administrative area covering approximately 110km² and an estimated population of 421,300 (Bristol City Council, 2011, p.7). Based on recent trends, Bristol’s population is
projected to grow by 26% to 519,800 by 2026 (ibid). Demographically the population is young, with more children under the age of 16 than people of a pensionable age. Ethnic minority groups make up 11.9% of the population. 34.5% of working age people in Bristol are educated to degree level, although this is not uniform and some parts of the city are in the most deprived 10% nationally for education, skills and training (ibid). Bristol has a diversified economy, with public services, financial services, wholesale and retail, hotel and catering, and manufacturing sectors all well represented (ibid). In 2012, unemployment in Bristol was 6% (Nomis, 2013) although as with education the levels of employment vary considerably between districts. South Bristol, the Inner East and the Northern Arc experience high unemployment (Bristol City Council, 2011, p.67).

There is a strong interest in food in Bristol. There are 39 fresh produce and farmers’ markets in the city, as well as numerous independent retailers, and the ‘Love Food Festival’ takes place four times a year (Carey, 2011). Many people are engaged in UA, with 114 allotment sites covering 98 ha of council land (interview 1), and at least 27 active community garden groups (Bristol Food Network, 2013). Local CSOs have organised themselves into the ‘Bristol Food Network’ through which they share knowledge and maintain a voice in local politics. In 2009, the Bristol Food Network issued a report entitled *A Sustainable Food Strategy for Bristol* in which they outlined their vision of a desirable local food system, and the city council’s *Food Charter* (2010) is largely based on their recommendations (Carey, 2013). Two national level CSOs are based in Bristol; The Soil Association, which certifies organic produce as well as coordinating several high profile campaigns for sustainable farming and healthy eating in the UK; and the Federation of City Farms and Community Gardens, which supports UA community projects across the country.

Bristol City Council would appear to be interested in food related issues. In 2010, the city council issued a 10 point *Food Charter* outlining their responsibility of “ensuring the availability of, and access to, affordable, safe and nutritious
food sufficient for an active lifestyle, for all, at all times” (Bristol City Council, 2010, p1). The allocation of space for local food production in the city is mentioned in the council’s 25 year Development Framework Strategy (2011). The council also directs limited funding to some UA initiatives, although most projects in Bristol have been funded through the National Lottery ‘Local Food’ grant (interviews 1, 14). The council recently commissioned two reports, one considering the implications of Peak Oil for the city (Osborn, 2009), and the other is a local food audit of Bristol (Carey, 2011). In May 2011 they established the first formal Food Policy Council in the UK. The Bristol Food Policy Council (FPC) is a voluntary organisation comprising of representatives from local authorities, food businesses, and CSOs. The aim of the FPC is to create a ‘Bristol good food plan’ based on their vision:

“We believe that good food is vital to the quality of people’s lives, health and wellbeing in Bristol and also to that of the people who produce it. As well as being tasty, healthy and affordable the food we eat should be good for nature, good for workers, good for local businesses and good for animal welfare.” (Bristol Food Policy Council, 2013)

The formation of the FPC was due in part to “the recognition (of) how vulnerable the food system in the city is to climate change and resource shortages” (Bristol Food Policy Council, 2012).

Literature on UA and UFP within the specific context of Bristol is limited. Morgan (in press) describes the formation of the Bristol Food Policy Council, of which he is the chair. Carey wrote a comprehensive study entitled Who Feeds Bristol? – Towards a Resilient Food Plan (2011), in which she describes the following aspects of the local food system; production, processing, distribution, communities, retail, catering, and waste. She also wrote a brief update article in 2013 (Carey, 2013). Carey offers a number of useful recommendations on how the city’s food system can become more resilient, and advocates an integrated food system planning approach. Although she discusses UA and urban food system governance in Bristol, there is room for more research in both of these areas.

3.2 Methods
This section describes the methods used in collecting the data. The motivations for selecting each method are stated, and also the sampling strategy employed. For some of the methods there is a short reflection on how the method was performed, and how this may affect the quality of the data obtained.

3.2.1 Analysis of Primary Literature
A basic internet search was conducted in order to provide background information for the study and also to identify any key issues and stakeholders. A broad range of documents were collected from various sources (see Appendices 10.4 and 10.5). They include:

- Websites of UA projects and CSOs, which outline their aims and structure
- Promotional maps showing the location and focus of UA initiatives
- The news letter of the Bristol Food Network, which provides information about upcoming food events
- Several reports or documents issued by Bristol City Council, or organisations affiliated with the Council, such as the Bristol Partnership, the Green Capital Partnership, and the Bristol Food Policy Council. Some of these documents outline the council’s vision of an UFP for Bristol.

3.2.2 Semi-Structured Interviews
Semi-Structured Interviews (SSI), a form of qualitative interview, are the foundation of this study. Kvale proposes that:
“The qualitative interview attempts to understand the world from the subject’s point of view, to unfold the meaning of people’s experiences, to uncover their lived world prior to scientific explanation” (1996, p.1)

An interview can therefore be understood as a conversation with a structure and a scientific purpose (Kvale, 1996; Gillham, 2000). An SSI is a particularly flexible form of qualitative interview which allows the researcher to pursue new or unexpected leads as they emerge (ibid). The objective of qualitative interviews is complexity rather than generalisation, by gaining an insight into how a respondent views particular elements of the research theme (ibid). Qualitative interviews demand more from the researcher as they are required to consider how their own verbal and non-verbal behaviour may affect the results. Examples of these ‘interviewer effects’ include asking leading questions, or interpreting the responses according to their own values or pre-conceived notions (Kvale, 1996; Harrison, 2006). Researchers should also be aware of their own ‘positionality’, where the perceived characteristics, gender or social status of the interviewer and/or the respondent can affect the relations between the two people (Momsen, 2006). These ‘respondent effects’ can influence how the interviewee chooses to answer a question, as they may wish to conform to social norms or the expectations of the interviewer. Interviewer and respondent effects have the potential to compromise the reliability of the data, and so the researcher should give due consideration to; i) what interviewer or respondent effects occur in a particular interview, and ii) how these effects may affect the quality of the data.

The SSIs were conducted to understand how different stakeholders regard two aspects of the local food system; i) the contribution of UA, and ii) the role of the city council. Key stakeholders were identified from the primary literature. Interview respondents were selected using a purposive sampling strategy, with additional respondents chosen through snowball sampling. Purposive sampling is the deliberate selection of respondents based on their expertise or knowledge in a particular area (Neergaard, 2007). These respondents often point to further cases or individuals which may be of interest to the researcher, known as snowball sampling (ibid). In this study all of the respondents have a direct involvement in food production, planning or policy in Bristol, and so therefore are the most informed people to comment on the themes in all three RQs. Fourteen people were interviewed, and three of these were conducted by telephone.

The respondents can be divided into four stakeholder groups:

- Bristol City Council – 4 respondents from different departments; urban planning, allotment management, the sustainable city team, and Bristol Green Capital Partnership
- Civil Society Organisations – 2 respondents; the Bristol Food Network, and the Federation of City Farms and Community Gardens
- Urban Agriculture groups – 6 respondents, see details below
- Researchers – 2 respondents, both of whom are directly involved in the work of the Bristol Food Policy Council

A complete list of the SSI respondents can be found in Appendix 10.1, and an example of the SSI template in Appendix 10.2.

There are at least 27 active UA community projects in Bristol (Bristol Food Network, 2013). Assessing all of them was beyond the scope of this study, and so six projects were selected for interviews, again using purposive sampling. These six initiatives differ from each other in terms of their objectives and how they function, and so there is an assumption that they may contribute in different ways to the local food system. Choosing a variety of UA projects also helps to build a more complete picture of UA in Bristol. Members of the following UA groups were interviewed:

**The Severn Project** – a Community Interest Company which offers social engagement and rehabilitation for those recovering from drug or alcohol addiction.

**The Golden Hill Community Garden** – A community garden group organised by Horfield Allotment Association, which focuses on providing access to the allotments for people with disabilities.
Windmill Hill City Farm – A well established city farm which offers education opportunities for children as well as being a secluded, peaceful spot in the city.

Hartcliffe Health and Environmental Action Group – A charity which provides education about growing, cooking and buying food, particularly for families on low incomes.

Feed Bristol – A large project run by the Avon Wildlife Trust which promotes well being, outdoor education and access to nature through growing food.

The Community Farm – A farm scale enterprise located just outside of Bristol which runs an organic box scheme and supplies wholesalers. Profits are reinvested into community engagement activities.

Reflection on the weaknesses of the semi-structured interviews

1. Documenting data

No recording equipment was used during interviews, as some respondents can feel less forthcoming when they are being recorded. The downside is that some information may have been omitted during the process of taking notes. I attempted to reduce this by clarifying any uncertainties during the interviews.

2. Interviewer and respondent effects

In order to reduce the possibility of interviewer effects, efforts were taken to ensure the respondents felt at ease, for example by conducting the interviews at their place of work, a café of their choice, or the urban garden where they are involved. My demeanour was professional but informal, and questions were asked in a neutral, non-leading manner. The purpose of the research was explained prior to each interview commencing and it was emphasised that I do not represent any particular stakeholder group, in order to ensure there were no undue expectations from the study. These measures helped to build trust early in the interview, and the majority of respondents were forthcoming with their opinions.

The social status of most of the respondents was comparable to that of the interviewer; we share similar ethnic and social backgrounds, and we have many cultural reference points in common. The respondents are all involved in urban food production in some capacity, and I also have some personal experience of urban agriculture, so there was no obvious gap in knowledge or understanding. In terms of gender, 8 of the 14 respondents were women, but none of the interview questions had a particular gender dimension. In summary, while interviewer and respondent effects exist in any interview, they are not considered to have significantly affected the results in this study.

3.2.3 Direct Observation

Five of the SSIs took place at the location of UA projects in Bristol, and so the interviews were combined with Direct Observation. Photographs were taken showing features of the site which the respondent pointed out to me or that I considered important, and these were used to triangulate the findings from the SSIs. Direct observation also occurred at two site visits which did not entail an interview:

St Phillips’ Wholesale Market – A major wholesale and distribution centre for fresh fruit and vegetables which serves the South West region of the UK. The market was visited in order to get an impression of which foods are distributed through this system, and the quantities involved.

The Federation of City Farms and Community Gardens – This organisation aims to promote and support UA community projects across the UK. I attended a planning meeting for a Bristol event called the ‘Get Growing Garden Trail’, in order to informally meet some of the local stakeholders.
3.2.4 Questionnaire Survey

Questionnaire Surveys (QS) are useful for understanding the degree to which certain phenomena are present in a given group, and they add greater breadth to social research than other methods such as interviews or case studies (Flyvbjerg, 2004). The larger sample population produces results which are easier to generalise in relation to a wider context. However, there is a common misconception that QS are more objective than other qualitative methods because they produce numerical data which can be used for statistical analysis. Flyvbjerg (2004) argues that questionnaires entail subjectivity in the choice of categories and questions, and that errors in the method may not be corrected due to the distance between the researcher and the respondent. This subjectivity has to be recognised to avoid putting undue emphasis on QS results over the findings from other methods. It is also essential to conduct a pilot test on a similar group to the study population in order to reduce the likelihood of errors occurring.

The objective of the QS was to gather opinions on the local food system from a broader base of the general public. The questions were based on key themes elucidated in the SSIs, and so the data could be used to triangulate the SSI results. The QS was anonymous, and the sample population were people who are currently engaged in some form of food production in Bristol. This selection criteria was used because people who grow their own food are more likely to have an opinion on the research themes, and also an understanding of how existing council policies affect the local food system.

The QS is comprised of four sections of closed questions. The first two sections provide a demographic overview of the respondents and their involvement in growing food. The third section is intended to answer RQ 1 and to a lesser extent RQ 2, and respondents were asked to state how important they consider various aspects of UA to the local food system. The final section poses general statements about the role of the city council, and respondents were asked to what extent they agree/disagree with the statement. The QS template can be found in Appendix 10.3.

The QS was pilot-tested by three urban food producers from Uppsala, Sweden. They are engaged in similar kinds of projects as their counterparts in Bristol, and so were selected based on their similarity to the study population. Their valuable feedback was used to improve the wording of the questions, thus reducing the possibility of respondents interpreting the questions in different ways. In some cases a brief definition or clarification phrase was inserted into the question.

The QS was distributed through the contact network of the Bristol City Council allotment manager, which included allotment site managers and community garden groups. It was also sent to several UA projects via their website contact details. The QS was initially distributed as a word document which the respondents were required to complete and return to me via email. This approach yielded only 9 responses. The QS was re-launched in a more user-friendly format using an online survey tool called ‘Kwik Survey’. This proved more successful, with a further 101 respondents. The data from the two sets was collated, and incomplete questionnaires were deleted.

Reflection on the weaknesses of the questionnaire survey

1. Sample bias

Due to the distribution channels available to me, the QS predominantly reached a particular sub-group of urban food producers; people who rent a private allotment from the city council. The QS was sent to many UA groups which are not allotment associations in an effort to overcome this sample bias. However, due to the large membership of the allotment associations, a much higher number of people responded from the rented allotment category; 107 respondents, compared to only 4 who state they are involved community gardens. This may be significant as people who rent private allotments may hold different perspectives or priorities to those involved in projects which are more community orientated, when considering the contribution of UA to the local food system.
Another aspect of sample bias is that a disproportionate number of the respondents are over the age of 50 (64%). While older people may be more involved in growing food than younger people, I would consider it unlikely that this is a demographically representative sample of Bristol’s food growing population. Similarly, 69% of respondents have a Bachelor degree, and this is also unlikely to be demographically representative. It would be a huge over-generalisation to say that people of a particular age group, or of a particular level of education, will share the same views. Nevertheless, if younger age groups or people who did not attend university are not well represented in the sample, then evidently their views will not be reflected in the results.

2. Interpretation of questions

An inherent risk of this method is that some respondents may interpret the questions differently to how I intended, thus producing misleading results. While a pilot test does reduce the likelihood of this happening, it cannot guarantee that all respondents will understand and answer the questions in the same way. The risk is most pronounced in Question 23:

*The Council has a responsibility to ensure the availability of food for Bristol’s residents.*

This question was intended to assess people’s views regarding the council’s role in the city food system on a day to day basis, or to paraphrase; “Does the council have a responsibility to ensure food is available, in the same way as other essential services like housing, electricity and clean water?” However, the statement could also be understood as relating only to civil emergency situations, when the council would consider intervening in the food system if the standard distribution channels were not functioning. The respondents were in a strong agreement that the council does have a responsibility to ensure the availability of food, but I do not have sufficient confidence in this finding to base arguments on it because of the ambiguity in how the question was phrased.

3. Insufficient inquiry on social justice

The QS was based on key themes which emerged from the first 4 SSIs that I conducted. Thus, the QS was originally intended to explore people’s perceptions on i) how UA increases resilience in Bristol’s food system, and ii) the role of the council in the local food system. It was successful in answering these questions. The later SSIs revealed the importance of the issue of social justice in Bristol’s food system, but by then the QS had already been distributed. Therefore, the QS does not have any questions with the specific aim of understanding how people view social justice, although section 3 does briefly touch upon it. This is a major oversight in the methods, as it would have been very interesting to hear people’s views regarding equity in Bristol’s food system, and whether social justice should be a main objective in the council’s urban food policy.

3.2.5 Targeted Questionnaires

A different type of questionnaire, a ‘targeted questionnaire’, was developed for four key stakeholders who were unavailable for a semi-structured interview. The targeted questionnaires were used because the perspectives of these four individuals were considered important in developing an understanding of particular core themes. In the hope of increasing the chances of a response, the targeted questionnaires were limited to four or five open-ended questions. One reply was received; Mark Goodway, who is the director of the Mathew Tree Project, a charity which aims to reduce food poverty in Bristol.

3.2.6 Field Trial – The produce from two allotments over a 12 month period

Quantitative data was obtained from one SSI respondent, Steve Clampin, the allotments manager for Bristol City Council. From October 2008 until September 2009, Mr. Clampin and one of the site representatives conducted field trials on their personal allotments, to find out the amount of vegetables produced from a “typical, well maintained plot” (interview 1). The year was described as “an average year for crop production”. The site representative’s plot was 200 m² and he used organic growing methods. Mr. Clampin’s plot was 250 m² and he used conventional growing methods.
The produce was weighed, and the yields were compared to the prices for comparable items in a local Tesco’s supermarket. Only the numerical data for Mr. Clampin’s plot is available, although he recalls the total value of the produce for the other plot over 12 months. The full data set can be seen in Appendix 10.6.

This data was collected for two reasons. The first was to assess the contribution of UA to the local food system, and so answering RQs 1 and 2. The academic literature contains a profusion of qualitative data on the benefits of UA, but quantitative data on the actual productivity of UA is more difficult to obtain. The second reason is that Carey (2011) used the same data for her projections of the potential total output if the city were to maximise food production by converting various green spaces to agriculture. Carey’s report is very influential in the Bristol context and so it is important to understand how she arrived at her assessment.

It should be stated that the field trial was conducted as a hobby by two keen gardeners in order to satisfy their own interest. The trial did not have a particular scientific objective and the methods cannot be verified according to academic rigour. The results of this trial are intended to be used as an indicator only.

3.3 Research Ethics

This study was conducted according to the principles of research ethics as proposed by the UK Economic and Social Research Council (2010). Prior to each interview commencing, the respondents were informed of the purpose of the study, who I am and the university where I study, and how the information they provided would be used and disseminated. At the end of each interview, the respondent was asked if they were still happy for the information they provided to be used in the report. Most of the names are not disclosed and they cannot be identified from the context of the information they imparted. The names which are disclosed gave their express permission to do so. In line with the tenets of Participatory Action Research, it is hoped that the final report may benefit the study population; by contributing to a greater understanding of the importance of UA in the city, and by offering feasible suggestions for developing UFP which would be relevant in the context of Bristol. An easy to read summary of the results was compiled and distributed to all the interview respondents.
4.0 Results
This section presents the main findings of the study, with each method presented individually.

4.1 Questionnaire Survey
In total, 110 complete QS responses were received. If we consider the demographics, slightly more women (54.1%) replied than men. The respondents are predominantly in the older age groups, with 20.0% aged between 50-59, and 43.6% aged 60 or over. 46.8% are employed, 22.9% are self-employed, and 26.6% are retired. The majority of respondents received higher education; 69.1% hold a Bachelor degree and 23.6% also hold a Master degree. In terms of growing food, almost everyone rents an allotment (97.2%), and many also have a private garden (32.7%). A small minority are involved in a community garden (3.6%), education/training (2.7%), business (1.8%) and guerilla gardening (1.8%). Most respondents are experienced gardeners; 44.5% have been involved in growing food for 3 to 8 years, and 40.9% for more than 8 years.

Section 3 of the QS contains 13 questions which were intended to explore people’s perceptions of the contribution of UA to the local food system. Respondents were asked to state how important or otherwise they considered various aspects of UA to making Bristol’s food system more secure or resilient. There is not sufficient space here to present detailed results from all 13 questions and so they have been summarised. The vast majority (75% or more) of respondents considered the following aspects of UA either ‘important’ or ‘very important’:

- Provides locally produced food
- Provides a source of nutritious and healthy food
- Provides organic food, not dependent on fossil fuel based fertilisers or pesticides
- Encourages learning how to grow food
- Encourages learning how to cook from scratch (using fresh produce)
- Promotes more environmentally aware consumption habits
- Encourages an active lifestyle
- Builds community spirit
- Improves the urban environment (more green space, easier access to nature)

The remaining 4 aspects of UA produced slightly different results to those listed above and so can be considered outliers in Section 3. While the majority of respondents still perceive these aspects as important or very important, it is notable that a larger proportion selected ‘neutral’ (between 23% and 37%) or in a few cases ‘not so important’ (between 1% and 6%). These aspects are:

- Improves local soil fertility
- Reduces money spent on food shopping
- Provides alternative sources of food in deprived areas of the city
- Provides opportunities for social inclusion and training for people recovering from drug or alcohol addiction

There were 5 questions in the QS aimed at understanding people’s perceptions of the role of the council in the local food system. Respondents were asked to state to what extent they agree or disagree with statements regarding the council’s activities or responsibilities in relation to the urban food system. Question 21 considered whether the council policy supports UA projects. Opinion was generally positive; 46.8% agree with this statement, 9.2% strongly agree, and 32.1% are neutral. Question 22 asked whether people believe the council has provided sufficient land for growing food within the city. The results are shown in Figure 2. We can see that the opinion of the council was somewhat negative on this issue, as a significant proportion of respondents either disagree (32.7%) or strongly disagree (12.7%).
Figure 2, showing people’s perception of whether the council has provided sufficient land for growing food.

Question 23 asked whether the council has a responsibility to ensure the availability of food for Bristol’s residents. The majority of people believe the council does have a responsibility in this regard; 40.0% of respondents agree and 20.0% strongly agree with the statement, and 21.8% are neutral. 14.5% disagree, and only 3.6% strongly disagree. Question 24 explored whether the council has a responsibility ensure a diversity of retailers in the city where people can buy food. Figure 3 shows that the majority of people agree (39.3%) or strongly agree (30.8%) with this statement. A small minority disagree or strongly disagree.
Figure 3, showing people’s perception of the council’s responsibility to ensure a diversity of food retailers

Question 25 asked whether people believe the council has a responsibility to source local food for catering in schools, hospitals and public offices. Figure 4 shows that nearly half of respondents strongly agree (47.3%) and a further 34.6% agree.

Figure 4, showing people’s perception of the council’s responsibility to source local food for catering in public buildings.
The final question of the QS assessed people’s perception of UK food security in the current globalised food system. Figure 5 shows opinion was rather divided across all five response categories, although the largest number of respondents (33) disagree with the assertion that UK has food security.

![Figure 5](image)

**Figure 5**, showing people’s perception of UK food security in the globalised food system

### 4.2 Allotment Trial
An analysis of the allotment trial data shows that Mr. Clampin was able to produce £771 worth of fruits and vegetables using conventional growing methods on a 250 m$^2$ allotment, compared to local supermarket prices. The site representative who also participated in the trial produced approximately £800 of fruits and vegetables using organic growing methods on a 200 m$^2$ plot, and so the results of the two trials are similar in terms of the overall economic value. Labour time is not included in these sums as both gardeners view UA as their hobby and not an economic activity (interview 1). Mr. Clampin estimated he spent around £150 on seeds, rent and other expenses, providing a net return of produce equivalent to £621. Perhaps more striking in these results is the diversity of produce which Mr. Clampin was able to grow on his plot; 46 different types of vegetables, 12 types of fruits and 6 herbs. Mr. Clampin was able to harvest something during every month of the year, with small amounts of winter vegetables from November to March, and a varied seasonal range of fruits and vegetables from April to October.

### 4.3 Direct Observation
During the site visits, features were observed which demonstrate how UA contributes to resilience and/or social justice in Bristol’s food system. These were documented using photographs, and some are used in the Analysis (section 5.0).
4.4 Targeted Questionnaires

Mark Goodway is the director of the Mathew Tree Project, a charity which aims to reduce food poverty in Bristol. He defines food poverty as “the inability to afford or access healthy food” (Targeted Questionnaire). A recent report by the Mathew Tree Project (2012) found that 69,300 people in Bristol are income deprived, which means they are at risk of not being able to afford enough food or have to substitute another critical need in order to feed themselves. The total amount of food aid required to meet this deficit would be 7,415,100 kg per year (ibid). The project’s website highlights the effects of hunger:

“When someone is hungry, they will not function well. They will struggle to get a job, or hold one down, they will become ill much more readily, their family relationships will suffer or even break down altogether. Children will find it virtually impossible to concentrate at school and will therefore find it very difficult to get a good education and qualifications. There will be, in some cases, a tendency to resort to crime.” (Mathew Tree Project, 2013)

The charity has a holistic approach to tackling the problem by providing not just food aid but also a range of services to help people move out of poverty. These include identifying a client’s individual needs, advice on how to shop, and training and qualifications for cooking and growing food. UA education takes place on a 13 acre plot in South Bristol, and the ability to grow your own food is a key element of their strategy:

“Food poverty is not going to be solved by simply providing people with food (i.e. the proliferation of food banks). Food poverty is solved by addressing the underlying causes and urban agriculture is essential for this.” (Targeted Questionnaire)

In considering UFP, he believes “some members of the council (not all) understand the importance of food to all aspects of (functional) life in Bristol”, and that there is a desire within the council to try and make sure Bristol is able to feed itself in the future should there be a collapse of the current established food system. However, he does not regard the council as the most appropriate entity to ensure the availability of food. He believes:

“The most effective response to all the food related challenges we face is an… intentional partnership between public, private, and voluntary organisations in a coordinated and strategic way.” (Targeted Questionnaire)

The role of the council is therefore to create an environment that would support and encourage such partnerships.

4.5 Semi-Structured Interviews

In total 14 interviews were conducted. All of the respondents are involved in Bristol’s food system in some capacity through activities such as production, education, planning, policy, or research. The results below describe their perspectives regarding the contribution of UA to the local food system, and the role of the city council.

4.5.1 The Contribution of Urban Agriculture

In terms of food production, several SSI respondents agreed that UA is not going to feed large numbers of people living in Bristol (interviews 1, 3, 4, 5, 12). However, a few respondents emphasised that UA and peri-urban agriculture offer an alternative to the global food system (interviews 7, 10, 12) which many consider to be vulnerable to shocks such as fuel supply disruption (interviews 1, 2, 4, 7, 9, 12, 14). As one interviewee puts it:

“When things go wrong with food, they go wrong quickly, and we’ll soon all be eating seagulls.”

(interview 7)
A few respondents stated that UA businesses can support the local economy and provide jobs (8, 9, 10, 14). Several people would like to see a stronger connection between the city and food production in the hinterland (interviews 3, 5, 7, 10, 14). This was perceived to have multiple benefits, such as shorter supply chains, supporting local farmers, and increased resilience to shocks. St Phillips Wholesale Market was also considered an important element of a more diverse urban food system (interviews 2, 7, 13, 14).

The majority of respondents believe UA plays an important role in educating children, and also adults, about where food comes from and how to grow it (interviews 1, 4, 5, 7, 9, 10, 11, 12):

“Children are very removed from food and where it comes from, they don’t know how to behave around animals. Farms provide a very interactive way of learning. We are trying to be a working farm, with the young farmer sessions, where children learn the connection between animals and meat.” (interview 9)

UA education facilitates training for employment (interviews 8, 12), promotes cooking meals from scratch (interview 12, 14), and reduces the strain on public health services (interview 3). UA is considered to improve people’s health and well being by providing a more nutritious diet (interviews 1, 4, 12) and through the physical activity of gardening (interview 9). Growing your own food and creating a meal from it is believed to raise self esteem (interview 12).

The potential of UA for the social inclusion of marginalised groups was considered very important by the urban gardeners (interviews 5, 7, 8, 9, 11, 12). These groups could be ethnic minorities, people recovering from drug or alcohol addiction, or those with physical or mental disabilities. According to one respondent:

“(City) farms are very safe places to integrate people with support needs, there are people with needs, but you are also rubbing shoulders with the general public, so you feel part of something.” (interview 9)

Other benefits of UA included community building by working together in groups and through engagement with the wider community (interviews 7, 10, 12), saving people money on their food shopping (interview 12), and enhancing local biodiversity by providing habitats (interview 7).

A few people stated that UA projects should be able to operate in the long term without being dependent on external funding (interviews 4, 7, 14). One council employee argues that:

“Community gardens need to be financially viable, the council can’t fund uneconomical processes. They need to identify market mechanisms to help them be more self-sufficient, and government funding could be directed towards this objective. There is dependency in some garden projects, and they have been failed by constant government grants.” (interview 4)

A number of respondents framed their discussion of local and global food systems in terms of ethics. There was a concern that although healthy, local, organic food was available in Bristol, many people can’t afford it, and only the affluent or educated are able to make such decisions regarding the food they buy (interviews 9, 12, 14). Food poverty was mentioned as a particular issue (interviews 4, 12, 14). Two respondents believe that quality food itself is undervalued, as we are so used to getting cheap deals in the supermarkets (interviews 10, 14). Some members of the UA projects want more ownership of how their food is produced because they disapprove of the business practices of large supermarkets (interviews 9, 10, 12). Two people believe there is a lack of social justice in current food system as farmers in the global south are being exploited (interviews 9, 12).

Finally, several people highlighted the positive work of dedicated individuals, known as ‘local food champions’ (interviews 4, 7, 11, 14). Some of the names mentioned were Steve Clampin (Allotments Office), Steve Glover (The Severn Project), Mark Goodway (Mathew Tree Project), and everyone at the Hartcliffe Health and Environmental Action Group.
4.5.2 The Role of the City Council

The council can intervene in the local food system in several ways, not least through urban planning. Planners have struggled with the issue of food because there are no statutory guidelines (interview 2). Moreover, some national policies do not support the creation of a local food agenda as they are more orientated towards the national/global food systems (interviews 2, 3, 4, 5). Even if the council does fully embrace such an agenda, “the power of the planning department is limited because 90% of the city will not change as many physical structures are already in place” (interview 2).

One council member states that they are keen to tackle the obesogenic urban environment, and they are moving towards a policy limiting the placement of fast food take-aways near schools (interview 2). This will only apply to new applications because the council does not have retrospective powers to close down existing take-aways. The issue of maintaining a diversity of food retailers is more problematic. Bristol has the highest per capita density of supermarkets in the UK, and this reliance on ‘the big 4’ (supermarket companies) is perceived by some to be a serious problem (interviews 4, 5, 7, 14). In 2011 residents in the Stokes Croft area petitioned against the opening of a Tesco Express store and the demonstrations erupted into violent encounters with the police (Bowcott, 2011). The economic development department of the council responded by introducing a strategy to support local businesses and districts (interview 2). However, the council has to follow national statutory guidelines which state they should remain neutral and cannot deliberately favour independent shops over supermarkets (interview 4).

The general public does not have a great deal of influence on planning, although the 2011 ‘Localism Act’ is one way in which the local community can sway the council’s planning agenda (interviews 2, 5). The Act entitles community organisations to bid for and take over assets which they believe are important to the community as a whole, yet it does not provide any financial resources to do so (interview 2).

There are two notable conflicts of interest in relation to planning and food in Bristol. The aspiration to build more homes will reduce the amount of space available for food production, and there has not been a real debate on the relative merits of the two land uses (interviews 13, 14). The other conflict is the M32 Park and Ride scheme which is intended to alleviate congestion on Bristol’s roads. While many respondents support the Park and Ride in principle, its proposed location is on a stretch of grade 1 agricultural land called the ‘Blue Finger’ and this has instigated an opposition campaign from two local CSOs (‘Blue Finger Alliance’ and ‘Rethink M32 Park and Ride’). Many interviewees would like to see the Blue Finger converted to urban food production (interviews 1, 4, 5, 11, 14), but some are resigned to sustainable transport being the higher priority (interviews 1, 4, 9).

A second way the council can intervene is by creating an overarching urban food strategy. Several respondents mentioned the ‘food interest group’ (known as the FIG) as a positive example of the council trying to work with food issues across separate departments (interviews 2, 3, 13, 14). Efforts to create an UFP may be bolstered by the interest shown by some members of the Mayor’s cabinet (interviews 3, 5, 13, 14). However, the general perception is that a lack of communication between departments is impeding the development of an UFP (interviews 2, 3, 4, 12, 13, 14). This is apparent on particular issues, such as allowing the sale of two football grounds to supermarket developers contrary to the policies of other departments (interview 2), or the location of food waste disposal sites (causing a rat infestation) next to St Philip’s wholesale market (interview 13).

A third intervention is the council’s own procurement policy. Several respondents note that the council is a provider of food in schools and other public buildings (interviews 3, 5, 9, 10, 13). The council can therefore influence the local food system by using “the power of purchase in a benign way” (interview 13). For example, the council can choose to buy organic produce, or from local farmers.

A fourth intervention is through supporting UA initiatives. Two council members stressed that the council is facing budget cuts and so there is no funding available, but they can support projects by providing public land and by forming partnerships (interview 1, 3). Moreover, there is a potential for usufruct licences to use vacant space (interviews 2, 3). From the perspective of urban gardeners, they do not want to wait for the council to lead them (interviews 6, 9, 11, 12, 14):
“They (the council) are important in providing space for the community, but they don’t intervene too much, which is the best way. We shouldn’t wait to be led by the council to initiate things we believe in.”
(interview 9)

Opinion was divided on the question of whether the council has a responsibility to ensure the availability of food. Researchers and members of some UA groups and CSOs believe the council does have this responsibility (interviews 4, 5, 8, 9, 10, 12, 13 14), although they differ in their emphasis of how the council should fulfil their obligation. Suggestions include supporting local UA businesses (interview 8), creating local food hubs (interview 10), and providing funds for UA organisations involved in social work (interview 12). One UA practitioner states:

“It isn’t their responsibility, but the council has chosen to make it something, and so they should stand by this…the food system should function as a whole - Bristol needs a comprehensive food policy.”
(interview 12)

One researcher believes that:

“The council does have a responsibility on two levels. All institutions have a food policy, yet have no duty of care for the people, whereas the council does not have a food policy and yet does have a duty of care. Secondly, they can be a facilitator for good food in the ‘public plate’ - they are feeding vulnerable people; pupils, prisoners, patients and pensioners.”
(interview 13)

The members of the council have a different view:

“The council doesn’t have a responsibility for provision, but they do have a responsibility to enable people to make choices about their food. They should educate people about where their food comes from, the health aspects.”
(interview 1)

Another council member believes they have a responsibility in some aspects but not all:

“At the extreme level, such as civil emergencies, the council is responsible, and also to ensure safe food, the environmental health and safety aspects. We also want to promote access to healthier food. The council is concerned, but this goes beyond our statutory duties.”
(interview 2)

A significant UFP development is the establishment of the Bristol Food Policy Council (FPC). The FPC is not a council entity, but they do have a close affiliation with the council’s Sustainability City Team. The FPC’s vision consists of 8 strategies which it hopes will create a more resilient local food system, and is largely based on Carey’s (2011) report, *Who Feeds Bristol?* (interviews 5, 13, 14). The general opinion of the FPC is that it is still finding its feet, and so has yet to have a significant influence on the city council policy (interviews 3, 4, 5, 11, 14). Some people believe the FPC could have a powerful strategic voice (interviews 3, 13), as one observer suggests:

“The Food Policy Council itself has no budget, no resources, yet they do have influence, a lot of ‘moral capital’. They can create a climate of opinion.”
(interview 13)

The question of where the FPC sits in relation to the city council has been raised; should it remain outside of the council to retain their integrity, or should they integrate with the council to have a greater influence on decision makers (interview 13). To date there has been little support of the FPC from grass roots organisations, although this is primarily due to a lack of communication as the FPC has no budget to initiate an engagement process (interview 14). The FPC has been criticised by food bank organisations for not having a seat for food justice, and the FPC are now considering implementing this suggestion (interview 13, 14). The FPC will launch their ‘Good Food Plan for Bristol’ in late 2013.
5.0 Analysis
This section is an analysis of the results using the conceptual frameworks of resilience and social justice. Some of the literature reviewed in the Introduction section is used to support the analysis. It should be stated from the outset that resilience and social justice are not mutually exclusive concepts. An aspect of UA may increase resilience and support social justice, whereas another aspect may contribute to only one of these dimensions of the urban food system.

5.1 Resilience in Bristol’s Food System
A resilient food system is characterised by a high capacity to absorb disturbances and reorganise while maintaining the same function, structure and feedbacks. This reorganisation would be displayed through adaptability, so that the system adjusts its responses to external drivers and internal processes, thus avoiding critical thresholds. It could also be displayed through transformability, the capacity to create a fundamentally new system if the existing systems become untenable (Folke et al., 2010).

The results suggest that many people do not feel confident that Bristol has a resilient food system. 45% of QS respondents disagree or strongly disagree that the globalised model will provide a continuous, reliable source of food. This finding is supported by 7 of the SSI respondents (interviews 1, 2, 4, 7, 9, 12, 14). Aspects of Bristol’s food system which demonstrate a lack of resilience include:

- The supermarket distribution systems parallel each other (interviews 2, 9, 12), and so are susceptible to the same kinds of disturbance. There is a lack of diversity in the food supply network.
- The scale of operations at St Philip’s wholesale market is declining (interviews 2, 14). St Philip’s is the only large scale wholesale market for fresh fruit and vegetables in the South West and so its potential closure would increase the reliance on supermarket distribution systems (Carey, 2011).
- Avonmouth Docks and the distribution centre at Bridgewater are located in flood plains (interview 2). Key nodes within the local food distribution network are therefore vulnerable to extreme weather events.
- Many people do not have the knowledge, skills or time to grow and cook healthy food (interviews 9, 12, 14). If existing food supply channels were disrupted, people would not be well equipped to start producing their own food.

The results also reveal evidence of resilience in Bristol’s food system. There is a high level of food activity in the city, originating from grass roots organisations and now influencing the work of the council. There are 114 allotment gardens, 27 community gardens, 39 regular fresh produce markets, various food festivals, and 2 large CSOs which focus on food issues. People are engaged in food production, they are interested in the quality of food they buy and how it is produced, and they are connected through regular events and the online newsletter of the Bristol Food Network (interviews 1, 3, 4, 5, 6, 12, 13, 14). This represents embedded knowledge of food as well as a degree of connectivity which would allow the urban food system to adapt in the event of a disturbance.

Another element which positively influences resilience is the availability of land in Bristol. Figure 6 shows the location of the UA sites visited in this study. There are only a few large areas of open land within the city, but many small pockets of green space can be seen, which are sports fields, parks or allotment gardens. Bristol’s allotment gardens are located in residential areas across the city and so are in close proximity to the people who use them. People are much more likely to use an allotment if it is located within 1 km from their home (interview 1), and so this mosaic of green space reinforces the social behaviour of growing food.
Figure 6, showing the location of UA sites and the Blue Finger in Bristol

To the North we can see the ‘Blue Finger’ which continues northwards for 20km (Blue Finger Alliance, 2013). The classification of ‘grade 1 agricultural land’ means that the Blue Finger has some of the best soil in the UK. Several SSI respondents would like to see the hinterlands providing food for Bristol (interviews 3, 5, 7, 10, 14), and the Blue Finger is an ideal location because of the high quality soil. It was the site of Bristol’s market gardens during the 19th Century and so there is a historical affirmation that large quantities of food can be grown there (Blue Finger Alliance, 2013). Moreover, existing UA projects are located within the Blue Finger, such as Feed Bristol, Sims Hill Shared Harvest and Stapleton Allotments. Barthel and Isendahl (2012) argue that community gardens increase urban resilience because they retain social-ecological memory; of food production competencies, and also the local characteristics such as soil, climate, and fluctuating organism populations. Food growing knowledge and experience is tied to the UA projects in the Blue Finger which, combined with the quality soil, represents considerable adaptive capacity should Bristol need to scale up local food production in the future. Sustainable transport is of course also an element of a resilient city, but the two CSOs which are campaigning against the Park and Ride proposal argue that there are other locations which are suitable for the purpose. If the Park and Ride is constructed in the Blue Finger, the area will no longer have such high adaptability as the UA projects will be lost or at least downsized. Moreover, the council is unlikely to squander the financial capital it has invested by restoring the land to agriculture in the future. A localised regime shift will have occurred, and the overall resilience of Bristol’s food supply would be reduced.

5.2 How Urban Agriculture Increases Resilience in Bristol

The results suggest that UA increases the resilience of Bristol’s food system in three ways. It strengthens social capital and connectivity through community building, it supports a diverse food supply network through local production, and it increases adaptability through education about how to grow food.
The QS respondents considered two important aspects of UA to be ‘provides locally produced food’ and ‘builds community spirit’. From a resilience perspective, these aspects increase the adaptive capacity of urban gardeners and the wider social networks of which they are a part. As individuals work together on UA projects they share knowledge, build trust and form relationships (interviews 7, 10, 12). The UA projects in Bristol display some of the indicators of agro ecosystem resilience as described by Cabell and Oelofse (2012); they have high social capital, they are appropriately connected, and they are socially self-organised. These attributes would allow the SES to respond more quickly and effectively in the event of a disturbance, such as a disruption in food supply. The system is also better equipped to respond to internal drivers, for instance rising levels of obesity, by disseminating advice and information on healthier eating through the network nodes such as the Mathew Tree Project or the HHEAG.

Feed Bristol exemplifies how resilience can be increased through education and local food production. Feed Bristol was established by the Avon Wildlife Trust in 2012, and its main focus is outdoor education and access to nature through growing food (interview 11). The site covers 8 acres and so could potentially produce a significant amount of food, particularly as there are 5 large greenhouses which could extend the growing season as well as allowing a more diverse selection of crops. The produce is given to local schools, elderly people’s homes, and the community garden groups which are based there. Visitors to the project include schools, adults with learning disabilities, and socially marginalised groups. They learn about growing vegetables, forest gardening, bee keeping, preserving food, and wildlife conservation. Figure 7 shows one of the signs which are placed around the site. These signs provide information on growing techniques and also the local wildlife, so that visitors who may have little prior knowledge can understand the features of UA and how they connect with the wider SES.

![Figure 7, Feed Bristol - an information board on forest gardens. Photo: Mark Wilson.](image)

The education activities at Feed Bristol are organised by the two full time employees with the help of volunteers who are familiar with UA and permaculture techniques. This education increases the knowledge, skills and experience of the people which visit the project. As individuals learn, they acquire more confidence in their own ability, and some go on to become volunteers themselves. This reflects Tidball and Krasny’s study, which found that:

“Community greeners gain multiple competencies, ranging from how to grow food and proper nutrition to how to work in multicultural groups to advocate with city government. They also create social networks…and a sense of self-efficacy and empowerment.” (2007, p.9)
Thus resilience is increased on two levels. The individuals who participate in UA have more capacity to produce their own food, and the community scale SES of which they are a part becomes more adaptable as there is a greater degree of knowledge and engagement. Feed Bristol also increases resilience by providing an alternative source of food to the conventional food system, albeit on a small scale. As supermarket distribution systems parallel each other, they are therefore vulnerable to the same types of disturbances, and if supply chains are disrupted for any reason then cities will exhaust their reserves very quickly (Steel, 2008; Barthel and Isendahl, 2012). Feed Bristol performs the same vital function of providing food but through a fundamentally different distribution network. At present, the volume of food produced by Feed Bristol and other UA initiatives in Bristol is comparatively small when considering the food demands of the entire city. However, Feed Bristol does function as viable alternative production/distribution model which could be scaled up if needed in the future. This diversity of food sources is an example of modularisation as described by Ahern (2011), and creates a degree of redundancy in the urban food system.

5.3 Social Justice in Bristol’s Food System

A food system that achieves social justice would ensure that food is available and accessible to all, it should be adequate in quantity, quality and be culturally appropriate, and it should provide ample nutrition so that people are healthy and capable of enjoying all other rights (UN, 1948; FAO, 1996). This would fulfil the fundamental human right to food, and contribute to the fulfilment of the right to health (CESCR, 2000).

Bristol’s food system is failing to support social justice in several respects, the most prominent being the prevalence of food poverty. As mentioned earlier, 69,300 people in Bristol are at risk of not being able to afford enough food (Mathew Tree Project, 2012). There are a number of food assistance organisations working in Bristol to tackle this problem, such as the Mathew Tree Project, the Trussel Trust, Fair Share South West, and the Bristol 5K partnership. The very existence of food banks is evidence that some people do not have access to sufficient food in an egalitarian manner which respects their dignity. Moreover, food poverty is by no means unique to Bristol; a recent report by OXFAM estimates that over 500,000 people in the UK are now reliant on food aid (Cooper and Dumpleton, 2013). Cooper and Dumpleton assert that:

“The growth in food aid demonstrates that the social safety net is failing in its basic duty to ensure that families have access to sufficient income to feed themselves adequately. The exponential rise in the creation of food banks reflects a growing problem and only delivers mitigation. Food banks provide a vital emergency service to the people they support but they do not address the underlying structural causes for the growth of food poverty.” (2013, p.3)

Food banks perform a vital function in Bristol and around the UK, but they do not absolve the State of its responsibility to ensure that everyone has access to adequate food (The State’s responsibility is discussed in more detail in Section 6.3.2). The national government has designated the task of providing food to the market economy, and established a ‘welfare state’ system to safeguard human rights. Yet this social safety net is failing to ensure the right to food, and this should be a serious concern for the government at both national and local levels.

Some people in Bristol have access to sufficient quantities of food, but are not able to buy food of adequate quality. For example, some districts in Bristol are believed to be food deserts, such as Lawrence Weston (interview 4). The situation is convoluted as there are many fresh produce and farmer’s markets in Bristol, as well as an abundance of supermarkets, which sell a wide variety of fresh, organic or local produce. The problem is that many people cannot afford the considerable mark up in price for such items (interviews 4, 9, 12, 14). Bristol has 26 wards which are in the most income deprived 10% nationally, and a recent report considers food deserts in Bristol to be primarily caused by poverty rather than retail geography (Bristol City Council, 2013). Bristol residents on low incomes must ensure they have enough to eat (quantity) and the attributes of quality or culturally appropriate are secondary. This finding is supported by a recent national survey, in which almost a third of low income households stated that, during the previous year, a lack of money or other resources had limited their access to enough varied and appropriate food to sustain an active and
healthy life (Holmes, 2007 cited in Dowler and O’Connor, 2012). A separate dimension of adequacy is the ability to make ethical choices about your food and how it is produced. Some respondents object to the business practices of supermarkets and yet their proliferation in Bristol has reduced the number of independent retailers (Carey, 2011). People are therefore less able to buy food according to their ethical position (interviews 9, 10, 12).

The right to health is in part fulfilled by eating a nutritious, balanced diet. In some deprived areas of Bristol, only 38-43% of residents eat the recommended 5 portions of fruit and vegetables a day (Bristol City Council, 2013, p.12) and childhood obesity levels are rising (interview 12). This can be attributed to the financial constraints discussed above and to the obesogenic urban environment which characterises some areas of Bristol (interview 2). Another important contributing factor is that many people, particularly those on low incomes, do not have sufficient knowledge and skills to grow, cook or buy healthy food (interviews 9, 11, 12, 14). Several projects in Bristol are working with food education to remedy this, such as the Hartcliffe Health and Environmental Action Group (HHEAG), Feed Bristol, the Square Food Foundation, and the Mathew Tree Project.

5.4 How Urban Agriculture Supports Social Justice in Bristol

The research findings suggest there are three main ways in which UA supports social justice in Bristol’s food system. It provides access to fresh fruit and vegetables, it encourages healthier living through education, and it promotes equality and inclusion in the community.

Access to healthy food is a particular challenge for many people in Bristol, due to main two factors: economic deprivation and a lack of knowledge on healthy eating. The most conclusive finding from the allotment trial was that UA can provide an extremely wide variety of fruits and vegetables. During most months of the year, Mr. Clampin has ready access to the recommended daily amount of fresh fruit and vegetables. This steady influx of fresh produce arriving in the kitchen encourages cooking from scratch and a healthy, varied diet. This is supported by the QS results, where respondents stated ‘nutritious and healthy food’ and ‘learning how to cook from scratch’ as two of the main benefits of UA. Mr. Clampin is evidently a talented gardener, yet gardening is a skill which anyone can learn with dedication, time, and perhaps some basic training. UA provides access to healthy food and could therefore be used to support social justice in Bristol’s food system by facilitating greater participation in UA for people on low incomes.

The results from the allotment trial also indicate that UA could make a significant contribution to reducing household expenditure on food. Mr. Clampin received a net return of produce equivalent to £621 from his allotment over a 12 month period (this calculation excludes labour time, as Mr. Clampin considers gardening to be a hobby). From a household economy point of view, £621 is no small sum of money. The trial was conducted in 2008-09, when the UK median gross wage was £20,801 (BBC, 2009). After income tax and national insurance deductions, this would amount to £16,156 disposable income (Listen to Tax Man, 2013). An allotment can therefore provide food equivalent to 3.8% of the national median disposable income. In 2011, the average total spending of a UK household on food was 9% of their disposable income (US Department of Agriculture, cited in The Economist, 2013). These figures should be viewed critically, as household spending on food is affected by many variables and not everyone has the free time required to work an allotment. On the basis of only one trial, it would be incorrect to argue that an allotment can reduce household expenditure on food by a third. However, it is reasonable to say that £621 would be a significant saving to the food budget of many households, particularly those on a low income.

The result from the QS, however, do not support this finding, as ‘reduces money spent on food shopping’ and ‘provides alternative sources of food in deprived areas of the city’ were among the lowest rated of the 13 aspects of UA. This may be due to the social profile of the respondents, as 69% hold a bachelor degree and a high proportion are employed or retired, and so are less likely to be economically vulnerable. It could also be due to the phrasing of the question, as respondents were asked to consider UA in the context of resilience in Bristol’s food system, and not social justice (weaknesses of this method are discussed in section 3.2.4).
The second factor limiting access to healthy food is a lack of knowledge. Hartcliffe Health and Environmental Action Group (HHEAG) is a charity which provides opportunities and support for people to engage in activities which promote ‘a healthy and sustainable lifestyle’. The charity was started in 1990, and they now employ 6 full time staff and receive help from 40 volunteers. They offer education on how to grow, cook and buy food, as well as a ‘walking for health’ group to encourage physical activity, and a support group for mental and emotional stress. There are several core values which influence their work (HHEAG, 2013), including:

- actions to redress health and social inequalities
- an integrated approach to health, wellbeing and environment
- everyone’s right to access fair priced healthy food

The people who work at HHEAG recognise that there are health and social inequalities in Bristol’s food system, and they attempt to address this through a holistic approach to education which connects food with health and wellbeing. This approach is based on the needs of the community, and many people who take the courses are on low incomes, have low levels of literacy and numeracy, and suffer from diet related illnesses (interview 12). The participants learn how to grow food on two allotments and they use this produce during the cookery lessons in the HHEAG kitchen. They attend ‘supermarket tours’ where they learn about weights, measurements, budgeting, and buying basic ingredients for recipes. The HHEAG also has a food cooperative, where eggs and fresh vegetables from the allotments are sold, along with locally sourced milk, cheese and meat. They also sell a range of basic, high quality products at lower prices than in conventional stores, shown in Figure 8.

![Figure 8](image-url)

*Figure 8,* the HHEAG Food Cooperative sells quality, healthy food at lower prices. Photo: Mark Wilson.

These products are aimed at encouraging cooking from scratch, and the cooperative loans recipe books and kitchen equipment so people can be inspired to try out new recipes at home. The food coop also delivers to elderly people and local nurseries. In summary, the HHEAG provides an excellent example of how UA can be integrated into a holistic education model which supports social justice. This education promotes equal access to high quality food for people across the community, and it provides the necessary knowledge and skills to grow, cook and buy food which is both nutritious and affordable.
The third way in which UA supports social justice in Bristol is by promoting equality and inclusion in the local community. The Golden Hill Community Garden has access to healthy food and the opportunity to grow it as their primary aim (interview 7). Anyone who has an interest in growing food can join the group, and the project strives to be inclusive and supportive of those who might not otherwise have this opportunity, such as people with mental or physical disabilities, or those who suffer from social anxiety. Figure 9 shows raised vegetable beds which are designed to be wheelchair accessible with extra height, sufficient space in between the beds, and a solid, level ground surface.

Golden Hill Community Garden supports social justice by ensuring that growing food is accessible to all people. Moreover, it provides a space for social interaction between groups of people who might not otherwise come into contact with each other on a day to day basis. This helps to build understanding and empathy between individuals and strengthens the local community.

5.5 Defining an Urban Food Policy in Bristol

Increasing resilience and supporting social justice in a local food system are normative goals. The assertion that an urban food policy (UFP) should achieve these two objectives is based on the assumption that few people in Bristol (or any city) would want to see a food system that is vulnerable to shocks and liable to collapse, or that does not fulfil the needs of all people living there. As the previous sections have shown, grass roots organisations and social projects directly increase resilience and support social justice through their activities, and make important contributions to Bristol’s food system and community as a whole. But resilience and social justice cannot be achieved without the support and collaboration of the most influential actor in the system, the city council. The results from this study suggest four main intervention points for the council in the local food system; urban planning, supporting UA initiatives, their procurement policy, and developing an overarching UFP. Stakeholders in Bristol have different perceptions of how the council should intervene in these areas, and this suggests an urgent need for cross-sectorial and departmental dialogue as the UFP is formulated.

The first intervention is urban planning. The council is already tackling the obesogenic environment by limiting the placement of fast food take-aways near schools, and they are in the process of establishing a comprehensive cycle network in the city. Morgan asserts that:
“Urban planners are arguably the key players in the campaign for healthy cities because modern diseases like obesity will not be solved by the medical profession, which is largely geared to treating illness rather than promoting health. On the contrary, long term solutions to diseases like obesity are more likely to be found in health-promoting planning measures.” (2010, p.343)

However, planning is not the complete solution to remedying unhealthy lifestyles, as one urban planner states:

“There is an important difference between what is necessary, and what is sufficient – there are few things where planning is enough on its own, the rest is behaviour change. Providing local shops and cycling routes is not enough on its own, although it is necessary to provide the options for people to change their behaviour. But it doesn’t mean they will change.” (interview 2)

In other words, the planning department can create the conditions which are necessary to support healthier lifestyles, but they cannot force people to change their behaviour habits. This is not to say the council cannot play a proactive role in educating people about healthier living, but this is outside the purview of the planning department. There is a unique opportunity here, because local CSOs such as the HHEAG and the Mathew Tree Project already have considerable experience in providing education for healthier living. A holistic strategy to create healthy cities would see the planning department designing an urban form conducive to healthy modes of living, and other departments such as the Sustainable City Team supporting CSOs which promote lifestyle and behaviour change. As several observers note, partnerships between local authorities, civil society groups and private enterprises may accomplish goals which actors within individual sectors are unable to achieve on their own (Targeted Questionnaire; Morgan, in press; Mendes, 2008; Blay-Palmer, 2009).

The issue of food retailer diversity is a challenge for Bristol City Council. Over 70% of QS respondents believe the council has a responsibility to ensure a diversity of retailers, a sentiment echoed in 5 of the interviews (interviews 4, 5, 7, 12, 14). One of FPC’s key strategies is ‘safeguard diversity of retail’, and it recently objected to a proposed new Sainsbury’s supermarket on Filton Avenue (Bristol Food Policy Council, 2013). The perceived negativity of a supermarket dominance of the city’s food system is apparent in local activism, such as the Bristol Food Network’s ‘Bristol Independents’ campaign (2013), the 2011 protests against Tesco in Stokes Croft (Bowcott, 2011), and street art as seen in Figure 10. According to this mural, 93% of local people do not want a new Tesco store on Cheltenham Road, and the value of ‘think local’ in the choice of food is espoused:

![Figure 10, street art on Cheltenham Road supporting independent retailers. Photo: Mark Wilson.](image-url)
The motivation behind this extensive opposition to supermarkets connects to resilience, as many people believe the conventional globalised food system is vulnerable to shocks (interviews 4, 5, 7, 9, 12, 14). It also connects to social justice, as some people do not agree with the businesses practices of supermarkets which are seen as monopolistic or exploitive (interviews 9, 10, 12). While Bristol City Council recognises this strength of opinion, it has no statutory powers to restrict supermarket numbers or placement (interviews 2, 4). The question then arises on whether the council should act only according to statutory guidelines if such regulations are seen to undermine resilience or social justice at the local level. It can be argued that the national planning policy is not always appropriate when applied at the city scale, as it cannot account for local circumstances or expectations, and it restricts the council’s ability to develop its own policy based on grounded information.

A third element of planning is providing space for urban food production in the long term. The QS found that 45% of people believe the council has not provided sufficient land for growing food in the city. The council’s ‘Development Framework Core Strategy’ (2011) states that within the next 25 years they expect to build up to 30,000 new homes, as well as provide new office space and 10 hectares of industrial land in the city. The same strategy also intends to allocate space for urban food production. There would appear to be a conflict of interests here because space is becoming limited in Bristol, as illustrated by the M32 Park and Ride controversy. As mentioned in section 5.1, reducing the amount of land available for growing food limits the adaptive capacity of Bristol’s food system. Yet as the population of Bristol increases there will be a greater demand for housing, and so there needs to be a genuine debate on the relative merits of the two land uses (interviews 13, 14).

A second intervention point for the council is supporting urban agriculture. Some UA groups would like to see the council provide more funding (interviews 8, 12), but the council is facing budget cuts and so is unable to do so (interviews 1, 3). The previous sections have presented evidence of the benefits of UA to the local community, such as increased resilience or greater social equality. While few people would dispute the assertion that UA projects should be financially viable (interview 4), there is a strong argument that funding is justified primarily because of these social benefits. The council would not simply be supporting hobby gardening, they would be advocating a more resilient and equitable food system. In the current economic climate, local authorities may be prepared to embrace normative goals for the food system but be less willing to pay for them (Wilkinson, 2012), particularly as the benefits are difficult to quantify. It is important to recognise that the benefits of investing in normative goals may not be visible for several years, but this does not detract from their legitimacy. For instance, if people eat healthier food they are less likely to develop diet related illnesses in years to come. As of April 2013, the responsibility for providing public health care now lies with local councils, and so supporting UA projects could make people healthier and reduce the council’s expenditure in the long term.

A third intervention point is the council’s own procurement policy. The QS results found that 47% of people ‘strongly agree’ and 35% ‘agree’ that the council should source local food for catering in schools, hospitals and public offices. This perspective is supported by 5 interview respondents (interviews 3, 5, 9, 10, 13). One council member stated that procurement is in fact the easiest way for local authorities to intervene in the food system, although some of the existing contracts with food suppliers have a long duration and would have to expire before changes could be made (interview 3). The power of procurement is largely due to scale; the council buys and serves such a large quantity of food that they can aggregate supply and demand in order to accomplish particular objectives (interview 13). They can increase resilience by buying from local farmers and the St Philip’s wholesale market (Carey, 2011). The council is responsible for feeding a lot of vulnerable people, and so social justice could also be supported by ensuring that hospital patients and school children are eating a healthy diet (interview 13).

The fourth intervention point is the creation of an overarching food policy which would guide all council departments and ensure their activities are not in conflict with one another. In Bristol, council members (interviews 1, 2, 3, 4) and other stakeholders (interviews 5, 12, 13, 14) are in favour of an integrated UFP. However, the lack of cross-departmental communication (interviews 2, 3, 4, 12, 13, 14), along with the minimal level of engagement with grass roots organisations (interview 14) is preventing such an UFP from developing. The FPC hopes to influence the city
council (interviews 2, 3, 5, 13, 14), and they are in the process of creating a ‘Good Food Plan for Bristol’. One FPC member states that:

“Bristol is trying to put food on the policy agenda, where it hasn’t been since industrialisation. The sustainability challenge is to reunite planning and public health… the council should look at food as a system.” (interview 13)

By viewing food as a holistic system, the council is able to integrate normative goals, for instance public health or resilience, within their existing policies such as procurement and planning. Moreover, a systems perspective allows the council and other stakeholders to consider their own function and position within the food system relative to other actors, and locate possible collaborations or synergies. Mendes argues that:

“The goal of urban food policies is to look holistically at multiplier effects. For instance, the ways that neighborhood capacity building can be enabled by community gardens;... improved avenues for participatory governance offered by food policy councils; or boosts to the local economy from farmer’s markets.” (2008, p.944)

A systems view allows multiplier effects to be more easily identified, and an UFP equips the actors with a dynamic regulatory framework to influence elements in the system in order to take advantage of these multiplier effects. The ability to adjust responses in this way increases the adaptive capacity of the system (Folke et al., 2010). Moreover, an UFP which is based on a comprehensive stakeholder engagement process and is endorsed by multiple actors in the food system has legitimacy. This allows the food system a high degree of transformability, as stakeholders have an overall understanding of the system and have previously established cross-sectoral lines of communication. If the existing food system should become untenable in the future, the stakeholders could use the UFP to initiate a deliberate transformation rather than wait for one to be forced upon them.
6.0 Discussion

6.1 Conclusions from the Study
There are three main conclusions from the study:

- UA increases the resilience of Bristol’s food system through; community building (connectivity, social capital), local food production (diversity), and education on how to grow food (adaptability).
- UA supports social justice in Bristol’s food system by; providing access to fresh healthy food, promoting equality and inclusion, and encouraging healthier living through education.
- The city council can increase resilience and support social justice in Bristol’s food system through four key interventions; urban planning, supporting UA initiatives, their procurement policy, and developing a holistic UFP.

6.2 Urban Agriculture and Sustainable Cities
As stated in the Introduction, our aspirations of achieving sustainable development are largely dependent on our ability to effectuate sustainable forms of food production. The Discussion takes its point of departure in Foley et al.’s assertion:

“Looking forward, we face one of the greatest challenges of the twenty-first century: meeting society’s growing food needs while simultaneously reducing agriculture’s environmental harm” (2011, p.337)

This section will examine the role of urban agriculture (UA) in making cities more sustainable, by considering its potential to overcome these two challenges. Section 6.3 will look more closely at the role of the council, and discuss possible approaches to urban food system reform.

6.2.1 Meeting Society’s Growing Food Needs
When framing UA within the broader sustainability debate, one of the first questions to arise is ‘Can urban agriculture provide the volume of food required by the residents of a city?’ This study has shown that few people living in Bristol believe UA can achieve this high aspiration, and this opinion is shared by the author. However, it can be argued that this is not a very helpful question because it is dichotomous - it presents an ‘all or nothing’ scenario. Meeting society’s growing food needs while simultaneously reducing agriculture’s environmental harm is a vast and highly complex challenge, and it is unlikely to be resolved with a single ‘silver bullet’ solution (Foley et al., 2011). It is more conceivable that a sustainable food system will be achieved through the aggregation of many small developments in how we produce and distribute our food at multiple scales, accompanied by significant changes in our consumption behaviour. Therefore, a more appropriate question would be “In what ways can urban agriculture contribute to the local food system?” This allows us to focus our attention on what UA can accomplish, rather than what it cannot.

Most cities in the global north rely heavily on the supermarket - agro-food industry complex to provide for their citizen’s food needs. This study has found that several stakeholders in Bristol perceive this system to be susceptible to shocks and therefore displaying a lack of resilience. The reasons for this lack of faith in the global food system require further examination, and some explanation may be drawn from particular key events which have undermined public confidence. In recent years the UK has experienced a national food shortage on two occasions. In 2000, there was a blockade of fuel depots in protest of rising petroleum prices, and within days the supermarkets were forced to ration food sales in order to avoid panic buying by members of the public. A decade later, during the winter of 2010, extreme weather conditions prohibited trucks from distributing food from warehouses to supermarkets. These were two isolated and short-lived incidents, but they did reveal that the ‘just in time’ supply model is fallible, and that supermarkets are only four days away from their shelves being empty at any time. Moreover, confidence in industrial meat production has been shaken by the BSE epidemic in the 1990s (zoonotic infection), the 2008 Irish pork crisis (contamination of
dioxin), and most recently the horsemeat scandal in 2013 (horse and pig DNA found in beef products). Supermarkets are judged not only on their ability to provide a continuous supply of food, but also that this food should be safe and correctly labeled. As discussed in section 2.1, other important factors in shaping people’s views could be the aging population of British farmers, the prospect of peak oil, and the fact that the UK is a net importer of food. Finally, there is the concern that the success of supermarkets in capturing a large market share is itself characteristic of vulnerability, because it has impacted negatively on local independent traders, thus reducing the diversity of available food sources. Many of the problems described above are systemic of the ‘just in time’ supply model and the sheer scale of industrial food production, and stem from the pursuit of greater efficiency and profitability. There is a pressing need for greater transparency and scrutiny of the inner workings of the global food system and its key actors.

In the context of these concerns, some stakeholders in Bristol believe that UA increases the resilience of the urban food system because it constitutes an alternative food source to the supermarkets, albeit on a small scale. This conviction resonates with the work of Barthel and Isendahl (2012) described in section 2.0. If we apply their key principles of resilience, diversity and social-ecological memory, to the case of Bristol some of the contributions of UA to the local food system become apparent. First, UA initiatives in Bristol provide working models of local food production and distribution which could be scaled up relatively quickly and easily. This represents diversity and redundancy in the urban food system, a fail-safe measure should the globalised food supply model suffer a prolonged disturbance or an unexpected collapse. Indeed, there are contemporary examples of cities which have been forced to re-localise food production in response to such a disturbance, most notably Havana following the US trade embargo against Cuba and the fall of the Soviet bloc in 1989. Second, the vital function of UA as a carrier of social-ecological memory is also in evidence in Bristol. The city’s urban gardens are centres of learning where food-growing knowledge and skills are passed onto others, increasing the capacity of individuals and communities to provide for themselves by working with the natural environment, as well as strengthening the connectivity between different social groups. Thus, the UA initiatives serve as a counterbalance to the global generational amnesia about how to grow our own food. By maintaining diversity and social-ecological memory in the urban food system, UA could play an important role in meeting the food needs of Bristol’s residents in the event of a disturbance.

UA can also be seen to be making a more immediate contribution to Bristol’s food system. What is particularly striking in the case of Bristol is how UA is being used by its practitioners to support broader societal objectives. This exemplifies that, for urban gardeners, UA is more than simply a form of food production; they perceive it as a leverage point with which to intervene in the urban food system to address social concerns. For example, UA is being used to tackle food poverty and diet related illnesses (Mathew Tree Project, HHEAG), promote equality and inclusion (Golden Hill Community Harvest, The Severn Project, Feed Bristol), and educate children about where food comes from (Feed Bristol, Windmill Hill City Farm, The Community Farm). Underpinning many of these UA initiatives is the conviction that everyone is entitled to equal access to healthy food, very much in alignment with the FAO’s definition of the right to food (FAO, 1996). In the words of one UA practitioner:

“Part of our ethos, which prevails today, is to have green space for those who live in flats and don’t have access to a garden…part of the problem [with the conventional food system] is that organic, local food is expensive, and many people cannot afford it. Only the affluent and the educated can make that choice.”
(interview 9)

UA is therefore one key strategy in overcoming inequalities in the urban food system, so that people who are less educated, on low incomes, or who live in apartment blocks can still make a choice regarding the food they consume. The ability to make this choice, in a dignified manner, is a tenet of an emerging academic and civil society discourse which advocates a rights based food system (see section 2.0). Its proponents are critical of the retreat of state welfare which they argue has led to the prevalence of food poverty and a culture of eating unhealthy, processed food which is usually cheaper than the healthier alternatives. It remains to be seen how far this discourse can influence state and local governments to implement policies which might remove the structural causes of unequal access to healthy food. In the meantime, UA is a more direct approach which local actors can employ in order to fulfil the right to food, in particular for vulnerable groups in society.
The use of urban food production to address social concerns illustrates the multi-functional nature of UA, and the academic literature contains many examples of how UA has been used to support multiple and often diverse objectives. This multi-functionality is dependent on the needs and actions of the urban gardeners and the wider communities of which they are a part, and so in most UA projects the social context of producing the food is of fundamental importance. Thibert asserts that:

“It is important to recognize that UA is not just about food: it is, first and foremost, about people and their relationship to their food and to their environment.” (2012, p.355, emphasis in original)

This statement closely reflects the situation in Bristol, where many urban gardeners framed UA in relational terms to describe how they interact with the land, with nature, with each other, and with the more distant actors in the urban food system. For these people, the social context of growing the food is as important, if not more so, than other qualities such as the economic value of the crops they produce. This is in stark contrast to the supermarket dominated food system, where the social context is largely removed as food becomes increasingly commodified in order to fulfil the singular purpose of making profit. Nutritional information is provided on food packaging, but the source and the conditions of its production remain unknown to the consumer, with the exception of a few niche products such as organic or fair trade which 'tell the story'. Through this commodification process, a tomato becomes simply a bundle of nutrients and a few calories, and one tomato is the same as any other. The socio-cultural significance of a tomato grown in an UA project, however, may be far greater if it served to enhance social relations within the local community, or raise the self esteem of the individual who produced it as an ingredient for a family meal. Thus, UA is not only a source of food but also a means of safeguarding some of the core values and social relations which are inherent in food production.

6.2.2 Reducing Agriculture's Environmental Harm

The concept of the ‘ecological footprint’ has been used to illustrate the heavy ecological demand of cities, which require various forms of natural capital to be transported in from far beyond their geographical boundaries. This demand is expected to continue to grow in the foreseeable future, due to the interconnected trends of urbanisation, rising affluence and changing consumption patterns. The role of UA in reducing this ecological footprint is emerging, particularly in the global north, as engaged individuals strive to produce some of what they need from their own locality. There are three dimensions of food production, on any scale, which determine its ecological footprint. These are; natural resource use, environmental impact, and its relationship to consumer behaviour.

As described in sections 1.0 and 2.1, natural resource use refers to the flow or throughput of the income derived from stocks of natural capital. These stocks and flows take two forms; i) renewable natural capital, which includes self-reproducing biological resources, for instance livestock or plants, as well as replenishable assets/flow limited resources such as water or sunlight, and ii) non-renewable natural capital such as fossil fuels or minerals. As mentioned previously, it is very difficult to ascertain the relative non-renewable resource consumption of UA compared to conventional agriculture - the literature review performed in this study did not reveal any comparative studies on this particular question. This issue is of such critical importance that it should not be side-stepped, and so in order to engage in the debate we must rely on observation and personal experience. While such methods are considered less scientifically stringent, they should not be disregarded out of hand, because anyone who has grown some of their own food in their garden or allotment will have a clear idea of how much energy and resources were invested into producing this food. In Bristol, it was observed that the labour was typically manual rather than mechanised, thus requiring little or no fossil fuel input. The food grown was usually for personal consumption, either by the growers themselves or by those in their immediate social network. The provision of this food is therefore not reliant on complex transportation networks to connect producer to consumer, although the two larger scale commercial enterprises (The Severn Project and The Community Farm) do use a delivery van. In all but one instance the producers preferred organic to inorganic fertilisers, due to their own ethical position but also because compost materials are so readily available. Inorganic fertilisers have a much higher energy intensity to extract and produce than organic compost fertilisers. Therefore, there is a strong basis for the assertion that food grown in an UA system has a lower non-renewable resource demand and
releases less greenhouse gas emissions than comparable items produced in conventional agriculture, assuming the gardener does not drive 20km to his or her vegetable patch every day. Needless to say, this discussion would be appreciably richer if it could draw upon solid research on the relative resource demand of different forms of food production.

The second dimension of agriculture’s ecological footprint is its environmental harm, and this relates closely to the renewable forms of natural capital. The rate at which we can sustainably extract useful goods and services is determined by the condition or health of both natural and agro ecosystems. Conventional farming practices impact negatively on the local environment in a number of ways; mono-cropping systems result in reduced biodiversity and the loss of fertile topsoil, and aquatic ecosystems absorb ‘waste’ pollutants such as nutrient run-off from fields. In contrast, observations of UA plots in Bristol suggest that urban food production systems are less damaging. For example, the urban gardeners cultivate a wide range of crops, and at least three of the sites visited had designated ‘wild areas’ to provide habitats for insects and birds. Thus biodiversity is enhanced in an urban environment which might otherwise become ecologically deficient due to the increasing density of housing, a finding which is supported by the research of Dubbeling (2009) and Havaligi (2011) in other cities. Moreover, the UA plots in Bristol are intensively managed and have soil cover for most of the year. They are therefore less prone to erosion than mono-crop fields where the soil is often left exposed post harvest. Another significant factor is the use of compost which, unlike inorganic fertilisers, adds organic matter to the soil which reduces run-off and nutrient leaching into local waterways. Finally, if we consider the global scale, it is reasonable to extrapolate that if we can produce more of our food in cities, our demand for food grown in rural areas will decrease. Less land would be required to support agro ecosystems and so there would be more space for natural ecosystems.

The third dimension is consumer behaviour. It is well documented that the Western diet is very resource intensive, and that lowering our meat and dairy consumption would enable us to shift crop production away from animal feed (Foley et al., 2011). This would reduce the demand for land, water, energy and fertilisers, as well as cutting greenhouse gas emissions from rearing livestock. This study did not explore whether UA promotes a vegetarian or ‘flexitarian’ diet, but one issue which did arise is the perceived disconnect from food and the knowledge of where it comes from. This is perhaps not surprising, considering the convenience and apparent plethora of foods available in supermarkets, and the large number of supply chain actors which now separate consumers from farmers. If many of us are not aware of where our food comes from, we are also not aware of the environmental (and social) impacts associated with its production. Some authors maintain that UA has the potential to overcome this disconnect, because the process of growing some of our own food encourages us to consider how the conventional food system operates, its environmental impacts, and ultimately our embeddedness within this system as consumers. The majority of interview and questionnaire respondents in Bristol were well aware of these environmental concerns, and some were making conscious decisions about the food they buy and grow based on this knowledge. They are no longer what Turner (2011) describes as ‘passive consumers’. Moreover, some authors maintain that the physical activity of producing food and the ‘relationship to the soil’ this engenders may nurture a sense of ecological citizenship or stewardship. For some people this may lead to a desire to embrace sustainable lifestyle practices more generally, such as changing their diet or reducing air travel in order to reduce their own ecological footprint. Ultimately, the decision of what food to eat is a very personal one, and each individual must make their own judgement. The main contribution of UA in this regard is that it enables people to make informed choices about their food.

6.3 Urban Food Policy and a Framework for Food System Reform

This section will consider the role of the city council in urban food system. It will discuss the process through which the council’s responsibility is defined, and the potential for forming cross-sectoral partnerships. It will conclude by advocating resilience and social justice as foundational concepts which can be used to assess and reform the urban food system.
6.3.1 Urban Food Policy – Whose Responsibility?

Bristol is one of a small but growing number of cities in which local stakeholders are actively engaged in visualising the food system they would like to see. Grass roots organisations in Bristol are already taking steps towards realising this vision through UA, civil society campaigns, and by successfully placing food on the council’s policy agenda. Despite this impressive momentum, there is a recognition that dedicated citizens and local CSOs are unlikely to achieve a sustainable food system on their own because a number of private and public sector entities also play major roles in this system. Much of the dialogue taking place in the forums of the Bristol Food Network and the Bristol Food Policy Council (FPC) has focused on how to involve and influence these key players, in particular the city council. At present, the council does not have an official food policy, although it did release a Food Charter in 2010 which contains 10 ambitions which “will shape and underpin the council’s approach to food provision” (Bristol City Council, 2010). It is not clear how the council intends to operationalise their charter, and so this document itself should not be considered a food policy.

The process of defining a food policy at the local level is somewhat novel, at least in the UK context, where policies are typically formulated by the national government which then issues a set of statutes for local authorities to abide by. However, local government departments such as city planning have struggled with the issue of food because there are no statutory guidelines for them to follow. The UK government has published a number of white papers in recent years which have the word ‘food’ in the title¹, but these tend to focus on agricultural policy, and it is important to differentiate between agricultural policy and food policy. Agricultural policy considers domestic food production in relation to food imports and exports, and more recently the emerging global challenges to agriculture such as climate change. Agricultural policy is therefore concerned with how and where food is produced and the focus is usually on the national and international levels. Food policy also considers how and where food is produced, but integrates this with a host of other food-related activities, such as how food is distributed, prepared, consumed, disposed of, and if there any associated health or environmental implications (see section 2.0 for specific examples of food related activities could be included under a food policy). These activities take place at the local level, they occur every single day, and they affect every individual who lives in the area. It is this immediate connection and relevance to people’s lives that motivates stakeholders in Bristol to engage in developing a food policy. Agricultural policy should undoubtedly remain a permanent feature of the national government’s agenda, but the absence of statutes pertaining to food policy leaves local government officials somewhat hampered even if they identify problems in the food system. City councils would benefit from clearer guidelines on their responsibilities and discretionary powers in relation to food, and so devising food policy statutes should also be a valid concern for the national government. This suggestion is made, however, with a caveat, as any food policy guidelines should not be so rigidly prescriptive as to undermine the local authorities’ ability to account for and adapt to the specifics of the local context. Each city is different, and the city council has a far greater knowledge of the local needs and circumstances than the national government.

An urban food policy (UFP) is essentially a formal expression of the city council’s responsibility with regard to the broad range of food-related activities mentioned above. In some respects this responsibility is already well established because the council administers key functions in the urban infrastructure, such as the maintenance of roads which facilitate food distribution, or the management of waste collection systems. Yet in other respects, in particular the provision of food, this responsibility is not so clearly defined. In Bristol, researchers and representatives from UA groups and CSOs believe the council does have a responsibility to ensure the availability of food, but opinion was divided regarding how exactly the council should intervene in the urban food system. Members of the council, for their part, were not convinced that food provision should be a part of their role beyond promoting awareness about healthier food and responding to civil emergency situations. This spectrum of opinion regarding the role of the council is not surprising, and neither is it unique to Bristol. Several authors have commented on the difficulties faced by municipalities in other locales in defining their food policies, due in part to the ingrained perceptions among city planners that agriculture is essentially a rural activity and that the conventional food system is functioning well. The prevalence of UA in many cities along with the disconcerting rise of diet-related illnesses and food poverty has

¹ Recent UK Government agricultural policy reports include; Food Matters (Cabinet Office, 2008), UK Food Security Assessment (DEFRA, 2010b), Food 2030 (DEFRA, 2010a), and The Future of Food and Farming (Foresight, 2011).
galvanised civil society groups into challenging these perceptions, but even if the need for an UFP is generally accepted
its transdisciplinary nature ensures it does not fit neatly into the mandate of any particular municipal department. A
number of questions will therefore arise during the process of defining the council’s responsibility:

1. Do we need a food policy?
2. What issues/activities should be included in the food policy?
3. Which council department should provide the leadership, and how will they engage with the other affected
departments?
4. Which stakeholders outside of the council should have a role in deciding the policy?
5. Which department(s) will provide the resources (finance, personnel) required to implement the policy?

These questions are far from simple, and there will invariably be differences of opinion regarding the most appropriate
course of action not only between council departments, but also between the council and stakeholders from the wider
community. Morgan offers some useful insight for understanding and navigating this complex process:

“The answer to this question [of the leadership and location of food policy] very much depends on the
way food policy is framed; that is to say, it depends on the prism through which the urban food question
is viewed and valued by politicians and their civil society interlocutors.” (in press, p.4)

From this statement we can infer two key facets of food policy; i) people will choose to frame food policy in different
ways, for instance through the lenses of ‘resilience’, ‘health’ or ‘justice’, according to their own values or world view,
and this may go a long way towards understanding the underlying causes of any disagreements; and ii) because such a
diverse group of actors are involved in the local food system and will be affected by the policy measures, the
problematic task of defining a food policy belongs to everyone concerned, not just the council. This second aspect is
what some authors refer to as ‘sharing the burden of reform’, and this requires a comprehensive and inclusive dialogue
between the various stakeholders, and most likely the services of a skilled facilitator. Bristol is in a fortunate position
because local actors have already established a food policy council, distinct from the city council, as a forum in which
to conduct this dialogue. The FPC is a safe space for stakeholders, including members of the city council, to discuss
how to share the burden of urban food system reform and also the more contentious policy issues, such as limiting
supermarket numbers and placement. The relative autonomy of the FPC ensures it can function as a ‘critical friend’ to
the city council on policy issues.

6.3.2 The Power of Partnership

There are some interventions which are relatively straightforward for the city council to implement under their own
volition, such as using their procurement policy to ensure healthy food for school children and hospital patients. For
some of the more complex issues, such as addressing food poverty, the council may not be the most appropriate entity
to directly intervene, but instead could support the CSOs which are already actively engaged in these areas (see sections
4.4 and 5.4). This is an example of cross-sectoral collaboration, whereby city councils enter into mutually beneficial
partnerships with local businesses and civil society groups in order to achieve more by working together than they
might expect to achieve by acting alone. Several authors advocate partnership as an effective means of sharing the
burden of urban food system reform because it increases the likelihood of the food policy actually being implemented,
and so the policy becomes more than an aspirational green-washing exercise. The benefits a collaborative approach may
bring are as follows; First, local CSOs may have more expertise or experience than the council for particular types of
interventions, for example providing food education or food assistance which is tailored to the specific needs of
individual clients. Second, in these times of austerity local councils may not have the funds available to finance food
initiatives, as is the case in Bristol. The council can, however, explore other forms of support such as providing land for
UA projects, or playing a coordinating/advisory role. Third, addressing failings in the food system through
collaboration increases the legitimacy of the council’s UFP, as a more diverse group of stakeholders will contribute to
formulating the policy and thus have shared ownership of its outcomes. Finally, by developing greater understanding
and communication between various actors in the urban food system, the capacity of local stakeholders to react positively to disturbances is increased.

There are, however, two important considerations when entering into cross-sectoral partnerships; i) the relative power balance between the partners, and ii) the collaboration should not be used to absolve the State of its formal obligations. The first point refers to the concern that an overly autocratic local government may try to exert undue influence over their civil society partners regarding the aims or operation of a local food project. Indeed, while most UA practitioners in Bristol were positive to the idea of more council involvement in the urban food system, several stated that they did not want to live in a ‘nanny state’ where the council determines which local food initiatives are permissible. Reflecting on her research in Vancouver, Mendes asserts that:

“Food policy development, like other social and environmental issues, is dynamic and necessarily evolutionary. The question then becomes how best to achieve ‘equilibrium points’ – what to institutionalize and what not to – in finding a locally appropriate balance between ordinances ‘from above’ and flexible citizen dynamics ‘from below’.” (2008, p.950)

In most cities defining a food policy will be a fundamentally new endeavour, and so finding these equilibrium points may take time and adjustment. Food policy should be considered ‘dynamic and necessarily evolutionary’ because it is likely that some mistakes will be made along the way as stakeholders discover what policy interventions and partnerships are most applicable to their local context. This should not deter anyone from engaging in food policy, but it is useful to think of the policy as a continuous process and not an end state. The second consideration is the responsibility of the State with regard to addressing food poverty and the inadequate access to healthy food. The UK is a signatory to three UN documents which enshrine or reiterate the right to food, and under the provisions of these documents the State is a duty bearer charged with ensuring this right is fulfilled. However, the UK government has resisted pressure from the UN to incorporate the provisions into national law (Dowler and O’Connor, 2012). As discussed in section 2.0, a number of authors and CSOs are critical of the UK government’s failure to address the structural causes of food poverty and unhealthy diets, namely the inadequate levels of minimum wage and social welfare. Instead, there is an increasing State reliance on local CSOs to alleviate the problems through ‘downstream interventions’, which include food banks, volunteer-run food cooperatives, and training to improve cooking and budgeting skills. A number of stakeholders in Bristol view local government - CSO partnerships as a way of enhancing the scope and effectiveness of such downstream interventions, and given the urgency of the problems this strategy is undoubtedly worth developing. Yet such partnerships should not deflect attention away from the national government which has a formal responsibility to assure the right to food, and which has a far greater financial and organisational capacity to address the issues than individual voluntary sector actors. Moreover, the partnerships could potentially place some CSOs in a compromising position, because on one hand they play an adversial role by campaigning for greater State responsibility, while on the other hand they are collaborating with local authorities, the administrative apparatus of the State, to address the issues directly.

6.3.3 Resilience and Social Justice as the Basis for Urban Food System Reform

Resilience and social justice are presented in this thesis not merely as analytical frameworks, but more importantly as normative goals of the urban food system. This is based on the premise that a food system should not be vulnerable to shocks or liable to collapse, and that it should fulfil the food needs of all people living in the city. Resilience and social justice provide points of reference for urban residents who might be concerned about the negative social, environmental or economic impacts of the conventional food system, and the risks posed by its structure and modes of operation. Through these conceptual lenses local stakeholders can better understand how the current food system functions, and the conditions under which these impacts and risks may manifest in the specific context of their locality. The concepts

4 the UN Declaration of Human Rights (1948), the International Covenant on Economic, Social and Cultural Rights (1966), and the Rome Declaration on World Food Security (1996)
can be used to generate a discussion on what a more desirable food system might look like, and assess what types of city and community level interventions might be appropriate and possible to implement.

Several authors have applied the concept of (social-ecological) resilience to food systems because it offers models for increasing society’s capacity to manage change. It can be used to identify sources of risk which arise from how human societies use, or misuse, the natural resources and services on which all forms of food production depend. By encompassing a time dimension, responses can be prioritised according to the gravity and immediacy of a particular risk. Resilience has an inherent systems perspective and so can explain the dynamic interaction between different elements of the food system which may result in positive or negative multiplier effects. The concept is sufficiently malleable that it can be applied to various contexts and, crucially in the case of food system inquiry, it can be used to connect the interrelated scales of global and local. Finally, resilience provides a common language which can intersect academic, policy and practice discourses, and this facilitates greater coordination between actors from different sectors. Indeed, resilience is already deemed an appropriate normative goal by Bristol stakeholders who are engaging in urban food system reform. The concept is prominent in Carey’s (2011) local food audit *Who Feeds Bristol?*, and resilience thinking permeates the eight key strategies of the Bristol Food Policy Council’s (2013) *Good Food Plan for Bristol*.

So why is there a need to combine resilience with the additional conceptual layer of social justice when considering the urban food system? As described above, resilience is very applicable for understanding ecological risk, and the concept has recently been broadened to incorporate a stronger social science dimension by focusing on human agency; that we can imagine possible solutions and have the capacity of organised, collective action to overcome some forms of social risk. However, as discussed in section 2.0, several authors believe resilience is insufficient to understand fundamental elements of social systems such as power relations, and that a resilient system will not necessarily be a just system. It can be argued that agency only describes the mechanism by which humans can enhance their social and ecological resilience, it does not explain the ideologies and norms which guide this behaviour. There is therefore a need for a conceptual frame to understand and analyse social risk which is distinct from resilience. Social justice, expressed in this paper as the right to food, is a concept based on the conviction that all people have inherent human rights which are egalitarian, indivisible and interdependent. A rights-based frame enables us to explore the gross inequalities which are present in the conventional food system, to identify the causes of such inequalities at both the individual and systemic levels, and to determine which actors have a responsibility to address the disparities. It can also be used to question the neoliberal paradigm that dominates the conventional model of food production and distribution, which remains largely unchallenged as the basis for structuring the food system at all scales. For all its virtues, resilience is inadequate to fully explore the social dimensions of the food system, and so a synthesis of resilience and social justice is therefore advocated as a more comprehensive approach to urban food system reform. The city of Bristol provides a useful and illustrative example of how local stakeholders are engaging in such a process, and it is hoped that their experience will provide inspiration for people in other cities to reflect upon their own urban food system.

### 6.4 Suggestions for Further Research

This study highlights two areas which would benefit from further research. These are:

1. The relative resource consumption of urban agriculture compared to conventional agriculture. As mentioned in section 1.4, conceptual approaches such as Cradle to Cradle or Emergy Analysis could be used to carry out such an analysis. The dependence on rapidly diminishing finite resources is arguably the most important factor in the resilience of agro-ecosystems, not to mention many other social-ecological systems.

2. More exploratory studies of urban food policy. This is a relatively new research area, and to date only a few cities have received attention, notably Toronto, Vancouver, San Francisco and London. While the context of any city is unique, such research would benefit municipal authorities and stakeholders in other locales as they strive to formulate their own food policy. These studies would build an understanding of the key considerations, obstacles and potential collaborative processes involved in creating an urban food policy.
7.0 Conclusion
Resilience and social justice are advocated as normative goals of the urban food system, and can be used as conceptual frameworks to guide a process of urban food system reform. Urban agriculture and urban food policy are two potential leverage points to intervene in the food system in order to enhance the wellbeing of urban residents. By maintaining diversity and social-ecological memory, urban agriculture increases the resilience of the urban food system. Moreover, the multifunctional nature of urban agriculture enables practitioners to use it to address social concerns such as food poverty and diet related illnesses. An urban food policy is a formal expression of the city council’s responsibility with regard to a range of food-related activities; how food is produced, distributed, prepared, consumed and disposed of. Defining the food policy is a complex task and should be based on a comprehensive and inclusive dialogue between the concerned council departments and stakeholders from the private and voluntary sectors. Forming cross-sectoral partnerships can facilitate the implementation of the policy and increase its legitimacy.
8.0 Acknowledgement
I would like to express my sincere gratitude to a number of people, without whom this study would not have been possible. First of all, I would like to thank Daniel Bergquist, my supervisor, colleague and friend. His insights into the subject area along with his advice and support during the writing process were invaluable. I would also like to thank my evaluator Sofia Cele for her critical reflections and a number of excellent suggestions. My thanks to Susanne Heinze who offered several useful comments during her opposition of my paper. My thanks also to my friends and colleagues at the Centre for Environment and Development Studies (Cemus) at Uppsala University, with whom I have enjoyed many inspiring conversations which have shaped my understanding of sustainable development. My friends Colin, Tina and Sara deserve a special mention for providing a roof over my head during the field work. Finally, I would like to express my gratitude to everyone in Bristol who participated in the interviews or who completed the questionnaires.
9.0 References


Anderson, M.D., 2013. Beyond food security to realizing food rights in the US. Journal of Rural Studies 29, pp.113-22


Bristol Independents, 2013. *About Bristol Independents* [online] Available at: http://bristolindependents.co.uk/about/ [Accessed 30 July 2013]


Donald, B., and Blay-Palmer, A., 2006. The urban creative-food economy: producing food for the urban elite or social inclusion opportunity? Environment and Planning A 38, pp.1901-20


52


10.0 Appendices

10.1 Semi-Structured Interviews conducted

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bristol City Council members or associates</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview 1</td>
<td>Bristol City Council – Allotment Office</td>
<td>01.03.2013</td>
<td>Council Offices, Brunel House</td>
</tr>
<tr>
<td>Interview 2</td>
<td>Bristol City Council - Urban Planning Department</td>
<td>05.03.2013</td>
<td>Council Offices, Brunel House</td>
</tr>
<tr>
<td>Interview 3</td>
<td>Bristol City Council - Sustainable City Team</td>
<td>07.03.2013</td>
<td>Quayside, City Centre</td>
</tr>
<tr>
<td>Interview 4</td>
<td>Bristol Green Capital Partnership</td>
<td>04.03.2013</td>
<td>The Create Centre, Hotwells</td>
</tr>
<tr>
<td><strong>Civil Society Organisations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview 5</td>
<td>Bristol Food Network</td>
<td>08.03.2013</td>
<td>By telephone</td>
</tr>
<tr>
<td>Interview 6</td>
<td>Federation of City Farms and Community Gardens</td>
<td>05.03.2013</td>
<td>By telephone</td>
</tr>
<tr>
<td><strong>Urban Agriculture Groups</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview 7</td>
<td>Golden Hill Community Garden</td>
<td>06.03.2013</td>
<td>Golden Hill Community Garden, Horfield</td>
</tr>
<tr>
<td>Interview 8</td>
<td>The Severn Project, Community Interest Company</td>
<td>27.02.2013</td>
<td>Temple Meads site, Totterdown</td>
</tr>
<tr>
<td>Interview 9</td>
<td>Windmill Hill City Farm</td>
<td>08.03.2013</td>
<td>Windmill Hill City Farm</td>
</tr>
<tr>
<td>Interview 10</td>
<td>The Community Farm</td>
<td>11.03.2013</td>
<td>By telephone</td>
</tr>
<tr>
<td>Interview 11</td>
<td>Avon Wildlife Trust - Feed Bristol</td>
<td>11.03.2013</td>
<td>Feed Bristol, Stapleton</td>
</tr>
<tr>
<td>Interview 12</td>
<td>Hartcliffe Health and Environmental and Action Group</td>
<td>11.03.2013</td>
<td>HHEAG office at the Gatehouse Centre, Hartcliffe</td>
</tr>
<tr>
<td><strong>Researchers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview 13</td>
<td>Cardiff University, Bristol Food Policy Council</td>
<td>26.02.2013</td>
<td>Cardiff University</td>
</tr>
<tr>
<td>Interview 14</td>
<td>Independent Researcher</td>
<td>12.03.2013</td>
<td>Stokes Croft, Bristol</td>
</tr>
</tbody>
</table>
10.2 Semi Structured Interview example

SSI – Bristol City Council - name
Place:
Date:

There are two objectives to this study. The first is to understand the contribution urban agriculture makes to the resilience of the local food system. The second is to learn about the role of the City Council in local food production.

At the end of the interview if you are in any way unhappy with this information being used in my study, please tell me and I will not use this interview.

I will ask you some questions, please feel free to give as much detail as you like in your answers. If you believe I have missed anything important in my questions, please provide this information as well.

Do you have any questions about the interview or how the information will be used?

Your role in the Council
1. Tell me a little bit about your role in the department?
2. How will the merging of local government and public health under the Health and Social Care Act (2012) affect the work of the planning department?

The role of Bristol City Council in relation to food
3. Do you believe the City Council has a responsibility to ensure food provision for the city’s residents, or this outside of their role
4. The Council appears to focus on procurement and education in its Food Charter. Do you believe the council should intervene in other aspects of the food system? If so, which ones?
5. Bristol is the first city in the UK to form a Food Policy Council. Is there something unique about this council in terms of its attitude towards food? What is the City Council’s motivation for getting involved in local food initiatives?
6. In what ways will the FPC influence the work of the planning department?
7. Other than the FPC, in what forums is the city council engaging with the public on food related issues?

Spatial Planning
8. How much do the various departments in the council speak to each other and coordinate? Bristol Green Capital outlining their sustainable city vision, land use planning department, transport, economic development?
9. Bristol Development Framework Core Strategy states that by 2026 they expect to build 26 to 30,000 new homes, as well as 10 hectares of industrial land and some new office space, without expanding into the green belt. This is likely to cause competition for space; can these new developments be reconciled with the objective of growing more food locally?
10. The M32 park and ride proposal demonstrates two conflicting sustainability objectives – local food production and cleaner transport. What is your view of M32 park and ride proposal?
11. Has the Localism Act (2011) proved to be an effective legal tool for planning authorities or community groups to promote a local food agenda? If it’s too early to say, what is the potential of the Act for this aim?
12. What is the potential for ‘meanwhile’ licences in Bristol?
Resilience
13. The concept of resilience is central to Carey’s report. How relevant is the concept of resilience to the Council’s vision of a sustainable food system? Are you worried about food security in the current globalised food system?

14. If we consider Bristol’s food system, how important is urban agriculture – the actual production of food, compared to other elements which could make the food system more resilient, such as shorter supply chains, education or a diversity of retailers?

15. Carey advocates a ’food system planning’ approach, which would inevitably require more coordination between various council departments, as well as civil society groups and the general public. Is this approach concrete enough to enable such extensive coordination?

16. Do issues such as public health or social equity have more political leverage than resilience?

Further information
Are there any questions I have overlooked?
My name is Mark Wilson, and I am a student from Uppsala University in Sweden. For my MSc thesis, I am researching local food production in Bristol. There are two objectives to this study. The first is to identify what contribution urban agriculture makes to the resilience of the local food system. The second is to learn about the role of the City Council in the local food system.

Please would you take 10 minutes to complete this questionnaire? The questionnaire is anonymous.

**Page 1 – Personal Information**

1. Gender:
   - [ ] Male
   - [ ] Female

2. What is your age?
   - [ ] under 20
   - [ ] 20 - 29
   - [ ] 30 - 39
   - [ ] 40 - 49
   - [ ] 50 – 59
   - [ ] 60 or over

3. What is your occupation?
   - [ ] Student
   - [ ] Self-employed
   - [ ] Retired
   - [ ] Employed
   - [ ] Unemployed
4. What education did you receive?

- [ ] Secondary school
- [ ] University - Bachelor degree
- [ ] College/High school
- [ ] University - Master degree
- [ ] Vocational Training/Apprenticeship

Page 2 – Your involvement in growing food

5. Do you currently grow some of your own food?

- [ ] Yes
- [ ] No

6. Which type of food growing initiative are you involved in? (you can tick more than one box)

- [ ] Rented Allotment
- [ ] Community Garden
- [ ] Private Garden
- [ ] Business
- [ ] Guerilla Gardening
- [ ] Education/Training

7. How many years have you been involved in growing food?

- [ ] less than 1
- [ ] 1 - 2 years
- [ ] 3 – 4 years
- [ ] 5 – 8 years
- [ ] More than 8 years
Please consider each statement below. Decide how important these aspects of urban agriculture are to making Bristol’s food system more secure or resilient.

8. Provides locally produced food

Very important  important  neutral  not so important  Unimportant

9. Provides a source of nutritious and healthy food

Very important  important  neutral  not so important  Unimportant

10. Reduces the money spent on food shopping

Very important  important  neutral  not so important  Unimportant

11. Provides organic food, not dependent on fossil fuel based fertilizers or pesticides

Very important  important  neutral  not so important  Unimportant

12. Encourages learning how to grow food

Very important  important  neutral  not so important  Unimportant
13. Encourages learning how to cook from scratch (using fresh produce)

Very important     important     neutral     not so important     Unimportant

14. Promotes more environmentally aware consumption habits

Very important     important     neutral     not so important     Unimportant

15. Encourages an active lifestyle

Very important     important     neutral     not so important     Unimportant

16. Builds community spirit

Very important     important     neutral     not so important     Unimportant

17. Provides alternative sources of food in deprived areas of the city

Very important     important     neutral     not so important     Unimportant

18. Provides opportunities for social inclusion and training for people recovering from drug or alcohol addiction

Very important     important     neutral     not so important     Unimportant
19. Improves the urban environment (more green space, easier access to nature)

Very important \hspace{0.5cm} important \hspace{0.5cm} neutral \hspace{0.5cm} not so important \hspace{0.5cm} Unimportant

20. Improves local soil fertility

Very important \hspace{0.5cm} important \hspace{0.5cm} neutral \hspace{0.5cm} not so important \hspace{0.5cm} Unimportant
Page 4 – The role of Bristol City Council

Please consider each statement below, and state to what extent you agree or disagree with it.

21. The council policy supports urban agriculture projects.
   - [ ] strongly agree
   - [ ] agree
   - [ ] neutral
   - [ ] disagree
   - [ ] strongly disagree

22. The council has provided sufficient land for growing food within the city.
   - [ ] strongly agree
   - [ ] agree
   - [ ] neutral
   - [ ] disagree
   - [ ] strongly disagree

23. The council has a responsibility to ensure the availability of food for Bristol’s residents.
   - [ ] strongly agree
   - [ ] agree
   - [ ] neutral
   - [ ] disagree
   - [ ] strongly disagree

24. The council has a responsibility to ensure a diversity of food retailers.
   - [ ] strongly agree
   - [ ] agree
   - [ ] neutral
   - [ ] disagree
   - [ ] strongly disagree

25. The council has a responsibility to source local food for catering in schools, hospitals and public offices.
   - [ ] strongly agree
   - [ ] agree
   - [ ] neutral
   - [ ] disagree
   - [ ] strongly disagree

26. The UK has food security – a continuous, reliable supply of food - in the current globalised food system.
□ □ □ □ □
 strongly agree  agree  neutral  disagree  strongly disagree

End of Questionnaire – Thank you!
10.4 Table of key documents relating to urban planning and/or food policy in Bristol

<table>
<thead>
<tr>
<th>Name of Report</th>
<th>Author/Department</th>
<th>Year of Publication</th>
<th>Commissioned by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parks and Green Spaces Strategy</td>
<td>Bristol Parks &amp; Estates</td>
<td>2008</td>
<td>Bristol City Council</td>
</tr>
<tr>
<td>Allotment Strategy 2009 - 2019</td>
<td>Bristol Parks &amp; Estates</td>
<td>2009</td>
<td>Bristol City Council</td>
</tr>
<tr>
<td>Bristol City Council Food Charter</td>
<td>Bristol Public Health</td>
<td>2010</td>
<td>Bristol City Council</td>
</tr>
<tr>
<td>Bristol Development Framework Core Strategy 2011 - 2026</td>
<td>Bristol City Council</td>
<td>2011</td>
<td>Bristol City Council</td>
</tr>
<tr>
<td>Climate Change &amp; Energy Security Framework 2012-15</td>
<td>Sustainable City Team</td>
<td>2012</td>
<td>Bristol City Council</td>
</tr>
<tr>
<td>Building a positive future for Bristol after Peak Oil</td>
<td>Simone Osborn</td>
<td>2009</td>
<td>Bristol Green Capital Partnership, The Bristol Partnership</td>
</tr>
<tr>
<td>The Bristol 20:20 Plan – Bristol’s Sustainable City Strategy</td>
<td>The Bristol Partnership</td>
<td>2010</td>
<td>The Bristol Partnership</td>
</tr>
<tr>
<td>Sustainable Food Strategy for Bristol</td>
<td>Bristol Food Network</td>
<td>2009</td>
<td>Bristol Food Network</td>
</tr>
<tr>
<td>The Bristol Good Food Charter</td>
<td>Bristol Food Policy Council</td>
<td>2012</td>
<td>Bristol Food Policy Council</td>
</tr>
</tbody>
</table>
### 10.5 Summary of additional primary data sources used

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Description</th>
<th>Date (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Observation</td>
<td>I attended a Bristol Food Network meeting, where the focus was planning the <em>Get Growing Garden Trail</em>, a two day event in June where tours of community gardens are offered to encourage new membership</td>
<td>7.03.2013</td>
</tr>
<tr>
<td>Direct Observation</td>
<td>Photos were taken of the urban agriculture sites I visited showing various urban agriculture typologies</td>
<td>February and March 2013</td>
</tr>
<tr>
<td>News letter</td>
<td>Bristol Food Network’s newsletter – providing information about local food related events, issued every two months</td>
<td></td>
</tr>
<tr>
<td>Blog Post</td>
<td>Elisabeth Wrinkler’s <em>Real Food Lover</em> blog post – recounting Councillor Gus Hoyt’s <em>Green Bristol food vision</em>, which he presented at the Friends of the Earth’s Annual General Meeting on 25th February 2013</td>
<td>28.02.2013</td>
</tr>
<tr>
<td>Document</td>
<td>Joy Carey’s case study notes on the establishment of the Bristol Food Policy Council and Charter</td>
<td>June 2011</td>
</tr>
<tr>
<td>Document</td>
<td>Bristol Food Policy Council’s members and aims</td>
<td>2012</td>
</tr>
<tr>
<td>Document</td>
<td>Bristol City Council: <em>Food Poverty – what does the evidence tell us?</em> Prepared for Bristol Food Policy Council</td>
<td>August 2013</td>
</tr>
<tr>
<td>Document</td>
<td>Bristol Green Capital <em>Terms of Reference</em>, which outlines their structure and role</td>
<td></td>
</tr>
<tr>
<td>Document</td>
<td>Bristol Green Capital <em>Flyer</em>, describing their role and bid for the European Green Capital 2015 award</td>
<td></td>
</tr>
<tr>
<td>Document</td>
<td>The Bristol Partnership 20:20 Action Plan and Outcomes</td>
<td></td>
</tr>
<tr>
<td>Document</td>
<td>Bristol Central Area Action Plan Ideas Workshop – Capture Document. This was a stakeholder event to promote dialogue on urban development in preparation for the Bristol Development Framework Core Strategy</td>
<td>15.07.2010</td>
</tr>
<tr>
<td>Document</td>
<td>Bristol Food Network’s <em>Get Growing Garden Trail</em> 2012 leaflet, with descriptions and locations of community gardens</td>
<td>June 2012</td>
</tr>
<tr>
<td>Document</td>
<td>Bristol Good Food – Food poverty? Report by the Mathew Tree Project for the Food Policy Council</td>
<td>April 2013</td>
</tr>
<tr>
<td>Map</td>
<td>The Federation of City Farms and Community Gardens’ map, showing the location of allotment sites and community gardens in the city</td>
<td></td>
</tr>
<tr>
<td>Map</td>
<td>Bristol City Council’s map showing the location of allotment sites in the city</td>
<td></td>
</tr>
<tr>
<td>Map</td>
<td>Bristol Food Network’s <em>Get Growing</em> map, showing the location of community gardens and orchards</td>
<td></td>
</tr>
<tr>
<td>Google Earth</td>
<td>Used to provide an overview of the location and area of the urban agriculture sites, and also to delineate the plots from adjacent gardens and allotments</td>
<td></td>
</tr>
<tr>
<td>Power Point Presentation</td>
<td>Overview of the Severn Project Community Interest Company, sent to me by the manager Steve Glover</td>
<td></td>
</tr>
<tr>
<td>Community Garden Group websites</td>
<td>Most of the urban agriculture groups have a website, and these provide useful background information on the aims and work of the group in question</td>
<td></td>
</tr>
</tbody>
</table>
### 10.6 Data for allotment trial for one year, conducted by an urban gardener

**Value of Fruit & Vegetables from plot 14 Bower Ashton Allotments, 1/10/08-30/9/09**

<table>
<thead>
<tr>
<th>Month</th>
<th>No/Weight</th>
<th>Price</th>
<th>Month</th>
<th>No/Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>okt-08</td>
<td></td>
<td></td>
<td>jul-09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broccoli</td>
<td>100g</td>
<td>£ 0.18</td>
<td>Baking potatoes</td>
<td>9.6kg</td>
<td>£ 12.10</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>0.5 lb</td>
<td>£ 0.40</td>
<td>Basil</td>
<td>1 bunch</td>
<td>£ 0.79</td>
</tr>
<tr>
<td>Carrots</td>
<td>8kg</td>
<td>£ 6.24</td>
<td>Blackberries</td>
<td>200g</td>
<td>£ 1.60</td>
</tr>
<tr>
<td>Cape Gooseberries</td>
<td>19</td>
<td>£ 2.40</td>
<td>Broccoli</td>
<td>1.15kg</td>
<td>£ 1.12</td>
</tr>
<tr>
<td>Cape Gooseberries</td>
<td>50g</td>
<td>£ 0.42</td>
<td>Cabbage</td>
<td>500g</td>
<td>£ 0.39</td>
</tr>
<tr>
<td>Celeriac</td>
<td>2</td>
<td>£ 2.80</td>
<td>Cauliflower</td>
<td>3</td>
<td>£ 2.36</td>
</tr>
<tr>
<td>Celery</td>
<td>2</td>
<td>£ 0.84</td>
<td>Courgettes</td>
<td>1.75kg</td>
<td>£ 3.59</td>
</tr>
<tr>
<td>Cos Lettuce</td>
<td>2</td>
<td>£ 0.88</td>
<td>French beans</td>
<td>1.85kg</td>
<td>£ 7.84</td>
</tr>
<tr>
<td>Cucumber</td>
<td>1</td>
<td>£ 0.60</td>
<td>Gherkins</td>
<td>300g</td>
<td></td>
</tr>
<tr>
<td>Green peppers</td>
<td>2</td>
<td>£ 0.40</td>
<td>Grape</td>
<td>200g</td>
<td>£ 0.49</td>
</tr>
<tr>
<td>Green Chillies</td>
<td>1 lb</td>
<td>£ 3.92</td>
<td>Onions</td>
<td>17kg</td>
<td>£ 0.68</td>
</tr>
<tr>
<td>Leeks</td>
<td>1</td>
<td>£ 4.45</td>
<td>New potatoes</td>
<td>25.15kg</td>
<td>£ 75.65</td>
</tr>
<tr>
<td>Marrow</td>
<td>1</td>
<td>£ 1.20</td>
<td>New potatoes</td>
<td>25.15kg</td>
<td>£ 75.65</td>
</tr>
<tr>
<td>Parsnips</td>
<td>3.5kg</td>
<td>£ 15.57</td>
<td>Onions</td>
<td>17kg</td>
<td>£ 15.00</td>
</tr>
<tr>
<td>Pumpkin</td>
<td>1</td>
<td>£ 0.99</td>
<td>Potatoes (main crop)</td>
<td>18.5kg</td>
<td>£ 7.40</td>
</tr>
<tr>
<td>Raspberries</td>
<td>1.25 lb</td>
<td>£ 8.97</td>
<td>Raspberries</td>
<td>1.08kg</td>
<td>£ 10.80</td>
</tr>
<tr>
<td>Salad Bag</td>
<td>4</td>
<td>£ 6.64</td>
<td>Rosemary</td>
<td>1 bunch</td>
<td>£ 0.68</td>
</tr>
<tr>
<td>Sweet Potatoes</td>
<td>4lb</td>
<td>£ 3.36</td>
<td>Runner beans</td>
<td>600g</td>
<td>£ 2.64</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>£ 60.90</td>
<td>Salad Bag</td>
<td>4</td>
<td>£ 4.00</td>
</tr>
<tr>
<td>nov-08</td>
<td></td>
<td></td>
<td>Shallots</td>
<td>3.2kg</td>
<td>£ 4.17</td>
</tr>
<tr>
<td>Broad Beans</td>
<td>600g</td>
<td>£ 2.64</td>
<td>Total</td>
<td></td>
<td>£ 20.87</td>
</tr>
<tr>
<td>Leeks</td>
<td>900g</td>
<td>£ 3.16</td>
<td>Courgettes</td>
<td>1.625kg</td>
<td>£ 2.98</td>
</tr>
<tr>
<td>Parsnips</td>
<td>2.75g</td>
<td>£ 4.26</td>
<td>Cucumbers</td>
<td>16</td>
<td>£ 8.19</td>
</tr>
<tr>
<td>Salad Bag</td>
<td>4</td>
<td>£ 6.64</td>
<td>Dessert apples</td>
<td>1.45kg</td>
<td>£ 2.01</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>£ 5.02</td>
<td>Florence Fennel</td>
<td>450g</td>
<td>£ 1.58</td>
</tr>
<tr>
<td>aug-09</td>
<td></td>
<td></td>
<td>French beans</td>
<td>1.925kg</td>
<td>£ 6.50</td>
</tr>
<tr>
<td>Potatoes</td>
<td>200g</td>
<td>£ 0.49</td>
<td>Gherkins</td>
<td>600g</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>£ 20.87</td>
<td>Grapes</td>
<td>200g</td>
<td>£ 0.49</td>
</tr>
<tr>
<td>dec-08</td>
<td></td>
<td></td>
<td>Marrow</td>
<td>4</td>
<td>£ 4.80</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>800g</td>
<td>£ 1.62</td>
<td>Melon</td>
<td>1</td>
<td>£ 1.00</td>
</tr>
<tr>
<td>Celeriac</td>
<td>1</td>
<td>£ 1.40</td>
<td>Parsley</td>
<td>1</td>
<td>£ 1.28</td>
</tr>
<tr>
<td>Salad Bag</td>
<td>2</td>
<td>£ 2.00</td>
<td>Parsnips</td>
<td>1.85kg</td>
<td>£ 2.92</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>£ 5.02</td>
<td>Pears</td>
<td>200g</td>
<td>£ 0.35</td>
</tr>
<tr>
<td>jan-09</td>
<td></td>
<td></td>
<td>Total</td>
<td></td>
<td>£ 20.87</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>2 kg</td>
<td>£ 2.61</td>
<td>Sprouting Broccoli</td>
<td>100g</td>
<td>£ 1.57</td>
</tr>
<tr>
<td>Celeriac</td>
<td>3</td>
<td>£ 4.20</td>
<td>Salad Bag</td>
<td>3</td>
<td>£ 4.98</td>
</tr>
<tr>
<td>Leeks</td>
<td>900g</td>
<td>£ 3.16</td>
<td>Sprouting Broccoli</td>
<td>100g</td>
<td>£ 1.57</td>
</tr>
<tr>
<td>Parsnips</td>
<td>2.75g</td>
<td>£ 4.26</td>
<td>Total</td>
<td></td>
<td>£ 12.18</td>
</tr>
<tr>
<td>Salad Bag</td>
<td>4</td>
<td>£ 6.64</td>
<td>Potatoes (main crop)</td>
<td>12.4kg</td>
<td>£ 4.96</td>
</tr>
</tbody>
</table>

---

66
<table>
<thead>
<tr>
<th>Mar-09</th>
<th></th>
<th>Apr-09</th>
<th></th>
<th>Sep-09</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Brussels Sprouts                                                      450g</td>
<td>£ 0.58</td>
<td>Salad Bag                                                             4</td>
<td>£ 6.00</td>
<td>Rosemary                                     1 bunch</td>
<td>£ 0.68</td>
</tr>
<tr>
<td>Sprouting Broccoli                                                     1 kg</td>
<td>£ 11.39</td>
<td>Runner beans                                                          4.34kg</td>
<td>£ 18.58</td>
<td>Tomatoes                                     525g</td>
<td>£ 0.90</td>
</tr>
<tr>
<td>Total                                                                 £ 17.97</td>
<td></td>
<td>Total                                                                  £ 135.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar-09</td>
<td></td>
<td>Apr-09</td>
<td></td>
<td>Sep-09</td>
<td></td>
</tr>
<tr>
<td>Asparagus                                                             1.16 kg</td>
<td>£ 18.56</td>
<td>Cauliflower                                                          9</td>
<td>£ 7.20</td>
<td>Beetroot                                    1kg</td>
<td>£ 2.73</td>
</tr>
<tr>
<td>Cos Lettuce                                                           3</td>
<td>£ 1.86</td>
<td>Broccoli                                                              1.75kg</td>
<td>£ 1.84</td>
<td>Broccoli                                    875g</td>
<td>£ 1.84</td>
</tr>
<tr>
<td>Jerusalem artichokes                                                  450g</td>
<td>£ 1.58</td>
<td>Rosemary                                                              1 bunch</td>
<td>£ 0.79</td>
<td>Cape gooseberry                             780g</td>
<td>£ 6.67</td>
</tr>
<tr>
<td>Salad Bag                                                             4</td>
<td>£ 6.32</td>
<td>Spinach                                                               900g</td>
<td>£ 3.22</td>
<td>Celery                                     2</td>
<td>£ 1.50</td>
</tr>
<tr>
<td>Sprouting Broccoli                                                    225g</td>
<td>£ 3.93</td>
<td>Spring Onions                                                        1 bunch</td>
<td>£ 0.64</td>
<td>Courgettes                                  600g</td>
<td>£ 1.10</td>
</tr>
<tr>
<td>Total                                                                  £ 56.87</td>
<td></td>
<td>Total                                                                  £ 96.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maj-09</td>
<td></td>
<td>Jun-09</td>
<td></td>
<td>Total                                                                  £ 771.17</td>
<td></td>
</tr>
<tr>
<td>Asparagus                                                             1.15kg</td>
<td>£ 18.43</td>
<td>Cauliflower                                                          2</td>
<td>£ 1.60</td>
<td>Marrow                                     3</td>
<td>£ 3.60</td>
</tr>
<tr>
<td>Broccoli                                                              11</td>
<td>£ 6.22</td>
<td>Mint                                                                  1 bunch</td>
<td>£ 0.79</td>
<td>Parsley                                    2 bunches</td>
<td>£ 1.58</td>
</tr>
<tr>
<td>Spinach                                                               2.75 kg</td>
<td>£ 2.37</td>
<td>Onions                                                                2.75 kg</td>
<td>£ 2.37</td>
<td>Pears                                     800g</td>
<td>£ 2.90</td>
</tr>
<tr>
<td>Parsley                                                               4 bunches</td>
<td>£ 5.12</td>
<td>Radishes                                                             320g</td>
<td>£ 0.64</td>
<td>Pumpkin                                    2</td>
<td>£ 1.98</td>
</tr>
<tr>
<td>Rhubarb                                                               2.14kg</td>
<td>£ 4.88</td>
<td>Rosemary                                                              1 bunch</td>
<td>£ 0.68</td>
<td>Raspberries                                3.31kg</td>
<td>£ 34.65</td>
</tr>
<tr>
<td>Sage                                                                  1 bunch</td>
<td>£ 0.68</td>
<td>Salad Bag                                                             4</td>
<td>£ 6.00</td>
<td>Red cabbage                                2kg</td>
<td>£ 1.54</td>
</tr>
<tr>
<td>Total                                                                  £ 46.07</td>
<td></td>
<td>Total                                                                  £ 96.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun-09</td>
<td></td>
<td>Total Oct 2008-Sept 2009</td>
<td></td>
<td>Total                                                                  £ 771.17</td>
<td></td>
</tr>
<tr>
<td>Asparagus                                                             450g</td>
<td>£ 3.50</td>
<td>Broad beans                                                           1.55kg</td>
<td>£ 6.17</td>
<td>New potatoes                               8.65kg</td>
<td>£25.97</td>
</tr>
<tr>
<td>Carrots                                                               200g</td>
<td>£ 0.75</td>
<td>Cos Lettuce                                                           8</td>
<td>£ 4.34</td>
<td>Peas                                       3.92kg</td>
<td>£ 19.56</td>
</tr>
<tr>
<td>Courgettes                                                            290g</td>
<td>£ 0.53</td>
<td>French beans                                                          100g</td>
<td>£ 0.42</td>
<td>Radishes                                   200g</td>
<td>£ 0.53</td>
</tr>
<tr>
<td>Garlic                                                                14 bulbs</td>
<td>£ 4.36</td>
<td>Gooseberries                                                          5.5kg</td>
<td>£ 15.08</td>
<td>Raspberries                                910g</td>
<td>£ 9.09</td>
</tr>
<tr>
<td>Iceberg lettuce                                                       2</td>
<td>£ 1.00</td>
<td>Mangetout                                                             560g</td>
<td>£ 3.72</td>
<td>Redcurrants                                550g</td>
<td></td>
</tr>
<tr>
<td>New potatoes                                                          8.65kg</td>
<td>£25.97</td>
<td>Mangetout                                                             560g</td>
<td>£ 3.72</td>
<td>Rosemary                                   2 bunches</td>
<td>£ 1.36</td>
</tr>
<tr>
<td>Peas                                                                  3.92kg</td>
<td>£ 19.56</td>
<td>New potatoes                                                          8.65kg</td>
<td>£25.97</td>
<td>Sage                                       1 bunch</td>
<td>£ 0.68</td>
</tr>
</tbody>
</table>